

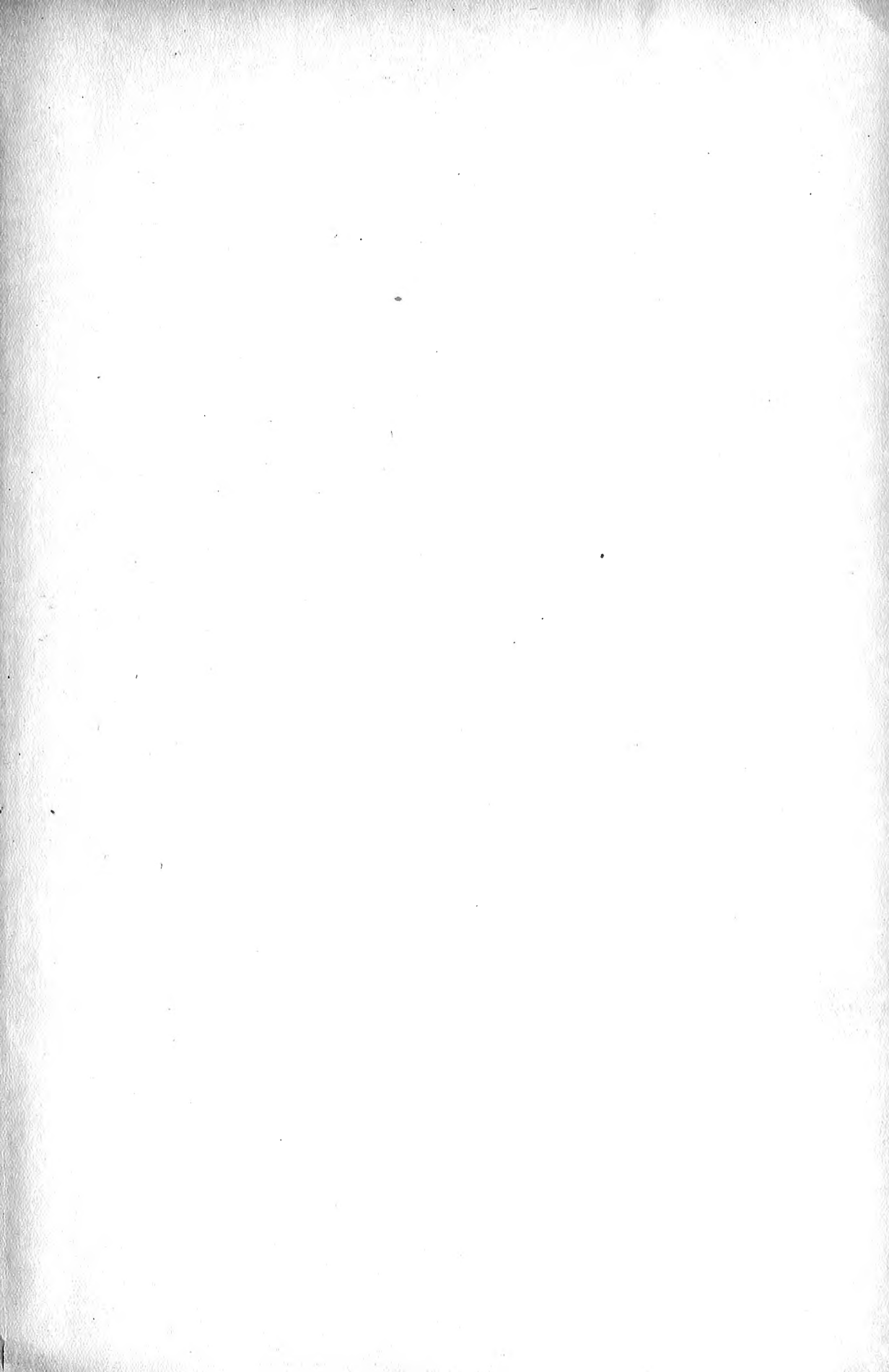
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PROCEEDINGS
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VOLUME XXXIII



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PROCEEDINGS

OF THE

ROYAL IRISH ACADEMY

VOLUME XXXIII

SECTION A.—MATHEMATICAL, ASTRONOMICAL, AND
PHYSICAL SCIENCE.

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PROCEEDINGS
OF
THE ROYAL IRISH ACADEMY
PAPERS READ BEFORE THE ACADEMY

I.

PHOTO-ELECTRIC DISCHARGE FROM LEAVES.

By PROFESSOR J. A. McCLELLAND, D.Sc., F.R.S.,
University College, Dublin,

AND

REV. R. FITZGERALD, M.Sc., PH.D.

[Read JANUARY 2. Published MAY 18, 1916.]

THE following paper contains an account of experiments dealing with the photo-electric properties of leaves and flowers of various kinds, and of substances extracted from the leaves.

The source of ultra-violet light used was a spark between aluminium terminals placed in the secondary of an induction coil, with suitable capacity inserted in the circuit. We have not in any of the experiments described in this paper used a source of definite wave-length, but in the further examination of some of the results we hope to do so. The original intention was to see if photo-electric effects could be obtained from leaves, using sunlight as the source; but many interesting points arose in preliminary experiments with the source described above, and the present paper is devoted to them. The leaves or extracts under examination were placed on an insulated support in a metal vessel, in the lid of which was a quartz window, with metal gauze underneath, through which the light passed. The tray containing the leaves or solution was joined to an electrometer, and the metal vessel, the lid of which was parallel to the exposed photo-electric surface, was connected to storage cells, and kept at a high positive potential, usually 240 volts. Care was taken that the light after passing through the quartz and gauze fell only on the surface under examination, the leaves or solution covering the surface

of the vessel used to contain them so that no discharge of electrons took place from the vessel itself.

The photo-electric effect is in all cases expressed in terms of the discharge from freshly cleaned copper under similar conditions. A copper plate was used as a standard, and care taken that the leaves or other surface under examination were of the same size and in same position as the standard.

To obtain approximate uniformity in the light the terminals were cleaned very frequently, and all volatilized matter removed from the quartz.

The electrometer used gave a deflection of 1300 scale divisions per volt, so that a small photo-electric effect could be detected, but as the source of light was strong, and the exposed surface large, we usually had quite a large capacity joined to the electrometer.

Photo-Electric Activities of various leaves and flowers.

Leaves from a great many trees and shrubs, and flowers of various colours, were tested. The results may be summarized by stating that green leaves gave an effect varying from 3 per cent. to 10 per cent. of that from copper, while flowers of various colours gave smaller effects, usually less than 1 per cent. of that from copper.

The following table contains a few of the leaves and flowers tested with the corresponding activities on a scale on which copper is represented by 100:—

Copper plate freshly cleaned,	100
Leaves of Sycamore tree,	10
Leaves of shrub Euonymus,	10
Leaves of Horse Chestnut,	8
Leaves of Arum lily,	8
Leaves of Plane tree,	7
Ivy leaves,	5
Fresh grass,	3
Chrysanthemum leaves,	10
White Chrysanthemum flowers,	1·8
Pink Chrysanthemum flowers,	1·0
Yellow Chrysanthemum flowers,	0·8
Red Chrysanthemum flowers,	0·5

Experiments with Chlorophyll Extracts.

The different behaviour of green leaves and flowers suggested that chlorophyll may be the chief active agent. Hence we made experiments with chlorophyll extracts prepared in the laboratory from various types of leaves.

The chlorophyll was extracted by acetone, using in different experiments ivy leaves, leaves of nettles, and of the evergreen euonymus. We may quote the results for nettle leaves, which were similar to the others.

The leaves were pounded in a mortar, put into a glass vessel, and left for some hours in contact with acetone, and the liquid then filtered off. This liquid when exposed to ultra-violet light showed practically no activity. When diluted with a large quantity of water the activity was greatly increased, the maximum effect being obtained when the acetone extract formed less than one per cent of the whole. The actual numbers for one experiment are given below :—

Volume of acetone extract added to 100 c.cs. of distilled water.	Activity.
2 drops,	3·5
6 drops,	6·0
20 drops = 0·5 c.c.,	9·0
1 "	6·5
2 "	5·0
4 "	2·5
8 "	1·5

A fresh mixture was taken at every observation, so as to eliminate fatigue effects. The activities are as before given on the scale on which a copper plate would be represented by 100. The effect was therefore a maximum when about ·5 c.c. of this particular acetone solution was added to 100 c.c. of water, and the addition of more of the solution diminished the activity.

The explanation appears to be as follows :—The active substance, probably chlorophyll, is in solution in the acetone, and in this solution it is inactive. When a few drops of the acetone solution are added to the water, the substance is thrown out of solution, and shows its photo-electric effect. When more and more acetone solution is added, we reach a point when the effect of the additional acetone is to dissolve more completely the active substance, and therefore the activity decreases. This can be verified by the addition of small quantities of pure acetone at different stages. For example, in the case of one acetone solution, ·2 c.c. added to 100 c.c. of water gave on an arbitrary scale an activity of 150. An additional 5 c.c. reduced this to 72; but if, instead of adding the additional 5 c.c. of acetone solution, we added 5 c.c. of pure acetone, the effect was reduced to 55. These and similar observations made it clear that the photo-electric effect in these experiments depends essentially on the quantity of the active substance out of solution, as it is inactive when dissolved in acetone.

As mentioned above, similar results were obtained with acetone extracts from various types of leaves, and we also made similar measurements with chlorophyll purchased as pure and afterwards dissolved in acetone. Of course the percentage in the water of an acetone solution required to give the maximum effect depends on the concentration of the particular solution.

Fatigue Effects of Acetone Extracts.

The active substance extracted from leaves by means of acetone showed very rapid fatigue effects; and in work of the type described above, the time of exposure must be carefully attended to, if concordant results are to be obtained. The fatigue effect with these extracts is certainly far more rapid than in the case of metals. Not only is the fatigue more rapid, but there appears to be a permanent destruction of photo-electric power produced by the light to a considerable depth in the liquid. For example, in one experiment drops of acetone extract were added to water sufficient to give approximately the maximum activity. This was measured as quickly as possible and found to be 140 on our arbitrary scale. The light was kept on, and the activity fell off very rapidly. The liquid, which was 1.5 cms. deep, was then stirred up so as to renew the surface, and the terminals and quartz plate were carefully cleaned, but it was impossible to restore the activity to more than 90. These numbers indicate a destruction of photo-electric power to a considerable depth in the liquid, and not merely a change, temporary or permanent, in the surface layer. In the case of the active substances we are dealing with, the photo-electric discharge is apparently accompanied by a permanent change in the substance itself.

To test directly whether the ultra-violet rays we were using could penetrate to a considerable depth, we interposed in the path of the rays a vessel with a quartz bottom. When a layer of water 1 cm. deep was in the vessel, the rays after passing through it gave a marked photo-electric discharge from a copper plate. The transparency was, however, greatly diminished by the addition of a very few drops of the acetone extract to the water.

From their known properties it is to be expected that the chlorophyll molecules would break up readily under the action of light.

*Experiments with water Extracts from Leaves and from Flowers
of various kinds.*

We now decided to treat leaves directly with distilled water, and to test the water for a photo-electric effect. The first experiment tried was with

withered nettle leaves plucked some days previously. They were cut up and pressed in a mortar with cold distilled water. After filtration the liquid gave an effect corresponding to ten divisions per minute on the usual scale. After concentration to half its volume, the activity of the water was increased about 60 per cent. After standing for some time in the laboratory, the liquid was passed through a Chamberland-Pasteur filter, and found to be still active. Boiling with animal charcoal and filtering through ordinary filter paper was found to remove the activity.

We tried similar experiments with leaves of euonymus, ivy, and plane tree, and we may quote the numbers for the first:—

Leaves in a natural state, taken fresh from shrub,	Activity =	10
Cold water extract from leaves,	"	30
A freshly cleaned copper plate,	"	100

We were, therefore, able to get a photo-electric activity equal to 30 per cent. of that of copper by pounding up leaves in a mortar with cold distilled water. To obtain the active extract it is not necessary to break up the leaves. We immersed leaves in cold water, taking care that the surface of the leaf and the stem below the water were not broken or damaged in any way. With prolonged immersion we have obtained an activity as high as 14 on our scale. With distilled water near the boiling-point greater values are obtained, and the period of immersion may be short. Hot water poured over leaves of shrub euonymus, allowed to cool, and then tested, gave 45 per cent. of the activity of copper. The active liquid obtained in this way was found to maintain its activity for weeks when kept in a closed vessel, but the activity fell away to one-third of its value in a week when exposed to the air.

We have attempted to obtain very active water solutions by concentrating weak solutions, but without any very marked success.

The rate of fatigue of these water extracts was not so great as in the case of the acetone extracts diluted with water.

It will be noted how much the activity of the extracts obtained from leaves by simply immersing them in water exceeded the activity of the leaves in their natural condition. Different coloured chrysanthemums, which gave a very small effect, as shown in the table above, were found to yield a water extract with an activity as high as 10 per cent. of that of copper.

*Effects produced by treating water Extracts of Leaves and some pure
Organic Substances with Oxidizing Agents.*

Some effects that we observed led us to try the action of oxidizing agents on the photo-electric activity of water extracts from leaves, and also the action of oxidizing agents in the case of solutions of some pure organic substances.

As oxidizing agents we employed lead peroxide or potassium permanganate solution. Lead peroxide, whether dry or suspended in water, is practically inactive as regards photo-electric effect, and so also is potassium permanganate. Water extracts from many types of leaves were treated with one or other of these oxidizing agents, and in nearly every case we found a large increase of photo-electric activity. Sometimes there was no increase from treatment with lead peroxide, but there was an increase when potassium permanganate was used, and in a couple of instances the increase was more marked with the lead peroxide. It is not necessary to give the numbers for all the experiments, but one or two typical cases may be quoted.

A water extract from sycamore leaves had an activity of 45. When shaken up with lead peroxide and then allowed to settle, the activity was increased to 85. The rate of decay from this increased value was very slow. An extract from leaves of an ash tree had a small activity of 12, which was increased to 35 by treatment with potassium permanganate. An extract obtained from horse-chestnut leaves had an activity of 40. This was only slightly increased by potassium permanganate, but when treated with lead peroxide the activity quickly rose to 90. After standing overnight the activity had fallen very little, and when shaken up again with more lead peroxide the activity was further increased.

The large increases in photo-electric activity noted above, and also results obtained when trying to isolate substances from the residues left when water extracts of leaves were distilled off, led us to try the effects of oxidizing agents on some organic substances.

Hydroquinone in the solid state gave only a small effect when exposed to ultra-violet rays, but a saturated solution in cold distilled water had an activity of 40. When to the solution of hydroquinone a little paste, made by shaking up lead peroxide with water, was added, the odour of quinone was at once apparent, and the activity rose to 80. In a few hours the activity had fallen away, but was restored by adding more lead peroxide. The quinone which is produced is not specially active, and the lead peroxide is inactive. It is clear, therefore, that the increased activity is connected with the process of oxidation of the hydroquinone.

Another solution of hydroquinone which we tested had an activity of 80, and this was increased when treated with lead peroxide to 115, or 15 per cent. more than a freshly cleaned copper plate.

The two substances isomeric with hydroquinone, resorcine, and pyrocatechine, gave by like treatment similar results, and showed high activities.

A very high photo-electric activity was obtained with pyrogallic acid. It is very soluble in water, and a solution which showed an activity of 60 had this activity increased, when shaken up with potassium permanganate, to as high a value as 400, or four times that of copper.

Tannin and gallic acid solutions showed little increased activity when treated with lead peroxide, but responded to potassium permanganate.

As an example of a substance of a different type we tried β -naphthol, which has two benzene rings and one hydroxyl group. Dissolved in weak alkali it showed an activity of 80, and this was increased to 170 by treatment with very dilute permanganate.

Solutions in water of maltose and dextrose were tried. They gave a small activity, and it could not be increased by treatment with lead peroxide or permanganate. Methyl alcohol, ethyl alcohol, acetone, ether, aldehyde, and liquid esters were tested and found to be practically inactive.

The greatest effects and the greatest increases by the use of oxidizing agents were therefore found with closed-ring compounds, the open chain compounds giving small effects.

SUMMARY.

1. A table is given showing the photo-electric effects of a number of leaves and flowers. The maximum effect obtained from any type of leaf was about 10 per cent. of that from copper.

2. Acetone was used to extract chlorophyll from leaves. The acetone solution was inactive, but became active when largely diluted with water, the solid being then thrown out of solution. The photo-electric effect decays very rapidly under the action of the light.

3. It is shown that an active substance is obtained from leaves by immersing them in distilled water. When the water is near boiling point, a short time is sufficient. Large effects are obtained in this way, the water solution in some cases being half as active as copper. When comparing the effects obtained in this way with those obtained by the use of acetone, we must remember that a few drops of the acetone solutions added to a large

volume of water gave a marked effect, so that the total activity obtained by the use of acetone greatly exceeds that of the water solutions.

4. The action of oxidizing agents greatly increases the activity of the water solutions described above, and a similar effect was obtained by adding oxidizing agents to solutions of several organic substances. Very large activities were obtained in this way.

These experiments seem to afford ample proof that, in these particular cases at any rate, the emission of electrons under the action of ultra-violet light is facilitated by chemical change.

It is hoped to investigate some of the points raised in this paper in a more conclusive manner, when we are in a position to use light of definite wavelength.

II.

THE MOBILITIES OF IONS PRODUCED BY SPRAYING
DISTILLED WATER.

By J. J. NOLAN, M.A., M.Sc.,
University College, Dublin.

Read FEBRUARY 28. Published MAY 18, 1916.

IN a previous paper* the electrification given to distilled water by breaking it up in contact with air has been investigated. It was found that the water took up a positive charge which was proportional to the area of new water-surface produced. The breaking up of the water was produced in two ways: (1) by allowing drops to splash against an air-blast, and (2) by spraying. Concordant results were obtained from these methods, the values of the charge produced per square centimetre of new surface in each case being identical. The negative charge is carried off in the air, which contains ions of both signs, negative being in excess. A knowledge of the nature of this ionisation would be of importance in any attempt to formulate a theory of the effect. The experiments described in this paper have, therefore, been undertaken. A short account of some of the results has been given already in the previous paper. A more complete account can now be given.

Investigations bearing on these experiments have been made by Kähler,† Aselmann,‡ and Simpson.§ Kähler found that when distilled water is splashed negative ions only are produced. Aselmann also, working under similar conditions, found only negative ions. These ions had mobilities lying over a wide range. Limiting values of mobilities were obtained, the highest mobility and the lowest being respectively 4 cm./sec., and 2.7×10^{-4} cm./sec., in a field of 1 volt per cm. Very few of the ions, however, had mobilities lower than 1.6×10^{-2} cm./sec. Simpson found that when distilled water is broken up in air, ions of both signs are produced, negative being in excess. No measurements of mobility were made.

* Nolan. Proc. Roy. Soc., vol. xc, p. 531 (1914).

† Kähler. Ann. der Phys., vol. xii, p. 1119 (1903).

‡ Aselmann. Ann. der Phys., vol. xix, p. 960 (1906).

§ Simpson. Phil. Trans., vol. ccix, p. 379 (1909).

There is, of course, no reason to expect that the ionisation produced by splashing and that produced by a different method of breaking up water should be identical. But apart from any apparent want of harmony between these results, it was felt that there was need for a more detailed examination of this type of ionisation.

Apparatus and Method of Experiment.

The arrangement of apparatus is shown in fig. 1. The spraying apparatus—a metal scent-spray fitted to a large bottle—is placed inside a cylindrical metal vessel. Connected to this vessel is the “measuring-cylinder.” It consists of a metal cylinder with a coaxial cylindrical electrode. The latter is insulated from the cylinder, and connected to a Dolezalek electrometer. The cylinder is connected to a battery of cells. The insulation of the electrode is protected

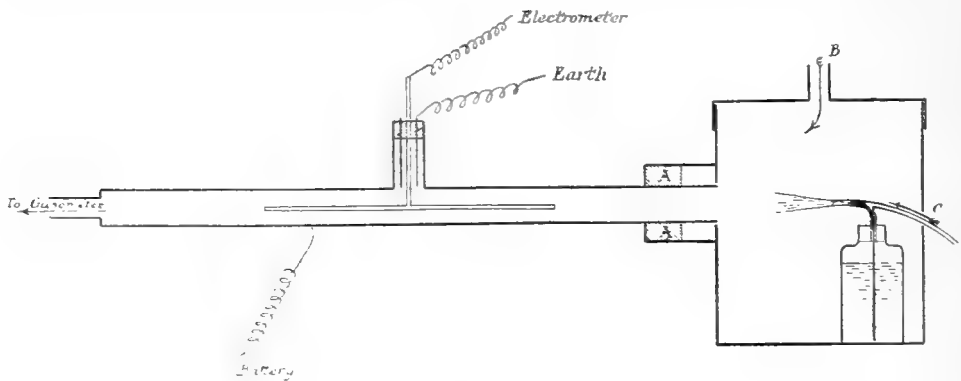


FIG. 1.

against drops of water by a specially long guard-cylinder connected to earth. In the earlier experiments insulating material (*AA*) was introduced between the measuring-cylinder and the spraying-chamber. But afterwards in working with the more mobile ions it was found convenient to establish metallic connexion, so that the two vessels were at the same potential. This prevented any ions being held back by an adverse field from entering the cylinder. The measuring-cylinder was connected by tubing to a large gasometer, so that air could be drawn from the spraying-chamber (which had openings at *B* and *C*) at any desired rate. In the first experiments the sprayer was driven with oxygen at a pressure of about 100 cms. of water. Most of the experiments, however, were made with air at a pressure of about 20 cms. of mercury. No difference in the nature of the ionisation was found. The results got by the two methods have not, therefore, been specially distinguished. As to the magnitude of the effect, no proper comparison can be made, as the sprayers were different in the two cases.

The theory of the coaxial cylinder method of measuring mobilities of ions is well known. Ionised air is drawn through at a steady rate, and a current-voltage curve is plotted. Saturation for an ion of mobility u is produced at a voltage V when

$$V = \frac{\log_e \left(\frac{b}{a} \right) Q}{2\pi Lu},$$

a and b being the radii of the inner and outer cylinders, Q the quantity of air drawn through per second, and L the length of the inner cylinder. If, therefore, ions of only one mobility are present, the current-voltage curve will be a straight line bending over and becoming parallel to the voltage axis at the saturation voltage. If a number of different classes of ions are present, each class having a definite mobility, the current-voltage curve is made up of a number of straight lines, each intersection representing a voltage at which one class of ion is saturated, and each succeeding section of the curve making a smaller angle with the voltage axis until saturation is finally reached. If the number of different classes of ions is great, the intersecting straight lines are short, and the result is, in practice, a smooth curve. But if the interval between the mobility of one class and that of the next is not too small, and if the quantities concerned are big, it is possible to use the current-voltage curve as a method of measuring the mobilities of all the ions concerned.

This is the method of determining mobility that has been used throughout the work described in this paper. The ordinary procedure, therefore, was to find the rate of charging of the inner terminal for various voltages, the air being drawn steadily at a suitable rate and the pressure on the sprayer being also kept steady. In the course of the work the widest possible range of air velocities was employed, and measuring-cylinders of various dimensions were used.

It is clear that the success of this method depends upon the accuracy with which the current-voltage curve can be drawn. As far as the electrometer readings are concerned a high degree of accuracy can be reached, especially when, as in most of this work, the electrical quantities to be dealt with are quite considerable. Variations of the spraying apparatus constitute a possible source of error; but it was found that, except on very rare occasions, the sprayer was remarkably steady. But there is still the disadvantage that unless the quantity of ions of any one class is big, the bend of the curve due to the saturation of that class cannot be accurately defined, and consequently the value deduced from the mobility is subject to considerable error. This method, however, has the advantage that it can be used, without

any essential change of apparatus, for the measurement of widely different mobilities.

General Results.

An example of the sort of curve obtained is given (fig. 2). This curve as drawn is made up of a number of straight lines, showing that ions of different mobilities are present. Saturation of the slowest class is effected at 266 volts, and two other classes of ions are saturated at 78 volts and 20 volts. Under the conditions of this experiment these voltages correspond to ions of mobilities $\cdot 00034$, $\cdot 00116$, and $\cdot 0045$ respectively.

It is clear that while the bend at 20 volts and to a less degree that at 266 volts are well marked in this curve, considerable hesitation might be felt at marking a bend exactly at 78 volts. The position of this bend will to a

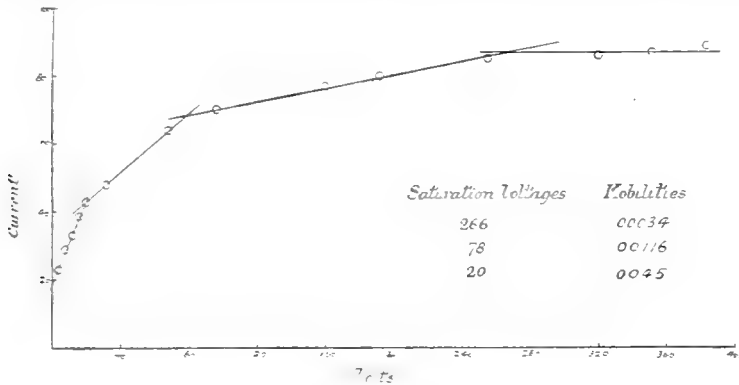


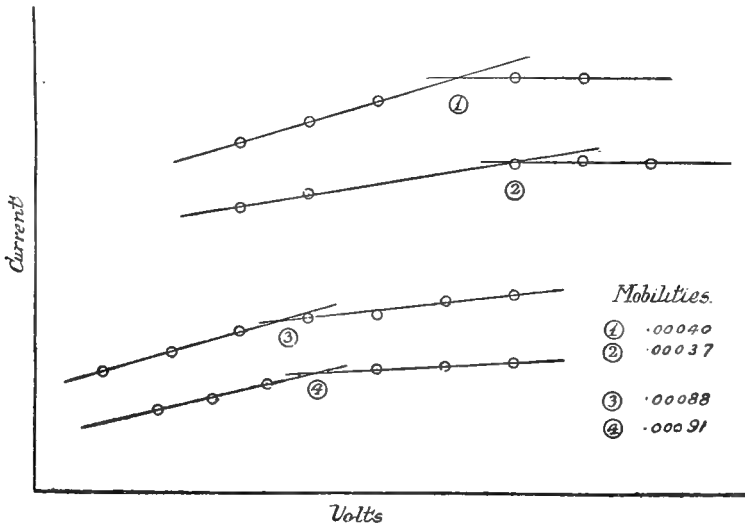
FIG. 2.

great extent be determined by the position of one point of the curve. In fact, it might be said that a smooth curve might be drawn with almost equal exactness, showing that, instead of an abrupt step in mobilities, there was a gradual shading off from one to another, with ions of all intermediate mobilities present. With the object of eliminating this sort of uncertainty, and of obtaining as accurate values as possible for the mobilities of the different ions, the current-voltage curve was worked over in detail many times, each section being investigated under conditions specially chosen to bring out its features.

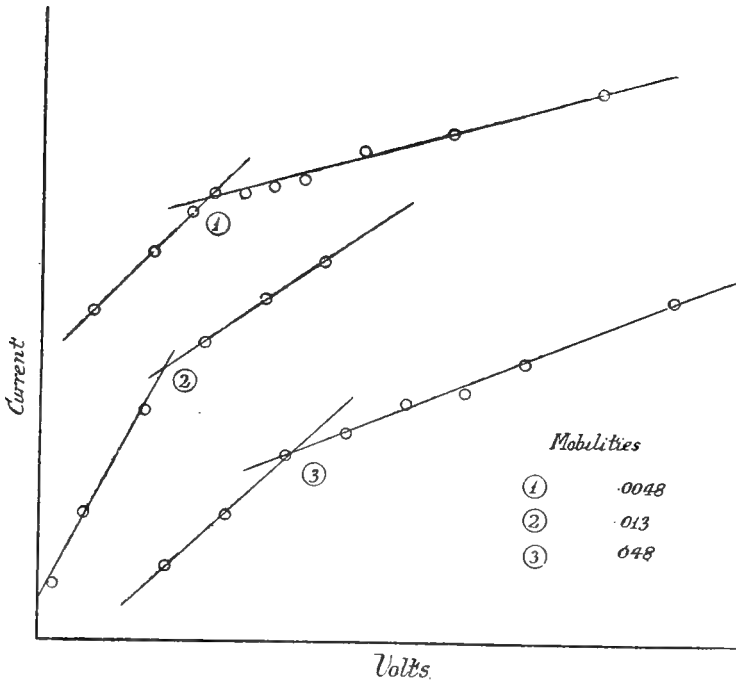
Fig. 3 gives two examples of the curves drawn to determine the mobility of the slowest ion, and two referring to the ion next in order of mobility. These curves are plotted in arbitrary and different units. The values of mobility deduced from the points of bending of the curves are given.

Fig. 4 gives an example of each of the next three bends of the curve and the corresponding values of the mobilities. These have been plotted to different axes and in different units for convenience, and are not to be con-

sidered with reference to the axes shown in the figure. In figures 3 and 4, therefore, we have examples of the determination of the mobilities of five different ions.



Volts
FIG. 3.



Volts
FIG. 4.

It is convenient, before continuing the investigation of the current-voltage curve, to examine further the five classes of ions which we have shown to exist so far.

Positive and Negative Ions.

The negative current is always greater than the positive. The ratio of negative to positive when saturation is obtained is about 1.25.

The five groups investigated so far are found both with positive and negative ions. The actual values of the mobilities are the same for both as far as can be determined.

Effect of Time.

In the case of ions derived from flames, it is found that the mobilities decrease rapidly with time. If sufficient time is allowed, the ions come to a stable mobility, having a value of about .0003 cm./sec. It is important to find if the mobilities of the ions produced by spraying depend upon the time intervening between their production and observation.

TABLE Ia.

Mobilities of Positive Ions.

Rate of drawing air	1	2	3	4	5
(a) 5 litres in 377 sec.	.00038	.00107	.0052(?)	—	—
(b) „ 150 „	.00039	.00096	.0039	—	—
(c) „ 75 „	.00038	.00088	—	—	—
(d) „ 45 „	—	—	.0043	.0097	—
(e) „ 20 „	—	—	.0047	—	—
(f) „ 7 „	—	—	—	.013	.045
(h) „ 1.8 „	—	—	—	—	.048

TABLE Ib.

Mobilities of Negative Ions.

Rate of drawing air	1	2	3	4	5
(b) 5 litres in 150 sec.	.00035	.00116	.0045	—	—
(c) „ 75 „	.00036	.00120	.0055	.013	—
(d) „ 45 „	—	—	.0037	.013	—
(g) „ 2 „	—	—	—	—	.060(?)
(i) „ 1.7 „	—	—	—	—	.040(?)

This can be investigated in two ways—(1) by varying the rate at which they are drawn from the sprayer, and (2) by keeping the rate constant, and varying the length of their path by interposing lengths of tubing.

Tables are given for positive and negative ions, showing the mobilities found with different rates of drawing air.

The numbers derived from experiments in which there was some doubt about the exact point of bending of the curve have been indicated by a note of interrogation.

Many of the above mobilities, especially for rates *b* and *c*, are the means of a great number of determinations. These tables show, in the first place, what has been stated above—that there is no difference between positive and negative as regards mobility. They also show that the five classes of ions are present together in the air drawn from the sprayer, and that their mobilities do not change appreciably with time. Of course the agreement between the mobilities is not good in some cases; but if the positive and negative are taken together, and if allowance is made for the difficulty of obtaining good numbers for mobility, this conclusion is justified. Special care was taken in determining the mobility of the slowest ion. In this case we find a very good agreement between the mobility values for all rates. Irregularities in the mobilities of Class 2, which will be dealt with later, prevented so good an agreement in that class.

The unvarying mobility of the ions is also made clear by experiments on the effect of introducing lengths of tubing between the spraying-chamber and the place of observation. The following table shows the results of one set of experiments. Each successive observation was made after introducing about 1 metre of tubing. Under the conditions of experiment each length of tubing was equivalent to an increase of about 9 seconds in the time.

TABLE II.

Rate—5 litres in 75 sec.

No.	Mobility of slowest Ion	Proportion of total Ionisation due to slowest Ion.
1	·00038	18 per cent.
2	·00037	25 „
3	·00040	33 „
4	·00039	40 „

This table shows that the mobility of the slowest ion at least is unaffected

by time, while the percentage of the total charge carried by that ion increases rapidly. The total ionisation falls off very rapidly with time. This effect may be ascribed to recombination, which will of course be more active among the more mobile ions. An increase in the percentage of the slowest ion is therefore to be expected.

Determination of the Mobilities.

The results of all experiments for the determination of the mobilities of the first five classes are given in the following table. They are set down without distinction of sign. In arriving at the mean values which are given in the last line all numbers marked doubtful are excluded. Apart from these the values found for classes 1 and 2 may be regarded as having all the same

TABLE III.

Mobilities of Ions of First Five Classes.

1	2	3	4	5	
·00031	·00087	·0036*	·013*	·045*	
31	88	39*	·013*	·048*	
33	88	43*	·013*	·040?	
33	88	45*	·010?	·060?	
34	88	45*	·011?		
37	88	48*	·016?		
37	88	31			
38	90	33			
38	93	44			
39	95	53			
40	107	58			
40	116	52?			
40	120				
40	131				
40	121				
			Unclassified Mobilities		
43	88?		·00065*		
44			·00065*		
38?			·00059?		
44?					
MEANS.	·00038	·00100	·0043	·013	·046

degree of reliability. In classes 3, 4, and 5, however, some of the values were obtained under conditions not specially suitable for accurate readings of these particular mobilities. The numbers obtained specially under good conditions are marked with an asterisk. The others have been disregarded in obtaining the mean values for these classes.

It will be noted that a great number of observations of classes 1 and 2 have been made. As regards class 1 this is due to the fact that it is very difficult to decide upon the exact saturation voltage. It was considered specially important to make sure of this mobility. The same difficulty of deciding on the exact point of bending of the curve is found with class 2. But here there seems to be some real variation apart from experimental errors. The values vary between $\cdot 00131$ and $\cdot 00088$, and no less than six observations give the latter value. Then, again, disregarding one experiment about which there is some doubt, we have two experiments giving a mobility $\cdot 00065$. This is typical of a variation which tends to occur throughout these experiments—more often in the form of an increase or decrease in the quantity of some ion present, but occasionally in the occurrence of an ion of mobility which does not fall within any of the divisions ordinarily observed. The variation in quantity is very noticeable in the case of class 1. Occasionally the quantity of this ion present is so reduced that it would be difficult to assert that it was not absent.

Summing up the results obtained so far, it may be said that five classes of ions have been found, each class having a distinct mobility. That these ions decrease rapidly with time, but do not alter in mobility—at least within a considerable range. The mobilities are $\cdot 00038$, $\cdot 00100$, $\cdot 0043$, $\cdot 013$, and $\cdot 046$ cm./sec. in a field of 1 volt/cm. Taking the mobility of the slowest ion as 1, these mobilities may be written 1, 2·6, 11·3, 34, and 121.

Ions of Greater Mobility.

In addition to the five classes dealt with above, seven other classes of ions have been found. This division into two sets of five and seven groups respectively was adopted arbitrarily at first for convenience; but, as will be shown later, there is some ground for believing that it corresponds to a definite difference in the nature of the ionisation. All twelve classes are present together; but the conditions of air-velocity and voltage which favour the observations of the more mobile groups do not yield observations of the slower ions, and vice versa.

In dealing with the more mobile ions, very rapid air-blasts were generally used, and the measuring cylinder was of large diameter. Thus the time-interval between the production of the ions and their observation was

rendered very small; and, in the second place, saturation of the ions was produced at voltages high enough to enable good curves to be drawn.

The negative ions are again in excess. The ratio of negative to positive is higher than in the case of the slower ions. Some of the more mobile ions are about twice as numerous as the corresponding positive ions. As far as can be seen, there is no difference between positive and negative in respect to the values observed for mobilities.

Tables are given, as before, of the mobilities of positive and negative ions, classified into groups as observed with different rates of drawing air.

TABLE IVa.
Mobilities of Positive Ions.

Rate of Drawing Air	6	7	8	9	10	11	12
5 litres in 39 sec.	—	—	·55	—	—	—	—
„ 20 „	—	—	—	1·0	—	—	—
„ 14 „	—	—	—	—	1·9	3	—
„ 4·3 „	—	·20	—	—	—	—	—
„ 3·2 „	—	—	—	—	1·56	—	8?
„ 2 „	·14	·27	—	—	1·6	—	—

TABLE IVb.
Mobilities of Negative Ions.

Rat of Drawing Air	6	7	8	9	10	11	12
5 litres in 26 sec.	—	—	—	1·08	—	—	—
„ 20 „	—	—	·55	1·08	—	—	—
„ 14 „	—	—	—	—	1·9	3	—
„ 7 „	—	·22	·39	1·12	—	—	—
„ 4·3 „	·12	·20	—	—	—	3·7	9?
„ 4 „	—	·22	·43	1·13	—	—	—
„ 3·2 „	—	—	—	1·07	1·45	3·1	6·2
„ 2·2 „	·09	·19	·39	1·10	—	—	—
„ 2 „	—	·27	·51	1·10	1·60	3·57	6·5
„ 1·7 „	·13	·29	·55	—	1·60	3·6	—

An inspection of the table of negative ions shows that the mobilities are

not affected within the range of experiment by the rate at which the air is drawn from the sprayer. The positive ions have not been examined as fully, but there does not seem to be any ground for making distinction between the signs. At least one reliable observation has been obtained of each class of positive ions, excepting Class 12. If this ion exists with a positive charge, it must exist in very small quantities. The quantity of positive ions of Group 11 (mobility = 3) observed was very small, and was found only in one experiment.

Determination of the Mobilities.

The following table gives the values of mobility deduced from every experiment that was performed:—

TABLE V.
Mobilities of the more Mobile Groups.

	6	7	8	9	10	11	12
	·12*	·20*	·51*	1·13*	1·4*	3·0*	5·4
	·13*	·20*	·51*	1·04	1·56*	3·12*	6·2
	·09	·24*	·53*	1·08	1·56*	2·8	6·5
	·14	·24*	·53*	1·08	1·56*	2·9	7·1
		·27*	·57*	1·10	1·56*	3·1	7·2
		·29*	·39	1·10	1·60*	3·12	6·5?
		·19	·39	1·11	1·62*	3·25	8?
		·22	·43	1·12	1·62*	3·5	9?
		·22	·45	·96?	1·44	3·6	
		·27	·53	1·22?	1·50	3·7	
		·28	·54		1·90	3·9	
			·55		1·90	3·0?	
			·55		1·30?	3·0?	
			·60		1·50?		
			Unclassified Mobilities, $\left\{ \begin{array}{l} - \cdot67^* \\ - \cdot67^* \\ + \cdot80^* \\ - \cdot84 \\ + 2\cdot30 \end{array} \right.$				
MEANS,		·12	·24	·53	1·09	1·56	3·27

As before, the numbers that are considered specially good are marked with an asterisk. For the classes 6, 7, 8, and 10 the means given are the means of the numbers thus distinguished. For classes 9, 11, and 12 the means given are obtained from all the results, excluding those marked doubtful.

It has not been thought necessary to give examples of the curves from which these mobilities have been deduced. In general they do not differ in character from those that have been already shown. The mobilities

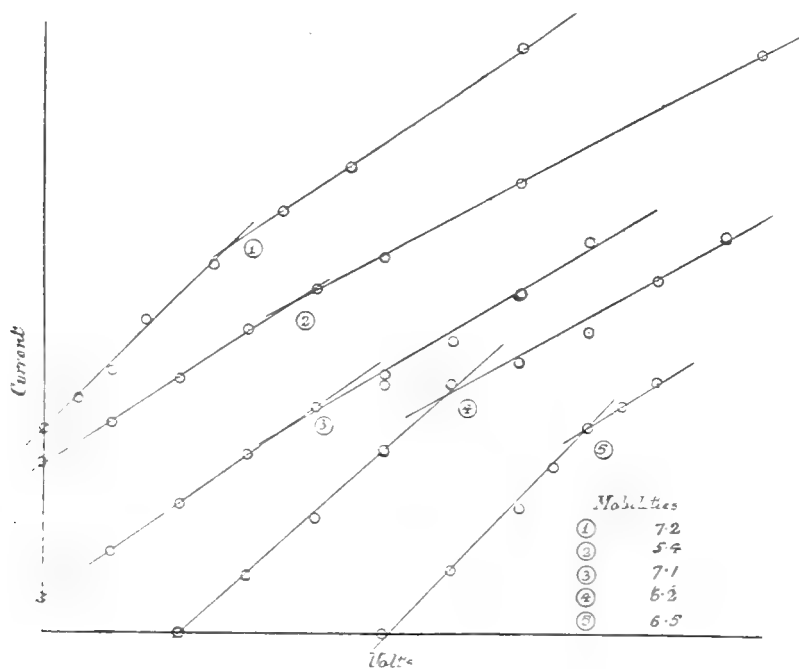


FIG. 5.

numbered 9, 11, and 12 have been difficult to establish. The quantity of each of these ions present is very small. Consequently the corresponding bends on the current-voltage curve are very faintly marked. Of the ten observations of class 9 only one can be regarded as thoroughly satisfactory. Similarly in class 11, there are only two good observations out of thirteen. Less attention, however, was given to those classes than to class 12. When indications of this class were obtained, careful experiments were made in order to verify its existence, as the mobility was considered to be remarkably high. The curves from which the values of mobility of this class are deduced are all given in fig. 5. These curves are for convenience plotted to various

axes and in various units. They all deal with negative ions. As has been already mentioned, no positive ion of this mobility (with one very doubtful exception) was observed.

It is clear from the curves that the number of ions of this mobility is small in comparison with the others present. But there is hardly any room for doubt that such ions exist. The method of measuring mobilities employed during this work is not very suitable for sorting out small quantities of ions of high mobility. It is hoped that by use of a different method a better knowledge of all the more mobile groups, and especially of the last group, may be obtained.

Unclassified Mobilities.

As in the case of the slower ions, we find that certain mobilities occur which do not fit into any of the groups. Of these the most remarkable are $\cdot 67$ negative and $\cdot 80$ positive. These mobilities are deduced from very good observations, and cannot be considered to be open to doubt in any way. These observations tend to cast some doubt on our idea of coexistent groups of ions each of definite and unchanging mobility. In dealing with the slower ions we were able to single out the ion of lowest mobility, and to show that the mobility of this class did not change with time. If Table I is referred to, and the positive and negative considered together, the reason for making this conclusion apply to all five classes will be understood. Classes 1, 2, and 3 appear on the same curve, and are found practically unchanged at rates a , b , and c . At the last rate a new ion can be observed (no. 4). This ion, as well as no. 3, is unchanged in passing from rate c to rate d . It is found again at rate f with another ion (no. 5). The latter must be a new and distinct ion. It cannot be, say, no. 1 or no. 2 in the process of growth, for we have, so to speak, kept in touch with these. As far as we can see this ion is of unvarying mobility, as there is no change in passing from rate f to rate h . If Tables I and IV are considered together, it will be seen that an attempt has been made to continue this process of "keeping in touch" throughout. At each rate as many ions as possible were observed and observations were made at a great many rates. Except in this limited manner, i.e., by keeping in touch with the slowest mobility through the overlapping of observations at different rates, we cannot earmark any group of ions and measure its mobility after different time-intervals. But we have at least been able to show that these groups are separate and distinct, and that the more mobile are not merely an earlier form of the slower ions. But even if each observation were isolated and

separate in itself, if the process of following up the chain from the slowest to the fastest ion had not been carried out, we should come to the same conclusion. All these measurements, made under widely different conditions with regard to time, fall into a certain limited number of distinct groups. There cannot, therefore, be any gradual changing of mobility from one group to another; there is no change from $\cdot 013$ to $\cdot 0043$ (Group 4 to Group 3), for if such a change occurred, intermediate values must have been observed in some of the experiments. These conclusions have special force in the slower groups (Group 2 excepted), because their strength depends upon good agreement between the values for mobility within the groups and the absence of intermediate values. With the exception of Group 2, these conditions are satisfied in the case of the slower ions. In the more mobile groups the gaps between the groups are small, and for some of the groups satisfactory observations have not been obtained in great numbers. The occurrence, therefore, of the mobilities $\cdot 67$, $\cdot 8$, $2\cdot 3$, &c., tends to weaken the group system. There may be a special reason for the occurrence of these anomalous mobilities. Further investigation by a more accurate and rapider method than that employed in this work should clear up the point. The group system has been well established in the case of the slower ions, and, in spite of the anomalies that have been mentioned, it may be considered as hardly less firmly established in the case of the more mobile ions also.

The results obtained from these observations of the ionisation produced by spraying distilled water bear a very close relation to those obtained from experiments on the bubbling of mercury, which are given in the paper immediately following by Professor McClelland and Mr. P. J. Nolan. Consideration of the results of this paper are therefore deferred. A joint discussion of the combined results is given at the end of the next paper.

[SUMMARY OF RESULTS.]

SUMMARY OF RESULTS.

1. When the distilled water is sprayed by air, ions of the following mobilities are obtained:—·00038, ·0010, 0043, ·013, ·046, ·12, ·24, ·53, 1·09, 1·56, 3·27, and 6·5 cm./sec. in a field of 1 volt/cm.

2. These ions are found carrying both positive and negative charges except the fastest (mob. = 6·5), which has not been found with a positive charge.

3. The mobility of the ions does not change with time within a certain considerable range.

4. The negative ions exceed the positive in the ratio of 5:4 for the slower ions, varying to 2:1 for the faster groups.

The writer wishes to express his indebtedness to Professor McClelland, to whose suggestion this research is due, for his interest and advice.

III.

THE NATURE OF THE IONS PRODUCED BY BUBBLING AIR
THROUGH MERCURY.

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THE allied subjects of the electrification produced by bubbling air through liquids and by splashing and spraying liquids have been frequently investigated in recent years, and some generalizations of importance have been obtained, but there are still much confusion and uncertainty.

This paper deals with the mobility of the ions carried away by air which has bubbled through mercury, measurements being made both with air containing the normal amount of water-vapour, and also with air well dried. The paper is closely allied to the preceding paper in this volume, which deals with the mobility of ions carried away by air which has been used to spray distilled water, the object of both papers being to obtain further knowledge of the form in which the electrical charge exists. The charge of positive sign remaining on the larger drops when distilled water is sprayed has been carefully examined by J. J. Nolan,* who found that over a considerable range of size of droplets the surface density of charge was constant.

Apparatus.

The arrangement of apparatus shown in fig. 1 was adopted. Air was forced by a pump, driven by a motor, through a tightly packed plug of cotton wool *A*, about 20 cms. long, and 8 sq. cms. in cross-section. The air thus purified passed through a glass nozzle immersed in the mercury in a glass cylinder *B*, which was 30 cms. high, and 8 cms. in diameter.

In most of the experiments the nozzle through which the air escaped was turned up as shown in the figure, and an iron plate was placed above

* Electrification of Water by Splashing and Spraying. Proc. Roy. Society, A, vol. xc, 1914.

and close to the surface of the mercury, so that the air sprayed the mercury against the iron plate. In some of the experiments the iron plate was not used, and a straight nozzle pointing downwards was employed.

A part of the air which had passed through the mercury was drawn off by means of a gasometer attached to *N*, through a length of tubing between *C* and *D*, and through the measuring tube *M*. The surplus air escaped through the orifice *O*, which could be opened or closed to suit the current drawn off by the gasometer. The quantity of air drawn through the measuring tube *M* could be deduced from the rate of motion of the gasometer, and this rate could be varied as desired.

The measuring-tube *M* consisted of a cylindrical brass tube with a metal rod 55 cms. long stretched along its axis. The tube was connected to a battery of small storage cells, and the inner terminal to an electrometer, so

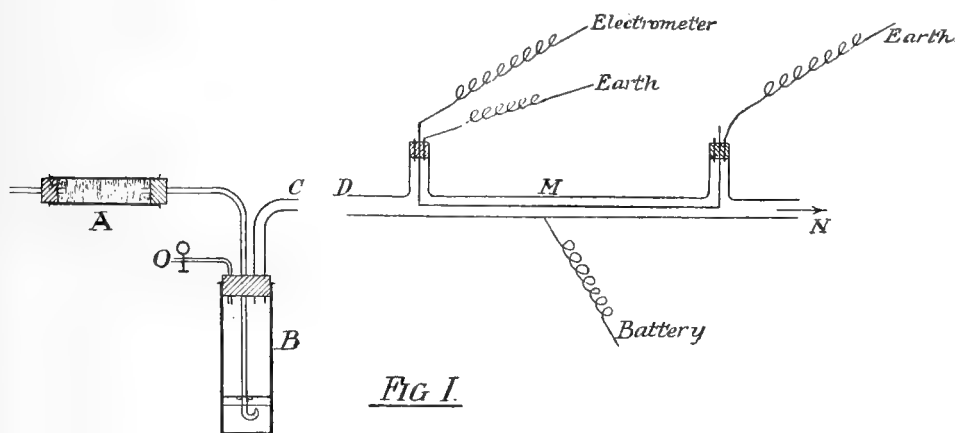


Fig. 1.

that the current corresponding to different voltages could be measured in the usual way. A sensitive electrometer was used giving about 1700 scale divisions per volt; but in many of the observations extra capacity was employed to reduce the motion on the scale.

Any desired length of tubing could be interposed between *C* and *D* so as to vary the time between the formation of the ions and the measurement of their mobility. The rate of flow of the air-current through the tubing could also be varied.

When dealing with the more mobile ions, a different measuring-tube was used, with greater cross-section, and with a shorter inner terminal.

In some of the experiments the air was dried before being passed through the mercury. The apparatus used in drying the air consisted of two towers

packed with calcium chloride, and a large bulb half filled with phosphorus pentoxide. The air first passed through the calcium chloride, and then slowly over the pentoxide. The drying produced in this way was certainly not perfect, but it was sufficient to show the general effect produced by the partial removal of the water-vapour.

Mobility of the Ions.

The method used to measure the mobility consisted in plotting the current-voltage curve for a steady rate of flow of the air through the measuring-tube *M*. To obtain the saturation current corresponding to ions of mobility *u* a voltage *V* is required given by the expression

$$u = \frac{Q \log \frac{b}{a}}{2\pi V l},$$

where *Q* is the volume of gas passing through the tube per second, *b* and *a* the radii of the tube and inner terminal, and *l* the length of the terminal. If there are a number of groups of ions of different mobilities present in the air, it is clear that the current-voltage curve will consist of a number of straight portions the last of which will be parallel to the axis of voltage, and the voltage for each bend of the curve will be that required to saturate a group of ions. If the bends on the curve are not clearly defined, it will indicate that we are not dealing with distinct groups of ions, but that the range of mobilities is continuous, and the maximum current is reached for the voltage sufficient to saturate the slowest ions present.

This method is, no doubt, not a very accurate one, but it is suitable for giving approximate values of the mobilities when the ions occur in a considerable number of quite distinct groups.

Preliminary Observations.

During the earlier observations a straight nozzle was used, the air simply bubbling through the mercury which was sprayed to some extent against the sides of the glass cylinder.

It was observed that the mobilities varied with the speed of the air-current and with the length of tubing inserted between the mercury vessel and the measuring-tube *M*. The longer the time that elapsed between the bubbling through the mercury and the measurements, the slower were the mobilities. When the length of tubing was sufficiently great, the mobilities reached steady values. The current was fully saturated at a voltage corresponding to a mobility of .00034 cms. per second for a gradient of one volt per cm.

This is the mobility of the large ions found in the atmosphere and of the large ions in flame-gas which has been allowed to cool. The slowest ion in air which has bubbled through mercury reaches this same mobility after some time, and apparently does not suffer any further decrease of mobility.

The curves for positive and negative ions were similar, and the slowest ion is the same in the two cases.

In addition to the ions of mobility $\cdot 00034$, it was evident from the bends in the curve that other distinct groups were present. The amount of the ionization was, however, small, especially when time was given for steady mobilities to be reached, and we endeavoured to increase the ionization before making a detailed examination of the curves.

The amount of the ionization depended on the manner in which the mercury was thrown about by the air-blast; but when the disturbance is rather violent, it is difficult to obtain steadiness. After trying various types of nozzles we used a turned-up nozzle a very short depth below the surface of the mercury, and placed an iron plate just above the surface, so that the mercury was blown against the plate. This arrangement we found gave a very large supply of positive ions, but the number of negative ions was practically unchanged by the presence of the iron plate. We afterwards used this arrangement, and most of the measurements were made with positive ions, as their greater number made the observations easier and more accurate.

The mercury was purified well when beginning the observations, but the constant bubbling of air through it brought out further traces of impurities, and these were removed at later stages. It was noticed that the ionization decreased as the mercury became purer.

We decided to determine carefully the mobilities of the different groups of ions in the following cases:—(1) with undried air and giving sufficient time to allow the mobilities to reach their minimum values; (2) with dried air and allowing the same time to elapse between the production of the ions and their measurements; (3) and (4) with undried and dried air respectively, the measurements of mobility being carried out as soon after the bubbling as convenient.

Undried Air. Constant Mobilities.

The curves on figs. 2 and 3 are examples of those we plotted when the time interval between the mercury vessel and the measuring-tube was sufficient to allow the mobilities to reach steady values. In both figures the curves are plotted in two parts, the smaller numbers on the axis of voltage referring to the lower curve. The rate of air-current through the

measuring-tube is greater for fig. 2 than for fig. 3. The calculated mobilities corresponding to the well-marked bends are given. The agreement is fairly good, considering the nature of the observations. The time which has elapsed from the production of the ions to the measurement of their mobilities is about 60 seconds in the case of fig. 3 and 30 seconds for fig. 2. In neither of these curves is the bend shown corresponding to the mobility $\cdot 00034$ cms. per second. This was carefully determined by observations with slower air-currents.

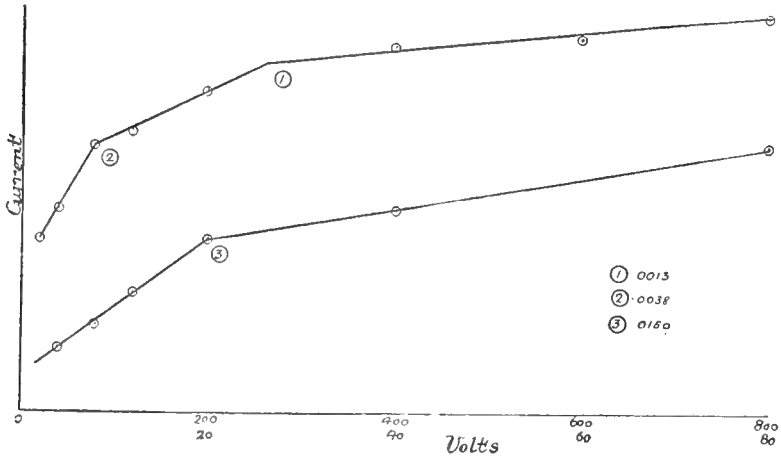


Fig. 2.

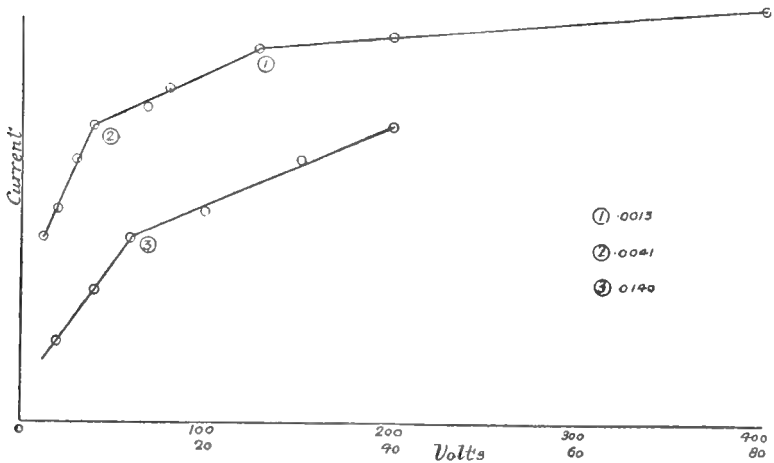


Fig. 3.

The curves do not pass through the origin, which indicates that there is at least one further group of ions of mobility greater than $\cdot 0013$ cms. per second. In later work it will be found that five sets of ions were shown to

exist. The means of a number of observations of the type illustrated by these curves gave the following mobilities:—

·00034, ·0013, ·004, ·014.

The ratios of these mobilities are.—

1 3·8 11·8 41.

As stated above, all the observations in this section were with positive ions, except in the case of the slowest group, in which ions of both signs were measured, and found to have the same mobility.

Dried Air.

The air was now passed through drying tubes before reaching the mercury, and the same time interval allowed between the bubbling and the measurements as in the above experiments with undried air.

One result of drying the air was to reduce the amount of ionization to about one-sixth of its value with undried air.

The mobilities were greater than with undried air, although the time interval was equally long. Measurements of the mobilities made at different times did not now show such a satisfactory agreement, possibly because the degree of dryness on different occasions was not the same. One set of experiments gave the following mobilities:—

·00056, ·0021, ·0068, ·024 cms. per sec.

The ratios of these mobilities are:—

1, 3·8, 12·1, 42·8.

The observations to which these numbers refer were made with positive ions only.

The question arises as to whether these ions had reached constant mobilities, or whether they were still decreasing in mobility towards the values found in the preceding section. Our observations show that after the interval of time allowed the mobilities, if not constant, were changing very slowly.

Dried Air. Mobilities measured before stable condition was reached.

Continuing to use dried air, we now measured the mobilities as soon as convenient after the air bubbled through the mercury. As higher mobilities were now found, we used a measuring-tube with a shorter inner terminal. The dimensions of the apparatus and air-blast were such that about 10 seconds interval occurred before the measurements were made. A careful examination of the air showed that the fastest moving ion had a mobility of ·32 cms. per second.

With this measuring-tube three distinct bends on the current voltage curve were determined, corresponding to mobilities $\cdot32$, $\cdot092$, and $\cdot043$ cms. per second. With the larger measuring-tube previously used the slower ions were examined, and two groups were found with mobilities $\cdot0064$ and $\cdot0022$ cms. per second. With a third measuring-tube of intermediate size the portion of the curve corresponding to mobilities between $\cdot043$ and $\cdot0064$ was examined, but found to be free from bends, showing that there were no groups of ions with mobilities between these values.

We have, therefore, five distinct groups of ions with mobilities:—

$\cdot0022$, $\cdot0064$, $\cdot043$, $\cdot092$, and $\cdot32$.

The ratios of these mobilities are:—

1, 2.9, 19.5, 41.8, and 145.

These numbers are the means of several observations, which showed fairly good agreement.

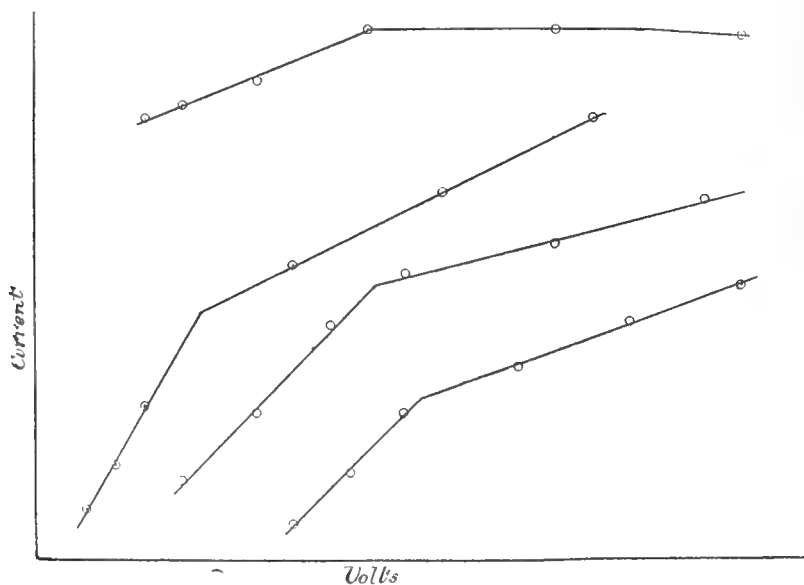


FIG. 4.

As the ionization was greater under the present conditions, we were able to make observations on both positive and negative ions, and in the case of all the five groups the ions of different signs were found to have equal mobilities.

The mobilities given above are greater than the corresponding numbers when a longer time interval was allowed. Probably even larger numbers would have been found if the measurements had been made with a still shorter time interval.

It will be observed that the ratios of the mobilities are not very different from the ratios in the preceding sections. Further, it will be observed that five groups are present, and in the preceding sections, while we have measurements for only four groups, there was evidence of the presence of a fifth group. To give an idea of the distinct character of these groups, we show on fig. 4 portions of some of the curves from which the mobilities are calculated. The curves are plotted on arbitrary scales, and without reference to the origin. They are given to show that the curves on both sides of each bend are straight lines. The upper curve shows the bend corresponding to the slowest ion present.

Undried Air.

The mobilities were also measured about ten seconds after the production of the ions, using undried air.

In this case also five groups were found. The positive and negative ions in each group had the same mobility, and the mean values obtained were:—

·0013, ·0045, ·02, ·048, ·20

The ratios are:—

1, 3·4, 15·4, 37 154

The mobilities are less than for dry air with the same time interval, and the amount of ionization was greater.

The positive ions were more numerous than the negative, the excess occurring chiefly in the groups with mobilities ·02 and ·048. Some observations were again made with the iron plate removed, and using a straight nozzle, the other conditions being as in this section. The mobilities were practically the same as when the mercury sprayed against the iron, but the number of positive ions was greatly decreased.

SUMMARY.

The results in the preceding sections are collected in the following table:

	Mobilities of Groups.				
	I.	II.	III.	IV.	V.
Undried air:					
Long time interval, .	·00034	·0013	·004	·014	—
Ratios,	1	3·8	11·8	41	—
Dried air:					
Long time interval, .	·00056	·0021	·0068	·024	—
Ratios,	1	3·8	12·1	42·8	—

Undried air :

Short time interval,	·0013	·0045	·02	·048	·20
Ratios,	1	3·4	15·4	37	154

Dried air :

Short time interval,	·0022	·0064	·043	·092	·32
Ratios,	1	2·9	19·5	41·8	145

As it happens, the shorter time interval employed in obtaining the numbers in this table was such that the mobility of the slowest group was the same as that of the second group when stable, and other coincidences of the same nature occur in the table. It should be remembered, however, that with the short time interval the mobilities are not constant, but depend on the time. We should not, therefore, specially identify a stable ion in Group II with a varying ion in Group I which happens to have the same mobility.

The ratios of the mobilities in the different groups are approximately the same, whatever the time interval, and whether the air is dried or undried. No doubt, very considerable variations occur in these ratios, but, considering the difficulty of deciding on the mobility in many cases, the approximate constancy is striking.

JOINT DISCUSSION OF RESULTS WITH THE AUTHOR OF THE PRECEDING PAPER ON THE MOBILITY OF IONS PRODUCED BY SPRAYING DISTILLED WATER.

The experimental results in this paper are so closely related to those in the preceding paper that it is convenient to discuss them together. When distilled water is sprayed, the air carries away ions of many distinct groups, the five slowest of which correspond closely with the stable groups found in the experiments with mercury in undried air. The more mobile ions found in the experiments with water are either entirely absent from or present only in very small numbers in the mercury experiments. We shall first discuss the probable nature of these five groups which are common to the two sets of experiments.

The differences in the behaviour in the two cases are apparently due to the fact that those produced from mercury take some time to add on water-vapour, and thus arrive at a stable condition, while the others produced from water do not show any change of mobility with time. When the air is "dried" in the mercury experiments, all the water-vapour is not removed, but the approach to stable conditions is retarded by the diminution of the vapour present. Various hypotheses might be suggested to account for the

mobilities of these different groups of ions and for the constancy of the ratios of their mobilities during the process of growth.

1. We might assume that all the ions are the same size at any instant, and will, therefore, take on water-vapour at the same rate, and in this way we can get an explanation of the constancy of the ratios. We would then, however, have to explain the different mobilities by different charges, and it is difficult to see how different charges could possibly give us the steps in mobility we have observed. It is extremely improbable that the correct explanation can be found on any assumption of variable charges on similar nuclei.

2. We might assume that the ions consist of water-globules of different sizes having the same charge, or we need make no assumption regarding the charge if the mobility of such ions is approximately independent of the charge. The fact that both the mobility and the rate of taking on water would depend on the size of the globule might result in the ratios of the mobilities being approximately constant. The five separate ions in their final steady state would from this point of view be five globules of different sizes, each possessing some degree of stability.

The objection to this view is that we have ions proceeding past certain apparently stable sizes until each arrives at its characteristic size. The difficulties in the way of this hypothesis are very great.

3. We can modify this assumption (2) in a way that removes the serious difficulties in accepting it. Let us assume that there is one stable size of water-globule, and that the five different ions consist of groupings of different numbers of these globules. Before the steady state is reached each globule is taking on water, and, therefore, the grouping which constitutes an ion is growing at a rate depending on the number of globules it contains. The constancy of the ratios of the mobilities is at once explained on this theory.

As an example of how such groups may be built up, we may start with a single globule carrying a unit charge and having a certain mobility. The next ion may contain a number of these globules, say three, two positive and one negative, or two negative and one positive. Such an ion might have approximately one-third the mobility of the single globule. Similarly some grouping of these ions might form a still more complex and more slowly moving ion, and so on. It may be noticed that the average of the observed mobility ratios is about 3·4.

It is possible that on some such lines as are here indicated an explanation of the different groups of ions may be found. According to this view ions of each class combine to form the next slower class, and if sufficient time is given we should have an excess of the slowest and most complex ion. Certainly

the percentage present of the slowest ion increases with the time ; but whether this is due partly to the reason here suggested, or whether it can be sufficiently explained by the more rapid loss of the more mobile ions, we are not yet in a position to say. Further work is also required in the direction of measuring the mobilities at shorter intervals after the spraying and the bubbling through mercury.

In this discussion we have dealt only with the five groups of ions which occur both in the experiments with water and with mercury, the slowest of these ions being the well-known large ion of Langevin. The other groups of ions found in the spraying of distilled water contain the ordinary small ion and at least two classes of even greater mobility. These ions are now being further investigated by a different and more convenient method, and we must postpone further discussion for the present. It would appear that a fuller knowledge of the different groups of the more mobile ions that occur in these experiments should help to elucidate the nature of the ordinary small ion, while a study of the slower groups can hardly fail to add to our knowledge of the Langevin ion.

IV.

ON PERIODIC CONFORMAL CURVE-FACTORS AND
CORNER-FACTORS.

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1. *Introduction.*—In a previous paper* the writer has defined conformal curve-factors, and exemplified their use in the conformal representation of simply connected two-dimensional regions of assigned type, say in the plane of a complex variable $z = x + iy$, upon the principal half-plane of a variable $w = \phi + i\psi$.

If there is justification for the hope that the method of curve-factors constitutes a more systematic and comprehensive mode of approach to those classes of physical problems which can be formulated in terms of conformal transformation than any previously recognised method, it is worth while to consider how it may be extended to the conformal representation upon the principal half-plane of w of such a doubly connected region in the z plane as is unbounded externally but is bounded internally by a single closed curve, not necessarily free from corners. Such a representation would find illustration in the circulatory irrotational motion of liquid round a fixed internal boundary, the velocity being the downward gradient of ϕ , or in the electrostatic field round a charged cylindrical conductor, the electrostatic potential being $-\psi$.

If the hydrodynamical circulation round the cylinder, or alternatively its electric charge per unit length, is to be definite, the inner boundary of the field of flow or induction will correspond, not to the whole real axis in the plane of w , but to a definite length λ upon it, which may be called the "linear period." The complete half-plane of w on the positive side of the real axis corresponds to the doubly connected region in the z plane, repeated again and again, and z is a periodic function of w having the real wave-length or linear period λ . Also dz/dw is a periodic function of w .

The transformation, in its differential form, is therefore of the type

* Some Applications of conformal transformation to problems in Hydrodynamics. Roy. Soc. Phil. Trans. A., vol. ccxv, 1915, p. 439.

$dz = \mathcal{C}(w)dw$, where $\mathcal{C}(w)$ is a curve-factor periodic in ϕ with linear period λ . And, as a tangent to the internal boundary makes one complete revolution as the point of contact goes once round the boundary, the angular sub-range of \mathcal{C} corresponding to the linear sub-range λ is 2π ; this fact may be conveniently expressed by saying that the "angular period" of \mathcal{C} is 2π .

It is proposed to look for types of periodic curve-factors which can be employed to give conformal representation of doubly connected regions whose only boundary is internal, and it will be seen that such curve-factors may be used to construct not only differential transformation formulae but also formulae in which z is expressed explicitly in terms of w .

2. *Circular and elliptic curve-factors and derived types.*—When the boundary is a circle of radius a , the origin of z may be taken at the centre, and the field of flow or induction is determined by the relation

$$w = (i\lambda/2\pi) \log(z/a), \quad (1)$$

where the sign is so chosen that ϕ increases as the circle is described in the clockwise sense, which implies keeping the relevant region on the left.

The relation is equivalent to the differential formula

$$dz = -(2\pi ia/\lambda) \exp(-2\pi iw/\lambda) dw, \quad (2)$$

and this gives the periodic curve-factor

$$\mathcal{C}_{s7}^{\prime} = \exp(-2\pi iw/\lambda). \quad (3)$$

When the boundary is an ellipse of semi-axes $c \cosh a$, $c \sinh a$, with centre at the origin of z and major axis along the real axis, the field is determined by the relation

$$z = c \cosh[-(2\pi i/\lambda)w + a]. \quad (4)$$

The corresponding differential relation,

$$dz = -(2\pi ic/\lambda) \sinh[-(2\pi i/\lambda)w + a], \quad (5)$$

gives the curve-factor

$$\mathcal{C}_{s8}^{\prime} = \sinh[-(2\pi i/\lambda)w + a]. \quad (6)$$

$\mathcal{C}_{s7}^{\prime}$ and $\mathcal{C}_{s8}^{\prime}$ have no zeroes or infinities for definite positive values of ψ . Their only infinity in the relevant region is for $\psi \rightarrow +\infty$, and that of course corresponds to the external boundlessness of the relevant region in the z plane.

As periodicity with a linear period which is a submultiple of λ implies periodicity with linear period λ , the substitution in $\mathcal{C}_{s7}^{\prime}$ and $\mathcal{C}_{s8}^{\prime}$ of λ/n for λ , where n is any integer, will give periodic curve-factors. In the case of $\mathcal{C}_{s7}^{\prime}$ the substitution leads simply to the n th power of $\mathcal{C}_{s7}^{\prime}$, and so does not give a new type. But

$$\mathcal{C}_{s9}^{\prime} = \sinh[-(2\pi ni/\lambda)w + a] \quad (7)$$

is not a mere power of $\mathcal{C}_{s8}^{\prime}$ and is therefore a new type. Its angular period

corresponding to the linear sub-range λ is $2n\pi$, so that if an angular period of 2π were desired $\mathcal{C}^{1/n}_{59}$ might be employed.

One of the important characteristics of the special kind of conformal representation now under consideration, namely the periodicity of dz/dw with linear period λ and angular period 2π , can be secured by making dz/dw proportional to $\mathcal{C}^{1/n}_{59}$ or to a product of powers of two or all of the types \mathcal{C}_{57} , \mathcal{C}_{58} , \mathcal{C}_{59} , provided the angular period of the combination is 2π . For example, $\mathcal{C}^p_{57} \mathcal{C}^q_{59}$ or $\mathcal{C}^p_{58} \mathcal{C}^q_{59}$ is, to this extent, applicable provided $p + nq = 1$.

The sum of two curve-factors is sometimes, but not always, a curve-factor. For example, the function

$$\mathcal{C}_{60} = \exp(-2\pi i w/\lambda) + k \exp(-2\pi n i w/\lambda), \quad (8)$$

can only vanish when the moduli of the two complex terms are equal, so that $\exp(2\pi\psi/\lambda) = |k| \exp(2n\pi\psi/\lambda)$; for positive ψ this implies

$$1 = |k| \exp\{2(n-1)\pi\psi/\lambda\},$$

which is impossible if $|k| > 1$. Hence, when this inequality is satisfied, \mathcal{C}_{60} is a curve-factor. As regards angular period, if one represents the two terms as vectors which are to be added by the triangle law, one readily sees that the angular period of the sum is the same as that of the term which has always the greater modulus. So the angular period of \mathcal{C}_{60} is $2n\pi$.

Similarly it can be seen that

$$\mathcal{C}_{61} = a \exp(-2\pi n_1 i w/\lambda) + b \exp(-2\pi n_2 i w/\lambda) + c \exp(-2\pi n_3 i w/\lambda) \quad (9)$$

is a curve-factor provided that, for all positive values of ψ ,

$$|a| \exp(2\pi n_1 \psi/\lambda) > |b| \exp(2\pi n_2 \psi/\lambda) + |c| \exp(2\pi n_3 \psi/\lambda), \quad (10)$$

as, for example, when $n_1 > n_2$, $n_1 > n_3$, and $|a| > |b| + |c|$; the angular period is $2n_1\pi$.

3. *Transformations which are not in differential form.*—There is another way of employing periodic curve-factors for obtaining conformal representation of regions of the kind under discussion. If such a representation be specified by a formula $z = f(w)$, the origin of z being supposed inside the closed boundary, the function f has to satisfy three requirements:—(1) f must have no zeroes or infinities for positive values of ψ , save an infinity for $\psi \rightarrow +\infty$. (2) f must be periodic in w with real linear period λ . (3) The periodicity of f must be such that, when a point traverses a length λ of the real axis in the w plane, the corresponding point in the z plane describes a closed path which encircles the origin once and only once. Now any periodic curve-factor $\mathcal{C}(w)$, whose linear and angular periods are λ and 2π respectively, satisfies all these requirements. Hence $z = \mathcal{C}(w)$ specifies a conformal representation of the kind of region desired.

Similar use might be made of a periodic curve-factor of zero angular period, the origin in the plane of z being outside the boundary curve.

The relation between the boundaries corresponding to $dz = \mathcal{C}(w) dw$ and to $z = \mathcal{C}(w)$ is analogous to the relation between an orbit and its hodo-graph.

The determination of the form of the boundary is usually easier when the transformation is of the latter type, as might be exemplified by taking \mathcal{C} to be $\mathcal{C}^{1/n}_{cs}$ or $\mathcal{C}^{1/n}_{co}$. But the advantage, at the present stage of the discussion, of transformations of the type $z = \mathcal{C}(w)$ is that they give representations possessing not only one characteristic but all the characteristics required by the specification of article 1.

4. *Condition for the periodicity of z .*—In the previous article it has been seen that the conditions which must be satisfied by \mathcal{C} include all the conditions which must be satisfied by f . The converse theorem, however, is not true, and the difference is important.

One characteristic feature of the problem under consideration has been formulated early in article 2. Another characteristic feature is that the boundary (corresponding to $\psi = 0$) in the z plane is a closed curve, and that the curves which correspond to positive constant values of ψ are also closed curves. In other words z is periodic in w with linear period λ .

If the differential relation $dz = \mathcal{C}dw$ lead, on integration, to the relation $z = F(w)$, so that $F = \int \mathcal{C}dw$, it is necessary that both \mathcal{C} and F be periodic. But the mere periodicity of \mathcal{C} is not a guarantee of the periodicity of F ; for if a constant g (possibly complex) be added to \mathcal{C} , the periodicity of \mathcal{C} is not impaired, while a non-periodic part gw is added to F . Thus, in the absence of precaution to the contrary, there is always a chance of a periodic \mathcal{C} leading to a non-periodic F . In the geometrical interpretation this would mean that the curve in the z plane corresponding to $\psi = 0$, instead of being a single closed loop, would be an infinitely extended periodic curve, necessarily with nodes and loops when the angular period is 2π , of the general character, for example, of a nodal trochoid. It may obviously be said of such a curve that dz is periodic, but z is not.

If C be the mean value of \mathcal{C} calculated for a fixed value of ψ , zero or positive, and for a range of values of ϕ of extent λ , then for the corresponding range $\int \mathcal{C}dw = \lambda C$, and the value of z does not repeat itself unless $C = 0$. Hence there must be added to the conditions which \mathcal{C} has to satisfy the requirement that its mean value as here defined must be zero.

It can be seen that, provided \mathcal{C} is periodic, the mean value which has been defined is independent of the particular positive constant value assigned to ψ . For, as \mathcal{C} has by hypothesis no singularities in the half-plane of ψ positive,

$\int \mathcal{C}dw$ round any contour in that region is zero. Let the contour be a rectangle whose corners are

$$\phi_0 + i\psi_1, \quad \phi_0 + \lambda + i\psi_1, \quad \phi_0 + \lambda + i\psi_2, \quad \phi_0 + i\psi_2;$$

through its periodicity the subject of integration has equal values at corresponding points on the sides lying in the lines $\phi = \phi_0$, $\phi = \phi_0 + \lambda$, and so the corresponding contributions to the contour integral vanish; hence the parts of the integral corresponding to the sides in the lines $\psi = \psi_1$, $\psi = \psi_2$, add up to zero. Thus $\int \mathcal{C}dw$ has the same value when taken from $\phi = \phi_0$ to $\phi = \phi_0 + \lambda$ with constant ψ , whether $\psi = \psi_1$, or $\psi = \psi_2$. It follows that the mean value of \mathcal{C} is the same for both ranges.

This suggests a method of formulating the condition for a closed curve, that is the condition for periodicity of z or $\int \mathcal{C}dw$, which is useful in many cases. It consists in getting the mean value of \mathcal{C} for $\psi \rightarrow +\infty$, and equating it to zero. Suppose that, for great positive values of ψ , \mathcal{C} can be expressed as a series of descending integral powers of $\exp(-2\pi i\psi/\lambda)$, say

$$\mathcal{C} = \exp(-2\pi n i\psi/\lambda) \sum_{s=0}^{s=\infty} c_s \exp(2\pi s i\psi/\lambda), \tag{11}$$

and that the series is integrable for $\psi \rightarrow +\infty$. Then, n being an integer, it is to be observed that every term is periodic and has the mean value zero except that corresponding to $s=n$, which is a constant. Thus the mean value of \mathcal{C} is c_n , and the condition for periodicity of $\int \mathcal{C}dw$ is $c_n = 0$.

By way of illustration, let the test be applied to $\mathcal{C}^{1/n}_{60}$. This can be put in the form

$$k^{1/n} \exp(-2\pi i\psi/\lambda) [1 + k^{-1} \exp\{2\pi(n-1)i\psi/\lambda\}]^{1/n}, \tag{12}$$

and the binomial expansion is valid for great positive values of ψ . If $n = 2$, there is a constant term in the expansion, but for any other integral value of n there is none. Thus the transformation $dz = \mathcal{C}^{1/n}_{60} dw$ gives a closed curve for any integral value of n except $n = 2$.

Similarly

$$\mathcal{C}^{1/n}_{59} = \left(\frac{1}{2}\right)^{1/n} \exp\left(-\frac{2\pi i\psi}{\lambda} + \frac{\alpha}{n}\right) \left[1 - \exp\left(\frac{4\pi n i\psi}{\lambda} - 2\alpha\right)\right]^{1/n}, \tag{13}$$

and the binomial expansion is valid for great positive values of ψ . There is no constant term for any integral value of n , and so the transformation $dz = \mathcal{C}^{1/n}_{59} dw$ gives a closed curve.

5. *Relation between angular period and exponential order at infinity.*—

When a periodic curve-factor can be expanded, for ψ great and positive, in the form indicated in formula 11, it may be said to have a definite "exponential order at infinity," namely $2n\pi/\lambda$, this being the coefficient of ψ in the

exponential term of highest order. The exponential order at infinity is closely related to the angular period.

There being no definite infinities or zeroes of \mathcal{C} in the relevant region, the integral $\int d\mathcal{C}/\mathcal{C}$ taken round any contour is zero. Let the contour be the rectangle formed by the lines $\psi = 0, \psi = t, \phi = \phi_0, \phi = \phi_0 + \lambda$; since \mathcal{C} is periodic, the subject of integration is equal at corresponding points of the lines $\phi = \phi_0$ and $\phi = \phi_0 + \lambda$, and so the integrals along these sides of the rectangle cancel one another. The integral along the length λ of the line $\psi = 0$ equals $-i$ times the corresponding angular range, and the integral along the length λ of the line $\psi = t$ equals $+i$ times the angular range for this line, that is the angle between the tangents at the extremities of the corresponding curve in the z plane. Thus it appears that the angular range is the same for all lines of length λ parallel to the line $\psi = 0$, being in fact equal to the angular period of \mathcal{C} .

If t be made indefinitely great, the limit value of the integral depends on the term of highest exponential order in the formula 11. If \mathcal{C} be put equal to $A \exp(-iNw)$, then $d\mathcal{C}/\mathcal{C} = -iNdw$, and the integral from $\phi_0 + it$ to $\phi_0 + \lambda + it$ is $-iN\lambda$. So if \mathcal{C} have its exponential order at infinity N and its angular period Ω , $N\lambda = \Omega$. When $\Omega = 2\pi$, $N = 2\pi/\lambda$, and therefore the n of formula (11) must be unity.

6. *A more comprehensive formula for periodic curve-factors.*—As the number of types of periodic curve-factor as yet obtained is small, it is desirable to seek some wider formula which may be used for the extension of the category of known types. Consider a semi-infinite strip of width λ in the w plane, say the strip between the lines $\phi = -\frac{1}{2}\lambda, \phi = \frac{1}{2}\lambda$, on the positive side of the axis of ϕ .

If \mathcal{C} is (i) periodic of linear period λ , (ii) free from definite zeroes and infinities in the half-plane of w , then it is equally general to describe \mathcal{C} as (i) periodic of linear period λ , (ii) free from definite zeroes and infinities in the strip.

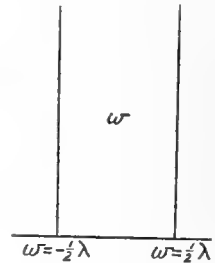


FIGURE I.

The strip in the w plane can be represented conformally upon the half-plane of a new variable θ by the transformation

$$\theta = c \sin(\pi w/\lambda), \tag{14}$$

where c is a real constant. Now \mathcal{C} , having no definite zeroes or infinities in the strip in the w plane, must, when expressed as a function of θ , be free from definite zeroes and infinities in the positive half-plane of θ . And as \mathcal{C} is a curve-factor whose range of curvilinearity covers λ on the real axis in the

w plane, and has no branch-points on the lines $\phi = \pm \frac{1}{2}\lambda$ (save possibly at the corners of the strip), so \mathcal{C} is a curve-factor in θ whose range of curvilinearity does not extend outside the range from $-c$ to $+c$.

If the range of curvilinearity covers only part of the range from $-c$ to $+c$, the curve in the z plane corresponding, in the transformation $dz = \mathcal{C}dw$, to $\psi = 0$ will have one or more straight portions, without loss of smoothness at points between the points $w = \pm \frac{1}{2}\lambda$ where curved and straight portions meet. In such cases \mathcal{C} is not a simple curve-factor.

It is to be noted that θ is periodic in w , of linear period 2λ . Therefore any function of θ , defined so as to be single-valued over any region of the θ plane, is, when expressed as a function of w , periodic of linear period 2λ within that region. So, in particular, if the plane of θ be cut along the real axis from $\theta = -c$ to $\theta = c$, any curve-factor in θ whose branchings are all in this cut, and which is single-valued in the cut plane, is periodic in w with linear period 2λ . But what is required of \mathcal{C} is periodicity of linear period λ , so that not all curve-factors in θ satisfy the requirement.

Thus the attempt to generalize has led to the following verbal formula for a periodic curve-factor:—Any curve-factor in the variable $\theta = c \sin(\pi w/\lambda)$ which is periodic in w with linear period λ , and has the linear range $-c$ to c or any range within that range.

As regards the required periodicity, it is to be noticed that the addition of λ to w changes θ into $-\theta$, so that \mathcal{C} must be a function of θ whose value is unaltered by change of the sign of θ . But, seeing that the variables dealt with are complex, and that there may be branch-points or a continuous distribution of branching along the range from $\theta = -c$ to $\theta = c$, the effect upon \mathcal{C} of a change in the sign of θ cannot be estimated by a mere glance at the functional formula, but must be studied more closely.

If the positive half-plane of w be divided up into a continuous series of semi-infinite strips of breadth λ , one of which is the strip from $\phi = -\frac{1}{2}\lambda$ to $\phi = \frac{1}{2}\lambda$, the transformation (14) represents only alternate strips of the series upon the positive half-plane of θ . The other strips, including those immediately adjoining the above specified strip, are conformally represented on that half-plane of θ for which the imaginary part is negative. The addition of λ to w involves a passage from a point in one strip to the corresponding point in the next strip; but this passage must be along a path which does not cross the axis $\psi = 0$, and therefore does cross the boundary between the strips. The corresponding change is from a value θ to a value $-\theta$; but in the θ plane the passage is not along any arbitrarily selected path, it must be along a path which does not cut the part of the real axis between $\theta = -c$ and $\theta = c$, but crosses the real axis somewhere outside that range.

A type of path from θ to $-\theta$ is represented in figure 2, wherein O is the origin of θ , and A, A' are points in the axis equidistant from O . The path from A to A' is in the axis, except for semi-circular detours round branch-points between $-c$ and c , and a circular detour round c , which may be a branch-point.

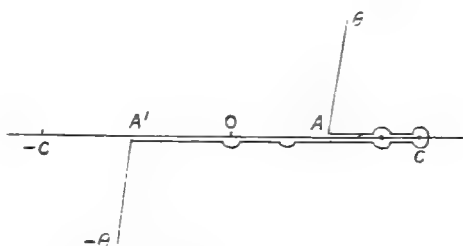


FIGURE 2.

The function $\zeta(\theta)$ may have one or more groups of branch-points, such that within each group the powers of the branchings are additive.* Attention being directed to the branchings of such a group, it is known that each semi-circle of detour round a point where there is branching of power α introduces a factor $\exp(-i\pi\alpha)$ into the corresponding part of the function. Now A may be taken anywhere from O to c , and if it be possible by moving A to introduce or remove a semi-circular detour in the part of the path from A to c without making simultaneously a corresponding change in the semi-circular detours in the part of the path from O to A' , then it is impossible for the effect of the traversing of the path from A to A' to be independent of the position of A , as it must be if $\zeta(A') = \zeta(A)$. Hence it is necessary that, within each additive group, the distribution of branch-points along the range from $-c$ to c be symmetrical with respect to O .

This symmetry once recognized, it is seen that to each branching of power α in the range from O to c there correspond two semi-circular detours in the path, either two at the same point, if between A and c , or two at points symmetrically situated with respect to O , if between A' and A . The only exception is the branch-point (if any) of power α_0 at O , for which there is only one semi-circle. As the function is to have the same value for $-\theta$ as for θ , the cumulative effect of all the semi-circular detours corresponding to the branchings of an additive group must be the restoration of the original

* This may be explained by an example. In the case of the function

$$\theta^2 - 1 - \theta^2 - a^2 \frac{1}{2} - (a - b) \frac{1}{2} (\theta - c) \frac{1}{2} (\theta - d) \frac{1}{2}$$

the powers of the branchings at $\theta = a$ may be regarded as additive, since they affect the same term of the function: and the branchings at $\theta = b$, $\theta = c$, $\theta = d$ form a group whose powers are likewise additive.

value; hence, as each contributes a factor $\exp(-i\pi\alpha)$, it is necessary that

$$\exp\{-i\pi(a_0 + 2\Sigma\alpha)\} = 1, \quad \text{or} \quad a_0 + 2\Sigma\alpha = \text{an even integer.}$$

In this statement, on account of the exceptional circumstances at O , an integral odd power of θ must be regarded as a branching; thus, to take the simplest possible example, the function

$$(\theta^2 - \frac{1}{4}c^2)^{\frac{1}{2}}$$

changes sign with θ , but the function

$$\theta(\theta^2 - \frac{1}{4}c^2)^{\frac{1}{2}}$$

does not.

It is of interest to see how some of the already known types fit into the formula. It is easy to see that

$$\mathcal{C}_{57} = \exp(-2\pi iw/\lambda) = 1 - 2\frac{\theta^2}{c^2} - 2\frac{\theta}{c}\left(\frac{\theta^2}{c^2} - 1\right)^{\frac{1}{2}}, \quad (15)$$

and that

$$\mathcal{C}_{62} = \theta^2 - \frac{1}{2}c^2 + \theta(\theta^2 - c^2)^{\frac{1}{2}} \quad (16)$$

is a curve-factor in θ of linear range $-c$ to c and angular range 2π . Similarly it is seen that

$$\begin{aligned} \mathcal{C}_{58} &= \sinh\{- (2\pi iw/\lambda) + a\} \\ &= \left(1 - 2\frac{\theta^2}{c^2}\right) \sinh a - 2\frac{\theta}{c}\left(\frac{\theta^2}{c^2} - 1\right)^{\frac{1}{2}} \cosh a, \end{aligned} \quad (17)$$

where

$$\mathcal{C}_{63} = (\theta^2 - \frac{1}{2}c^2) \sinh a + \theta(\theta^2 - c^2)^{\frac{1}{2}} \cosh a \quad (18)$$

is a curve-factor in θ of linear range $-c$ to c and angular range 2π .

Another suitable curve-factor in θ is

$$\mathcal{C}_{64} = B(\theta^2 - b^2) + (\theta^2 - a^2)^{\frac{1}{2}}(\theta^2 - c^2)^{\frac{1}{2}}, \quad (19)$$

where $a < b < c$; this is a special case of \mathcal{C}_{47} .

A special case of \mathcal{C}_{64} , which has the advantage of being a simple curve-factor, is

$$\mathcal{C}_{65} = B(\theta^2 - b^2) + \theta(\theta^2 - c^2)^{\frac{1}{2}}, \quad (20)$$

where $b < c$. This leads to the periodic curve-factor

$$\mathcal{C}_{66} = B\{\cos(2\pi w/\lambda) - \cos\gamma\} + i \sin(2\pi w/\lambda). \quad (21)$$

The formulation of the present article suggests the question whether there has been left open any possibility of a corner in the curve in the z diagram which is defined by $\psi = 0$, at the point (or points, if z is not periodic) corresponding to $\theta = \pm c$. The answer is that if the curve-factor in θ is a proper curve-factor there is no such corner. A curve-factor $\mathcal{C}(\theta)$ may be described as 'proper' when the transformation $dz = \mathcal{C}(\theta)d\theta$ gives in the z plane, as corresponding to θ real, a locus without corners, that is a finite curved line

together with the tangents at its extremities. A curve-factor may be called improper if the locus corresponding to θ real has angles anywhere, the case of angles at the points where the curve joins the two straight lines being a particular case.

Now on reference to fig. 2 it is seen that the locus θ real corresponds to θ moving along the whole of its real axis with semi-circular infinitesimal detours round the branch points of $\zeta(\theta)$, and in particular such branch points as there may be at $\theta = \pm c$. On the other hand, the locus w real corresponds to θ moving along the part of the real axis between $-c$ and c , making complete circular detours round the branch points at $\theta = \pm c$. If a semi-circular detour round one of these points makes no abrupt change in the vector-angle of ζ , then a complete circular detour will make no change; so if the locus θ real is smooth at such a point, so also is the locus w real. An angle in the locus θ real at c would be represented by an angle twice as great in the locus w real.

7. *Periodic Corner-factors.*—In the case of a conformal representation in which dz/dw is periodic, the presence of a corner at the point corresponding to $w = a$ on the closed or periodic curve in the z plane defined by $\psi = 0$ implies a similar corner at the points $w = a \pm n\lambda$, when n takes all integral values. Therefore the differential form of the (z, w) transformation includes, instead of a single Schwarzian factor or power of $w - a$, a corresponding power of the infinite product

$$(w - a) \prod \{(w - a)^2 - n^2\lambda^2\},$$

or rather, since this form is divergent and constant factors do not affect the geometrical property,

$$\frac{(w - a)\pi}{\lambda} \prod \left\{ 1 - \frac{(w - a)^2}{n^2\lambda^2} \right\}.$$

But this is

$$\sin \{ \pi (w - a) / \lambda \},$$

and so it appears that the periodic corner-factor of linear period λ is

$$\sin \{ \pi (w - a) / \lambda \},$$

the power to be employed depending upon the angle at the corner in the same manner as in the case of Schwarzian factors.

By way of confirming this statement it may be observed that, as w passes through real values from $+\infty$ to $-\infty$, the vector-angle of

$$[\sin \{ \pi (w - a) / \lambda \}]^p$$

increases abruptly by $p\pi$ in passing any such value as $a + n\lambda$, but remains constant between a consecutive pair of such critical values. Thus if dz/dw be equated to a product of such factors, the curve in the z plane which corresponds to $\psi = 0$ is a succession of straight lines interrupted periodically by

corners. These, if they do not form a closed polygon, have at any rate a space-periodicity which is generally of a circular type, but may be linear. The conformality of the representation of the region $\psi > 0$ is readily verified.

8. *Conformal representation of the space outside a triangle or closed polygon.*—Let the angles of a triangle in the z plane be A, B, C , and let the values α, β, γ be assigned to ϕ at the corners. By the previous article it appears that the conformal transformation of the region outside the triangle is determined by the formula

$$\frac{dz}{dw} = K \left\{ \sin \frac{\pi}{\lambda} (w - \alpha) \right\}^{1 - \frac{A}{\pi}} \left\{ \sin \frac{\pi}{\lambda} (w - \beta) \right\}^{1 - \frac{B}{\pi}} \left\{ \sin \frac{\pi}{\lambda} (w - \gamma) \right\}^{1 - \frac{C}{\pi}}, \quad (22)$$

where K is a constant, and $\lambda > \gamma - \alpha > \beta - \alpha > 0$. The obvious periodicity of the expression on the right-hand side of the formula is for a linear period 2λ ; but when it is noticed (i) that the modulus has a period λ , (ii) that the decrease of vector angle as w passes through real values from say w_0 to $w_0 + \lambda$ is

$$\pi - A + \pi - B + \pi - C = 2\pi,$$

it becomes clear that the expression is periodic with linear period λ .

In general, though the transformation (22) gives a periodic dz/dw , there is no reason why it should give a periodic z . Usually the value of z for $w = \alpha + \lambda$ will be different from that for $w = \alpha$, and the boundary will be a continuous recurring rectilinear pattern having the kind of periodicity that would be got by printing from a rolling cylinder on a long straight ribbon, namely a space periodicity with respect to z . But, if a particular relation subsists between the parameters, z is a periodic function of w , and the boundary is a triangle.

Though the right-hand side of formula (22) is not a proper curve-factor, the method of article 4 for obtaining the condition that z be periodic is applicable to it. The condition is therefore the vanishing of the absolute term in that expansion of dz/dw in ascending powers of $\exp(2\pi iw/\lambda)$ which is valid for great positive values of ψ . On putting

$$\sin \frac{\pi}{\lambda} (w - \alpha) = \frac{1}{2}i \exp \left\{ \frac{i\pi}{\lambda} (\alpha - w) \right\} \left\{ 1 - \exp \frac{2i\pi}{\lambda} (w - \alpha) \right\},$$

and employing the binomial theorem, it is seen that the expansion in question is

$$- \frac{1}{4}K \exp \left\{ \frac{i\pi}{\lambda} \sum \alpha \left(1 - \frac{A}{\pi} \right) \right\} \left[\exp \left(-\frac{2i\pi w}{\lambda} \right) - \sum \left(1 - \frac{A}{\pi} \right) \exp \left(-\frac{2i\pi \alpha}{\lambda} \right) + \dots \right], \quad (23)$$

where the terms that should follow the final plus sign are positive powers of $\exp(2\pi iw/\lambda)$.

Thus the condition for periodic z , that is, for a closed triangle, is

$$\Sigma \left(1 - \frac{A}{\pi} \right) \exp \left(- \frac{2i\pi a}{\lambda} \right) = 0. \quad (24)$$

This is, of course, equivalent to the two conditions

$$\Sigma \left(1 - \frac{A}{\pi} \right) \cos \left(\frac{2\pi a}{\lambda} \right) = 0, \quad \Sigma \left(1 - \frac{A}{\pi} \right) \sin \left(\frac{2\pi a}{\lambda} \right) = 0, \quad (25)$$

and these are equivalent to the statement that a triangle can be drawn such that the directions of its sides make the angles

$$2\pi a/\lambda, \quad 2\pi\beta/\lambda, \quad 2\pi\gamma/\lambda,$$

with a fixed direction, and the lengths of the sides are proportional to

$$1 - (A/\pi), \quad 1 - (B/\pi), \quad 1 - (C/\pi).$$

All the above argument applies equally to a polygon whose internal angles are A, B, C, D , &c., provided each of the summations be understood to include as many terms as there are corners.

9. *Focal periodic curve-factors.*—The transformation of the previous article, giving the field outside a polygonal boundary, may be interpreted as giving the field round a different boundary got by assigning to ψ a constant positive value. Such new boundary would be smooth. A new ψ , chosen to vanish on the new boundary, is introduced by substituting $\psi + \kappa$ for ψ , or $w + i\kappa$ for w , in formula (22), it being understood that κ is positive. Thus there is obtained what may be called a focal periodic curve-factor,

$$\zeta_{67} = \Pi [\sin \{ \pi (w + i\kappa - a)/\lambda \}]^{1 - \frac{A}{\pi}}, \quad (26)$$

wherein

$$\Sigma \left(1 - \frac{A}{\pi} \right) = 2 \quad \text{and} \quad \Sigma \left(1 - \frac{A}{\pi} \right) \exp \left(- \frac{2i\pi a}{\lambda} \right) = 0. \quad (27)$$

The corners of the polygon, now outside the relevant region, may be called foci of ζ_{67} , and any number of foci may be introduced. When there are two foci, $A = 0, B = 0$, and the condition for periodicity of z is

$$\exp(-2i\pi a/\lambda) + \exp(-2i\pi\beta/\lambda) = 0,$$

which is equivalent to $\beta = a + \frac{1}{2}\lambda$. So the bifocal curve-factor is seen to be practically equivalent to ζ_{68} .

In ζ_{67} it is understood that κ is the same in all the factors of the product, but if, instead, the constant typified by κ be different in the different factors, and denoted by a', β' , &c., there results the more general function

$$\zeta_{68} = \Pi [\sin \{ \pi (w - a + ia')/\lambda \}]^{1 - \frac{A}{\pi}}, \quad (28)$$

subject to the conditions

$$\Sigma \left(1 - \frac{A}{\pi} \right) = 2, \quad \Sigma \left(1 - \frac{A}{\pi} \right) \exp \left\{ - \frac{2i\pi}{\lambda} (a - ia') \right\} = 0. \quad (29)$$

This is as free from zeros and infinities in the relevant region as is \mathcal{C}_{67} , and is clearly periodic of linear period λ . It is therefore a periodic curve-factor, and has the angular period 2π .

A curved boundary with one or more corners is given by the special form assumed by \mathcal{C}_{68} when one or more of the constants α', β', \dots is taken to be zero.

10. *Periodic curve-factors regarded as limits of products of periodic corner-factors.*—The field outside a closed polygonal boundary being obtained by the method of article 8, it is possible to increase the number of sides of the polygon without limit in such manner that the polygon tends to a limit form which is a smooth closed curve. The corresponding limit of the product of corner-factors which takes the place of the right-hand side of formula (22) is then a periodic curve-factor, and serves to define the field of flow or induction outside the boundary curve.

Attention being directed to such a smooth curved boundary, the angle (measured in the clockwise sense) which a tangent to the curve makes with a fixed direction may be called χ , and $d\chi/\pi$ takes the place of $1 - (A/\pi)$ as index to the periodic corner-factor

$$\sin \{ \pi (w - a) / \lambda \}.$$

Here a is a real variable which is to be regarded as varying continuously round the curve, increasing by λ with each complete description of the curve in the clockwise sense. The transformation then takes the form $dz = K\mathcal{C}dw$, where

$$\mathcal{C} = \lim \prod \left\{ \sin \frac{\pi}{\lambda} (w - a) \right\}^{d\chi/\pi} = \exp \int \frac{d\chi}{\pi} \log \sin \left\{ \frac{\pi}{\lambda} (w - a) \right\}, \quad (30)$$

and, corresponding to formula (25),

$$\int \cos (2\pi a / \lambda) d\chi = 0, \quad \int \sin (2\pi a / \lambda) d\chi = 0, \quad (31)$$

the integrals being taken over a range λ of the variable a . \mathcal{C} is a periodic curve-factor.

These formulae are indefinite until a functional relation is known or assumed between a and χ , say $\chi = f(a)$. With such a relation postulated, and with the range of values of a specified as being from $a = a$ to $a = a + \lambda$, the formulae take the definite shape:—

$$\mathcal{C}_{68} = \exp \int_a^{a+\lambda} \frac{1}{\pi} \log \sin \left\{ \frac{\pi}{\lambda} (w - a) \right\} f'(a) da, \quad (32)$$

$$\int_a^{a+\lambda} \cos (2\pi a / \lambda) f'(a) da = 0, \quad \int_a^{a+\lambda} \sin (2\pi a / \lambda) f'(a) da = 0, \quad (33)$$

The function $f(a)$ must be such as to conform to certain conditions. It is clear that $f'(a)$ must (for real values of a) be periodic in a of period λ , and it is also clear that

$$f(a + \lambda) - f(a) = 2\pi. \quad (34)$$

The electrostatic interpretation of the (z, w) transformation is in terms of an electrified cylindrical conductor alone in its own field; and it is known that when there is only one conductor the charge is of the same sign at all points of its surface. Hence if ds be an element of arc of the boundary the sign of da/ds is everywhere the same, so that $d\chi/da$ and $d\chi/ds$ have everywhere the same or everywhere opposite signs. Thus if the curve be everywhere convex, $f'(a)$ must be always of one sign, say positive. But if the curve may have concave parts, $f'(a)$ is not so restricted.

Formula (34) indicates that the mean value of $f'(a)$ must be $2\pi/\lambda$.

One way of summing up the requirements of the function $f'(a)$ is to say that it is capable of being represented by a Fourier series corresponding to a wave-length λ , that the absolute term in the series is $2\pi/\lambda$, and that there are no terms in $\sin(2\pi a/\lambda)$ or $\cos(2\pi a/\lambda)$. Thus, for example,

$$2\pi/\lambda + c \cos(\pm\pi a/\lambda)$$

is a possible form of $f'(a)$.

A particular kind of geometrical consideration may be useful in suggesting possible forms of $f'(a)$. Consider any closed plane curve (not to be confused with the boundary curve in the z plane), whose tangent makes an angle ω with a fixed direction in its plane. Let ds be the element of arc; then it is known that

$$\int \frac{ds}{d\omega} \cos \omega \, d\omega = 0, \quad \int \frac{ds}{d\omega} \sin \omega \, d\omega = 0, \quad (35)$$

for a range of ω of extent 2π . Let a new variable a be defined by the relation $\omega = 2\pi a/\lambda$. The radius of curvature $ds/d\omega$ is a function of ω ; let its form be

$$ds/d\omega = \lambda f'(\lambda\omega/2\pi). \quad (36)$$

This defines a function $f'(a)$ which is periodic and, in virtue of the relations (35), satisfies the conditions (33). In order to satisfy the condition (34) it is only necessary to choose the linear dimensions of the curve so that the perimeter shall be $4\pi^2$.

For example, in the ellipse (a, b)

$$ds/d\omega \propto (a^2 \cos^2 \omega + b^2 \sin^2 \omega)^{-3/2},$$

and therefore

$$A \{a^2 \cos^2(2\pi a/\lambda) + b^2 \sin^2(2\pi a/\lambda)\}^{-3/2} \quad (37)$$

is a possible form of $f'(a)$, provided the constant A be suitably adjusted.

A corresponding specification of $f(a)$ is that if the arc of any smooth closed curve of perimeter $4\pi^2$ be $2\pi F(w)$, then $F(2\pi a/\lambda)$ is a possible form of $f(a)$

11. While there is no general formula for expressing the integral

$$\mathcal{J} = \int_a^{a+\lambda} \frac{1}{\pi} \log \sin \left\{ \frac{\pi}{\lambda} (w - a) \right\} f'(a) da, \quad (38)$$

which occurs under the exponential operator in formula (32), as a function of w , it will be shown that, for certain types of $f'(a)$, the integral may be evaluated by a method of contour integration.

The first step is to indicate any selected value of w , as it appears explicitly in the above formula, by w_0 , and to replace the real variable a by the complex variable w , which is to be the variable of integration; it is to be understood that when w is real it is to be the same as a . The change in the argument of f' gives a function $f'(w)$ which is identical with $f'(a)$ when w is real, but which is otherwise a function of a complex variable, possibly possessed of singularities which are quite foreign to $f'(a)$. The integral which comes up for consideration is

$$\mathcal{K} = \int \frac{1}{\pi} \log \sin \left\{ \frac{\pi}{\lambda} (w_0 - w) \right\} f'(w) dw, \quad (39)$$

and the value of this, when taken round a suitable contour in the w plane, has to be examined.

The contour found to be most suitable consists, in the main, of a rectangle whose sides are in the lines

$$\phi = a, \quad \phi = a + \lambda, \quad \psi = 0, \quad \psi = t,$$

where t is positive and may be made indefinitely great. There must, however, be cuts from the boundary to infinitesimal circular cavities round all branch points and infinities of the subject of integration, and it is convenient to take for these cuts straight lines which start from the line $\psi = t$ and run parallel to the line $\phi = 0$. The complete contour includes each side of each cut, and the circumference of each infinitesimal circle.

The point w_0 is taken inside the rectangle, and at this point the function

$$\pi^{-1} \log \sin \{ \pi \lambda^{-1} (w_0 - w) \}$$

has a branch point. For $w - w_0$ small the singularity is sufficiently represented by $\pi^{-1} \log (w_0 - w)$, and it is seen that, if the point w describes an infinitesimal circle round w_0 in the conventionally positive sense, a constant $2i$ is added to the value of the function for each complete circuit. The same is therefore also true for any other circuit round w_0 , whatever its size or shape, provided it does not surround the other branch-points corresponding to $w_0 \pm n\lambda$,

where n is any integer. It follows that the subject of integration in \mathcal{K} has values which, at corresponding points on opposite sides of the cut to this particular singularity, differ by $2if'(w)$; thus the integrals \mathcal{K} taken along the two sides of the cut combine to give the value

$$2i \int_{\phi_0 + it}^{w_0} f'(w) dw, \text{ or } 2i\{f(w_0) - f(\phi_0 + it)\}. \tag{40}$$

The integral for the circumference of small radius ϵ round w_0 is of the order of magnitude $\epsilon \log \epsilon$, (it being supposed that w_0 is not taken coincident with any infinity of $f'(w)$), and this tends to the limit zero.

If $f'(w)$ had a logarithmic singularity, it would be dealt with in a similar manner, and would yield a term proportional to the integral of

$$\log \sin \{\pi\lambda^{-1}(w_0 - w)\}$$

along the corresponding straight cut.

A simple pole of $f'(w)$, say at

$$w = w_1 = \phi_1 + i\psi_1,$$

would correspond to $f'(w)$ taking the form

$$P(w - w_1)^{-1} \quad \text{for } w - w_1$$

infinitesimally small, P being a constant. A complete circuit round w_1 leaves the value of the function unaltered, so the integrals along the two sides of the cut cancel one another.

This is equally true for infinities of higher integral order. But infinities of fractional order are branch-points, and for such the integrals along the two sides of the cut do not cancel one another, but give an integral which is not generally more susceptible of direct evaluation than the integral \mathcal{J} . For this reason the method of contour integration is not likely to be helpful when $f'(w)$ has branch-points.

The integral along the circumference round w_1 of infinitesimal radius ϵ , taken in the conventionally negative sense, is readily seen to have the limit

$$- 2iP \log \sin \{\pi\lambda^{-1}(w_0 - w_1)\}.$$

The treatment of an infinity of higher integral order is sufficiently illustrated by considering the case in which $f'(w)$, for $w - w_1$ small, tends to the form

$$Q(w - w_1)^{-2} + P(w - w_1)^{-1}.$$

Near w_1 , approximately,

$$\frac{1}{\pi} \log \sin \frac{\pi}{\lambda} (w_0 - w) = \frac{1}{\pi} \log \sin \frac{\pi}{\lambda} (w_0 - w_1) - \frac{w - w_1}{\lambda} \cot \frac{\pi}{\lambda} (w_0 - w_1),$$

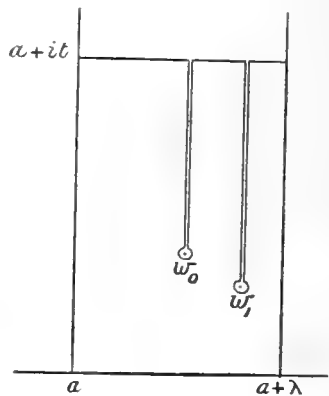


FIGURE 3.

and therefore the subject of integration in \mathcal{K}^0 is, to the same degree of approximation,

$$\frac{Q}{\pi}(w-w_1)^{-2} \log \sin \frac{\pi}{\lambda}(w_0-w_1) + (w-w_1)^{-1} \left[\frac{P}{\pi} \log \sin \frac{\pi}{\lambda}(w_0-w_1) - \frac{Q}{\lambda} \cot \frac{\pi}{\lambda}(w_0-w_1) \right].$$

For the small circular contour, described in the negative sense, the first term integrates to zero, and the second gives

$$-2i \left[P \log \sin \frac{\pi}{\lambda}(w_0-w_1) - \frac{\pi Q}{\lambda} \cot \frac{\pi}{\lambda}(w_0-w_1) \right], \quad (41)$$

which is therefore the limit for a circle of vanishing radius.

In considering the contribution made to the contour integral by the sides of the rectangle which are parallel to $\phi = 0$, it is to be noticed that $f'(w)$, being periodic, has the same value at points on the two sides corresponding to the same value of ψ , no ambiguity of value being possible in the region defined by the complete contour. It is also to be noticed that at such corresponding points $\sin \pi\lambda^{-1}(w_0-w)$ has values which differ only as to the factor -1 , so that the logarithms differ only by the constant $i\pi$; in fact, for $\psi < \psi_0$, the imaginary part of $\pi^{-1} \log \sin \{\pi\lambda^{-1}(w_0-w)\}$ is

$$i\pi^{-1} \tan^{-1} [\tanh \{\pi\lambda^{-1}(\psi_0-\psi)\} \cot \{\pi\lambda^{-1}(\phi_0-\phi)\}],$$

which increases by i as ϕ increases by λ , ψ being kept constant.

From this it appears that the algebraic sum of the integrals along the sides $\phi = a$, $\phi = a + \lambda$, is

$$i \int_a^{a+i\lambda} f'(w) dw, \quad \text{or} \quad i \{f(a+i\lambda) - f(a)\}. \quad (42)$$

In considering, lastly, the integral \mathcal{K}^0 along the line $\psi = t$, it is to be remembered that the subject of integration has a discontinuity owing to the fact that, at the beginning of the cut to w_0 ,

$$\pi^{-1} \log \sin \{\pi\lambda^{-1}(w_0-w)\}$$

is less by $2i$ for ϕ just less than ϕ_0 than for ϕ just greater than ϕ_0 . If continuity be restored to the logarithm, for the purpose of this particular integration, by continuing its analytical form from that for $\phi > \phi_0$, the integral along this side of the rectangle is

$$\int_{a+\lambda+it}^{a+it} \pi^{-1} \log \sin \{\pi\lambda^{-1}(w_0-w)\} f'(w) dw - 2i \int_{\phi_0+it}^{a+it} f'(w) dw. \quad (43)$$

All singularities having been kept outside the contour, the complete contour integral must be zero. On combination of formulae (38), (40), (41), (42),

and (43), the vanishing of \mathcal{H} is expressed by the equality

$$\begin{aligned} \mathcal{J} &= 2i \Sigma [P \log \sin \{\pi\lambda^{-1}(w_0 - w_1)\} - \pi\lambda^{-1} Q \cot \{\pi\lambda^{-1}(w_0 - w_1)\} + \text{etc.}] \\ &+ i \{ f(a) + f(a + it) - 2f(w_0) \} \\ &+ \int_{a+it}^{a+\lambda-it} \pi^{-1} \log \sin \{\pi\lambda^{-1}(w_0 - w)\} f'(w) dw, \end{aligned} \quad (44)$$

which, when w is substituted for w_0 after integration, constitutes an expression for \mathcal{J} as a function of w . The limit of the right-hand side for $t \rightarrow +\infty$ may be a comparatively simple form.

With a view to investigating this limit, it can be verified that, for ψ great and positive,

$$\frac{1}{\pi} \log \sin \frac{\pi}{\lambda} (w_0 - w) = \frac{1}{\pi} \log \left(-\frac{1}{2}i\right) + \frac{i}{\lambda} (w_0 - w) - \frac{1}{\pi} \sum_{m=1}^{m=\infty} \frac{1}{m} \exp \left\{ \frac{2mi\pi}{\lambda} (w - w_0) \right\}. \quad (45)$$

Let it be assumed that $f'(w)$ is such a function that it can be represented, for great positive values of ψ , by the series

$$f'(w) = \sum_{s=0}^{s=\infty} \gamma_s \exp \{-2\pi i\lambda^{-1}(n-s)w\}, \quad (46)$$

where n is an integer: and let it be assumed that this series is integrable, so that, for ψ great and positive,

$$f(w) = \gamma_n w + \frac{i\lambda}{2\pi} \left[\sum_{s=0}^{s=n-1} + \sum_{s=n+1}^{s=\infty} \right] \frac{\gamma_s}{n-s} \exp \{-2\pi i\lambda^{-1}(n-s)w\}. \quad (47)$$

As $\int f'(w) dw$, taken round the rectangular contour, equals $\Sigma 2\pi iP$, to which integral the contributions of the sides ϕ constant, and ψ zero, are respectively zero and 2π , it is necessary that $2\pi - \gamma_n \lambda = \Sigma 2\pi iP$, so that

$$\gamma_n = 2\pi\lambda^{-1}(1 - \Sigma iP). \quad (48)$$

With the above assumptions, for ψ great,

$$\pi^{-1} \log \sin \{\pi\lambda^{-1}(w_0 - w)\} f'(w) = E + C + F(w_0) + i\lambda^{-1}(w_0 - w) f'(w),$$

where E consists of exponential terms, C is a constant, and

$$F(w_0) = -\pi^{-1} \sum_{s=0}^{s=n-1} \frac{\gamma_s}{n-s} \exp \{-2\pi i\lambda^{-1}(n-s)w_0\}. \quad (49)$$

Consequently

$$\int_{a+it}^{a+\lambda+it} \pi^{-1} \log \sin \{ \pi \lambda^{-1} (w_0 - w) \} f'(w) dw = C\lambda + \lambda F(w_0) - i\lambda^{-1} \int_{a+it}^{a+\lambda+it} (w - w_0) f'(w) dw$$

$$= \left[-i\lambda^{-1} (w - w_0) f(w) \right]_{a+it}^{a+\lambda+it} + i\lambda^{-1} \int_{a+it}^{a+\lambda+it} f(w) dw + C\lambda + \lambda F(w_0). \quad (50)$$

In the last integral $f(w)$ may be replaced by $\gamma_n w$ without altering the result of the integration, and in the immediately preceding expression it is to be noted that $f(a + \lambda + it) = \gamma_n \lambda + f(a + it)$. Thus the whole expression reduces to

$$C\lambda - if(a + it) + i\gamma_n w_0 - \frac{1}{2} i\gamma_n \lambda + \lambda F(w_0). \quad (51)$$

The substitution of this in formula (44) leads to

$$\mathcal{J} = 2i\Sigma [P \log \sin \{ \pi \lambda^{-1} (w - w_1) \} - \pi \lambda^{-1} Q \cot \{ \pi \lambda^{-1} (w - w_1) \} + \text{etc.}]$$

$$- 2if(w) + 2\pi i \lambda^{-1} (1 - \Sigma iP) w + \lambda F(w) + C', \quad (52)$$

where w has been substituted for w_0 , and C' represents a constant.

In this expression it is interesting to note how the infinities under the first Σ sign cancel the infinities of $f(w)$ at definite points of the w plane, and how those exponential terms of $\lambda F(w)$ which become infinite for $\psi \rightarrow +\infty$ cancel the corresponding terms in $-2if(w)$; thus \mathcal{J} has no infinities except an infinity for $\psi \rightarrow +\infty$ corresponding to a term which is linear in w , namely $-2i\pi\lambda^{-1}w$.

12. Some particular cases may be considered.

(i) Let $f'(a)$ be a constant, namely equal to $2\pi\lambda^{-1}$, so that $f(w)$ is $2\pi\lambda^{-1}w$. Then most of the terms in formula (52) vanish, and \mathcal{J} differs only by a constant from $-2\pi i \lambda^{-1}w$; so \mathcal{C}_{69} or $\exp \mathcal{J}$ is proportional to $\exp(-2\pi i \lambda^{-1}w)$, which is \mathcal{C}_{67} .

(ii) Let

$$f'(a) = 2\pi\lambda^{-1} \sinh 2\beta / \{ \cosh 2\beta - \cos(4\pi\lambda^{-1}a) \},$$

so that

$$f(w) = -\frac{1}{2}i \log \{ \sin(2\pi\lambda^{-1}w - i\beta) / \sin(2\pi\lambda^{-1}w + i\beta) \}.$$

In a strip of breadth λ , $f'(w)$ has two simple poles, namely (if a be chosen within suitable limits) at $w = w_1 = i\lambda\beta/2\pi$ and $w = w_2 = \frac{1}{2}\lambda + i\lambda\beta/2\pi$, and at each of these $P = -\frac{1}{2}i$. Thus $1 - \Sigma iP = 0$, and the expansion of $f(w)$ for ψ great and positive has no term linear in w . As the expansion of $f'(w)$ for ψ great and positive has no term of a higher order of magnitude than

$\exp(4\pi iw/\lambda)$, the function $F(w)$ is zero. Thus formula (52) gives

$$\begin{aligned} \mathcal{J} &= C' + \log \sin(\pi\lambda^{-1}w - \frac{1}{2}i\beta) + \log \sin(\pi\lambda^{-1}w - \frac{1}{2}i\beta - \frac{1}{2}\pi) \\ &\quad - \log\{\sin(2\pi\lambda^{-1}w - i\beta)\sin(2\pi\lambda^{-1}w + i\beta)\} \\ &= C'' + \log \sin(2\pi\lambda^{-1}w + i\beta). \end{aligned}$$

The corresponding form of $\mathcal{C}_{55}^{\mathcal{Z}}$, or $\exp \mathcal{J}$ is proportional to $\sin(2\pi\lambda^{-1}w + i\beta)$, which is \mathcal{C}_{55} .

(iii) Let $f'(a) = \cos\{2n\pi\lambda^{-1}(a + \kappa)\}$, where n is an integer and κ a constant, so that $f(w) = (\lambda/2n\pi) \sin\{2n\pi\lambda^{-1}(w + \kappa)\}$. Here it is to be observed that the mean value of $f'(a)$ over a range λ is not $2\pi\lambda^{-1}$, but is zero. This renders formula (48) inapplicable; in fact, $\gamma_n = -2\pi i\lambda^{-1}\Sigma P$, and the coefficient of w in formula (52) must be correspondingly modified. In this instance $f'(w)$ has no infinities at definite points in the strip. But the exponential expression for $\mathcal{J}'(w)$ contains one term which becomes infinite for $\psi \rightarrow +\infty$, namely $\frac{1}{2} \exp\{-2ni\pi\lambda^{-1}(w + \kappa)\}$, and so

$$F(w) = -(1/2n\pi) \exp\{-2ni\pi\lambda^{-1}(w + \kappa)\}.$$

Thus formula (52) assumes, in this instance, the form

$$\begin{aligned} \mathcal{J} &= -2i(\lambda/2n\pi) \sin\{2n\pi\lambda^{-1}(w + \kappa)\} - (\lambda/2n\pi) \exp\{-2ni\pi\lambda^{-1}(w + \kappa)\} + C' \\ &= C'' - (\lambda/2n\pi) \exp\{2ni\pi\lambda^{-1}(w + \kappa)\}, \end{aligned}$$

and the corresponding form of $\exp \mathcal{J}$ is

$$\mathcal{C}_{70}^{\mathcal{Z}} = \exp[-(\lambda/2n\pi) \exp\{2ni\pi\lambda^{-1}(w + \kappa)\}]. \quad (53)$$

This is not a periodic curve-factor of the kind which has been aimed at, since it is based upon a form of $f'(a)$ whose mean value is zero, and tends to a definite limit for $\psi \rightarrow +\infty$ instead of becoming infinite of exponential order $2\pi\lambda$. It is an indexional periodic curve-factor whose angular period is zero.

$\mathcal{C}_{70}^{\mathcal{Z}}$ is, nevertheless, useful for the building up of periodic curve-factors of angular period 2π ; for, if $f'(a)$ be taken of the form

$$2\pi\lambda^{-1} + c \cos\{2n\pi\lambda^{-1}(a + \kappa)\},$$

the corresponding curve-factor is

$$\mathcal{C}_{71}^{\mathcal{Z}} = \mathcal{C}_{55}^{\mathcal{Z}} \mathcal{C}_{70}^{\mathcal{Z}}, \quad (54)$$

and it is clear that $\mathcal{C}_{71}^{\mathcal{Z}}$, or any other product of $\mathcal{C}_{55}^{\mathcal{Z}}$ with powers of different particular cases of $\mathcal{C}_{70}^{\mathcal{Z}}$ is a periodic curve-factor whose angular period is 2π .

On this may be founded a general formula. For $f'(a)$ can be expressed as a Fourier series, and to each term of this series there corresponds a curve-

factor of the type of \mathcal{C}_{70} , except the constant term which leads to \mathcal{C}_{57} . The product of all these curve-factors, if it is convergent, is the curve-factor corresponding to $f'(a)$.

It may be noticed, in passing, that the form of $f'(w)$ suggested by formula (37), as it has branch-points, does not admit of the method of deriving the corresponding curve-factor which has just been described.

13. *The specification of fields with logarithmic singularities in the region outside a cylindrical or prismatic boundary.* When it is desired, particularly with a view to physical applications, to investigate fields with assigned logarithmic singularities, such as sources, vortices, electrodes, or line electric charges, in doubly connected regions of the kind under consideration, a simple formulation is available. The procedure is simply to employ periodic curve-factors and corner-factors, or any other available method, to represent the doubly connected region in the z plane conformally and repeatedly on an infinite succession of semi-infinite strips in the principal half-plane of a variable ζ ; when this has been done, sources or vortices (in the hydrodynamical application) may be taken account of in a (w, ζ) transformation, each source or vortex at a point $a + i\beta$ in the ζ plane being accompanied by such an image at the point $\zeta = a - i\beta$ as is required to maintain the constancy of ψ along the axis of ζ real. But a single source or vortex at $\zeta = \zeta_0 = a + i\beta$ is not, in the circumstances, a representation of a physical possibility; what is wanted is an endless series of sources or vortices, all similar to one another, at the points $\zeta = \zeta_0 \pm n\lambda$, where n takes all integral values, balanced by the corresponding series of images. This is the only way of ensuring that every strip in the ζ plane which corresponds to the complete field in the z plane is equipped with a singularity representative of the single source or vortex which is present in that field.

The w which, in the absence of a boundary, would correspond to such a periodic singularity, would be proportional to

$$\log [(\zeta - \zeta_0) \Pi\{(\zeta - \zeta_0)^2 - n^2\lambda^2\}],$$

or (as in article 7 above) to

$$i \log \sin \{\pi\lambda^{-1}(\zeta - \zeta_0)\}. \tag{55}$$

When ψ is to be zero for ζ real, a corresponding term involving the complex conjugate to ζ_0 must be included.

Thus, for a single source at $\zeta = a + i\beta$, which produces liquid at the rate m , the form of w is

$$w = -(m/2\pi) \log [\sin \{\pi\lambda^{-1}(\zeta - a - i\beta)\} \sin \{\pi\lambda^{-1}(\zeta - a + i\beta)\}]; \tag{56}$$

and, for a single vortex round which the circulation is μ ,

$$w = \frac{i\mu}{2\pi} \log \frac{\sin \{\pi\lambda^{-1}(\zeta - \alpha - i\beta)\}}{\sin \{\pi\lambda^{-1}(\zeta - \alpha + i\beta)\}}. \quad (57)$$

For a number of sources or vortices w is formed by addition of terms such as (56) and (57).

The elimination of ζ between the (w, ζ) transformation formed in this manner, and that (z, ζ) transformation which represents the relevant region of the z plane upon an endless series of strips in the positive half-plane of ζ , gives a relation between z and w which specifies flow with the prescribed sources and vortices and the known or prescribed boundary.

For example, it is known that the transformation

$$\zeta = (i\lambda/2\pi) \log (z/a) \quad (58)$$

represents the region outside the circle of radius a in the z plane, whose centre is at the origin, upon the infinite series of semi-infinite strips of width λ in the half-plane on the positive side of the real axis of ζ . Hence this relation, combined with (57), defines a relation between w and z corresponding to a vortex in presence of a circular internal boundary, or to a line charge in presence of a circular conductor. The result of eliminating ζ is

$$w = \frac{i\mu}{2\pi} \log \frac{\sin \pi\lambda^{-1} \{ (i\lambda/2\pi) \log (z/a) - \alpha - i\beta \}}{\sin \pi\lambda^{-1} \{ (i\lambda/2\pi) \log (z/a) - \alpha + i\beta \}}. \quad (59)$$

It is easy to verify that this corresponds to the familiar formula

$$w = (i\mu/2\pi) \log \{ (z - z_1)/(z - z_2) \}, \quad (60)$$

where z_1 and z_2 are image points with respect to the circle.

A single vortex in presence of an elliptic boundary is represented by formula (57) in combination with

$$z = c \cosh \{ \alpha - (2\pi i/\lambda) \zeta \}; \quad (61)$$

and a single line-charge in presence of a prismatic conductor is represented by formula (57) in combination with

$$dz/d\zeta = K\pi \{ \sin \pi\lambda^{-1}(\zeta - \gamma) \}^{1-4/\pi}, \quad (62)$$

the parameters being subject to the conditions explained in Article 8.

These examples have not allowed for a circulation round, or total charge upon, the boundary itself, but this is easily provided for by introducing a linear term into the (w, ζ) transformation. The general form of this

transformation is

$$w = A\zeta + \sum \frac{i\mu}{2\pi} \log \left\{ \frac{\sin \frac{\pi}{\lambda} (\zeta - \alpha - i\beta)}{\sin \frac{\pi}{\lambda} (\zeta - \alpha + i\beta)} \right\} \\ - \sum \frac{m}{2\pi} \log \left\{ \sin \frac{\pi}{\lambda} (\zeta - \alpha' - i\beta') \sin \frac{\pi}{\lambda} (\zeta - \alpha' + i\beta') \right\}, \quad (63)$$

and terms representing doublets could be introduced if desirable.

The formula (63), coupled with a (z, ζ) transformation, whether of the type $z = f(\zeta)$ or of the type $dz = \mathcal{C}(\zeta) d\zeta$, gives the specification of the field with assigned singularities in the region bounded internally in accordance with the latter transformation. The only further steps requisite for explicit formulation are (possibly) integration, and (certainly) elimination, and adjustment of parameters. The inner boundary may be a rectilinear polygon, in which case $\mathcal{C}(\zeta)$ is a product of corner-factors in ζ , or it may be a smooth curve, in which case $\mathcal{C}(\zeta)$ may be one of the periodic curve-factors considered above, or $f(\zeta)$ may have one of the forms which have been shown above to be suitable.

The limitation of the method is that one cannot prescribe the boundary arbitrarily and be sure of getting a solution; one must be content with such boundaries as correspond to known forms of \mathcal{C} or f . If the range of known forms of periodic curve-factors can be extended, the scope of the method will be correspondingly enlarged. Meanwhile it is possible that a rough approximation to any particular assigned boundary might be got by a suitable choice from among the focal curve-factors.

V.

THE LARGE IONS AND CONDENSATION-NUCLEI
FROM FLAMES.

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IN previous papers,¹ Professor McClelland and the author have given the results of observations on the large ions occurring in the atmosphere. These investigations included a prolonged study under various conditions in the city, and an examination of the air at a distance from the city, and free from the artificial sources of large ions, such as flames, &c. The results were such as to lead to the conclusion that the large ions occurring in the atmosphere of a city are due for the most part, if not entirely, to the great number of sources of combustion, which, as laboratory experiments prove, produce large ions of exactly the same mobility as those occurring in the atmosphere. Attention was also directed to the analogy existing between the results of the study of atmospheric large ions and the work of Aitken on condensation-nuclei in the atmosphere under various conditions, and it was suggested that the nuclei measured by Aitken were not dust particles in the form of solid matter in a very fine state of division, but were identical with the large ions and the uncharged nuclei from which large ions may be formed by ionizing the air in which these nuclei occur. The atmospheric large ions and condensation-nuclei, then, seem to be the same as those produced by flames. The mobility of the large ions from flames has been already investigated. Its value is found to be about 0003 cms. per second for an electric field of a volt per cm., and the mobilities of all the ions are the same. If the flame-gas be deionized by an electric field when the gas has just left the flame, nuclei are still formed, and they may be changed into large ions of the same mobility by ionizing the air in which they are contained. The relations existing between the number of charged and uncharged nuclei at any time, and the nature and cause of the disappearance of ions and nuclei, seemed to be a subject worthy of investigation, and the present paper is an account

¹ McClelland and Kennedy: Proc. Royal Irish Academy, vol. xxx, Sect. A, No. 5.
Kennedy: Proc. Royal Irish Academy, vol. xxxii, Sect. A, No. 1.

of experiments carried out with the object of obtaining more information on the nature of the large ion and the nucleus from which it is formed. The general method of working was to determine the number of condensation-nuclei by Aitken's apparatus, and to measure the quantity of ionization by an electrometer. One of the results obtained is that the charge on the large ion is not the simple electronic charge, but some multiple of it. It will be convenient, however, to consider the quantity of electricity per c.c. of either sign as being equal to $N\epsilon$, where ϵ is the electronic charge. N will not, therefore, as assumed in the previous papers, be the number of large ions of one sign per c.c. of the gas.

Disappearance of the Large Ions.

In experiments on the variation of the ionization with time, a gasometer of about 450,000 c.c. capacity was rapidly filled with the gas from a Bunsen flame burning under the funnel-shaped vessel, illustrated in fig. 1. When

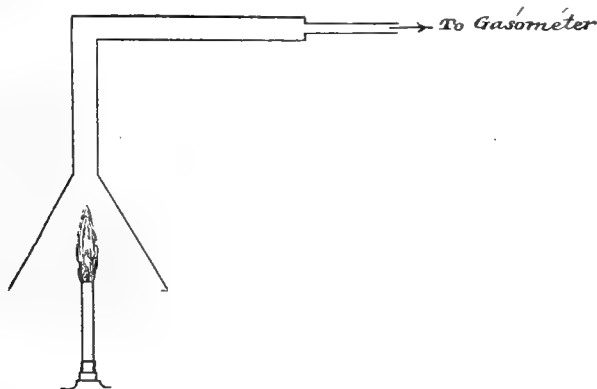


FIG. 1.

filled, the gasometer is connected to the measuring apparatus, which consists of a brass tube *A* (fig. 2), and an insulated concentric rod *B*, connected with

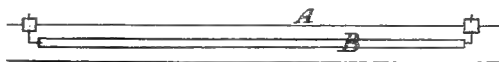


FIG. 2.

the electrometer. An air-current of about 60 c.c. per second is sent from the gasometer through *A*, which is charged to about 600 volts, sufficient to remove all the ions from the air-stream. Measurements were taken at intervals for about three hours after filling the gasometer, and the values of N deduced, assuming for ϵ the value 4.77×10^{-10} E. S. units. The result of such an experiment is given in the following table:—

TABLE I.

Time (minutes)	$N \times 10^{-3}$	$N^{-1} \times 10^6$
0	1045	96
7	767	130
17	585	171
27	469	213
38	411	243
50	380	263
63	271	369
80	240	416
83	240	416
105	199	502
107	200	500
127	169	592
130	169	592
154	138	725
157	130	769
169	122	820
172	118	847

and is represented graphically in fig. 3. It will be seen that the rate of

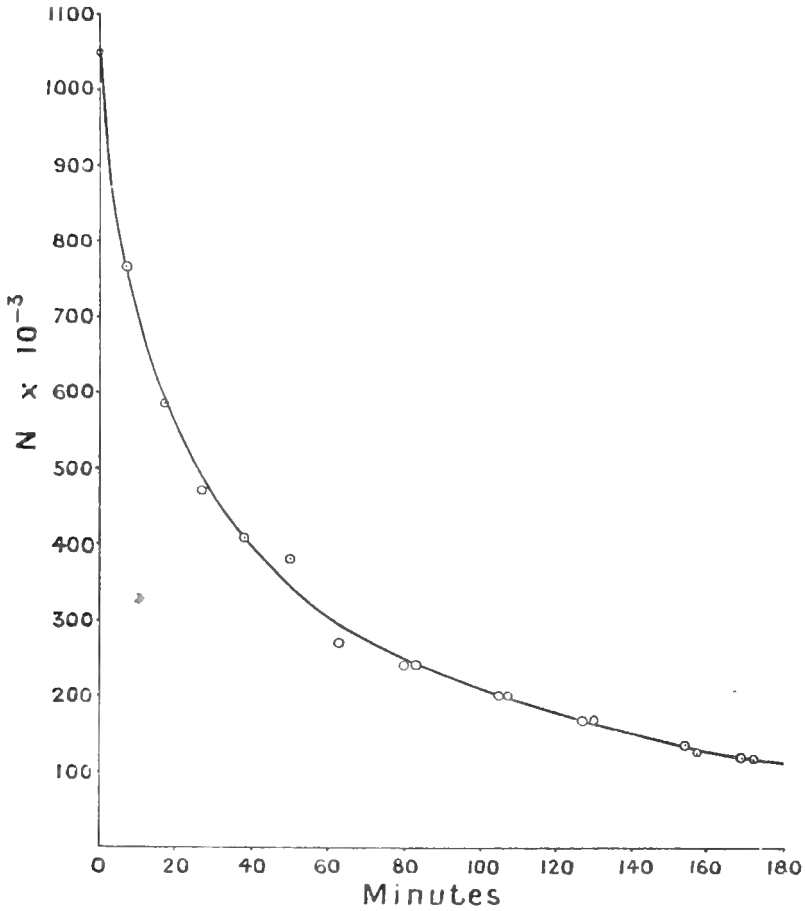


FIG. 3.

disappearance is very much slower than in the case of small ions ; at the end of three hours, there still remains a considerable quantity of ionization.

Fig. 4 shows the graph of N^{-1} and the time. The graph is a straight line, showing that

$$\frac{1}{N} - \frac{1}{N_0} = \beta t,$$

N_0 being the value of N at the beginning, and β a constant. The large ions, therefore, recombine according to the law

$$\frac{dN}{dt} = -\beta N^2.$$

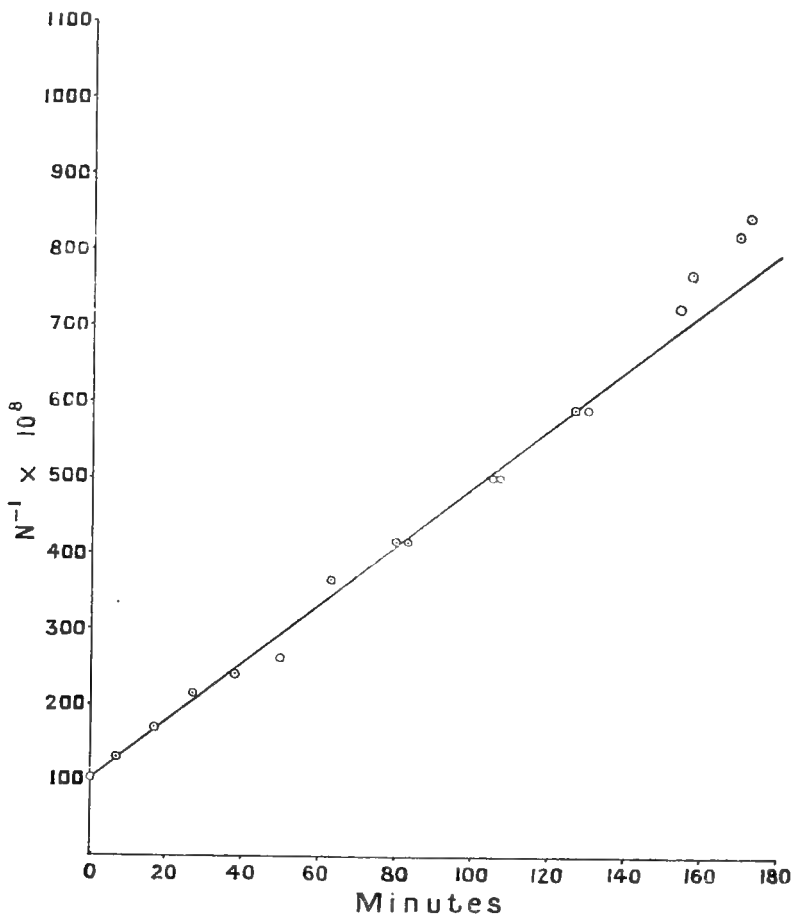


FIG. 4.

It will be seen, however, that towards the end the rate of disappearance is more rapid than the law indicates.

The value of β , the constant of recombination, is 6.3×10^{-10} , taking the second as the unit of time.

Measurements of the Condensation-Nuclei.

The number of nuclei per c.c. of the gas at any time was obtained by means of Aitken's counting apparatus described in detail in the "Proceedings of the Royal Society of Edinburgh," vol. 18, pp. 39-52. As this form of the apparatus, however, is suitable only for measurements in air in which there are comparatively few nuclei—less than 10,000 per c.c.—and as the numbers per c.c. in the flame-gas were as high as 1,000,000, it was necessary to dilute the gas containing the nuclei with a known volume of filtered air so as to get a concentration suitable for measurement with the counter. The dilution was made in the apparatus shown in fig. 5. *A* is a glass vessel of about 250 c.c. capacity fitted with taps at *B* and *C*. *D* is a three-way tap by means of which the vessel *A* may be put in communication with the *T*-piece *F* or the tube *E*, which itself is fitted with a three-way tap *G*, leading either to the Aitken apparatus or to a gasometer filled with thoroughly filtered air. Below the tap *B* there is a flexible tube attached, by means of which the vessel *A* is connected to a cistern containing mercury. By raising this cistern the whole vessel may be filled with mercury up to *F*. At *K* there is a short length of rubber tubing. The gas to be tested flows from the gasometer through the tube *HF*. In making an experiment the tap *D* is turned to give communication between *A* and *F*, and the whole vessel is filled with mercury up to *F*. The mercury cistern is then lowered until there is a known volume, say 10 c.c., of the gas below *D* in the tube *DC*, which is graduated. The tap *D* is then turned round to connect *A* and *E*, and the tap *G* is turned so as to connect with the gasometer containing the filtered air. The filtered air is allowed into *A* until a certain volume, say 200 c.c., occupies the vessel below *C*. The taps *B* and *C* are then closed, and, by making the remaining

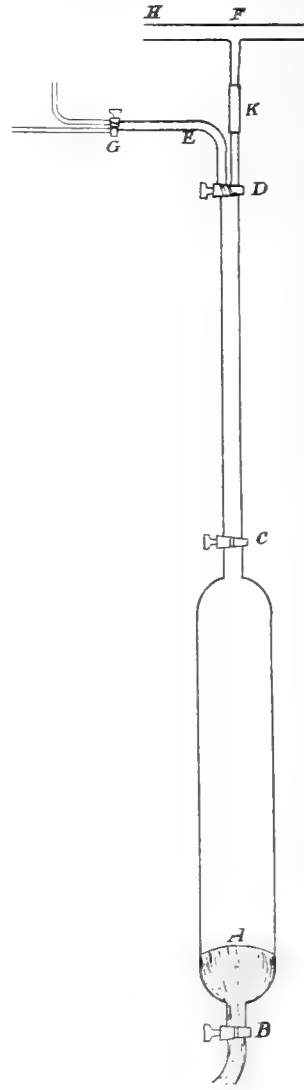


FIG. 5.

mercury move to and fro in A without splashing, the filtered air is thoroughly mixed with that containing the nuclei, and the dilution is such that the nuclei have only $\frac{1}{20}$ th of their original concentration. By repeating the process a dilution of $\frac{1}{400}$ is obtained, and, similarly, any intermediate amount of dilution may be produced. When the suitable concentration has been obtained, the vessel A is put in communication with the Aitken apparatus, and a portion of the air in it is passed through the apparatus so as to drive out the air in the intervening tubes. In this way all the space joining the counting apparatus to the vessel A is filled with air at the required concentration, and the test is made as described in Aitken's paper. About ten tests were made of each sample of air, and the mean of these results taken to calculate the number of nuclei per c.c., correction being made for the variation in the pressure in A by the introduction into the counter of the amounts of air necessary for the tests.

Disappearance of the Nuclei.

Investigation was first made on the nature of the disappearance of uncharged nuclei, and for this purpose the gasometer was filled rapidly with flame-gas as indicated in fig. 1, but in this case the flame-gas immediately after leaving the flame was subjected to a very strong electric field to remove all the ions. The gasometer then contained great numbers of uncharged nuclei, but tests made with the electrometer showed that the number of ions present was too small to be measured. Measurements of the number of nuclei per c.c. were made at intervals, and Table II contains such a series of measurements, n being the number of nuclei per c.c.

TABLE II.

Time (minutes)	$n \times 10^{-3}$	$n^{-1} \times 10^7$
0	1125	8.9
25	306	32.7
55	164	61
95	108	92.5

Fig. 6 shows the graph of the variation of the nuclei with time. The number per c.c. falls off very rapidly at first, but the rate of diminution diminishes with the concentration. The rate of disappearance and its nature preclude any possibility of explaining it by a simple fall under gravity. The nuclei are so small that de Broglie¹ was unable to distinguish them with

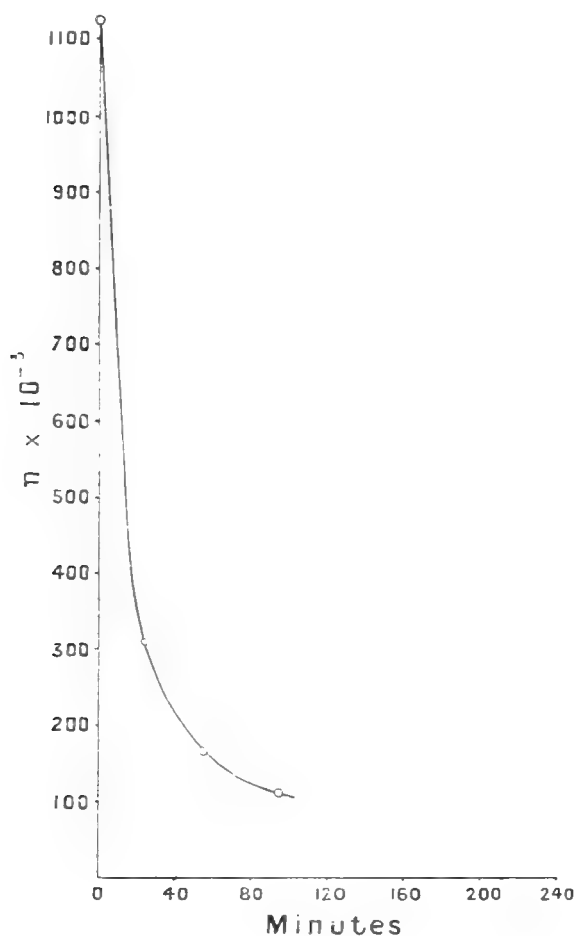


FIG. 6.

the ultra-microscope, and consequently the amount of their fall would be quite negligible in the time considered in the experiment. A feasible explanation, however, may be based on the coalescence of two nuclei colliding with sufficient energy, such a collision accounting for the disappearance of one nucleus.

¹ De Broglie: "Comptes Rendus," vol. 148, 1909, p. 1317.

There are many difficulties in understanding the origin of the large ion or nucleus, but Langevin¹ and Sir J. J. Thomson² have given a satisfactory theory of the nucleus in its final state as consisting of a minute water-drop retaining a stable size in unsaturated air, the size being almost independent of the charge carried. When two such nuclei come into collision and coalesce, the two will form one tiny drop with a radius greater than the equilibrium value, and evaporation will take place until equilibrium is restored, so that the new nucleus will have the same size and properties as either of the original ones. On such a theory it is to be expected that the frequency of the collisions, and consequently the rate of disappearance of the nuclei, should be proportional at any time to the square of the number present.

Fig. 7 is the graph of $\frac{1}{n}$ with the time, and shows that

$$\frac{1}{n} - \frac{1}{n_0} = \gamma t$$

and

$$\frac{dn}{dt} = -\gamma n^2,$$

n_0 being the initial value, and γ a constant.

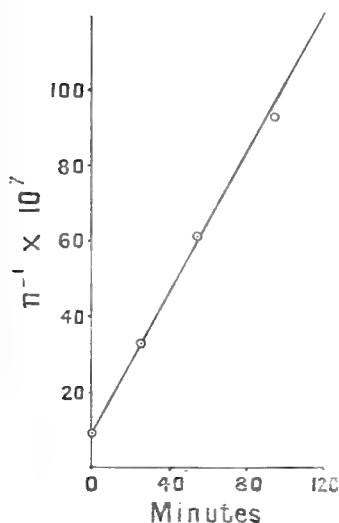


FIG. 7.

Experiment therefore supports the idea of the disappearance of the nuclei being due to collision and consequent coalescence.

It next seemed of interest to ascertain what effect the electric charge has on the collision frequency and rate of disappearance of the nuclei, and for this purpose similar experiments were made when the gasometer was filled with flame-gas without having removed the ions. In this case some of the nuclei are charged positively, an equal number negatively, and the remainder uncharged. The uncharged nuclei were in such experiments about half or one-third of the total number.

Table III shows the result of such an experiment.

¹ E. Bloch: "Ann. de Physique et de Chimie," 1905; Chauveau: "Le Radium," Avril, 1912.

² Conduction of Electricity through Gases.

TABLE III.

Time (minutes)	$n \times 10^{-3}$	$\frac{1}{n} \times 10^7$
0	829	12
20	345	29
43	219	46
74	145	69
115	103	99.5
154	76	132
223	50.4	199

Fig. 8 is the graph of n and the time, and fig. 9 that of $\frac{1}{n}$ and the time, showing that in this case as well the rate of disappearance of the nuclei is

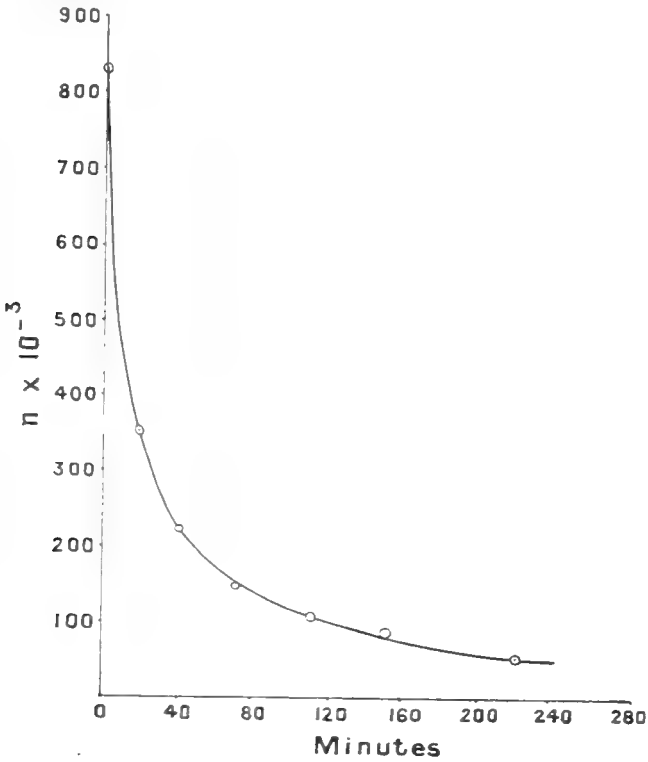


FIG. 8.

proportional to the square of the number present. Further, as far as the experiments have gone, there seems to be no appreciable difference in the

rate of disappearance of the nuclei, whether they are uncharged, as in the first series of experiments, or whether, as in the second series, a great proportion of the nuclei are large ions. The rate of disappearance seems to be the same, within the range of experimental error, though of course further work is desirable in order to make this point certain.

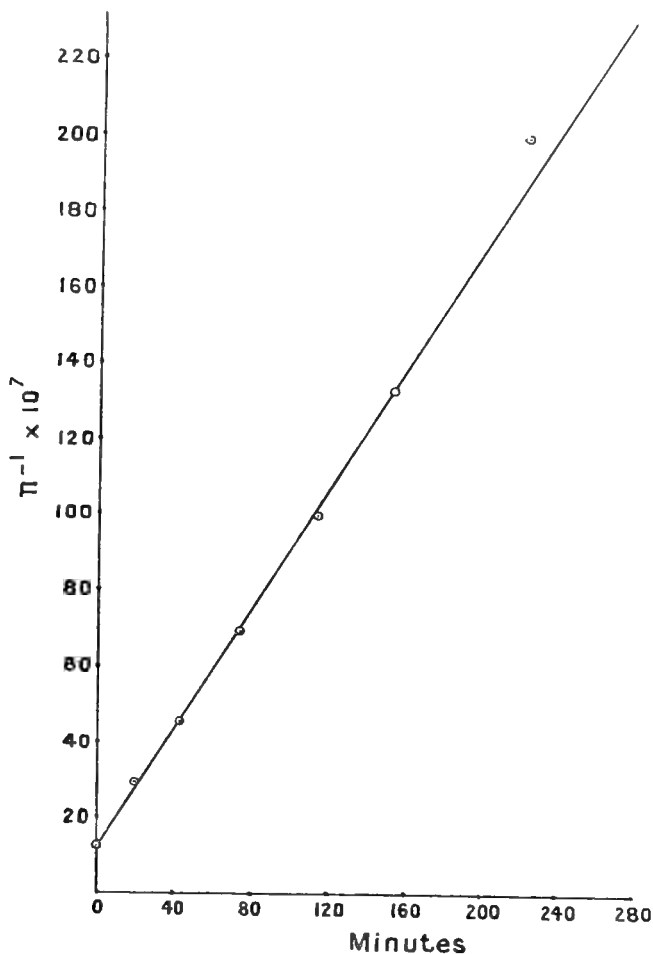


FIG. 9.

The mean of a number of determinations of γ is 14×10^{-10} .

In all cases of the disappearance of the nuclei when very long intervals are considered, the nuclei disappear more rapidly than according to the formula

$$\frac{dn}{dt} = -\gamma n^2.$$

In one experiment the number of nuclei per c.c. at the end of twenty-one hours

[10*]

was 1800, having diminished from 1,000,000 in that time, whereas the value should be about 10,000 if the formula held true during that period.

The Charge on the Large Ion.

In some of the earlier experiments on the decay of the ions and nuclei from the same mass of flame-gas in the gasometer, it was found that in certain cases the total number of nuclei per c.c. was less than the number of large ions per c.c. as calculated on the assumption that each ion carries the electronic charge. This leads to the conclusion that the ions carry multiple charges, and an attempt was made as follows to determine the charge. The flame-gas was drawn slowly—at about 60 c.c. per second—through the funnel *A* and the large vessels *B* and *C*—each of about 70,000 c.c. capacity—as illustrated in fig. 10. so that on leaving *C* the ions and nuclei had reached their stable size. The method adopted was to determine the total charge

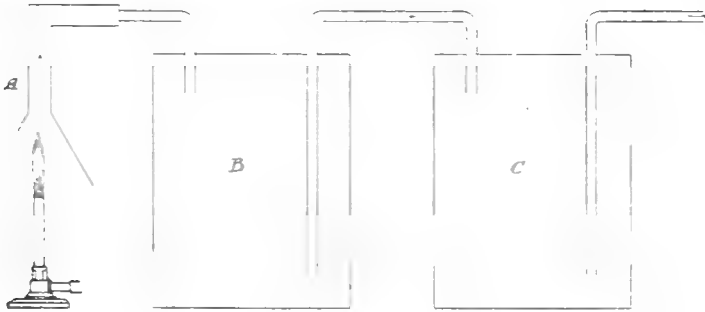


FIG. 10.

per c.c. by the electrometer, and to measure the total number (n) of nuclei by means of the counting-apparatus, and also the number (n_0) of uncharged nuclei left in the air-stream, when all the charged nuclei had been removed by an electric field. $n - n_0$ is the total number of charged nuclei, and, as in the gas from flames, the positive and negative charges per c.c. are equal, half this number, $\frac{n - n_0}{2}$, may be taken as the number of nuclei carrying the

charge per c.c. measured by the electrometer, and from this the average charge may be calculated. The results of a number of such experiments, made on different occasions, are given in the following table, the positive charge per c.c. being given in the fourth column as the multiple N of the electronic charge ϵ . The average charge E on the ion is given in the fifth column as a multiple of ϵ .

TABLE IV.

$n \times 10^{-3}$	$n_0 \times 10^{-3}$	$(n - n_0) \times 10^{-3}$	$N \times 10^{-3}$	$\frac{E}{\epsilon}$
673	377	296	260	1.8
828	480	348	348	2.0
870	539	331	323	1.9
781	373	408	363	1.8
862	521	341	322	1.9
1006	613	393	388	2.0
836	399	437	593	2.7
715	339	376	499	2.7
644	358	286	450	3.1
768	391	377	493	2.6
740	355	385	375	2.0
873	511	362	395	2.2

A series of measurements were next made in which the flame-gas was drawn into the gasometer at the same slow rate, and was stored for various time-intervals ranging from one and a half to two and a half hours before the tests were made. Table V gives the results of a series of such experiments.

TABLE V.

$n \times 10^{-3}$	$n_0 \times 10^{-3}$	$(n - n_0) \times 10^{-3}$	$N \times 10^{-3}$	$\frac{E}{\epsilon}$
202	108	94	80	1.7
82	29	53	72	2.7
75	30	45	71	3.1
130	64	66	123	3.7
136	62	74	104	2.8
65	37	28	57	4
82	29	53	69	2.6
140	67	73	103	2.8
76	24	52	61	2.3
95	24	71	64	1.8
141	51	90	73	1.6
130	78	52	92	3.5

A number of determinations of the charge was made also from the decay curves of N , n , and n_0 , the gas in these experiments being drawn very rapidly, as in fig 1, into the gasometer, and tested at intervals for two or three hours afterwards. From the decay curves, the values of N , n , and n_0 are obtained at any time, and the charge calculated. In all such observations the value obtained for E was very much greater than in the experiments when the gas was drawn slowly from the flame, its magnitude varying from about 4.5ϵ to 6ϵ .

There is no doubt, therefore, that the large ion bears a charge which is a multiple of the electronic charge. The magnitude of the charge seems to depend on the circumstances under which the ion is formed. There are several reasons for believing that the formation of the nucleus does not depend on the presence of the charge. Experiments made on the number of nuclei in the flame-gas show that the number is not diminished appreciably by the removal of the ions just as the gas leaves the flame. The gas is then at a very high temperature, and the molecular groupings forming the nuclei have not been formed before the ions are removed; and yet their growth is not apparently affected thereby. The charging of the nucleus seems to be an accident, not essential to its formation, but occurring owing to the enormous number of free ions of very high mobility in the flame and the gas coming from it. Considering the charging to take place in this way, it is very easy to understand the formation of multiply charged ions, and it is to be expected that the average charge on the nucleus should depend on the number of free ions of high mobility present when the nuclei are in process of formation. The much higher value of the charge E , obtained above from the decay curves of N , n , and n_0 , might be explained by the consideration that in all these experiments the gas was drawn from the flame with great rapidity into the gasometer. The gas therefore cooled rapidly, and the nuclei were formed when there was a much greater number of free ions present than in the first series of experiments, where the cooling of the gas was slower and the nuclei had not been formed before a comparatively great number of the free ions had disappeared by recombination.

An estimate of the charge on the large ion may be deduced directly from the constants of decay β and γ of the charge per c.c. and the nuclei, assuming that the rate of disappearance of the nuclei is not affected by the charge. For, suppose the charge per c.c. is $N\epsilon$, then

$$\frac{dN}{dt} = -\beta N^2.$$

If there are n_c charged nuclei of either sign, each carrying a charge equal to

$x\epsilon$, then $N = xn_c$, and consequently

$$\frac{dn_c}{dt} = -\beta xn_c^2,$$

where $\frac{dn_c}{dt}$ means the collision frequency between ions of different sign, every such collision involving the loss of charge of the two colliding nuclei, and resulting in the formation of one uncharged nucleus, with the subsequent history of which we are not concerned, since it is only the charged nuclei that are under consideration at present. If there are n nuclei per c.c., it has been found that

$$\frac{dn}{dt} = -\gamma n^2;$$

that is, the collision frequency is γn^2 , each collision involving the loss of one nucleus. With equal numbers of positively and negatively charged nuclei, or, $2n_c$ altogether, the collision frequency will be $4\gamma n_c^2$. If the collision frequency be independent of the charge, as seems true from the experiments, the number of collisions per second taking place between the positively and negatively charged nuclei will be half the entire number, or $2\gamma n_c^2$. Therefore

$$\frac{dn_c}{dt} = -2\gamma n_c^2,$$

and consequently

$$\beta x = 2\gamma.$$

Now

$$\beta = 6.3 \times 10^{-10}, \quad \text{and} \quad \gamma = 14 \times 10^{-10},$$

therefore

$$x = 4.5,$$

and this value agrees well with the values obtained under similar circumstances from direct measurements of N , n , and n_0 , the calculations being made from the decay curves of these quantities.

The Mobility of the Large Ion.

The results given in this paper show that the charge on the large ion may have widely different values under different circumstances of production. Even in any one mass of flame-gas it is not likely that the values of the charges borne by the different ions will be the same, though they will probably vary but little round a mean value. When the gas has been deionized by an electric field, and the nuclei charged again by ionizing the

gas with X-rays, the charge on the nucleus will depend on the intensity of the ionization. In all cases, however, as far as experiment has gone, the mobility has the same value $\cdot 0003$. The mobility must, therefore, be independent of the charge, a result which is in agreement with Sir J. J. Thomson's¹ theory of the mobility of ions in gases.

The Nature of the Large Ions and Condensation-Nuclei.

Though Langevin's theory gives a satisfactory explanation of the stable existence of a very minute water-drop, even in unsaturated air, such drops being the nuclei for condensation found in the atmosphere and produced by flames, there is yet very little to suggest an explanation of the origin and growth of the nucleus itself. It has been already stated that the charge can play no important part in its formation, since the number produced by the flame is not affected by the removal of all the free ions just as the gas leaves the flame. On the other hand, the production of nuclei in flames is associated with the production of water-vapour. Ions of the same mobility $\cdot 0003$, and neutral nuclei, are also produced by the burning of hydrogen; but flames such as CO, sulphur, or arsenic, in which water is not produced, give no large ions. That the presence of water-vapour, however, is not sufficient for the production of large ions and of condensation-nuclei has been demonstrated by the experiments of de Broglie² and Aitken on the hydrogen flame. De Broglie, using a flame of hydrogen thoroughly dried and purified, and burning at the end of a lead tube in a chamber kept cool by a water-bath, found that no large ions are produced. Aitken with similar precautions as to purity found that hydrogen burning in thoroughly filtered air produced no condensation nuclei, but if any solid impurities, such as particles of dust or rubber from the connecting tubes, found their way into the flame, great numbers of nuclei were immediately formed. Further experiment on the early history of the large ion, such as, for example, the variation of the mobility as the gas from the flame cools, may give more information on the nature and origin of the nucleus forming the large ion.

There are two other allied phenomena, which in this respect seem worthy of further study. It is well known that when all condensation nuclei have been removed from a mass of air, saturated with water-vapour, either by repeated expansion or by filtering, an exceedingly dense cloud is formed

¹ Sir J. J. Thomson: Proc. of the Physical Society, vol. 27, Dec., 1914.

² de Broglie: "Comptes Rendus," vol. 151, 1910, p. 67.

by producing a sufficiently great expansion and consequent cooling and supersaturation. If this cloud be evaporated, by the heating due to sudden compression, it disappears very rapidly, but a very small expansion again produces a dense cloud. It is evident, therefore, that the drops of the first cloud did not entirely evaporate, but remained in a stable state in the form of very minute invisible drops, as suggested by Langevin's theory. These invisible drops serve as nuclei of condensation for a very small expansion, apparently similar to the nuclei produced by flames and occurring in the atmosphere.

Again, de Broglie¹ has shown that when pieces of moist pumice are heated, nuclei are driven off from the surface, and when these nuclei are charged by ionizing the air containing them, the mobility of the ions so formed is the same as that of the ions from flames. He points out, too, that the formation of the nuclei is due, not to the production of large quantities of water-vapour, but to the driving off of the last surface layer of moisture.

Before, however, being able to identify the nuclei obtained in these two ways with those produced by flames, it would be necessary to see if the manner of disappearance of the nuclei is the same as for those from flames.

Summary.

1. The rate of decay of ionization in the case of large ions from flames is according to the law

$$\frac{dq}{dt} = -\beta q^2,$$

where q is the charge of one sign per c.c.

2. The rate of decay of nuclei, measured by Aitken's apparatus, is according to the law

$$\frac{dn}{dt} = -\gamma n^2,$$

and is the same whether the nuclei are charged or uncharged.

3. The large ions do not carry the simple electronic charge but some multiple of it. The charge varies under different conditions.

4. The equations in (1) and (2) do not hold when the time gets very great,

¹ de Broglie: "Aurif de Chimie et de Physique," vol. 16, 1909.

the rate of falling off being then in both cases greater than would be given by these equations.

5. The mobility of the large ions is the same under all circumstances, and the same in any mass of flame-gas. The mobility must, therefore, be independent of the charge.

6. The formation of the nucleus seems not to be affected by the charge.

In conclusion I wish to express my indebtedness to Professor McClelland for his advice and encouragement during the work.

VI.

IMPACT IN THREE DIMENSIONS.

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1. The problem of impact in three dimensions is incompletely discussed by Routh in his excellent treatise on *Elementary Rigid Dynamics*, of which a seventh edition appeared in 1905, and which may be regarded as the standard work on the subject.

He does not show how the initial stage of the impact depends on the roots of a certain equation $F(\theta) = 0$; nor how generally the representative point gets on to the line of no sliding; nor that when sliding ceases and rolling is impossible the motion of the representative point is along a line determined by one particular root of $F(\theta) = 0$. Also, the solution he gives of impact between perfectly rough bodies is not correct, as it may involve the physical absurdity of supposing the impulsive normal reaction to be negative.

These points and others are discussed in this paper, and it is shown that the course of the impact under the most general conditions in three dimensions can be minutely traced, and lastly the correct solution of the problem is given when the coefficient of friction is supposed to be very great.

2. *The General Equations.*—In order to deal with the problem of getting the motion after impact, when a rigid body A strikes against a body A' , we trace the variation of the resultant blow delivered by A at the point of contact O , by resolving it into three components:— P and Q the components along any two perpendicular axes drawn through O in the common tangent plane, and R the component along an axis drawn in the direction of the common normal, so that it is initially and always positive. We follow the movement of the extremity of the resultant blow, whose co-ordinates are P, Q, R , and call it the representative point.

For A , let M be its mass; u, v, w the components of the velocity of its centre of gravity; $\omega_x, \omega_y, \omega_z$ the components of its angular velocity; $U, V, W, \Omega_x, \Omega_y, \Omega_z$ the initial values of the same quantities; A, B, C its

moments of inertia; x, y, z the co-ordinates of O ; $l_1 m_1 n_1, l_2 m_2 n_2, l_3 m_3 n_3$ the direction cosines of the axes of P, Q, R ; all referred to the principal axes through the centre of gravity of A . Let the corresponding quantities for A' be denoted by the same letters with dots. Then as A has been acted on by a blow $-P, -Q, -R$ at x, y, z , we have:—

$$M(u - U) = - (l_1 P + l_2 Q + l_3 R).$$

$$M(v - V) = - (m_1 P + m_2 Q + m_3 R).$$

$$M(w - W) = - (n_1 P + n_2 Q + n_3 R).$$

$$A(\omega_x - \Omega_x) = - \begin{vmatrix} y, m_1 P + m_2 Q + m_3 R \\ z, n_1 P + n_2 Q + n_3 R \end{vmatrix} = - \lambda_1 P - \lambda_2 Q - \lambda_3 R,$$

$$B(\omega_y - \Omega_y) = - \begin{vmatrix} z, n_1 P + n_2 Q + n_3 R \\ x, l_1 P + l_2 Q + l_3 R \end{vmatrix} = - \mu_1 P - \mu_2 Q - \mu_3 R. \quad (1)$$

$$C(\omega_z - \Omega_z) = - \begin{vmatrix} x, l_1 P + l_2 Q + l_3 R \\ y, m_1 P + m_2 Q + m_3 R \end{vmatrix} = - \nu_1 P - \nu_2 Q - \nu_3 R.$$

The corresponding equations for A' are obtained by substituting $-P, -Q, -R$ for P, Q, R , and dotting all the other letters.

These equations connect the velocities of translation and rotation of A and A' with the total impulsive components P, Q, R at any stage of the impact.

At any such instant, let S inclined at θ to the axis of P be the velocity with which the point O of A slides on A' ; let K be the velocity of compression; and let the initial values of these quantities be denoted by S_0, θ_0, K_0 ; then we have

$$\begin{aligned} S \cos \theta &= l_1(u + z\omega_y - y\omega_z) + m_1(v + x\omega_z - z\omega_x) + n_1(\omega + y\omega_x - x\omega_y) \text{—(similar} \\ &\quad \text{quantity with dots)} \\ &= l_1 u + m_1 v + n\omega_1 + \omega_x \lambda_1 + \omega_y \mu_1 + \omega_z \nu_1 \text{—(similar quantity with dots)} \\ &= S_0 \cos \theta_0 - \frac{P}{M} - \frac{\lambda_1}{A} (\lambda_1 P + \lambda_2 Q + \lambda_3 R) - \frac{\mu_1}{B} (\mu_1 R + \mu_2 Q + \mu_3 R) \\ &\quad - \frac{\nu_1}{C} (\nu_1 P + \nu_2 Q + \nu_3 R) \\ &\quad - \frac{P}{M'} - \frac{\lambda_1'}{A'} (\lambda_1' P + \lambda_2' Q + \lambda_3' R) - \frac{\mu_1'}{B'} (\mu_1' P + \mu_2' Q + \mu_3' R) \\ &\quad - \frac{\nu_1'}{C'} (\nu_1' P + \nu_2' Q + \nu_3' R) \\ &= S_0 \cos \theta_0 - aP - hQ - gR. \end{aligned}$$

Similarly we get

$$S \sin \theta = S_0 \sin \theta_0 - hP - bQ - fR, \tag{2}$$

$$K = K_0 - gP - fQ - cR,$$

where
$$a = \frac{1}{M} + \frac{1}{M'} + \frac{\lambda_1^2}{A} + \frac{\mu_1^2}{B} + \frac{v_1^2}{C} + \frac{\lambda_1'^2}{A'} + \frac{\mu_1'^2}{B'} + \frac{v_1'^2}{C'},$$

$$f = \frac{\lambda_2 \lambda_3}{A} + \frac{\mu_2 \mu_3}{B} + \frac{v_2 v_3}{C} + \frac{\lambda_2' \lambda_3'}{A'} + \frac{\mu_2' \mu_3'}{B'} + \frac{v_2' v_3'}{C'},$$

with corresponding values of b, c, g, h , so that it is easily seen that $a, b, c, bc - f^2, ca - g^2, ab - h^2$, and $\Delta = abc + 2fgh - af^2 - bg^2 - ch^2$ are all positive.

3. During the course of the impact an instant ought to arrive when K , the velocity of compression, vanishes. If R_i be the value of R at that instant, it is an experimental law that the impact is over when R becomes equal to $(1 + e)R_i$, where e is the coefficient of restitution. In two dimensions K vanishes only once during the impact, but in three dimensions I find that K may vanish once or thrice. This result no doubt conflicts with our preconceived ideas about impact, but so do other results which undoubtedly hold in two dimensions also, for instance:— S may begin by increasing, and K also may begin by increasing.

When K vanishes three times, and R does not attain the value $(1 + e)R_i$ while K is negative, that is between the first and second vanishing of K , then we must take R_i to be the value of R when K vanishes for the third time, so that K shall be negative when R attains the value $(1 + e)R_i$. Between the second and third vanishing of R , K is positive, and the impact could not be over when the bodies are still compressing each other.

4. When the bodies are perfectly smooth, $P = 0, Q = 0$ during the impact, so that $R_i = K_0/c$, which is positive, as K_0 and c are both positive. The final values of the velocities of rotation and translation are then obtained by putting $P = 0, Q = 0, R = (1 + e)R_i$ in the equations (1).

5. If the coefficient of friction μ is very large, it is commonly supposed that when $K = 0, S = 0$ also, so that

$$\Delta R_i = (ab - h^2) K_0 + (hf - bg) S_0 \cos \theta_0 + (gh - af) S_0 \sin \theta_0.$$

If, however, we treat the problem in this way, as K_0, S_0, θ_0 may have any values provided K_0 and S_0 are positive, we can arrange an impact such that R_i is negative, which is absolutely impossible. For instance, taking θ_0 and $\theta_0 + \pi$, the factor multiplying S_0 changes sign, so that if $(ab - h^2) K_0$ is taken less than S_0 multiplied by the absolute value of that factor, K_0, S_0 , and either θ_0 or $\theta_0 + \pi$ give an impact for which R_i is negative. This proves

that the commonly accepted solution of the problem of collision between very rough bodies is unsound. I give the correct solution at the end of this paper. It is not very much less complicated than the general solution.

6. *Continuation of the general theory.* In the equations (2) we take S to be positive, its direction being given by θ . It is most important also to keep in mind that R increases continually during the impact, so that it forms a useful independent variable in terms of which to express S and θ .

Differentiating equations (2)

$$d(S \cos \theta) = -adP - hdQ - gdR$$

$$d(S \sin \theta) = -hdP - bdQ - cdR.$$

Now, while sliding is taking place, the increment of the impulsive force of friction on A' is in the direction of sliding and equal to μdR ;

$$\therefore dP = \mu \cos \theta dR, \quad dQ = \mu \sin \theta dR;$$

$$\therefore \cos \theta \frac{dS}{dR} - S \sin \theta \frac{d\theta}{dR} = -(a\mu \cos \theta + h\mu \sin \theta + g) = -U_1$$

$$\sin \theta \frac{dS}{dR} + S \cos \theta \frac{d\theta}{dR} = -(h\mu \cos \theta + b\mu \sin \theta + f) = -U_2;$$

$$\therefore S \frac{d\theta}{dR} = U_1 \sin \theta - U_2 \cos \theta = F(\theta)$$

$$\frac{dS}{dR} = -U_1 \cos \theta - U_2 \sin \theta = -\phi(\theta).$$

7. If initially $F(\theta_0) = 0$, and S is not zero, θ will remain constant, and therefore the representative point will move along a straight line inclined at $\tan^{-1}\mu$ to the axis of R .

For, as $F(\theta_0) = 0$, and S is not zero, $\frac{d\theta}{dR} = 0$ initially.

Differentiating

$$S \frac{d^2\theta}{dR^2} + \frac{dS}{dR} \frac{d\theta}{dR} = \frac{dF(\theta)}{d\theta} \cdot \frac{d\theta}{dR};$$

$\therefore \frac{d^2\theta}{dR^2} = 0$ initially. Similarly all the derived functions of θ with respect to R vanish initially, so that θ remains constant.

There are two or four values of θ which make $F(\theta) = 0$; for by putting

$$x = \mu \cos \theta, \quad y = \mu \sin \theta$$

in $F(\theta)$, we see that such values of θ are given by the intersection of the rectangular hyperbola

$$(a-b)xy + h(y^2 - x^2) + gy - fx = 0,$$

which we shall call $H = 0$ with the circle $x^2 + y^2 = \mu$, whose centre is on the

curve; so that there are always two real points of intersection, and four if μ is large enough to make the circle cut the other branch of the hyperbola; this value of μ we shall call μ_2 .

If at any instant during the impact θ should become equal to one of the roots of $F(\theta) = 0$, we should expect the representative point to move as described in this section; but as a matter of fact the conditions set down here never occur unless they do so initially, for we shall see that whenever θ becomes equal to a root of $F(\theta) = 0$, at the same time $S = 0$, so that we are brought to the consideration of what will happen when $S = 0$ initially or at any moment during the impact.

This discussion of the roots will be further developed and also another discussion given in section 9; both of which will show that when μ is less than the value μ_1 necessary to make rolling possible, one root exists for which $\phi(\theta)$ is negative, so that when sliding is along it S increases as $\frac{dR}{dS}$ is positive, and one or three other roots exist for which $\phi(\theta)$ is positive; and that when μ is greater than μ_1 , $\phi(\theta)$ is positive for the two or four roots which then exist, so that when sliding takes places initially along any of these other directions, S decreases continually.

8. To simplify further discussion we shall show (see Routh's Rigid Dynamics) that by turning the axes of P and Q about the axis of R through an angle γ , h may be made zero.

For after the axes are turned through γ , let the values of P, Q, S, θ for the new axes be denoted by the same letters with dots, and we get

$$\begin{aligned} S' \cos \theta' &= S \cos \theta \cos \gamma + S \sin \theta \sin \gamma = (S_0 \cos \theta_0 - aP - hQ - gR) \cos \gamma \\ &\quad + (S_0 \sin \theta_0 - hP - bQ - fR) \sin \gamma \\ &= S_0' \cos \theta_0' - (a \cos \gamma + h \sin \gamma) (P' \cos \gamma - Q' \sin \gamma) \\ &\quad - (h \cos \gamma + b \sin \gamma) (P' \sin \gamma + Q' \cos \gamma) - (g \cos \gamma + f \sin \gamma) R \\ &= S_0' \cos \theta_0' - (a \cos^2 \gamma + 2h \cos \gamma \sin \gamma + b \sin^2 \gamma) P' \\ &\quad - \left(\frac{b-a}{2} \sin 2\gamma + h \cos 2\gamma \right) Q' - (g \cos \gamma + f \sin \gamma) R \end{aligned}$$

similarly

$$\begin{aligned} S' \sin \theta' &= S_0' \sin \theta_0' - \left(\frac{b-a}{2} \sin 2\gamma + h \cos 2\gamma \right) P' \\ &\quad - (a \sin^2 \gamma - 2h \sin \gamma \cos \gamma + b \cos^2 \gamma) Q' - (f \cos \gamma - g \sin \gamma) R. \end{aligned}$$

Thus $h = 0$ if γ has any of the four perpendicular directions given by

$$\tan 2\gamma = \frac{2h}{a-b}.$$

I further note that we may take a greater than b , for if a is less than b , interchange the axes of P and Q , also that we may take f and g to be each negative, for if not by reversing the direction of the axis of P we change the sign of g , and by reversing the direction of the axis of Q we change the sign of f . Thus there is one unique pair of axes for which $h = 0$, a is greater than b , and f and g are each negative, but the rotation from P to Q for this pair may turn out to be clockwise or counter-clockwise.

9. If $S = 0$ initially or at any instant during the impact, as we take S to be positive, its direction being given by θ , it must either remain zero or increase. If it remains zero, the representative point moves along the line given by the intersection of the planes

$$aP + gR = S_0 \cos \theta_0, \quad bQ + fR = S_0 \sin \theta_0,$$

h being taken = 0. Along this line

$$adP + gdR = 0, \quad bdQ + fdR = 0,$$

and as $\mu^2(dR)^2$ must be greater than or equal to $(dP)^2 + (dQ)^2$, motion along this line, called the line of no sliding, is possible only if μ is greater than or equal to μ_1 , where

$$\mu_1 = \sqrt{\frac{g^2 + f^2}{a^2 + b^2}}.$$

If S increases from zero, as

$$S \frac{d\theta}{dR} = F(\theta), \quad \frac{dS}{dR} = -\phi(\theta),$$

initially $F(\theta) = 0$, and by differentiating

$$S \frac{d^2\theta}{dR^2} + \frac{dS}{dR} \cdot \frac{d\theta}{dR} = \frac{dF(\theta)}{d\theta} \cdot \frac{d\theta}{dR}.$$

Now,

$$\begin{aligned} F'(\theta) &= \frac{dF(\theta)}{d\theta} = \frac{d}{d\theta}(U_1 \sin \theta - U_2 \cos \theta) = U_1 \cos \theta + U_2 \sin \theta - a\mu \sin^2 \theta - b\mu \cos^2 \theta \\ &= \phi(\theta) - p(\theta), \quad \text{where } p(\theta) \text{ is positive for all values of } \theta, \end{aligned}$$

$$\therefore S \frac{d^2\theta}{dR^2} + \left\{ 2 \frac{dS}{dR} + p(\theta) \right\} \frac{d\theta}{dR} = 0,$$

\therefore as $S = 0$ initially, and $\frac{dS}{dR}$ and $p(\theta)$ are each positive, $\frac{d\theta}{dR} = 0$ initially; differentiating again

$$S \frac{d^3\theta}{dR^3} + \left\{ 3 \frac{dS}{dR} + p(\theta) \right\} \frac{d^2\theta}{dR^2} + \frac{d}{d\theta} \left\{ 2 \frac{dS}{dR} + p(\theta) \right\} \left(\frac{d\theta}{dR} \right)^2 = 0;$$

$\therefore \frac{d^2\theta}{dR^2} = 0$ initially, and similarly it may be shown that all the derived functions of θ with respect to R vanish initially, so that θ remains constant.

Hence, when $S = 0$, the representative point may move along a line inclined at $\tan^{-1} \mu$ to the axis of R , whose projection on $R = 0$ makes an angle θ with the axis of P , which satisfies $F(\theta) = 0$, provided that this value of θ makes $\phi(\theta)$ negative. We shall now show that there is such a unique root of $F(\theta) = 0$, if μ is less than μ_1 ; so that the possibility of moving along this line and that of moving along the line of no sliding are mutually exclusive.

A root θ of $F(\theta) = 0$, gives

$$\frac{U_1}{\cos \theta} = \frac{U_2}{\sin \theta} = \frac{U_1 \cos \theta + U_2 \sin \theta}{\cos^2 \theta + \sin^2 \theta} = \phi,$$

$$\therefore (a\mu - \phi) \cos \theta + g = 0, \quad (b\mu - \phi) \sin \theta + f = 0,$$

$$\therefore \frac{g^2}{(a\mu - \phi)^2} + \frac{f^2}{(b\mu - \phi)^2} = 1.$$

Tracing the curve

$$y = \frac{f^2}{(a\mu - x)^2} + \frac{f^2}{(b\mu - x)^2} - 1,$$

$$\frac{dy}{dx} = \frac{2g^2}{(a\mu - x)^3} + \frac{2f^2}{(b\mu - x)^3},$$

y then increases from -1 at $x = -\infty$ to $+\infty$ when $x = \mu b$, assuming a greater than b ; it then diminishes from $+\infty$ until

$$\frac{a\mu - x}{g^{\frac{2}{3}}} = \frac{x - b\mu}{f^{\frac{2}{3}}} \quad \text{or} \quad x = \frac{af^{\frac{2}{3}} + bg^{\frac{2}{3}}}{f^{\frac{2}{3}} + g^{\frac{2}{3}}} \cdot \mu,$$

at which point

$$y = \frac{g^2 (f^{\frac{2}{3}} + g^{\frac{2}{3}})^2}{(a-b)^2 g^{\frac{2}{3}} \mu^2} + \frac{f^2 (f^{\frac{2}{3}} + g^{\frac{2}{3}})^2}{(a-b)^2 f^{\frac{2}{3}} \mu^2} - 1 = \frac{(f^{\frac{2}{3}} + g^{\frac{2}{3}})^3}{(a-b)^2 \mu^2} - 1.$$

It then increases to $+\infty$ for $x = \mu a$, and then diminishes to -1 for $x = +\infty$. Thus there are always two values of x for which $y = 0$, one less than μb , and the other greater than μa , and there will be two other values between μb and μa if y is negative at the point where it is a minimum, or if

$$\mu^2 \text{ is greater than } \frac{(f^{\frac{2}{3}} + g^{\frac{2}{3}})^3}{(a-b)^2} = \mu_2^2.$$

This then is the value of μ referred to in section 7, such that if μ is greater than μ_2 the circle $x^2 + y^2 = \mu^2$ cuts the other branch of the rectangular hyperbola $H = 0$. Of the two or four real roots one only can be negative, and the condition that there should be one negative root is that y should be positive when $x = 0$, or that μ^2 should be less than

$$\frac{g^2}{a^2} + \frac{f^2}{b^2} = \mu_1^2.$$

We thus have shown that when $S = 0$, according as μ is greater or less than μ_1 , the representative point moves along the line of no sliding, or along a line inclined at $\tan^{-1} \mu$ to the axis of R , whose projection on $R = 0$ makes with the axis of P the angle θ associated with the negative value of ϕ .

The value of μ_2 can also be obtained by noting that as the circle touches the hyperbola for that value of μ , we have $F(\theta) = 0$ and $\frac{dF(\theta)}{d\theta} = 0$, so that

$$\frac{a-b}{2} \mu \sin 2\theta + g \sin \theta - f \cos \theta = 0, \quad (a-b) \mu \cos 2\theta + g \cos \theta + f \sin \theta = 0.$$

Solving for f and g

$$f = (a-b) \mu \sin^3 \theta, \quad g = (b-a) \mu \cos^3 \theta, \\ \therefore (a-b)^2 \mu^2 = (f^2 + g^2)^{\frac{2}{3}}.$$

10. Assuming now that S_0 is not zero, and that θ_0 is not a root of $F(\theta) = 0$, sliding takes place initially, and we have

$$\frac{dS}{dR} = -U_1 \cos \theta - U_2 \sin \theta = -\phi(\theta),$$

$$S \frac{d\theta}{dR} = U_1 \sin \theta - U_2 \cos \theta = F(\theta),$$

$$\therefore \frac{1}{S} \frac{dS}{d\theta} = -\frac{\phi(\theta)}{F(\theta)} = -\frac{F'(\theta) + p(\theta)}{F(\theta)}, \quad \text{where } p(\theta) = a\mu \sin^2 \theta + b\mu \cos^2 \theta.$$

Integrating from θ_0 to θ ,

$$S = \frac{S_0 F(\theta_0)}{F(\theta)} \exp. \left(- \int_{\theta_0}^{\theta} \frac{p(\theta)}{F(\theta)} d\theta \right), \\ \therefore \frac{dR}{d\theta} = \frac{S}{F(\theta)} = \frac{S_0 F(\theta_0)}{\{F(\theta)\}^2} \exp. \left\{ - \int_{\theta_0}^{\theta} \frac{p(\theta)}{F(\theta)} d\theta \right\}.$$

As dR is always positive, it follows that θ increases continually if $F(\theta_0)$ is positive, and decreases continually if $F(\theta_0)$ is negative, until it becomes equal to a root a of $F(\theta) = 0$.

By the above equations, S and R both remain finite until θ nearly equals a , and it is most important to find if they remain finite when $\theta = a$.

Putting $\theta = a - \epsilon$,

$$\text{near } a, \quad \frac{1}{F(\theta)} = \frac{-1}{F'(a)} \left\{ \frac{1}{\epsilon} + k_0 + k_1 \epsilon + \&c. \right\},$$

so that integrating from a small value η of ϵ to ϵ , and then making ϵ indefinitely small, the important part of

$$- \int_{\theta_0}^{\theta} \frac{p(\theta) d(\theta)}{F(\theta)} \text{ is } - \int_{\eta}^{\epsilon} \frac{p(a) d\epsilon}{\epsilon F'(a)} = - \frac{p(a)}{F'(a)} \log \frac{\epsilon}{\eta}.$$

Thus the value of S depends on $\epsilon^{\psi(a)}$, where

$$\psi(a) = -\frac{p(a)}{F'(a)} - 1 = -\frac{p(a) + F'(a)}{F'(a)} = -\frac{\phi(a)}{F'(a)},$$

and therefore is zero, finite, or infinite, according as $\psi(a)$ is positive, zero, or negative.

Similarly the magnitude of R depends on

$$\int_{\eta}^{\epsilon} \epsilon^{\psi(a)-1} d\epsilon = \frac{1}{\psi(a)} \left(\epsilon^{\psi(a)} - \eta^{\psi(a)} \right),$$

and so R is finite, if $\psi(a)$ is positive, and infinite, if $\psi(a)$ is zero or negative.

Now, when $F(\theta_0)$ is positive, θ advances towards the next root of $F(\theta) = 0$, and at that root $F'(\theta)$ is negative, as $F(\theta)$ is then decreasing; on the other hand, when $F(\theta_0)$ is negative, θ moves backward, and again at the first root which it meets $F'(\theta)$ is negative. Also $\phi(\theta)$ is positive for all the roots of $F(\theta) = 0$ except one, or for all the roots, according as μ is less or greater than μ_1 . Thus, when the special root for which $\phi(\theta)$ is negative exists, for it

$$\psi(a) = \frac{-\phi(a)}{\phi(a) - p(a)}$$

is negative, $p(a)$ being positive for all values of a ; also we note that for it $F'(a) = \phi(a) - p(a)$ is negative; hence, if θ_0 is adjacent to this root on either side, θ moves towards this root, but never reaches it, as at it R would be infinite. For any other root a , $\phi(a)$ is positive, and we saw that $F'(a)$ is negative for the root which is being approached, and so R is finite.

For the special root, S would be infinite, in all other cases when θ becomes equal to the proper adjacent root, $S = 0$. In the particular case of $\mu = \mu_1$, the special root gives $\phi(a) = 0$, so that although S would be finite for it, R would be infinite, and so θ does not take up such a value. For the double root a , when $\mu = \mu_2$, $S = 0$, and R is finite, as $F''(a)$ is positive.

There are four possible arrangements of the roots $F(\theta) = 0$. (1) If μ is less than μ_1 and less than μ_2 , there are two roots α, β , of which we take α to be such that $\phi(\alpha)$ is negative. (2) If μ is less than μ_1 and greater than μ_2 , there are four roots $\alpha, \beta, \gamma, \delta$, of which we take α to be the root for which $\phi(\alpha)$ is negative. (3) If μ is greater than μ_1 and less than μ_2 , there are two roots α', β' of which we take α' to be the root for which $F'(\alpha')$ is negative. (4) If μ is greater than μ_1 and greater than μ_2 , there are four roots $\alpha', \beta', \gamma', \delta'$, of which we take α', γ' to be the pair which make $F'(\theta)$ negative. It will be proved in section 12 that referred to the particular axes described at the end of section 8, α and α' are always in the first quadrant, β and β' in the third, and the other two γ, δ , or γ', δ' , when they exist, always in the fourth.

The path followed by the representative point can now be described exactly. In the initial stage it ascends a curve inclined at $\tan^{-1} \mu$ to the axis of R , and such that the projection of the tangent line on $R = 0$ tends continually to become parallel to that root of $F(\theta) = 0$ which is adjacent to θ_0 and makes $F'(\theta)$ negative. Thus in (1), no matter what the original value of θ_0 may be, it tends to become equal to α , but never assumes that value, and the impact terminates before sliding ceases. In (2) if θ_0 lies between α and β or δ and α , θ tends continually to become equal to α , but never attains that value, and so sliding does not cease; but if θ is between β and γ or γ and δ , θ tends to become equal to γ , and if the impact is sufficiently prolonged will attain that value, and then $S = 0$, and the representative point will move along a line inclined at $\tan^{-1} \mu$ to the axis of R , such that its projection on $R = 0$ is inclined at α to the axis of P . In (3) θ tends continually to become equal to α' , attains that value if the impact is sufficiently prolonged, then $S = 0$ and the representative point proceeds along the line of no sliding. In (4) if θ_0 is between α' and β' or δ' and α' , θ tends continually to become equal to α' ; if θ_0 is between β' and γ' or γ' and δ' , θ tends continually to become equal to γ' ; and if the impact is sufficiently prolonged, θ attains these values, and at that instant $S = 0$, and afterwards the representative point proceeds along the line of no sliding.

By drawing planes through the axis of R , inclined to the axis of P at angles equal to the roots of $F(\theta) = 0$, we divide space on the positive side of $R = 0$ into two or four departments, and we see that during the initial stage of sliding the motion of the representative point is confined to one of these departments. In section 7 we saw that if $\theta_0 = \alpha$ root of $F(\theta) = 0$, then θ remains constant and the representative point moves along a line inclined at $\tan^{-1} \mu$ to the axis of R in one of the planes just drawn. It now appears that when θ_0 is equal to α or γ or α' or γ' such motion is stable, but when θ_0 is equal to β or δ or β' or δ' it is unstable, because a small variation in θ_0 would cause θ to tend towards the root at the other end of the department into which it enters.

During the initial stage of sliding the values of P , Q , R are given by

$$R = S_0 F(\theta_0) \int_{\theta_0}^{\theta} \{F(\theta)\}^{-2} \exp. \left\{ - \int_{\theta_0}^{\theta} \frac{p(\theta) d\theta}{F(\theta)} \right\} d\theta = k \int_{\theta_0}^{\theta} \chi(\theta) d\theta$$

$$P = \mu k \int_{\theta_0}^{\theta} \cos \theta \chi(\theta) d\theta, \quad Q = \mu k \int_{\theta_0}^{\theta} \sin \theta \chi(\theta) d\theta.$$

11. We shall now show that the representative point always gets on to the plane of no compression, or, in other words, that K always becomes zero.

The values of P , Q , R for which $K = 0$ lie on the plane $gP + fQ + cR = K_0$. This plane meets the axis of R at a distance K_0/c from the origin, which is

positive, as K_0 and c are each positive. During the course of the impact R continually increases, so that the representative point must reach this plane, but so far as this reasoning goes, it might be when R became infinite, and if so the whole theory would collapse. We shall first examine the variations of K during the initial stage. During this stage K is given by the formula

$$K = K_0 - gP - fQ - cR = K_0 - k \int_{\theta_0}^{\theta} (g\mu \cos \theta + f\mu \sin \theta + c) \chi(\theta) d\theta.$$

The sign of this integral depends entirely on the sign of

$$g\mu \cos \theta + f\mu \sin \theta + c,$$

because during the initial stage of sliding we saw that $k d\theta$ and $\chi(\theta)$ are each positive. When θ is approaching the root a , the impact terminates before a is reached, so that in this case we must prove that K may become zero before θ equals a . Now $\phi(\theta) + g\mu \cos \theta + f\mu \sin \theta + c$ is positive for all values of θ , and near $\theta = a$, $\phi(\theta)$ is negative, so that near a

$$g\mu \cos \theta + f\mu \sin \theta + c$$

is positive, and if we examine the value of the above integral, we shall see that it therefore becomes equal to positive infinity, when θ becomes equal to a , in just the same way in which we examined the value of R . Thus the integral can become equal to any positive quantity as θ approaches a , and so for some value of θ between θ_0 and a it becomes equal to K_0 and K vanishes.

During any other initial stage of sliding K is given by the same formula and remains finite until $S = 0$. If $\mu(f^2 + g^2)^{\frac{1}{2}}$ is less than c ,

$$c + g\mu \cos \theta + f\mu \sin \theta$$

is always positive, so that K diminishes during the initial stage of sliding; but if $\mu(f^2 + g^2)^{\frac{1}{2}}$ is greater than c , then during the initial stage, by varying θ_0 , we can arrange that K may first decrease and then increase and in special cases again increase, so that by varying the values of S_0 , K_0 we can arrange that K shall vanish once or twice or thrice during the initial stage.

12. To elucidate this point—a point which caused more trouble than the whole of the rest of this investigation—it is necessary to show how the roots of $F(\theta) = 0$ and

$$g\mu \cos \theta + f\mu \sin \theta + c = 0$$

are arranged in order as μ increases. This is done by recognising as in section 7 that such roots are the angular co-ordinates of the points of intersection of the circle $x^2 + y^2 = \mu^2$ with the rectangular hyperbola

$$H = (a - b)xy + gy - fx = 0,$$

and with the line

$$L = gx + fy + c = 0.$$

It is instructive also to exhibit the sign of $\phi(\theta)$ for each of the roots by noting that

$$\mu\phi(\theta) = E = ax^2 + by^2 + gx + fy, \quad \text{if } x = \mu \cos \theta, \quad y = \mu \sin \theta,$$

so that the sign of $\phi(\theta)$ will be known by seeing that it is negative when inside the ellipse $E = 0$ and positive when outside. Similarly the sign of $F'(\theta)$ may be shown by the position of the point $\mu \cos \theta, \mu \sin \theta$ with respect to the rectangular hyperbola

$$H' = (a - b)(x^2 - y^2) + gx + fy = 0.$$

In order that all cases may be represented by one figure, we make use of the axes obtained at the end of Section 8, for which a is greater than b , $h = 0$, and f and g are each negative. For such axes the rotation from P to Q may turn out to be clockwise or counter-clockwise; but if one figure is drawn, the other possible one is the same as the first when viewed from the opposite side of the paper, and the description of the figure by quadrants applies equally well to both.

Substituting $-f, -g$ for f and g in H, E and L ,

$$H = (a - b)xy - gy + fx = (a - b) \left\{ x - \frac{g}{a - b} \right\} \left\{ y + \frac{f}{a - b} \right\} + \frac{fg}{a - b} = 0.$$

$$E = ax^2 - gx + by^2 - fy = a \left(x - \frac{g}{2a} \right)^2 + b \left(y - \frac{f}{2b} \right)^2 - \frac{g^2}{4a} - \frac{f^2}{4b} = 0.$$

$$L = c - gx - fy.$$

$H = 0$ passes through the origin, has its asymptotes parallel to the axes, and they meet in its centre $g/(a - b), -f/(a - b)$. The branch through the origin is confined to the first and third quadrants, the other branch to the fourth quadrant, so that as μ varies, one root of $F(\theta) = 0$ is always in the first quadrant, one in the third, and the other two in the fourth, but they exist only when μ is greater than μ_2 . The ellipse passes through the origin cutting $H = 0$ there at right angles, cuts off from the axes lengths equal to g/a and f/b , and as its axes are parallel to the axes of P and Q it passes through the point $g/a, f/b$, which point also lies on $H = 0$, and the origin and this point are the only points common to $H = 0$ and $E = 0$, as may be seen from the forms $H = U_1y - U_2x = 0, E = U_1x + U_2y = 0$, so that any point which satisfies $H = 0, E = 0$, besides the origin, makes $(x^2 + y^2)U_1 = 0$, and $(x^2 + y^2)U_2 = 0$, and therefore makes $U_1 = 0, U_2 = 0$. As the ellipse and the rectangular hyperbola intersect in the origin and at $g/a, f/b$, and have no other point of intersection, so that the other branch of the hyperbola lies completely outside the ellipse, it is quite clear from the figure that when μ is less than μ_1 , one root and one only makes

$\phi(\theta)$ negative, and when μ is greater than μ_v , all the roots make $\phi(\theta)$ positive. The tangent to $H = 0$ at the origin is perpendicular to $L = 0$, and the line $L = 0$ is further from the origin than any point of the ellipse, for $E + L$ is positive for all values of x and y , so that no point inside $E = 0$, for which E is negative, could be further from the origin than $L = 0$, for which L would be negative. Further, we may observe that the line joining the origin to the centre of $H = 0$ is inclined to the axis of x at the same angle as the tangent to $H = 0$ at the origin is on the other side. The rectangular hyperbola $H' = 0$ has its axes parallel to the axes of x and y , passes through the four points $0, 0; 0, -f/(a - b); g/(a - b), 0; g/(a - b), -f/(a - b)$, and occupies two positions according as f is greater or less than g . In either case it follows that denoting the roots in order by $\alpha \beta \gamma \delta$, $F''(\alpha)$ is always negative, and also $F''(\gamma)$ when γ and δ exist.

Referring now to the four possible arrangements of the roots of $F(\theta) = 0$ given in section 10:— α lies in the first quadrant, between the perpendicular on $L = 0$ and the axis of y or Q ; it makes $\phi(\theta)$ negative and $F'(\theta)$ negative; α' lies in the same region; either β or β' lies in the third quadrant; and if they exist, γ and δ or γ' and δ' lie in the fourth. When μ is very great, $\alpha \beta \gamma \delta$ coincide with the direction of the axes. As H is positive at its centre, therefore on any circle $x^2 + y^2 = \mu^2$ it is positive from δ to α or δ' to α' , negative from α to β or α' to β' , positive from β to γ or β' to γ' , and negative from γ to δ or γ' to δ' ; or if $\gamma \delta \gamma' \delta'$ do not exist, positive from β to α or β' to α' and negative from α to β or α' to β' . Thus θ moves towards α or α' if γ, δ or γ', δ' do not exist, and towards α or α' if θ_0 lies between δ and β or δ' and β' , but towards γ or γ' if θ_0 lies between β and δ or β' and δ' . Now the two roots ζ and ζ' say of $L = 0$ first appear when μ is large enough between 0 and α , and remain in this position in the arrangements (1) and (2) of the roots. Thus if θ_0 lies between β and the least of them, say ζ in (1), or between δ and the least of them in (2), L is first positive between θ_0 and ζ , then negative between ζ and ζ' , and again positive between ζ' and α , so that K first diminishes, then increases, and again diminishes. Accordingly it is possible so to arrange K_0, S_0 and θ_0 that K will vanish three times. If θ_0 is between ζ and ζ' , K first increases and then diminishes, and if θ_0 is in any other position in (1) or (2) K diminishes continually. The same holds for the arrangements (3) (4) until ζ' crosses α' . Then if in (3) θ_0 lies between ζ' and β' or ζ and β' , or if in (4) θ_0 lies between ζ' and β' or ζ and δ' , K first diminishes and then increases, hence K_0, S_0 and θ_0 may be arranged so that in such cases K vanishes twice. As μ increases further ζ' continues between α' and β' and ζ comes between γ' and δ' . If then θ_0 lies between ζ' and β' , K first diminishes and then

increases, so that K may vanish twice; but if θ_0 lies between ζ and δ' , K first increases and then diminishes. In all other cases in (3) and (4) K diminishes or increases during the whole of the initial sliding stage.

13. For the arrangement (2) of the root, as ζ and ζ' lie between δ and α , if θ_0 lies between β and δ , θ moves towards γ , and K diminishes continually until $\theta = \gamma$. Then $S = 0$, and the representative point moves along a line inclined at $\tan^{-1}\mu$ to the axis of R , whose projection on $R = 0$ makes an angle α with the axis of P , and in such a way that the projection of the representative point moves in the direction α , not in the direction $-\alpha$. If when θ becomes equal to γ , K has not passed through zero, we now must show that K will become zero while the representative point moves along this line. We can prove more than this, for we can show that if $P'Q'R'$ is any point on the same side of the plane $K = 0$ as the origin, or one for which

$$K_0 + gP' + fQ' - cR'$$

is positive, then by proceeding from it along a line inclined at $\tan^{-1}\mu$ to the axis of R , whose projection makes an angle α with the axis of P , we shall meet the plane $K = 0$ at a finite point. We have then to show that we can get a finite positive quantity R such that the point whose co-ordinates are

$$P' + \mu R \cos \alpha, \quad Q' + \mu R \sin \alpha, \quad R' + R$$

satisfies $cR - gP - fQ = K_0$.

If so,

$$R = \frac{K_0 + gP' + fQ' - cR'}{c - \mu g \cos \alpha - \mu f \sin \alpha}.$$

The numerator of the fraction is given to be positive, and the denominator is positive, as the point $\mu \cos \alpha, \mu \sin \alpha$ lies inside the ellipse, and therefore on the same side of $L = 0$ as the origin; or indeed we proved that it was positive in Section 11. Note, it cannot be zero for the arrangement (2).

14. In the arrangements (3) and (4) the line of no sliding is reached when θ becomes equal to α' or γ' . The line of no sliding is given by

$$P = \frac{S_0 \cos \theta_0}{a} + \frac{g}{a} R, \quad Q = \frac{S_0 \sin \theta_0}{b} + \frac{f}{b} R,$$

so it passes through the point

$$\frac{S_0 \cos \theta_0}{a}, \quad \frac{S_0 \sin \theta_0}{b},$$

in the plane $R = 0$, and its projection on $R = 0$ is parallel to the common chord of H and E . It meets the plane of no compression in a point for which

$$R = \frac{K_0 + \frac{g}{a} S_0 \cos \theta_0 + \frac{f}{g} S_0 \sin \theta_0}{c - \frac{g^2}{a} - \frac{f^2}{b}},$$

and so is finite, and is above or below the plane $R = 0$, according as

$$K_0 + \frac{g}{a} S_0 \cos \theta_0 + \frac{f}{b} S_0 \sin \theta_0$$

is positive or negative, since the denominator is positive $= \Delta/ab$. When θ becomes equal to α' or γ' the representative point is on the line of no sliding, and so if it has not crossed the plane of no compression or has crossed it twice, it is still on the same side of the plane of no compression as the origin, and we shall prove that by moving along the line of no sliding it will meet the plane. If it has already crossed the plane of no compression or crossed it three times, we shall prove that it will not meet it again. As before we can prove more than is required, for if $P'Q'R'$ is any point on the same side of $K = 0$ as the origin, we shall prove that by drawing a line through it parallel to the line of no sliding and moving up the line so that R increases, we shall cross the plane $K = 0$. We have then to show that

$$P' + \frac{g}{a} R, \quad Q' + \frac{f}{b} R, \quad R' + R$$

satisfies $K = 0$ with R positive. Substituting in $K = 0$,

$$R = \frac{K_0 - cR' + gP' + fQ'}{c - \frac{g^2}{a} + \frac{f^2}{b}} = \text{positive quantity}$$

as the numerator is given to be positive, and the denominator

$$= \Delta/ab = \text{positive quantity.}$$

The same formula for R also proves that if the point $P'Q'R'$ is on the opposite side of the plane $K = 0$ to the origin, or if the numerator is negative, then by moving up the line so that R increases we do not meet the plane $K = 0$. Always the plane of no compression is crossed once or thrice during the impact. If the representative point after first crossing the plane of no compression with $R = R_i$ attains a position for which $R = (1 + e)R_i$ before it crosses it again, the impact is over; but if not the impact will be over when

$$R = (1 + e)R_i$$

where R_i is the value of R when the plane is crossed for the third time. We are compelled to modify the experimental law in this way, otherwise we would have the absurdity of taking the impact to be finished when compression was still taking place.

15. *Impact in Three Dimensions when μ is very great.*—Referring P and Q to the axes for which $h = 0$, a is greater than b , and f and g are each negative, we see that as μ is very great we have an extreme case of the arrangement (4)

of the roots of $F(\theta) = 0$, in which $\alpha' = \frac{\pi}{2}$, $\beta' = \pi$, $\gamma' = \frac{3\pi}{2}$, $\delta' = 2\pi$, and the roots of $c - g\mu \cos \theta - f\mu \sin \theta$ are given by $g \cos \theta + f \sin \theta = 0$, and so by an angle ζ' in the second quadrant such that $(f^2 + g^2)^{\frac{1}{2}} \sin \zeta' = g$, $(f^2 + g^2)^{\frac{1}{2}} \cos \zeta' = -f$, $-g\mu \cos \theta - f\mu \sin \theta = \mu (f^2 + g^2)^{\frac{1}{2}} \sin(\theta - \zeta')$, and by an angle $\zeta = \pi + \zeta'$ in the fourth. If θ_0 is the first or second quadrant, θ moves towards $\frac{\pi}{2}$; if it is in the third or fourth, θ moves towards $\frac{3\pi}{2}$; and when θ becomes equal to $\frac{\pi}{2}$ or $\frac{3\pi}{2}$, $S = 0$, and the representative point moves along the line of no sliding. If θ_0 lies between ζ and π , K first diminishes and then increases, so that by properly arranging θ_0 , K_0 , and S_0 the plane of no compression may be crossed three times during the impact. For every other position of θ_0 it is crossed once. If θ_0 is in the first quadrant or between $\frac{\pi}{2}$ and ζ , K increases during the initial stage of the impact, and so to cross the plane of no compression the representative point must proceed along the line of no sliding, and the solution is that usually given. If θ_0 is in the third quadrant or between $\frac{3\pi}{2}$ and ζ' , K diminishes during the initial stage. If θ is between ζ' and 2π , K first increases and then diminishes.

16. These results also appear when we integrate the equations, which we now proceed to do; but in order to avoid troublesome complexity of notation, we shall measure θ from the axis of P in that quadrant in which θ_0 is. This means that having made an arrangement of axes for which $h = 0$, a is greater than b , and f and g are each negative, we reverse if necessary the direction of P and if necessary the direction of Q , so that the initial direction θ_0 shall lie in the first quadrant for the new axes. This quadrant will be the first, second, third, or fourth quadrant for the original axes, according as the signs of f and g are $-$, $-$ or $-$, $+$ or $+$, $+$ or $+$ or $+$, $-$. Accordingly, using f and g with their original signification, we have

$$S \frac{d\theta}{dR} = (a - b) \mu \sin \theta \cos \theta + g \sin \theta - f \cos \theta.$$

$$\frac{dS}{dR} = -(\alpha \mu \cos^2 \theta + b \mu \sin^2 \theta + g \cos \theta + f \sin \theta),$$

when μ is very large, $\frac{d\theta}{dR} = 0$ initially, when $\theta_0 = 0$ or $\frac{\pi}{2}$ or $\frac{3\pi}{2}$ or 2π , and the subsequent direction of sliding is along the corresponding axis, and S diminishes until $S = 0$. These special cases present no difficulty, either for μ very large, or in the general case when the direction of sliding remains constant, because the representative point moves along lines, and so the plane of

no compression will be crossed once. If it is crossed during the sliding motion, it will not be crossed again. If it is not crossed, it will be crossed during the motion along the line of no sliding. (See section 14.)

For μ very large and S_0 not equal to zero

$$\frac{dS}{S} = - \frac{a \cos^2 \theta + b \sin^2 \theta}{(a-b) \sin \theta \cos \theta} = - \frac{a}{a-b} \cdot \frac{d \sin \theta}{\sin \theta} + \frac{b}{a-b} \frac{d \cos \theta}{\cos \theta},$$

$$\therefore S = S_0 \left(\frac{\cos \theta}{\cos \theta_0} \right)^\lambda \left(\frac{\sin \theta}{\sin \theta_0} \right)^{-\lambda-1}, \quad \text{where } \lambda = \frac{b}{a-b},$$

$$\begin{aligned} dR &= \frac{S d\theta}{(a-b) \mu \sin \theta \cos \theta} = \frac{S_0 (\cos \theta)^{\lambda-1} (\sin \theta)^{-\lambda-2} d\theta}{(a-b) \mu (\cos \theta_0)^\lambda (\sin \theta_0)^{-\lambda-1}} \\ &= \frac{S_0 (\tan \theta_0)^\lambda \sin \theta_0 (\cot \theta)^{\lambda-1} \sin^{-3} \theta d\theta}{(a-b) \mu}. \end{aligned}$$

As dR is positive, so is $d\theta$, or in every case θ increases.

During the initial stage of sliding

$$R = \frac{k}{\mu} \int_{\theta_0}^{\theta} (\cot \theta)^{\lambda-1} (\sin \theta)^{-3} d\theta, \quad \text{where } k = \frac{S_0 (\tan \theta_0)^\lambda \sin \theta_0}{a-b},$$

$$\begin{aligned} P &= \mu \int_{\theta_0}^{\theta} \cos \theta dR = k \int_{\theta_0}^{\theta} (\cot \theta)^\lambda \operatorname{cosec}^2 \theta d\theta \\ &= \frac{k}{\lambda+1} \left\{ (\cot \theta_0)^{\lambda+1} - (\cot \theta)^{\lambda+1} \right\} \end{aligned}$$

$$Q = \mu \int_{\theta_0}^{\theta} \sin \theta dR = k \int_{\theta_0}^{\theta} (\cot \theta)^{\lambda-1} \operatorname{cosec}^2 \theta d\theta = \frac{k}{\lambda} \left\{ (\cot \theta_0)^\lambda - (\cot \theta)^\lambda \right\}.$$

When $\theta = \frac{\pi}{2}$, $S = 0$, R is finite, $P = \frac{S_0 \cos \theta_0}{a}$, $Q = \frac{S_0 \sin \theta_0}{b}$, as they

ought to be from the equations

$$S \cos \theta = S_0 \cos \theta_0 - aP - gR, \quad S \sin \theta = S_0 \sin \theta_0 - bQ - fR,$$

because $S = 0$, and R is negligible in comparison with P and Q during the sliding stage. During sliding the projection on $R = 0$ of the path described by the representative point is therefore

$$\left(\frac{S_0 \cos \theta_0 - aP}{\cos \theta_0} \right)^{\frac{1}{a}} = \left(\frac{S_0 \sin \theta_0 - bP}{\sin \theta_0} \right)^{\frac{1}{b}},$$

which would also follow by integrating

$$\frac{dP}{dQ} = \frac{\cos \theta}{\sin \theta} = \frac{S_0 \cos \theta_0 - aP}{S_0 \sin \theta_0 - bQ}.$$

During the initial stage, as R is negligible in comparison with P and Q ,

$$K = K_0 - gP - fQ = K_0 - S_0 \left(\frac{g}{a} \cos \theta_0 + \frac{f}{b} \sin \theta_0 \right) + k(a-b) \left\{ \frac{g}{a} (\cot \theta)^{\lambda+\tau} + \frac{f}{a} (\cot \theta)^\lambda \right\},$$

or

$$K = K_0 - S_0 \left(\frac{g}{a} \cos \theta_0 + \frac{f}{b} \sin \theta_0 \right) + S_0 \left(\frac{\tan \theta_0}{\tan \theta} \right)^\lambda \frac{\sin \theta_0}{\sin \theta} \left\{ \frac{g}{a} \cos \theta + \frac{f}{a} \sin \theta \right\}.$$

$$\text{Also} \quad K = K_0 - k \int_{\theta_0}^{\theta} (g \cos \theta + f \sin \theta) (\cot \theta)^{\lambda-\tau} \operatorname{cosec}^3 \theta \, d\theta.$$

(1) If the signs of g and f are each negative, we have the case of motion in the first quadrant of the special axes, and we see that K increases during sliding, so that to get R_i for $K = 0$, rolling must have commenced, and

$$R_i = \frac{K_0 - S_0 \left(\frac{g}{a} \cos \theta_0 + \frac{f}{b} \sin \theta_0 \right)}{c - \frac{g^2}{a} - \frac{f^2}{b}}.$$

(2) If the signs of g, f are $+, -$, we have the case of motion in the second quadrant, and if we put $f \sin \theta + g \cos \theta = -(f^2 + g^2)^{\frac{1}{2}} \sin(\theta - \zeta')$, we see that if θ_0 is greater than ζ' , K increases all the time, as K is initially positive;

\therefore in this case it is positive for $\theta = \frac{\pi}{2}$, or

$$K_0 - S_0 \left(\frac{g}{a} \cos \theta_0 + \frac{f}{a} \sin \theta_0 \right)$$

is positive, and the solution is as in (1); but if θ_0 is less than ζ' , K first diminishes and then increases, so that K may become zero once or twice between θ_0 and $\frac{\pi}{2}$; if it has become zero once, K for $\theta = \frac{\pi}{2}$ is negative, and remains so as we proceed along the line of no sliding, and so we find θ for $K = 0$, then get R_i , and find when R becomes equal to $(1 + e) R_i$; if K has not become zero or has become zero twice, K for $\theta = \frac{\pi}{2}$ is $+$, and by proceeding along the line of no sliding $K = 0$ a third time, and the solution is as in (1), unless, in the case of K vanishing twice, the value of R when K vanishes for the second time is equal to or greater than $(1 + e)$ times its value when K vanishes first.

(3) If the signs of g, f are $+, +$, we have the case of motion in the third quadrant; K diminishes until $\theta = \frac{\pi}{2}$, and if K for $\frac{\pi}{2}$ is negative the plane of no compression has been crossed, and the end of the impact may be during

sliding or rolling; but if K is positive for $\frac{\pi}{2}$, the plane $K = 0$ has not been crossed, and the solution is as in (1).

(4) If the signs of g, f are $-, +$, we have the case of motion in the fourth quadrant, and putting $g \cos \theta + f \sin \theta = (f^2 + g^2)^{\frac{1}{2}} \sin(\theta - \zeta)$, K increases until $\theta = \zeta$, if θ_0 is less than ζ , and then diminishes until $\theta = \frac{\pi}{2}$. Also if θ_0 is greater than ζ , K diminishes until $\theta = \frac{\pi}{2}$. In either case K will vanish once or will not vanish, according as K for $\frac{\pi}{2}$ is negative or positive. If negative, the end of the impact may be in the sliding or rolling stage; if positive, it must be in the rolling stage. Thus if

$$K_0 - S_0 \left(\frac{g}{a} \cos \theta_0 + \frac{f}{a} \sin \theta_0 \right),$$

which is the value of K for $\theta = \frac{\pi}{2}$, is positive, the solution is obtained by taking $S = 0$ when $K = 0$, except in the peculiar case occurring in (2), in which case and in all other cases the solution depends on the solution for θ of the equation $K = 0$. Also we see that, no matter how large μ may be, sliding may not cease in certain cases by the end of the impact, and in all such cases R may be taken = 0 when we proceed to find $u, v, w, \omega_x, \omega_y, \omega_z$, etc.

In this discussion μ is taken to be very large but still definite, so that P and Q vanish if R vanishes. We would have to deal with a different problem, if we could assume prominences on one surface to fit into depressions on the other, so that the two bodies interlock, and P and Q can have values when $R = 0$. In this case if R_i is negative, or the point of intersection of the line of no sliding and the plane of no compression is below the plane $R = 0$, by taking $R = 0$, and finding P and Q from $S = 0$, we arrive at a point on the line of no sliding for which K is negative, and conclude that the impact is then over.

PROCEEDINGS
OF THE
ROYAL IRISH ACADEMY

VOLUME XXXIII

SECTION B.—BIOLOGICAL, GEOLOGICAL, AND
CHEMICAL SCIENCE.



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ERRATA.

SECTION B.

- p. 95. l. 9, *after glacial read acetic.*
,, l. 31, *for 0.6580 read 0.0580.*

PROCEEDINGS
OF
THE ROYAL IRISH ACADEMY

PAPERS READ BEFORE THE ACADEMY

I.

THE APTERYGOTA OF THE SEYCHELLES.

BY PROFESSOR GEORGE H. CARPENTER, M.Sc., M.R.I.A.,
Royal College of Science, Dublin.

PLATES I-XVIII.

Read FEBRUARY 14. Published JUNE 5, 1916.

THE collection of wingless insects described in this paper was made as part of the work of the Percy Sladen Trust Expedition to the Indian Ocean in 1905 and subsequent years under the leadership of Professor J. Stanley Gardiner, F.R.S., of Cambridge.

Many of the specimens were collected by Professor Gardiner himself, others by Mr. J. C. F. Fryer; but the greater part of the collection was obtained by Mr. Hugh Scott, of the Cambridge University Museum. He spent eight months on the Seychelles during the years 1908-9; and an interesting account of his methods of work, with descriptions of the various islands visited, and the nature of the mountain-forest regions from which most of the insects come, will be found in a paper (1910) published in the Linnean Society's Transactions, in which have appeared most of the results of the Sladen Expedition hitherto issued (Gardiner and others, '07-'14).

For the privilege of examining this highly interesting collection I am indebted to the kindness of Professor Gardiner, to whom and to Mr. Scott my best thanks are further due for much information willingly given, and for patience under long delays due to the pressure on my time of other work. The publication of the paper by the Royal Irish Academy during war-time has been much facilitated by a grant, which is gratefully acknowledged, from the Council of the Royal Society. It is worthy of remembrance that a former Secretary of the Academy, E. Perceval Wright, made, nearly fifty years ago, a biological expedition to the Seychelles, and described some plants from the islands in our Transactions ('71).

A general account of the area in which the collection was made has been given in Professor Gardiner's paper ('06) on the Indian Ocean, and in his contributions to the Reports of the Expedition ('07-'14). The vast majority

of the specimens come from the granite islands of the Seychelles Archipelago in the restricted sense; most are from the forest-clad, mountainous islands of Mahé and Silhouette, a much smaller number from the islands of Félicité and Praslin. Collections of Apterygota were also made on Coetivy to the south and on some of the coral islands to the south-west of the true Seychelles group—the Amirante and Farquhar, and Aldabra—the latter of which lie north-west of Madagascar. A discussion on the geographical bearing of the facts of distribution of the insects is given at the end of this paper (pp. 48-55).

The Apterygota are now generally recognized as a sub-class of the Insecta, showing a number of interesting primitive characters which afford a strong presumption in favour of the view that their universally wingless condition is to be regarded as a survival inherited from the remote ancestors of insects, and not as an adaptation to some abnormal mode of life like the parasitism of such insects as lice and fleas, whose winglessness is clearly a secondary character. On account of their inability to fly, and the wide and often discontinuous range of many genera and species compared with the curiously restricted distribution of others, the Apterygota may be regarded as specially important in faunistic studies which open up problems of ancient geography. The rich collections of these insects which have been gathered in the Seychelles and neighbouring archipelagoes promise, therefore, results of some importance. The two main orders of Apterygota which were recognized by Lubbock in his classical monograph ('73), the starting-point for most English-speaking students of the group, are both well represented in the collections now described. These orders can be readily distinguished by superficial characters:—

- A. Feelers long, multiarticulate. Ten abdominal segments. Often eight pairs of simple abdominal appendages, . . . *Thysanura*.
 B. Feelers with four to six segments. Abdominal segments six only. At most three pairs of abdominal appendages, reduced or modified, *Collembola*.

Order THYSANURA.

The Thysanura or "Bristle-tails" are well represented in the fauna of the Seychelles. Hitherto only two species of the order—*Acrotelsa collaris* (Fab.) and *Lepidospora Braueri* Esch.—appear to have been recorded from the archipelago; both of these belong to the extensive family of the Lepismidae. In the collection now described, eight species (four of them new) of this family are enumerated, besides three of the Machilidae, and one each of the Campodeidae and the Iapygidae—all of these being apparently new. Thus the four principal families of the Thysanura have members among the insects

of the Seychelles. These families are easily distinguished by readily observed structural characters.

- A. Jaws projecting beyond the mouth; maxillae and labium developed somewhat as in typical mandibulate insects, with conspicuous jointed palps. A median jointed tail-process.

Sub-order *Ectotrophi*.

- a. Body not flattened dorso-ventrally; dorsal aspect of thorax markedly convex. Head with paired and median ocelli in addition to the large compound eyes. Abdominal segments 1-7 with exsertile vesicles, 2-9 with unjointed stylets, 10 with long jointed cerci.

Family *Machilidae*.

- b. Body flattened dorso-ventrally. No ocelli; compound eyes relatively small. Abdominal segments usually without exsertile vesicles (on segments 2-7 in some Nicoletiinae), stylets usually on segments 7-9 or 8-9 only (rarely 2-9), Family *Lepismidae*.

- B. Jaws apparently retracted within the head; maxillae and labium highly modified with palps unjointed or absent. No median tail-process, Sub-order *Entotrophi*.

- c. Cerci modified into forceps, Family *Iapygidae*.

- d. Cerci elongate with sensory bristles, Family *Campodeidae*.

Family **MACHILIDAE**.

Our knowledge of the various genera comprised in this family has been vastly extended during recent years through the work of Silvestri ('04, '05, '06, '11) and Verhoeff ('10). The latter author has deemed it advisable to recognize three distinct families instead of one. While the characters used in this discrimination—the shape and extent of the abdominal sterna and the number and arrangement of the exsertile vesicles which these bear (see Plate II, figs. 19-23, 27-31 *e.v.*)—are of undoubted value in facilitating classification and indicating relationship, they are not of sufficient importance to justify family-distinctions. The Machilidae, as generally understood, form such a natural and easily recognized group of Thysanura, that Silvestri is undoubtedly to be commended for following the older entomologists in regarding the insects as constituting a single family. Verhoeff's divisions may conveniently be regarded as sub-families—to be distinguished thus—

- A. Abdominal segments all with very small sterna, and bearing at most one pair of exsertile vesicles, *Meinertellinae*.

[B]

B. Abdominal segments from 2nd to 7th, inclusive, with relatively large triangular sterna.

- a.* Only one pair of exsertile vesicles on any abdominal segment, *Praemachilinae*.
b. Two pairs of exsertile vesicles on abdominal segments 2-3, 2-4, 2-5, or 2-6, *Machilinae*.

The last-named group (*Machilinae*) is alone represented in the collection from the Seychelles. Three species, all new, differ so definitely from any members of the family hitherto known that a new genus is required for their reception.

***Corethromachilis*¹ gen. nov.**

Feelers, maxillary palps, legs, and ninth abdominal stylets scaled. Apex of mandible feebly toothed. Lacinia of maxilla with a complex "brush" of lanceolate bristles. Legs of second and third pairs with coxal processes; beneath the tip of the terminal (third) segment of the foot in all three pairs a dense mass of lanceolate bristles forming a "brush" or scopula. Abdominal segments with moderately large triangular sterna, the first, fourth, fifth, sixth, and seventh with one pair of exsertile vesicles each, the second and third with two pairs each. Male with feebly jointed gonapophyses on the eighth and ninth abdominal segments; penis short, not reaching apex of the ninth sub-coxa. Female with ovipositor not, or hardly, projecting beyond ninth abdominal stylets.

Type, *Corethromachilis Gardineri* (sp. nov.) Seychelles.

This genus is of interest from the reduction to two of those abdominal segments which have two pairs of exsertile vesicles each. In the typical genus *Machilis* there are four segments thus provided; in *Coryphophthalmus* (Verhoeff, '10) three. In this character, therefore, *Corethromachilis* approaches *Praemachilis* and its allies, in which there is but one pair of exsertile vesicles on each abdominal segment from the first to the seventh, inclusive. But the most remarkable feature in *Corethromachilis* is found in the wonderful arrays of bristles on the lacinia of the maxilla and beneath the tip of each foot, forming the brush-like organs that have suggested the generic name. Except in the case of the aberrant *C. gibba*, described below, there is nothing to attract attention in the general appearance of the species. Indeed, the naturalist studying the *Machilidae* is struck with a monotony throughout the family in the main features of their superficial aspect, which is yet accompanied by a range of variation in details of the exoskeleton which afford reliable characters for classification. All the specimens of *Corethro-*

¹ From *κόρηθρον*, a broom, and *Machilis*.

machilis were collected in mountain-forest regions, offering in this respect a great contrast in habit to most Machilidae, which delight in stony places.

Three species from the Seychelles are referable to this new genus; they may be distinguished by obvious characters.

A. Insects of the usual Machilid build; paired ocelli transverse.

a. Legs and claws short, scopulae large and very dense
(fig. 17). Maxillary palps longer,

Corethromachilis Gardineri.

b. Legs and claws long, scopulae less dense (fig. 44).

Maxillary palps shorter, *C. brevipalpis.*

B. Metanotum raised into a great dorsal prominence (fig. 45). Head

with conical process between the eyes, paired ocelli shortly

ovoid (figs. 46, 47), *C. gibba.*

Corethromachilis Gardineri sp. nov.

(Plates I, II, figs. 1–26.)

Paired ocelli (fig. 2 *p.o.*) of the usual dumb-bell shape, about a transverse diameter apart. Feelers more than twice as long as body (fig. 1); basal segment (fig. 2) three times as long as broad; regions of flagellum (fig. 3) with 16–18 segments each. Mandible (fig. 4), maxillula (fig. 5 *Mal*), tongue (fig. 5 *hy*), galea of lacinia (fig. 6 *g*), and labium (fig. 12) exceptionally broad in proportion to their length. Maxillary palp one-third length of body. Legs short, claws remarkably short, and scopulae very dense (fig. 17). Stylet on second abdominal segment (fig. 20) with numerous bristles but without terminal spine. Median tail-process nearly twice as long as body; cerci half as long as body (fig. 1).

Length of body 14 mm. Colour (with scaling), dark metallic purple with white rings on feelers, cerci, and tail-process.

Localities.—Mahé: Forêt Noire district and Cascade, 1000 feet and over (August, 1905, September and October, 1908); Montagne Alphonse, Cascade, 1800 feet (December, 1905). Silhouette: forest near Mare aux Cochons, over 1000 feet (August and September, 1908). Praslin: Côtes d'Or Jungie (November, 1908). Specimens numerous in all these localities. Mr. Scott records that they all come from mountain forests, mostly among the dead leaves, both fallen and still hanging, of palms and other trees.

This species is remarkable for the lateral extension of the jaws and tongue. The base of the *mandible* (fig. 4) has a strong prominence on its outer border, while the *tongue* (fig. 5 *hy*) and the *maxillulae* (fig. 5 *Mal*) are

unusually broad in proportion to their length. They show, in the main, the arrangement of parts characteristic of the Machilidae. In the *maxilla*, the galea (figs. 6 *g*, 9, 10) is remarkably broad and flattened, its free border merging into a delicate membranous ridge, strengthened by rib-like thickenings, and its outer corner bearing a group of minute sensory spines projecting from papillae (figs. 10, 11). The lacinia (figs. 6 *l*, 7, 8, 9) exhibits in perfection the large and wonderfully formed head to which reference has been made in the generic description. From the terminal teeth (*t*) a lamella (*la*) extends on either aspect, embracing a considerable cavity from whose recesses spring more than fifty lanceolate bristles forming the characteristic "brush." Such a brush, though in a far less highly developed condition, has been figured by Börner ('08, Pl. VI. fig. 11) from a Japanese species of *Machilis*, and by the present writer ('13, Pl. II, fig. 6 A) in *Petrobius*. Börner calls the structure "der Mittelanhang." The hinder edge of the lamella (see figs. 7, 8 *la*) is produced into three prominent teeth (*t'*); its front edge (fig. 9 *la*) has a rather sinuate margin, but ends in a single, sharp, delicate tooth (*t''*). The maxillary palp (fig. 6 *p*) is of the usual form, its first segment with a strong backwardly directed conical process, its succeeding six segments with the proportionate lengths 10 : 10 : 8 : 11 : 9 : 13. The whole palp measures 5 mm. in length; the terminal segment as usual bears many strong spines. The labium (fig. 12) has a relatively broad and short sub-mentum; the terminal segment of the labial palp carries a number of rows of flattened tapering sensory spines (fig. 13).

The short claws and the dense scopulae below the terminal segment of each *foot* (fig. 17) give the insect a very characteristic appearance. The bristles of this scopula have a regular lanceolate shape towards the tip (fig. 18), but this specialized condition can be traced through a series of gradations from the ordinary bristles of the leg. The coxal process of the second leg (fig. 15) is narrower than that of the hind-leg (fig. 16).

Of the *abdominal segments*, the first (fig. 19) is remarkable for the reduced sternum, the second for the hairy, unspined stylets (fig. 20), and most of the others for the sinuate sutures between the sub-coxae and the sterna. The male genital segments (figs. 24 and 25) do not call for special remark; the *penis* (*p*) and *gonapophyses* are short; the latter show imperfect jointing, and bear numerous spines in rows along their inner faces (fig. 26). The *stylets* of the eighth and ninth segments have very long spines. In the female the gonapophyses are relatively short, with sixty-four rings on those of the eighth, and an equal number on those of the ninth, segment.

***Corethromachilis brevipalpis* sp. nov.**

(Plates II, III, figs. 27-44; Plate V, figs. 63-6.)

Paired ocelli (fig. 35 *p.o.*) long and narrow, almost in contact centrally. Feelers longer than the body, basal segment two and a half times as long as broad (fig. 35); regions of flagellum (fig. 36) with 14-16 segments each. Jaws of typical machilid form, "brush" of maxilla less prominent than in *C. Gardineri*. Maxillary palp one-fifth length of body. Legs (fig. 43) moderately long; claws long and scopula scanty (fig. 44). Stylet on second abdominal segment (fig. 28 *st*) with short terminal spines. Median tail-process longer than body; cerci as long as body.

Length (without appendages) 15 mm. Colour of scaling rather paler than in *C. Gardineri*.

Localities.—Mahé: in the mountain forests (August and September, 1908). Silhouette: forest near Mare aux Cochons, 1000 feet (September, 1908). A number of specimens from each locality, but the species is evidently less abundant than *C. Gardineri*.

C. brevipalpis is a somewhat larger species than *C. Gardineri*, but the maxillary palp (fig. 39 *p*) is absolutely shorter and feebler than in the latter (see fig. 6 *p*). The jaws of *C. brevipalpis* differ less markedly from those of typical Machilids than do the corresponding structures in *C. Gardineri*, the mandible (fig. 37) and maxillula (fig. 38 *Mxl.*) being of the proportions usual in the family, and the galea (fig. 39, 40 *g*) of the maxilla being longer than broad. The lacinia (fig. 40) is furnished with a "brush," but its bristles are less numerous and prominent than those of *C. Gardineri*. The first segment of the maxillary palp has its process sub-cylindrical; the proportions of the other six segments are as 5 : 4 : 5 : 7 : 5 : 6. The legs are of the same general build as those of *C. Gardineri*, but longer, and the conspicuous claws, with a slight tendency to indentation along the inner edge, and the scanty scopulae (fig. 44) make discrimination between the two species easy. The abdominal segments and their appendages (figs. 27-34) correspond closely with those of *C. Gardineri*, except that the stylets of the second (fig. 28 *st*) have distinct though short terminal spines. The tip of the ovipositor reaches only to the base of the spine on the ninth abdominal stylet. Its gonapophyses have from fifty-five to sixty segments each (figs. 63-64).

The ovipositor in these insects is well worthy of study, though of less value than the male reproductive processes in specific determination. There are two pairs of gonapophyses on the eighth and ninth segments respectively (see figs. 63, 64 *go*); the bases of these are connected with the inner anterior

corner of the sub-coxae to which they belong. Each gonapophysis is worked by appropriate muscles—an adductor (fig. 65 *ad*) the insertion of which is carried but a short distance along the appendage; and an extensor (fig. 65 *ext*), some of whose fibres are inserted close to the base, while a few, drawn out to a great length, extend right along the outer margin of the gonapophysis, almost to its tip (fig. 65 *ext'*). The segmentation of these appendages is well marked; the proximal segments (fig. 65 A) bear few, feeble, and short bristles; but beyond the extremity of the ninth abdominal sub-coxae these bristles become, almost suddenly, long, stiff, and prominent (fig. 65 B), this character persisting almost to the extreme tip (fig. 65 C). Each sub-coxa of the ninth segment articulates with a small, sub-triangular, basal sclerite which from its position might be regarded as an episternum (fig. 64 *epst*). From it originates an abductor muscle fig. 64 *abd*), whose fibres pass, diverging slightly towards the axis of the body, and are inserted into the inner edge of the base of the sub-coxa.

The scaling of *C. brevipalpis*—as of the other species of *Corethromachilis*—resembles that found generally in the family. Two typical forms of scale from abdominal sub-coxae are figured (fig. 66), one being of a moderately broad, and the other of a narrower and elongate, type. Some of the smaller and more delicate scales are broader than long.

***Corethromachilis gibba* sp. nov.**

(Plate IV, figs. 45–62.)

Paired ocelli (fig. 46, 47 *p.o.*), short and ovoid, situated on either side of a conical prominence in front of the eyes. Jaws transversely extended, and brush of maxillary lacinia complex, as in *C. Gardineri*. Maxillary palp nearly half as long as body. Thorax with the mentanotum produced dorsalwards into a prominent hump; margin of mesonotum broadly convex laterally, and sinuate in front (fig. 45). Legs short; foot-claws short and scopulae dense (fig. 55). Feelers and tail-process half as long again as body. Cerci two-thirds length of body.

Length 10mm. Colour of scaling, dark.

Localities.—Mahé: Mare aux Cochons, 1500 feet, in dead leaves (January, 1909, one female). Silhouette: 1500 feet, in high damp forest, among fallen, rotten palm-leaf bases, and other dead leaves in damp and shady jungle (eight specimens of both sexes, August, 1908, collected by Mr. H. Scott, who states that they jump vigorously).

This insect, with the great hump on its metathorax and the outstanding conical process in front of the head, may be distinguished at a glance from all

known Machilidae. So conspicuous are these distinctive features that the establishment of a distinct genus for the species might be thought desirable by some entomologists. But in the structure of its jaws, feet, and abdominal segments and appendages the insect resembles so closely the two *Corethromachilis* already described, that it seems reasonable to consider it cogenetic with them. It is suggestive that in *C. gibba* the tendency to develop conical out-growths should be displayed both on the head and the metathorax.

In the *feeler* the basal segment is three times as long as broad, and the regions of the flagellum have about 18–20 segments each (fig. 48). The arrangement of the *ocelli* is most remarkable, the median one looking directly downwards and those of the pair being placed close together on either side of the conspicuous prominence in front of the eyes (figs. 46, 47). The eyes are in contact for a comparatively short distance along the median axis of the head. As in *C. Gardineri*, the *mandible* (fig. 49), *tongue* (fig. 50 *hy*), *maxillula* (fig. 53 *Maxl*), *maxillary galea* (fig. 51 *g*), and *labium* (fig. 52) are exceedingly broad in proportion to their length. The maxillary lacinia has a head with complex brush, resembling that of *C. Gardineri* (figs. 7, 8, 9) so closely that it is needless to figure the details. The *legs* (figs. 54, 55) also are very like those of *C. Gardineri*; the *scopula*, however, in *C. gibba* is rather smaller, and the *claws* are a little longer than in the former. The abdomen of *C. gibba* is relatively small as compared with that of the other species, as may be seen by comparing the outlines of the *abdominal segments* (figs. 56–60) with those of the corresponding structures on Plate II. On the second segment (fig. 56) the *stylet* has a short but distinct spine. The ninth *stylet* (fig. 60 *st*) has a slender, acute spine almost its own length. The male *gonapophyses* of *C. gibba* are weakly developed and feebly jointed (figs. 61–62).

It is well known that various interpretations of the genital armature of insects have been given by different students. The term *gonapophyses* emphasizes the correspondence of these structures in the Thysanura with those in the Orthoptera and other insects which have a typically developed male and female armature. Terms such as “telepodite” and “parameron” have been applied by some authors who, like Escherich ('04, pp. 23–6), regard a genital process as comparable to the terminal portion of a thoracic leg. Silvestri ('05, pp. 794–7) has argued convincingly in favour of the opposite view: that the abdominal stylets, rather than the gonapophyses, are to be regarded as appendicular; and he has brought forward some reasons for considering the latter as homologous with the exsertile vesicles on the unmodified abdominal segments. It is at least suggestive that the genital segments of the abdomen never bear exsertile vesicles in the Thysanura.

Family LEPISMIDAE.

This family is fairly well represented in the fauna of the Seychelles, as shown by the collection now described, and there can be no doubt that further species await discovery. Students of the Lepismidae owe much to Escherich, whose beautiful monograph (04) stands as a foundation for modern systematic work. He divides the family into three sub-families:—

- A. Inner edge of maxillary lacinia with teeth and bristles. Head never longer than prothorax.
- a. Sub-coxae of genital segments broad and flat, covering bases of gonapophyses. Eyes present. Terminal segment of maxillary palp without sensory papillae. Body always scaled, *Lepisminae*.
 - b. Sub-coxae of genital segments narrow, not covering bases of gonapophyses. Eyes wanting. Terminal segment of maxillary palp with conspicuous sensory papillae. Body scaled or unscaled, *Nicoletiinae*.
- B. Inner edge of maxillary lacinia smooth. Head longer than prothorax. Eyes present. Body unscaled, *Maindroniinae*.

The first and second of these sub-families are represented in the Seychelles; the last is known to include only a single species from Arabia. It is noteworthy that all the Seychelles Lepismidae belong to well-known and widespread genera, in contrast to the Machilidae, which are represented in the archipelago by a distinct and peculiar genus.

LEPISMINAE.

The Lepisminae in the collection are distributed among four genera—*Lepisma*, *Isolepisma*, *Ctenolepisma*, and *Acrotelsa*, which are thus distinguished:—

- A. Bristles on head and body-segments simple. Tenth abdominal tergite rounded, truncate, or emarginate.
- a. Bristles on face and terga arranged singly, not in "combs," *Lepisma*.
 - b. Bristles on face and terga arranged in "combs," *Isolepisma*.
- B. Bristles feathered.
- c. Tenth abdominal tergite long and acutely pointed, *Acrotelsa*.
 - d. Tenth abdominal tergite truncate or emarginate. *Ctenolepisma*

In distinguishing genera, Escherich lays great stress on the nature and arrangement of the bristles, which are unfortunately often knocked off in preserved specimens. The scars marking their points of insertion are, however, usually conspicuous.

Lepisma Linné.

This, the best-known genus of the family, has the little household European "Silver-fish," *Lepisma saccharina* Linn., as its type species. In the collection from the Seychelles the genus is represented by a single myrmecophilous species, which is apparently new. A number of *Lepismae* from various regions are well known as guests of ants and termites.

Lepisma intermedia sp. nov.

(Plate V, figs. 67-70).

Thorax moderately convex laterally, abdomen evenly narrowed behind; body about three times as long as broad. Feeler half as long as body. Eyes small and round. Abdominal terga with two pairs of dorsal bristles. Tenth abdominal tergum twice as long as ninth, sinuately emarginate behind. median tail process three times, cerci twice as long as tenth tergum (fig. 67). Ninth sub-coxa with inner process only slightly longer than outer (fig. 68).

Length 3-4 mm. Colour of scaling deep brownish violet dorsally, ventral surface, feelers, legs, and appendages generally pale yellow.

Localities.—Mahé: Long Island, from a nest, in decayed log, of *Phcidole punctulata*, an ant known in both Africa and Madagascar (July, 1908, three specimens). Félicité (1908, two specimens).

Unfortunately all the specimens of this little *Lepisma* are dry and carded, so that it is not possible to make out many structural details. The legs have rather wide shins (fig. 69), and feet with the first and third segments each slightly longer than the second. The shin bears at its outer tip the broad spur commonly found in this family, and some flattened sensory bristles (fig. 70) feebly hooked at the tip. *L. intermedia* comes nearest to *L. Braunsi* Escherich (from South Africa), and *L. indica* Escherich ('04, pp. 50-51), differing by its smaller size, relatively longer median tail-process, and shorter inner ninth sub-coxal processes. It resembles *L. Braunsi* in its emarginate tenth tergum, and *L. indica* in its round eyes.

Isolepisma Escherich.

This genus was established by Escherich ('04, pp. 61-2) for a single wide-ranging tropical species in the description of which no clear indication is given of what are considered generic as contrasted with specific characters. Now that a second species has to be described, it is possible to give a more precise diagnosis of the genus.

Body somewhat narrow; thorax not markedly broader than abdomen, whose tenth tergum is distinctly longer than the ninth. Bristles, simple or bifid at the tip, arranged in tufts on the head, and in "combs" of two or three each on the thoracic and abdominal terga. Two or three pairs of abdominal stylets.

Isolepisma bisetosa sp. nov.

(Plate VI, figs. 71-82.)

Length 7.5 mm. Feelers, median tail-process and cerci shorter than the body (fig. 71). Terga of thoracic segments with a "comb" of two strong bristles at the hinder edge on each side of the middle line, and five or six lateral "combs" (fig. 71). Terga of abdominal segments (II-VIII, inclusive) with two "combs," usually of three, but occasionally of four bristles at the hinder edge on each side, and a comb of two bristles nearer the median line (fig. 71). Process of sub-coxa of ninth abdominal segment in both sexes acuminate, nearly half as long as the stylet (figs. 80, 81). Eighth abdominal segment of male (fig. 80), and seventh and eighth of female (fig. 81), with short stylets. Ovipositor in female (fig. 82) elongate, projecting beyond the tip of the ninth stylet for at least the length of the latter.

The above features serve to distinguish this species from *I. trisetosa*, Esch. ('04, pp. 62-3, Pl. I, fig. 1), which is rather smaller, has the feelers and caudal process as long as the body, and possesses paired combs on the thoracic segments consisting of three bristles each.

Localities.—Seychelles: Bird Island (1908); Ile aux Récifs (H. P. Thomasset); Long Island (July, 1908). Aldabra (J. C. F. Fryer, 1908-9). Farquhar (30th September, 1908). Providence: Cerf Isl. (J. S. Gardiner, 3rd September, 1905). Amirante, Eagle Island (J. S. Gardiner, May-September, 1905).

This species is apparently abundant, as it is represented by numerous examples from most of the localities. It is very closely allied to *I. trisetosa*, Escherich—the only species of the genus hitherto known—which has apparently a circumtropical range (Brazil, West Africa, Malay Archipelago). It may probably be regarded as having been differentiated from *I. trisetosa* during a long period of isolation.

Sufficient material of this species is available for an examination of the principal structures of the head. The *labrum* (fig. 72 *lbr*) is a short, broad plate, with arched front edge, hinged on to the *face* (fig. 72 *f*), which bears numerous slender bristles, and two series—three on either side—of broad, bifid ones, like those that project in front of the clypeus. The *mandible* differs distinctly in shape from that of *Ctenolepisma*, figured by Escherich

('04, Pl. II, f. 26). There is a rounded condyle at the base, and the inner hind edge projects around the hollow into which the fibres of the adductor muscles pass (fig. 75). On the outer edge of the mandible are a number of bristles, most of them bifid like those of the head, but a few simple; there are also some bifid bristles along the front inner edge, near the molar area, which is beset with a number of short, strong spines (fig. 76). Beyond these is a blunt projection, and the apex has three prominent but not very sharp teeth; a slight difference between the apices of the right and left mandibles is noticeable. The mandible is worked by at least six distinct muscles. There are two retractors (fig. 75 *re*), inserted into the inner median ridge—one by a single tendon, and the other by a number of slender tendons. A posterior adductor muscle (fig. 75 *ad. p.*), with a tendinous insertion, pulls at the basal region of the mandible, while three median adductors (fig. 75 *ad*), one large and two smaller, with fibres radiating so as to be inserted along the inside of the outer wall, serve to draw the mandible strongly towards its fellow. A closely similar arrangement in *Lepisma saccharina* has been described and figured by Börner ('09, pp. 104-5, fig. 2).

The *tongue* in *Isolepisma* (fig. 77 *hy*) is small, with the tip hairy, and the peduncles almost parallel. The *maxillulae* (fig. 77 *mxl*) have a roughened apex, with fine, short bristles. No differentiation into galea and lacinia—so apparent in a Machilid maxillula—is here distinguishable. Hansen twenty years ago pointed out that the maxillulae of the Lepismidae are feebly developed as compared with those of the other Thysanura, recalling the condition found in earwigs ('93), but no entomologist has hitherto given attention to these interesting structures in this family.

The *maxilla* (fig. 78) resembles in its main features that of a *Lepisma* figured by Escherich ('04; Pl. II, fig. 29). The tip of the lacinia has two strong teeth; its inner edge is drawn out into seven delicate teeth, forming a "comb" (fig. 78 *l*), proximal to which are eight prominent bristles. The musculature of the maxilla is like that found in biting insects generally; there is a strong protractor muscle (*pr.*) on the inner edge of the cardo (*c*), while the muscles for working the galea and lacinia (*g. m.* and *l. m.*) originate at the proximal end of the stipes, and have their fibres converging to the insertions at the bases of the lobes.

The *labium* (fig. 79) has a short and broadly arched sub-mentum (*s. m.*), the mentum (*m*), galeae (*g*), and laciniae (*l*) being small, somewhat rugose and spiny; the distal edge of the lacinia is drawn out into a delicate ridge. The four-segmented labial palp has a very broad and blunt terminal segment (fig. 79 *p*).

In both sexes the inner process of the ninth abdominal sub-coxa (figs. 80,

82 s. c., 81) is elongate, acute, and spiny. The *penis* (fig. 80 *pc*), as usual in *Lepisma* and allied genera, is short; the ovipositor projects far beyond the tip of the ninth abdominal stylets (fig. 82).

Ctenolepisma Escherich.

This genus was founded by Escherich ('04, p. 75) to include Lepismidae characterized by the possession of numerous "combs," of feathered bristles on the thorax and abdomen, four being present on the greater number of the abdominal terga, and by the rounded truncate or emarginate edge of the tenth abdominal tergum. It includes a number of species, whose collective range extends over the tropics and warmer temperate regions of the globe.

Ctenolepisma longicaudata Escherich.

A single female from Félicité, Seychelles, 1908, is evidently referable to this species, which Escherich described ('04, pp. 83-4, fig. 31) from specimens found in houses in South Africa, and to which he referred doubtfully a specimen from Guinea. The presence of the insect on the Seychelles confirms his suggestion that it would be found widely distributed in the Ethiopian Region.

Acrotelsa Escherich.

This genus was established ('04, p. 105) for some Lepismids of relatively large size, distinguished from allied genera by the tenth abdominal tergum being long and pointed. Escherich includes this genus in the sub-family of the Lepismatinae, among the diagnostic features of which (*op. cit.*, p. 36) he mentions the absence of sensory papillae on the terminal segments of both maxillary and labial palps, such sensory papillae being present in the Nicoletiinae. In *Isolepisma*, and probably in most of the species of Lepisminae, both maxillary and labial palps are without these papillae, and so are the maxillary palps in *Acrotelsa*. But in the three species of *Acrotelsa* from the Seychelles collection the labial palps have very conspicuous papillae on the terminal segment, and one of these species is clearly identical with that described by Escherich as *Acrotelsa collaris* (Fab.). Silvestri also has described some species of *Lepisma* with similar structures ('13, pp. 8-11). It is necessary, therefore, to revise the diagnostic characters of the Lepisminae, and to recognise that in this feature members of the sub-family may approach the Nicoletiinae. The sensory papillae of *Acrotelsa* are shown in figs. 88, 89 (*A. elongata*, sp. nov.), 98, 99 (*A. Scotti*, sp. nov.), and 101 (*A. collaris*). In the two former species the five papillae are arranged in a single row along the broad end of the terminal segment, while in *A. collaris*

they form a proximal row of three and a distal row of two. The cuticle of the papilla has a roughened, wrinkled surface, and is protrusible from a sub-cylindrical projection of the general firm cuticle of the appendage.

In the examination and delineation of the insects of this genus I gratefully acknowledge some valuable help from my colleague, Miss A. J. Reilly, A.R.C.Sc.

The three species of *Acrotelsa* from the Seychelles may be distinguished thus:—

- A. Large, indoor species, over 15 mm. No dorsal combs of bristles on thoracic terga, *A. collaris* (Fab.).
- B. Small species under 12 mm. A pair of dorsal "combs" on each thoracic tergum.
- a. Inner process of ninth abdominal sub-coxa very long, *A. elongata*, sp. nov.
- b. Inner process of ninth abdominal sub-coxa of normal length, *A. Scotti*, sp. nov.

***Acrotelsa collaris* (Fab.).**

This widely distributed species—the common house-lepismid of the tropics—has already been recorded from the Seychelles (Escherich, '04, p. 108). It is found in both hemispheres, and there can be little doubt that its wide range is largely due to commercial importation. The presence of sensory papillae on the terminal segment of the labial palp has already been mentioned. The insect has been well figured by Oudemans ('90, Pl. VI, fig. 1) and Escherich ('04, Pl. I, fig. 3).

Localities.—Seychelles: Bird Island (1 male, 1 female); Mahé: Port Victoria (3 specimens, dried and carded, 1908-9), Round Island (1 specimen, dried, July, 1908). Coetivy Island (3 specimens, dried and carded, 1905). Aldabra: Picard Island (1 male, 1 female, January, 1909).

***Acrotelsa elongata* sp. nov.**

(Plate VII, figs. 83-90.)

Body-form elongate, narrow. Terminal segment of labial palp (figs. 88, 89) broad and sub-globose with five sensory papillae. Each thoracic tergum with a dorsal and ten lateral "combs" of bristles on each side. Abdominal terga ii-viii with a dorsal and a marginal "comb" on each side. Tenth abdominal tergum acuminate, longer than broad, with four marginal "combs" on each side (fig. 83). Inner processes of ninth abdominal sub-coxa very elongate, their tips almost reaching the extremity of the ovipositor (fig. 90).

The feelers, cerci, and tail-process are unfortunately very imperfect in all the specimens.

Length, 9 mm. Colour, pale with brown scalding; feelers, cerci, and tail-process dark-ringed.

Localities.—Aldabra (1908, coll. J. C. F. Fryer, five females).

This species is very closely allied to the North Australian *A. producta* Escherich ('04, pp. 111, 112) with which it agrees in the immensely elongate ninth sub-coxal processes. *A. producta*, however, has a much narrower terminal segment to the labial palp, and a tenth abdominal tergum that is shorter than broad (Escherich l. c., fig. 45). It is remarkable that this most abnormal form from Aldabra should have its nearest ally on the Australian continent.

Some notes on the jaws of this *Acrotelsa* may be of interest. The *mandible* (figs. 84, 85) is relatively longer and narrower than in *Isolepisma* (see fig. 75), and more convex externally than in *Ctenolepisma* (Escherich, 1904, Plate II, fig. 26). In the group of fine spines at the molar area and the bifid bristles just proximal thereto this mandible agrees with those of *Lepisma* generally. The *galea* (fig. 86) calls for a little remark: the somewhat acuminate tip of the galea projects well beyond the lacinia, which has the inner edge, just proximate to the apical tooth, serrate, with seven delicate lanceolate "comb" teeth, and armed with six prominent bristles (fig. 87). The *labium* (fig. 88) has the sub-mentum, mentum, and lobes very broad, as well as the terminal segment of the palp, along the edge of which are five oval sensory papillae in a row (fig. 89 *s. p.*).

***Acrotelsa Scotti* sp. nov.**

(Plate VIII, figs. 91-100.)

Body-form elongate, narrow. Terminal segment of labial palp (fig. 98 *p.*), broad and sub-globose, arranged with five sensory papillae (fig. 99 *s. p.*). Each thoracic tergum with a dorsal and twelve lateral "combs" of bristles on each side. Abdominal terga ii-viii with a dorsal and a marginal "comb" on each side. Tenth abdominal tergum acuminate, longer than broad, with four marginal "combs" on each side (fig. 91). Inner process of ninth abdominal sub-coxa moderately long, surpassing the tip of the relatively short ovipositor. Gonapophyses slender, cylindrical, feebly segmented (fig. 95).

As with the previous species, the few specimens are all very imperfect as regards feelers, cerci, and tail-process.

Length, 11 mm. Colour, pale with brown scalding.

Localities.—Aldabra: Ile Esprit and Takamaka (November, 1908, four females, J. C. F. Fryer, coll.).

This species is not closely allied to any mentioned in Escherich's "System" (1904), but it comes very near to *A. Voeltzkowi*, subsequently described by him from Madagascar ('10), which differs from *A. Scotti* mainly in having only seven marginal combs on the thoracic terga and only three on each side of the tenth abdominal tergum. The jaws of *A. Scotti* resemble rather closely those of *A. elongata*. Some details for comparison are shown on Plate VIII (figs. 92-3, 96, 98), but they do not call for special description. In the leg (fig. 100) the shin has the usual prominent spur overhanging the base of the proximal segment of the foot, whose third (distal) segment carries between the two claws a slender, almost straight, claw-like empodium.

NICOLETHINAE.

Escherich ('04) included four genera—*Atelura*, *Lepidospora*, *Nicoletia*, and *Trinemophora* in this sub-family; the two former only are represented in the collection from the Seychelles. *Atelura*, as understood by Escherich, includes a number of small, scaled, blind insects, resembling *Lepismae* in general aspect, which live as the guests of ants and termites. Silvestri ('08) has referred some of Escherich's species of *Atelura* to several distinct genera. Only a few species of *Lepidospora* are known from various tropical and sub-tropical countries; these are large, scaled, free-living, bristle-tails. Possibly some examples of the wide-spread scaleless Nicoletiae await discovery in the Seychelles.

Atelura Heyden.

Two dried specimens represent this genus in the collection. They appear identical with or very close to one of Escherich's species of this genus in the wide sense, and as they are unsuitable for microscopic examination, I refrain from any attempt to discuss their relationship among Silvestri's groups.

Atelura nana Escherich.

In the small size (under 2 mm. long), pale colour, and long dense bristles covering (two or three rows on the thoracic segments) the Seychelles specimens agree closely with this species described from South Africa ('04, p. 127, fig. 53), where it was found in nests of *Pheidole punctulata* Mayr.

Locality.—Mahé: Round Island (from nest of *Pheidole* in broken stone, 19th July, 1908, two specimens).

Lepidospora Escherich.

Escherich founded this genus ('04, pp. 131-2) for the reception of the species *L. Braueri*, described by him from a single male specimen which was

brought from the Seychelles to the Hamburg Museum. He referred to this genus another species *L. gracilis* (*l. c.*, p. 178) founded on a single female from Sumatra. Subsequently Silvestri ('08 *a*, pp. 382-4) described *L. Escherichii* from Corfu, *L. ceylonica* ('10, pp. 95-6) from Ceylon, and *L. afra* ('08 *b*, p. 12) and *L. meridionalis* ('13, pp. 12-13) from South Africa. These species all agree in their fairly large size and narrow build, in which they resemble the Nicoletiae, while, unlike the members of that genus, their bodies are scaled. The species of Lepidospora, thus apparently few in number and scattered in their distribution, show a strange divergence in the form of the ovipositor. In *L. Braueri* (whose female is described below) the gonapophyses (Plate X, figs. 117, 118, *go.* 119) are thick, unjointed, and spindle-shaped, like those of *Atelura*; the same form of ovipositor is found also in *L. Escherichii* Silvestri. On the other hand, in *L. gracilis* Escherich and *L. meridionalis* Silvestri the gonapophyses are elongate, slender, and jointed like those of *Nicoletia* and of most of the Lepisminae. In *L. ceylonica* Silvestri they are thick and jointed. In this character, therefore, the structure of Lepidospora indicates an interesting transitional condition. A primitive feature of Lepidospora is seen in the presence of eight pairs of abdominal stylets; this large number, characteristic of the Machilidae, is reduced to two or three pairs in most species of the Lepismidae.

Lepidospora Braueri Esch. (1904).

(Plates IX, X, figs. 102-120).

This very curious and interesting species is described and figured in Escherich's Monograph from a single male, collected in the Seychelles, and preserved in the Hamburg Museum. The present collection contains several specimens of both sexes (all from the high level forest regions), so that some account of the structural features of the insect can be given. Attention has been especially paid to the jaws and to the ovipositor in the females.

Localities.—Mahé, in mountain forest: Cascade, 2,000 feet (one male, one female, 3rd December, 1905); Montagne Alphonse, Cascade, 1,800 feet (one female, 4th December, 1905); Mare aux Cochons, 1,500 feet, in dead leaves (one female, January, 1909). Silhouette: highest point, 2,467 feet, in damp earth under dead leaves (one male and four females, several immature, 2nd September, 1908); forest near Mare aux Cochons, over 1,000 feet (9th September, 1908, one immature).

A description of the jaws and ovipositor of a Mediterranean species of Lepidospora (*L. Escherichii* from Corfu) has been given by Silvestri ('08 *a*, pp. 382-4, figs. 18, 19). The mandibles of *L. Braueri* (Plate IX, figs. 104-105)

resemble those of Silvestri's species rather closely, even to a characteristic difference between the right (fig. 104) and the left jaw (fig. 105) in the form and arrangement of the teeth. The large retractor muscle of the mandible (fig. 104 *re*) is broad and strap-shaped; the fibres of the principal adductor (fig. 104 *ad*) are gathered into a narrow tendon, whence they radiate to the inside of the convex border of the appendage, as in the Lepismatinae. The *maxilla* resembles that of Nicoletia as figured by Escherich ('04, Plate II, fig. 27), but the palp in Lepidospora is relatively much longer. The terminal segment of the palp carries at its tip four knob-like sensory prominences beset with numerous fine hairs (figs. 107, 110, *s. p.*); it also bears, a little behind the tip, a flattened, annular structure (fig. 110 *s. r.*), which may also be regarded as a sense-organ. At the tip of the remarkably slender galea (fig. 107 *ga.*) are two peg-like spines, probably sensory. The lacinia (fig. 107 *l.*, fig. 108) has two teeth at its extremity, and carries on its inner border a most beautiful and elaborate "comb-process" (fig. 108 *c. p.*). This process is beset towards its tip with a double row of strong spines (fig. 109), while at the base there is a series of four or five complex, flattened spinose processes, one branch of each being bifid at the extremity (fig. 108).

The *tongue* (fig. 106 *hy*) is relatively narrower than that of Isolepisma; its tip is emarginate, with a small central prominence. The *maxillulae* (fig. 106 *mal.*), rather long and narrow in form with rounded extremity, are beset with oblique, parallel rows of fine hairs.

The *labium* (fig. 111) resembles rather closely that of Nicoletia as figured by Escherich ('04, Plate II, fig. 32), the basal plate, galeae, and laciniae being relatively longer and narrower than the corresponding parts in the Lepismatinae. In Nicoletia, however, the tip of the lacinia is bifid, while in Lepidospora it is simple. The very broad terminal segment of the palp bears six circular, cushion-shaped sense-organs, each beset with numerous fine hairs (fig. 111).

A thoracic *leg* in Lepidospora consists of coxite, trochanter, thigh, shin, and three-segmented foot (Plate X, fig. 112). The coxite carries several bifid hairs. At the tip of the shin is a strong, claw-like spine overhanging the base of the foot. At the tip of the foot are two strong claws, beset on the basal half with fine short hairs; between the claws projects a slender empodium, bluntly rounded at its extremity (fig. 113). No feature of special interest is presented by the sterna of the abdominal segments from the second to the seventh. Each carries, as usual in the group, a pair of stylets and a pair of protrusible vesicles (fig. 114).

Turning to the terminal *abdominal segments* and their reproductive processes, we find that those of the male have been already well figured

by Escherich ('04, text fig. 58, p. 131). I give now, however, a drawing (Plate X, fig. 116) of the ventral view of the tenth abdominal tergum, showing how the stout spines are arranged around the latero-posterior edges of the sclerite, and demonstrating also the conical apodemes (fig. 116 *ap*) and the muscles connected with the cerci and the median appendage.

In the female the tenth tergum is simpler and relatively narrower (fig. 120), without the stout spines that characterize the male, but carrying a pair of long, terminal bristles. The ovipositor of *Lepidospora Braueri* resembles that of *L. Escherichii*, which Silvestri has figured in outline. The large sternum of the eighth segment (Plate X, figs. 117, 118, viii) has a rounded hind margin beset with strong bristles; the sub-coxa is broad (fig. 118 *s. c.* 8), with the stylet inserted, as usual, in a notch near its inner edge. The anterior gonapophysis or process of the ovipositor (figs. 117, 118, *go.* 8) is large, broadly expanded in the middle, and with a blunt tip beset with hairs and a few short spines. The sub-coxa of the ninth segment (figs. 117, 118, *s. c.* 9), on the other hand, is narrow and elongate, constricted centrally; the sub-coxa (*s. c.* 9) and the stylet together are nearly as long as the gonapophysis (*go.* 9), which is narrower than the corresponding process of the eighth segment, shows very imperfect jointing, and carries, near the tip on the inner ventral aspect, a row of thick, curved processes, forming a comb-like structure (fig. 119). In a young individual in which no gonapophyses can yet be distinguished, the stylets of the ninth segment are longer than those of the segments in front, and the sub-coxæ are already prominent (Plate X, fig. 115).

The ovipositor of this species of *Lepidospora* is noteworthy on account of the poorly developed jointing of the gonapophyses. Escherich has given reasons for believing that this jointing, so apparent in the *Lepisma* and in *Atelura*, for example, is of a "false" and "secondary" nature. If this view be accepted, the condition in *Lepidospora Braueri* must be regarded as primitive. It has already been pointed out that in *L. gracilis* Escherich and in *L. meridionalis* Silvestri the gonapophyses of the female are long, with conspicuous jointing.

Family IAPYGIDAE.

The members of this family are easily distinguished from other Thysanura by the transformation of the hindmost abdominal appendages into a pair of forceps—a character which gives them the appearance of tiny earwigs. They resemble, however, the Campodeidæ and the Collembola in the structure of their jaws, which are for the most part retracted into the head-capsule. The typical genus *Iapyx* was established long ago by Haliday ('64) for an Italian

species *I. solifugus*. During recent years a large number of species have been described from various parts of the world, ranging from the Mediterranean countries and the United States to New Zealand and Chile. It is not surprising, therefore, to find the genus represented in the Seychelles collection.

Iapyx Haliday.

Iapyx silvestris sp. nov.

(Plate XI, figs. 121-134.)

Feelers 25-28 segmented. Legs somewhat slender; foot four-fifths length of shin, bearing two slightly curved claws, with feeble tooth on inner edge, and a short empodium (fig. 121). First abdominal sternum of male (fig. 126) with a small median rounded projection on the hinder edge, and a pair of vesicles, over which are two "comb"-series of small sharp bristles. Sixth abdominal tergum evenly rounded behind; seventh with the hind corners very slightly produced; tenth distinctly longer than broad (fig. 127). Forceps nearly as long as tenth segment; slightly asymmetrical, with the tips of the cerci strongly turned inwards, and the right internal tooth nearer the base than the left (figs. 127, 134).

Length 7 mm. Colour varies from whitish to chestnut in different specimens—all apparently adult.

Localities.—Mahé: Forêt Noire, at and over 1,000 feet elevation (5 specimens, both sexes, 1908). Silhouette (4 males, 1908).

This species is remarkable for the comparatively small number of antennal segments. In Verhoeff's synopsis of the genus ('04) no species with less than thirty segments in the feeler is mentioned. According to Silvestri ('08a, p. 389) the true *I. solifugus* Haliday has twenty-eight, while *I. anodus* Silvestri ('05, pp. 788-9) from Chile, has only twenty-seven. The latter, however, may be readily distinguished by the relative thickness of its legs, and the absence of internal teeth on the forceps, from the Seychelles insect. From *I. solifugus*, the species now described differs markedly in the armature of the first abdominal sternum as well as in the comparatively broad and blunt processes at the hind corners of the seventh tergum. *I. silvestris* is remarkable in apparently possessing only one "auditory" bristle beneath each of the three antennal segments (fourth, fifth and sixth), which usually carry three or four such structures (fig. 124).

From comparison of the specimens in this collection it appears that the feelers of *Iapyx* are capable of a high degree of contraction and extension. All the individuals from Mahé had the feelers presenting the appearance shown in fig. 121, while in two of the Silhouette specimens they were very

much shorter and markedly thickened a little beyond the base (fig. 122). Naturally the first conclusion drawn was that the latter must belong to a distinct species, but when a third insect from Silhouette was seen to have one long and slender, and one short and thick feeler, and a fourth to have the basal half of its feeler thick, and the distal half slender (the junction between the two sections is shown in fig. 123), it was clear that these appendages must be capable of great modification in appearance. This was confirmed when one of the short and thick-feelered insects was transferred from alcohol to caustic potash with the result that the distal half of the feeler lengthened out, resuming its previous contracted condition when the specimen was passed on into glycerine. Study of well-cleared specimens show that each segment of the feeler consists of a cup-shaped middle region broadening distally, covered with firm cuticle, while the proximal and terminal regions are covered with thin flexible cuticle, which has a wrinkled surface in partly contracted specimens. What happens on contraction is that these firm, cup-shaped regions are pulled back into each other, the flexible intermediate tracts being invaginated (fig. 123). For this purpose the feeler is provided with two strands of longitudinal muscle. No reference to this interesting change of appearance seems to have been made hitherto, and it will be necessary for systematists to consider it in future when describing the feelers of insects of this family.

The jaws of the South European *Iapyx* have been well described by Meinert ('65), von Stummer-Traunfels ('91), and Börner ('08), and as those of the Seychelles species resemble these very closely, it is needless to dwell upon them, though considerable difference of opinion has been expressed as to the homology of the structures usually regarded as maxillary. The under surface of the head of *I. silvestris* (fig. 125) shows the features usual in the labium of this family, with the stumpy, bristly, unjointed palps (*p*) that characterize the typical genus *Iapyx*.

Very little attention seems to have been paid to the genital armature in *Iapyx*. Grassi ('88, pp. 569, 572, pl. iv, fig. 47, pl. v, fig. 52) described and figured somewhat diagrammatically the external reproductive organs in both sexes, and Verhoeff drew the male ('04, pl. v, fig. 22, and female ('03, pl. xviii, fig. 8a) structures of *Hetero*i*apyx novae-zeelandiae*.

In both sexes there is a small sub-semicircular chitinous plate connected by flexible cuticle with the hind edge of the eighth abdominal sternum, behind which it is usually reflected. When protruded, therefore, it appears between the eighth and ninth sterna. In the male (figs. 132, 133) this plate has a marginal row of long bristles, and its ventral edge is beset thickly with short spines. Ventral to this plate extends a straight, hairy ridge (fig. 132 *r*), from

the two ends of which project the short, unjointed, bristly gonapophyses (*go.*). The crescentic opening of the ejaculatory duct is just hidden by the above-mentioned ridge when the organs are seen ventrally. In fig. 132 is shown the shape of the opening, as seen through the thin, translucent cuticle of the genital plate viewed from the dorsal aspect.

The genital plate in the female (fig. 130) has the same form as in the male, but its ventral surface is feebly granulated, bears no spines, and carries only a few long bristles. The vulvar opening is between this plate and a transverse ridge which projects dorsal to it; between the two lobes (fig. 130 *l*) which bound this flap the central spermathecal opening (fig. 130 *spe*) appears, while external to the lobes are the gonapophyses (fig. 130 *go.*), less prominent than those of the male. The lobes and the gonapophyses are evidently the inner and outer "papillae" as figured by Grassi; their arrangement in *Heteroiapyx novae-zeelandiae*, as sketched by Verhoeff ('03, pl. xviii, fig. 8*a*), is very similar. At the extreme tip of the female gonapophysis is a bluntly conical papilla, around the apex of which five or six minute bristles form a ring (fig. 131).

Family CAMPODEIDAE.

The interesting little insects comprised in this family agree with the Iapygidae in their retracted jaws, but differ in the nature of the hindmost abdominal appendages, which are elongate tail-feelers or cerci, as in Thysanura generally. Very little is as yet known of tropical Campodeidae; being blind insects living in soil and such concealed surroundings, they are seldom collected, and, being very fragile, imperfect and unrecognizable specimens are commoner than those fit for description. The Campodeidae from the Seychelles are few in number but highly interesting, as the species represented clearly belongs to the little-known genus *Lepidocampa* (Oudemans, 1890), whose members are distinguished from all other Campodeidae by being partially clothed with scales.

Lepidocampa Oudemans.

This genus was established by Oudemans ('90, pp. 76-7) for an Indo-Malayan species *L. Weberi*, inhabiting Sumatra, Java, and Flores. Silvestri ('99) found what he regarded as this identical species in Argentina, and afterwards ('01, p. 242; '05, p. 777) mentioned its presence in other parts of South America—Brazil, Paraguay, and Ecuador. Oudemans gives the number of antennal segments (over thirty), as he observed it in the Malayan insects, as a generic character, but Silvestri states that in the Argentine specimens the number of segments in the feelers varies from 22 to 32.

Just 22 are present in the few Seychelles specimens that possess a perfect feeler or two, so that, as far as this character is concerned, they might be referred to Oudemans' species, which they evidently resemble closely in size and general appearance. In the minute structure of the jaws, legs, and abdominal appendages, they appear to differ distinctly from the figures which Silvestri ('99, pls. 6, 7) has given of the South American *Lepidocampa*; and specific identity in wingless insects from such widely separated areas is unlikely. Indeed, Silvestri ('01, p. 242) admits that comparison of types would be necessary to verify the reference of his *Lepidocampa* to Oudemans' species. For the present, therefore, it seems advisable to describe the Seychelles specimens under a new name.

***Lepidocampa fimbriatipes* sp. nov.**

(Plates XII, XIII, figs. 135-157.)

Feeler with twenty-two segments, four "auditory" bristles on segments 3-6, inclusive, and a rosette-shaped antennal organ at tip of terminal segment (figs. 135-8). Mandible with four prominent apical teeth, and a lacinial "comb" of eleven teeth (figs. 141-2). Legs as in *L. Weberi* Oudemans: the laminate pulvilli bearing on each side a series of stiff, bristly outgrowths (fig. 146). Stylets of first abdominal segment in male (fig. 153) broadened distally with numerous spines, in female bluntly tapering, with a few terminal papillae (fig. 147). Stylets of abdominal segments 2-7 each with two conspicuous stout terminal spines (fig. 148). Telson and anal valves acutely pointed (figs. 149-150). (Cerci wanting in all specimens.)

Length 3.5 mm. Colour, rich brown—the scales showing a golden lustre when dry.

Localities.—Silhouette. Mahé, Forêt Noire, 1000 ft. A few specimens only from each island.

The rarity and interest of this genus make it advisable to enter into some details with regard to the structure of our Seychelles species for comparison with those given by Oudemans and Silvestri for the Malayan and Neotropical forms respectively. The Campodeoid aspect, combined with the restricted clothing of most characteristically shaped scales (fig. 140)—present on thorax and abdomen, but not on head or legs—makes a *Lepidocampa* easily recognisable. The *feelers* are shown by the Seychelles specimens to be capable of retraction and extension like those of *Iapyx* mentioned above (pp. 21-2). Silvestri saw and figured ('99, pl. 7, fig. 10) the *antennal organ* at the tip of the feeler's terminal segment; as seen from the side, it appears—as shown in his drawing—as a relatively large papilla surrounded by bristles. In

L. fimbriatipes (fig. 138) it is seen in surface view to consist of four prominences arranged rosette-wise, and surrounded by a cuticular thickening, close to which project a number of stout, thick, elongate spines. Silvestri overlooked the "auditory" bristles on the antennal segments from the third to the sixth, inclusive (figs. 136, 137). They agree closely with the similar structures found in Campodea; each bristle springs from the centre of a conspicuous cup-shaped depression of the cuticle. There are two of these sensory bristles on the lower, and two on the upper, aspect of each antennal segment bearing them.

The mandible (fig. 141) resembles generally that of the Argentine *Lepidocampa* figured by Silvestri (*l.c.* pl. 6, fig. 4), having an acuminate condyle and four prominent apical teeth, three of which bear minute subsidiary teeth; on the inner face of the third tooth are a series of ridges, forming apparently a grinding area. The lacinia to which Silvestri drew attention is conspicuous, consisting of a delicate "comb" of eleven teeth springing from a wide base attached to a blunt outgrowth of the inner edge of the mandible just beneath the teeth (fig. 142 *l*).

The maxillulae, maxillae, and tongue agree rather closely with the corresponding structures in Silvestri's American *Lepidocampa* ('99, pl. 6, fig. 6); in our species, however, the lacinial "comb" (fig. 143 *l*) has six processes, each ending in a delicate and slightly inflected lamella. The innermost of these processes has a perfectly smooth inner edge in *L. fimbriatipes*, whereas in Silvestri's figure it is shown with a marginal row of small, sharp teeth. The palp (fig. 143 *p*) is acuminate, with two or three papillae and stiff spines at its tip; it projects obliquely and inwardly towards the mouth from the galea (fig. 143 *g*), which is crowned with a group of long bristles, and bears near its anterior terminal edge a blunt, peg-like sensory structure (fig. 144). The maxillula (figs. 143, 157 *Mxl*) consists of a sub-triangular lobe with its blunt apex projecting over the tongue (*Hy*) and beset with very fine ridges and hair-like outgrowths. The outer edge of the maxillula is connected with the palp and galea just described, and the arrangement of these parts in *Lepidocampa*—lying as they do distinctly anterior to the stipes and lacinia—suggests that they belong really not to the maxilla, but to the maxillula, an opinion advocated—after study of the very similar corresponding organs in Campodea and Iapyx—by von Stummer-Traunfels ('91) and Hansen ('93). But the base of the galea is clearly connected with the maxillary stipes, the lacinia in insect maxillae generally lies behind the galea, and Börner ('08), after careful comparison of these structures in Iapyx with those of *Machilis* on the one hand, and of the *Collembola* on the other, is convinced that they are rightly referred to the maxilla. In support of this view, it is noteworthy that in the *Machilids*—probably as regards their jaws the most primitive of

all insects—the palp of the maxillula is vestigial (see figs. 5, 38, *Maxl*), and it seems unlikely that in the Iapygidae and Campodeidae the maxillular palp should be well developed and the maxillary utterly vanished.

The *labium* (figs. 145, 152) is, as Silvestri has pointed out ('99, p. 393), closely like that of Campodea, but his figures (*l.c.* pl. 6, figs. 7, 8) are imperfect in detail. The *sub-mentum* (fig. 152 *s.m.*) lies directly in front of the prothoracic presternum (*pst*), and the *mentum* (*m*) is reduced in extent. The ovoid protuberances (*p*), covered with sensory spines, are probably rightly regarded by Silvestri as palps, while the small conical processes (*l*), which Meinert ('65) considered to be palps, are evidently—from their internal position, as Silvestri has seen—laciniae. The broad, bristle-bearing lobes that project behind the mouth (fig. 152 *g*) must thus be recognized as galeae.

The legs in their relative lengths and in the proportions of their segments agree closely with those of *L. Weberi*. The most remarkable feature of these limbs is found in the beautifully fringed processes—apparently pulvilli (fig. 146 *pl*)—projecting on either side from the small claw-like empodium (*emp*) below the strongly curved claws (*cl*). From Oudemans' description and figure ('90, p. 77, pl. vii, fig. 8) it seems that these pulvilli in our Seychelles insect resemble very nearly those of his species. The pulvillus is a delicate, leaf-like plate, both edges of which bear series of stiff, slightly clubbed bristles projecting as a fringe, those of the outer series being longer than those of the inner. Silvestri's drawing of the foot of the South American *Lepidocampa* ('99, pl. 7, fig. 19) represents the whole surface of the pulvillus as covered by a number of rather feeble hairs, an entirely different arrangement from that found in *L. fimbriatipes*.

The first *abdominal segment*, with its appendages, shows the sexual difference characteristic of Campodea. In the *female* (fig. 135) the hinder edge of the sternum is furnished with a row of simple bristles, while the *stylet* (fig. 147) carries long bristles from its base onwards and a few spinose papillae at the tip. It is apparently relatively longer and less blunt than in Silvestri's species ('99, pl. 7, fig. 12). In the *male* (fig. 153), the *stylet* is relatively short and thick, with a cluster of spinose papillae at the tip, while the edge of the sternum bears several rows of spines, those of the two hindmost on prominent glandular papillae. The *stylets* on the succeeding six abdominal segments (fig. 148) bear each two strong spines at the extremity. Silvestri's description and figure ('99, p. 393, pl. 7, fig. 14) indicate these stylets merely as "setosi" in the species that he discovered in South America.

The *exsertile vesicles* are conspicuous on the abdominal segments from the second to the seventh, inclusive (fig. 135). When thrust out they exhibit a

stiff cylindrical base, bearing the somewhat granulated, bladder-like extremity (fig. 154 *e.v.*).

Neither Oudemans nor Silvestri mentions the *reproductive organs* of *Lepidocampa*; it is gratifying, therefore, to find that the Seychelles specimens afford material for at least a preliminary account of them. As might have been expected, they resemble rather closely those of *Campodea*, as described and figured by Grassi ('88, pls. iv and v, figs. 46, 50) and Meinert ('65, pl. xiv, fig. 13). In the *male* the hinder edge of the eighth abdominal sternum (fig. 154, viii) projects as a sub-triangular process, bearing series of long and short bristles, and concealing the external reproductive organs. These are exceedingly simple, consisting of two flattened chitinous *genital plates* (fig. 155 *g.p.*) with their free edges sub-semicircular and bearing series of bristles; between these plates the ejaculatory duct opens, so that the whole structure forms a kind of penis, as it is called by Meinert. The very short median *ejaculatory duct* (fig. 155 *d.e.*) is formed by the union of paired *vasa deferentia* (*v.d.*); its outer coat is thrown into a series of corrugations, showing that the organ in the specimen examined is in a retracted condition, the retraction being brought about by the action of muscles running parallel to the general direction of the tube, and originating in the abdominal exoskeleton; when extended the organ would evidently protrude beyond the hinder edge of the eighth sternum.

The *female's* eighth abdominal segment has the hinder edge of the sternum almost straight centrally (figs. 135, 156). Beyond it project a pair of short, blunt, conical processes, with a few bristles (figs. 135, 156 *go*) which may reasonably be regarded as the gonapophyses; the vulvar opening is between these and a semicircular *genital plate* (fig. 156 *g.p.*) corresponding to the dorsal plate similarly situated in the male. Anterior to these structures, and concealed by the eighth sternum, is the slit-like *spermathecal opening* (fig. 156 *spc.*).

In both sexes the hinder edge of the tenth abdominal tergum (figs. 149, 151) is adorned with a series of simple, bifid, and feathered bristles; beyond it projects the pointed *telson* (figs. 149, 150 *te*). The tenth sternum also has its hinder edge beset with varied bristles; it is deeply cleft in the middle line (figs. 150, 154), each half partly concealing an acuminate *anal valve* (*vl*) which bears an obliquely arranged series of papillae, whence spring long, flexible bristles. External to these valves may be seen the bases of the *cerci* (fig. 154 *ce*), which are unfortunately wanting in all the specimens examined.

The contents of the rectum are easily visible in some of the specimens, and afford interesting information as to the food of *Lepidocampa*. They

consist either of conidia of *Helminthosporium*¹ and other fungi, or of fragments of insect cuticle and bristles; probably the latter indicate that *Lepidocampa* behaves as a scavenger rather than as a beast of prey.

Order COLLEMBOLA.

The describer of Collembola, or "Spring-tails," from the Seychelles has the advantage of a field almost unworked, as one species only of these insects, *Acanthurella Braueri*, Börner ('06), seems as yet to have been recorded from the Archipelago. That insect is represented in the present collection, and so is a species *Arcelsonia thalassophila*, Börner ('07), described lately from Madagascar. The remaining sixteen species now recorded appear to be all new to science.

Among the Collembola there is a marked division into two groups, which Börner ('01) is probably justified in regarding as sub-orders. They are thus characterized:—

- A. Segmentation of the abdomen well marked, occasionally the fifth and sixth or the fourth, fifth, and sixth segments partially fused.
Body elongate in form. Tracheal system wanting (except in the Actaletinae), *Arthropleona.*
- B. Abdomen sub-globular with the segmentation obliterated.
Tracheal system developed, *Symphyleona.*

Of these two sub-orders, the latter, which marks a higher degree of specialization than the former, appears to be unrepresented in the fauna of the Seychelles, all the eighteen species here recorded being members of the Arthropleona. The Arthropleona may be most naturally divided into two very distinct families, though Börner in his latest classification ('13*b*) regards these as "sections" containing three families each, an unwarranted systematic elaboration.

- A. Prothorax well developed, with definite tergum, bearing bristles.
Cuticle usually granulated, *Poduridae.*
- B. Prothorax much reduced, its tergum undeveloped. Cuticle not granulated, *Entomobryidae.*

Only a single Seychelles species belongs to the former of these two families; the remaining seventeen are all Entomobryidae.

¹ For the determination of this genus I am indebted to my colleague, Professor T. Johnson, D.Sc.

Family **PODURIDAE.**

Spring-tails of this family are numerous in the great northern continental tracts, and not rare even in the Arctic regions. In tropical countries they appear to be relatively scarcer, and this scarcity is especially noticeable in insular faunas. The single Seychelles species belongs to a sub-family Neanurinae,¹ characterized by the slender, elongate mandibles and maxillae (see Plate XIV, fig. 1 *mand.*, *m.x.*, fig. 3), the mandibles being without a grinding molar area, and the jaws being often adapted for piercing rather than for biting.

NEANURINAE.

Neanura sexoculata sp. nov.

(Plate XIV, figs. 1–6.)

Three ocelli (fig. 1 *oc*) and a vestigial post-antennal organ (fig. 1 *p.a.*) on each side of the head. Foot with claw untoothed, empodial appendage (fig. 5 *emp*) vestigial. Maxilla (fig. 3) with acute apex and simple delicate process (? palp. fig. 3 *p*). Fifth abdominal segment with intermediate tubercle (fig. 6 *tb*¹) distinct from dorso-lateral tubercle (fig. 6 *tb*²); each of these

¹ Börner ('06, pp. 156–7) proposes to replace the established name (*Neanura*) of the typical genus of this sub-family by *Achorutes*, which Templeton gave (Trans. Ent. Soc. Lond., 1836) to a genus comprising two diverse species—(1) *dubius* (belonging to *Achorutes* as understood by Tullberg, Lubbock, Schött, and the great majority of modern writers) and (2) *muscorum*, belonging to Gervais' *Anura*, 1841 (modified into *Neanura* by MacGillivray, 1893). Börner wishes to revive for the former of these two groups Bourlet's generic name *Hypogastrura* (Mem. Soc. Science Agric., Lille, 1839), which is stated by its author to be founded for *Podura aquatica* Linné, although the description and figure given show—as Börner correctly points out—that Bourlet had in view a species congeneric with Templeton's *Achorutes dubius*. Hence Börner argues that *Hypogastrura* must stand as the generic name of this group, and *muscorum* must become the type of *Achorutes*, Templeton. Börner's argument seems reasonable, and he has been followed in this revision of nomenclature by many subsequent writers. Yet his decision prejudices the question, still under consideration by the International Commission on Zoological Nomenclature, whether the type of a genus based on a misidentified species ought to be fixed by what the author states or by what he means. In the "Smithsonian Inst. Publication," No. 2256, 1914, pp. 152 f., this question is argued by a number of zoologists from opposite standpoints, and is finally reserved by the Commission for consideration; and if this decision hold an author to the letter of his statement, *Hypogastrura* becomes a synonym of *Podura*. Until, therefore, the principle shall have been settled by authority, I prefer to retain a nomenclature which nobody can misunderstand, for *Neanura* can mean one genus, and no other. *Achorutes*, thanks to Börner's "emendation," has become ambiguous, as any name must when it gets transferred from genus to genus in the same family. Börner himself gives a startling exhibition of the inconvenience and confusion resulting from changes of this kind, by using *Achorutes* in one sense in the introduction to his paper (1906), and in the other sense in the systematic portion of the same paper!

tubercles bearing a sensory bristle dorsally. Abdominal dorso-lateral tubercles rounded.

Length 2.5 mm. Colour yellow.

Localities.—Mahé: Cascade, 1000 feet (1908, 4 specimens). Silhouette (1908, 2 specimens).

Two recently described Oriental species, *N. pudibunda* Imms ('12, pp. 86-7), and *N. dubiosa* Ritter ('12, p. 397), resemble *N. sexoculata* in colour, in the number of ocelli, and in the structure of the foot-claw. Imms and Ritter, however, give no details as to the maxillae and the abdominal tubercles, on which Börner ('06, pp. 167-9) has laid stress in distinguishing sub-genera in this genus. But in *N. pudibunda* Imms, a specimen of which I have lately had an opportunity of seeing, the intermediate tubercles of the fifth abdominal segment are fused with the dorso-lateral tubercles as in the European *N. muscorum* Templ. The simple maxilla, the distinction of the intermediate from the dorso-lateral tubercles of the abdominal terga, and the presence of sensory bristles on each of these tubercles in *N. sexoculata* combine to place the species in Börner's sub-genus *Lobella*, founded for the reception of a Japanese insect—*Neanura (Lobella) Sauteri*. Börner, however, describes the dorso-lateral tubercles of the four anterior abdominal segments as "zapfenartig" in *Lobella*; in our Seychelles insect they are rounded like the other abdominal tubercles, so that in this character an approach to typical *Neanura (N. muscorum* Templ.) is shown.

The main features of the head and its appendages may be seen by reference to the drawings (figs. 1-3). The cuticle is covered with strong granulations, and bears three prominent sub-hemispherical bristle-bearing tubercles on each side. The ocelli (fig. 1 *oc*) are imperfectly defined; two lie in front closely apposed, and one behind. In front of the two ocelli is a smooth, cuticular area surrounded by strong granulations; this seems to represent a vestigial, post-antennal organ (fig. 1 *p.a.*). The *feelers* are of the short, stumpy build usual in *Neanura*; at the tip of the terminal segment (fig. 2) may be seen retractile sensory papillae, near which are some sensory bristles and short spines. The *mandible* (fig. 1 *md*) is long and slender; its proximal end evenly rounded, its tip blunt and toothless. The *maxilla* (fig. 3) has a simple needle-like apex, near which is attached a delicate, pointed process (*p*), which may represent the palp. The labium (fig. 4) consists of paired elongate plates with somewhat serrate edge, borne on a median sub-triangular sclerite.

The *foot* and its claw are of the type usual in the genus; no tooth can be seen on the claw, but a minute slender vestige of the empodial appendage ("inferior claw" of older authors) may be distinguished (fig. 5 *emp.*). The

arrangement of the tubercles of the abdominal segments and their sensory bristles has already been sufficiently described. The spinose bristles, characteristic of *Neanura*, are in this species numerous and prominent on all parts of the body.

Family ENTOMOBRYIDAE.

Except for *Neanura sexoculata*, described above, all the Seychelles Collembola belong to this large family, the relationships of whose numerous genera have formed the subject of much discussion among specialists. General agreement exists as to the recognition of three principal sub-families, one of which—the Tomocerinae—is not represented in the present collections. In his latest classification of the Collembola, Börner ('13*b*) proposes to raise these groups to the rank of families. The most natural definition of these sub-families, as they may more reasonably be regarded, seems to be that adopted by Schäffer ('97), and by Börner in his earlier works (e.g. '03), and their essential superficial characters may be tabulated thus:—

- A. Fourth abdominal segment equal, or almost equal, in length to the third. Scales wanting. Feeler with third and fourth segments simple and sub-equal in length. Post-antennal organ usually present. Dentes of spring without spines, *Isotominae*.
- B. Fourth abdominal segment shorter than the third. Body scaled. Feeler with third and fourth segments ringed, the former much the longer. Post-antennal organ wanting. Dentes of spring spinose, *Tomocerinae*.
- C. Fourth abdominal segment usually much longer than the third. Body scaled or unscaled—always scaled if the third and fourth abdominal segments are sub-equal in length. Post-antennal organ wanting, *Entomobryinae*.

Börner in his later writings ('06, &c.) transferred from the *Isotominae* to the *Entomobryinae* a group including the common European *Isotomurus palustris*, because these insects bear on the second, third, and fourth abdominal segments sensory bristles or "bothriotricha," which are characteristic of the latter, but not of the former, sub-family. Now *Isotomurus* (of which there is a Seychelles species) resembles typical *Isotoma* and its allies so closely in all the main points of structure that Börner was obliged to call in a theory of "convergence" to account for the likeness. Unfortunately almost all writers on Collembola during the last ten years hastened to accept Börner's new classification, although his "bothriotricha" (one is figured on Pl. XIV, fig. 18) are far too slender to carry the weight which he assigned to them. Why

should their presence or absence be regarded as of such moment, when species with or without a post-antennal organ may be left peacefully side by side in the same sub-family? And now, in his last paper ('13 b), Börner announces the discovery, on the trochanters of the hind legs of Entomobryinae, of another type of microscopical sense-organ. Since these are wanting in the Isotomurini, he restores this group, although its members possess "bothriotricha," to its natural position among the Isotominae. I am glad, therefore, that before reading Börner's latest "system" I had decided to be unfashionable, and to retain *Isotomurus* and its allies among the Isotominae, especially in view of certain admissions previously made by Börner with regard to *Axelsonia*, an allied genus of very great interest discussed below.

ISOTOMINAE.

Two species from the Seychelles are referable to this sub-family as just defined, both belonging to the disputed group of the Isotomurini; the typical Isotomini are apparently absent from the fauna of the Archipelago. The species represent two distinct genera which may be readily distinguished.

- A. Foot-claw with distinct basal filiform processes. Bothriotricha simple, *Axelsonia*.
 B. Foot-claw without basal processes. Bothriotricha feathered, *Isotomurus*.

Axelsonia Börner.

This genus was diagnosed by Börner ('07, p. 147) for a marine species found in barnacle-shells on the Manavara reef off the coast of Madagascar. He had, in the previous year ('06, p. 159), published the name, referring to the genus in addition to the Malagasy species, *Isotoma nitida* Folsom ('99 a, p. 264, figs. 14-18), from Japan. The slender claw-processes (fig. 12 *l.p.*) and the simple bothriotricha on the abdominal segments serve to distinguish most definitely *Axelsonia* from all known Isotomine or Isotomurine genera.

Axelsonia thalassophila Börner.

(Plate XIV, figs. 7-14.)

This species was founded by Börner (*l.c.*, pp. 147-150, figs. 1-7) for marine spring-tails collected in barnacle-shells on a reef in Antongil Bay (east coast of Madagascar). The *Axelsoniae* of the Seychelles collection do not appear to differ specifically from Börner's insects; the only noteworthy divergence is in the comparative lengths of the third and fourth abdominal segments, the former being distinctly the longer in the insects now recorded

(see fig. 7), whereas in Börner's specimens these segments are described and figured (p. 147, fig. 1) as of almost equal length. The presence of minute secondary segments or "jointlets" between the second and third and third and fourth antennal segments (see fig. 9) is noteworthy. This feature is mentioned by Folsom in his description of *A. nitida*.

Locality.—Aldabra, from algae, Bassin Cabris, Picard Island. (J. C. F. Fryer, coll. 9th April, 1909.)

On account of the exceptional interest of this species, figures are given of the leading structural features of the Aldabra specimens, that it may be seen how closely they agree with Börner's types. The details shown in Folsom's drawings of his Japanese species *nitida* (in which the third abdominal segment is longer than the fourth) agree also very closely with *A. thalassophila*, and it is possible that we have but forms of one widespread species, with a tropical and sub-tropical range analogous to that of not a few northern Collembola with littoral habitat. The Japanese localities mentioned by Folsom (Tokyo and Niyagi) are apparently, however, not maritime. The geographical relations of shore-haunting insects are especially interesting; a discussion on these is given below (p. 49).

In his remarks on *Axelsonia*, Börner (*l.c.* p. 150) expressed his opinion that the simple form of the bothriotracha in the genus gives it a position intermediate between the characteristic Isotomini and the Isotomurini. He adds: "Ob sie ein Glied der Isotomini C.B. oder der Isotomurini C.B. ist, lässt sich schwer entscheiden und bleibt möglicherweise stets dem subjektiven Ermessen [!] der Forscher überlassen." After this admission it is somewhat surprising that he continued to argue for the decisive evidence of the bothriotracha as a character for placing the Isotomurini along with the Entomobryinae. Further on he pointed out that from the presence of bothriotracha in certain Poduridae and Sminthuridae, "ist ihre Entstehung zur Zeit der hypothetischen Protocollembola höchst wahrscheinlich." Surely if this be so, and the presence or absence of these bristles is useless as a family character, it should not have been allowed to override the many important and conspicuous features of structure which led systematists, until a few years ago, to include *Isotomurus* and *Axelsonia* in the comprehensive genus *Isotoma*. While objecting to Börner's classification as unwarranted and highly inconvenient, I felt in full agreement with him in regarding *Axelsonia* as "tief an der Wurzel des ganzen Entomobryenstammes"—an additional argument indeed for considering it to be nearly related to typical *Isotoma*. And now the discovery that these spring-tails have no "trochanteral organs" leads Börner, as stated above, to replace the insects where this obvious relationship is emphasized.

Isotomursus Börner.

This genus was founded by Börner ('03, p. 171) for the common European *Isotoma palustris* (Müller), and no other species seems as yet to have been included in it. Members of the genus resemble the typical Isotomini in all important points of external structure, but are distinguished by the presence of the six pairs of bothriotricha already mentioned on the abdominal segments. If we are justified in regarding the possession of these as an archaic character, it is of especial interest to find that *Isotomurus* is represented in the fauna of the Seychelles.

Isotomurus obscurus sp. nov.

(Plate XIV, figs. 15-19.)

Feelers half as long again as the head (fig. 15); relative length of segments as 3:8:10:11. Ocelli eight on each side, the inner posterior one markedly smaller than the rest; post-antennal organ broadly ovate, only slightly longer than the diameter of an anterior ocellus (fig. 16). Foot with simple, untoothed claw and lamellate acuminate empodial appendage; no tenent hair (fig. 17). Length of third and fourth abdominal segments equal; fifth and sixth abdominal segments distinct, and bearing a few long bristles. Spring somewhat short and stout; dens half as long again as manubrium, tapering rapidly to tip; mucro (fig. 19) with prominent apical and dorsal teeth, and a minute accessory dorsal tooth.

Length 1.75 mm. Colour deep violet-blue, except for the sutures of the body-segments and the dens and mucro, which are white.

Localities.—Silhouette, 1908 (6 specimens). Mahé: Forêt Noire, 1000 ft., 1908 (2 specimens).

This species is closely allied to the European *I. palustris* (Müller), but the latter has a tooth on the empodial appendage of the foot, and a small ventral tooth on the mucro of the spring. Its post-antennal organ also differs from that of the Seychelles species, being narrowly elliptical. *I. palustris* has been recorded from Java by Börner ('06, p. 173) and from Calcutta by Imms ('12, p. 93).

ENTOMOBRYINAE.

From the number of species included in this sub-family, it may be regarded as the dominant group among the Seychelles Collembola. Börner and other systematists recognize several tribes which may be regarded as natural assemblages of genera, and are at least convenient for purposes of classifica-

tion. The tribes and genera comprised in the Seychelles fauna may be distinguished thus :—

- A. Sixth abdominal tergum elongate and cerciform, feelers with six segments, the two distal ringed, *Heteromuricini.*
 including one genus, *Heteromuricus.*
- B. Sixth abdominal segment normal, not elongate. Feelers with the four segments all unringed.
 - i. Dentes of spring flexible, with dorsal edge corrugated, mucro relatively short and slender, with dorsal and terminal teeth and a dorsal spine, *Entomobryini.*
 - m. Body unscaled, *Entomobrya.*
 - n. Body scaled. Mesonotum prominent.
 - o. Dentes of spring without spines, *Lepidocyrtus.*
 - p. Dentes of spring with spines, *Acanthurella.*
 - ii. Dentes of spring rigid, without corrugations along dorsal edge.
 - q. Mucro of spring relatively short and broad, *Paronellini.*
 - s. Body scaled, feelers shorter than body, dentes with spines, *Microparonella.*
 - t. Body unscaled, feelers longer than body, dentes unspined, *Cremastocephalus.*
 - r. Mucro of spring elongate—usually a third or a quarter as long as dens, which carries series of large ribbed scales, *Cyphoderini.*
 genus, *Cyphoderus.*

HETEROMURICINI.

Heteromuricus Imms.

This remarkable genus was established by Imms ('12, p. 92) for a species *H. cereifer*, found under dead leaves at Calcutta. The name was given on account of the conspicuous tail-process at the hinder end of the abdomen; this, however, appears not to be a "median cercus," as Imms suggested, but the elongate tergum of the sixth abdominal segment. Imms has referred this insect to a new sub-family, the Heteromuricinae, intermediate between the Tomocerinae (seemingly unrepresented in the Seychelles fauna) and the Entomobryinae. He suggests, however, its probable affinity with *Heteromurus* (Wankel), which is regarded by most recent students as a member of the

Orchesellini. The five- or six-segmented feelers of *Heteromuricus* show a correspondence with *Orchesella*, but this is a character that cannot be regarded as of great importance, and the mucro of the spring (fig. 24), with its two teeth and a slender inclined spine, is that of a typical *Entomobryine*. The jaws, however (see below and next page), are in many respects like those of *Orchesella*. Until further allied genera shall have been discovered it is, perhaps, best to retain *Heteromuricus* as the unique representative of a distinct tribe. The insects have a close superficial likeness to species of *Tomocerus*, on account of the ringed feelers. From these, however, the form of the foot and mucro, and the absence of spines on the dentes, distinguish them at once. Moreover, in *Tomocerus* the third abdominal segment is longer than the fourth, whereas in *Heteromuricus* the fourth is clearly longer than the third.

In the Seychelles collection a new species of this genus is represented by numerous examples, which differ in many respects from *H. cercifer* Imms.

***Heteromuricus longicornis* sp. nov.**

(Plates XV, figs. 20-24; XVIII, figs. 74-77.)

Feelers (fig. 20) nearly as long as the body, six-segmented; the proportional lengths of the segments as 1:8:3:9:32:14, the fifth and sixth segments (except for the proximal end of the former) ringed and surrounded with whorls of short, stout bristle (fig. 22). Eight ocelli on each side of the head, the two posteriors of the inner row very small (fig. 21). Legs with scales and feathered hairs; a single filiform bristle near the tip; claws with minute internal teeth near the base, empodial appendage slender, lanceolate, untoothed (fig. 23). Spring half as long as the body; dens $1\frac{1}{4}$ times length of manubrium (fig. 20), bearing long feathered hairs; mucro with evenly curved terminal and dorsal teeth, and a fine dorsal spine (fig. 24).

Length 3.5 mm. Colour of scaling dark slaty-grey.

Localities.—Silhouette (1908, 4 specimens). Mahé: Forêt Noire, 1000 ft. (September, October, 1908, many specimens).

This species is very easily distinguished from *H. cercifer* Imms, which has the feelers only about half as long as the body, the eight ocelli all about the same size, and the foot-claws with distal teeth. *H. longicornis* also is apparently half as large again as *H. cercifer*.

Opportunity has been taken from the number of examples of this insect in the collection to make a study of the jaws, as the details of structure known about the genus are scanty. There is nothing remarkable about the *mandible* (Plate XVIII, figs. 74-75), except that the right one has, just proximal to the apical tooth, four small teeth (fig. 74a), while the left

(fig. 75*a*) has two large teeth, with a couple of small rounded tubercles between them. The maxillulae and tongue (fig. 76) are like those of *Orchesella* as described and figured by Folsom ('99*b*). The *maxillula* (fig. 76, *Maxl*) has its distal free end angular, with two sub-acute prominences; along the proximal region of its inner edge is the usual row of denticles—the distal few being blunt, the rest relatively long and sharp. The *tongue* (fig. 76 *hy*) is—like that of *Orchesella* (Folsom, '99*b*, pl. 3, fig. 23)—broad distally, with rounded edges and dorsal depressions bounded by toothed ridges; the supporting foot of the tongue (fig. 76 *pd*) is strikingly like that of *Orchesella*. So are the cardo and stipes of the *maxilla* (fig. 76 *c. st.*), the sub-cylindrical galea (fig. 76 *g*)—according to the highly probable and ingenious interpretation of Börner ('08)—and the vestigial palp (fig. 76 *p*), with its long, acuminate bristle, being of the usual Collembolan type. The head of the maxillary lacinia (fig. 77) has three strong external teeth—regarded by Folsom and most students as representing the galea—four lamellae (fig. 77 *lm*), composed of closely approximated bristles, and a conspicuous “brush” (*br*), consisting of an axis, with lateral filaments resembling an ostrich-plume in appearance. This structure certainly corresponds with the brush of the maxillary lacinia in *Corethromachilis*, described above (pp. 4, 6, Pl. I, figs. 7-8), and in the “Mittelanhang” figured by Börner ('08, Pl. VII, fig. 12) as present in the lacinial head of *Tetradontophora*, which it resembles rather closely.

Food material is visible in the intestines of several examples of this species. It consists entirely of fungus hyphae, and conidia, the latter more fragmental than in the rectum of *Lepidocampa* (see above, p. 28), but apparently also referable to *Helminthosporium*.

ENTOMOBRYINI.

Entomobrya Rondani.

Degeeria Nicolet, Lubbock, etc.

This widespread genus of spring-tails, characterized by the absence of scales, the great length of the fourth abdominal segment, and the foot with a conspicuous tenent hair, is represented in the Seychelles collection by a single species, which appears to be undescribed.

Entomobrya seychellarum sp. nov.

(Plate XV, figs. 25-27.)

Feelers nearly twice as long as head, proportion of their segments as 3:6:5:8. Fourth abdominal segment three and a half times as long as third. Foot-claw with three teeth (fig. 26). Mucro of spring with the usual terminal and dorsal curved teeth, the dorsal spine slightly bent (fig. 27).

Colour cream-yellow with violet markings, comprising a streak along

each side of the head, a lateral stripe along all the body-segments, paired **┌**-shaped markings on the hinder edge of the metatergum, a strong transverse band on the hinder edge of the third abdominal segment, two pairs of longitudinal streaks running forward from the hinder edge of the fourth abdominal segment, and nearly the whole of the fifth and sixth abdominal segments.

Length 1·3 mm.

Localities.—Mahé: Forêt Noire, 1000 ft. (October, 1908); Cascade, 1000 ft. (1905); Mare aux Cochons, 1000–2000 ft. (January, 1909). Silhouette (1908).

It seems hard to find clear structural characters for defining the species of *Entomobrya*. In the longitudinal violet bands on the fourth abdominal segment, *E. seychellarum* recalls the European *E. nivalis* DG., but the definite transverse band on the third segment serves to differentiate the present insect.

Lepidocyrtus Bourlet.

This widely spread genus, whose members are scaled, and have the head overhung more or less by the mesothorax, appears to be especially well represented in tropical countries. The Seychelles collection contains no less than seven species—nearly half the total number of Entomobryinac, so that the dominance of the genus is strikingly exemplified. The Seychelles Lepidocyrti may be distinguished thus:—

A. Mucro slender, with the terminal tooth strongly procurved dorsalwards.

i. Feelers not more than twice as long as the head.

m. Colour uniformly dark except spring and segmental sutures. Mesonotum rather prominent, *L. silvestris*.

n. Colour pale, with dark lateral streaks, thighs and antennal segments with terminal dark rings.

Mesonotum very prominent, . . . *L. annulicornis*.

o. Colour pale, except for darkening of third and fourth antennal segments. Mesonotum less prominent, *L. obscuricornis*.

p. Colour pale, except for lateral patches on fourth abdominal sterna and at tip of hind thighs.

Mesonotum rather prominent, . . . *L. stramineus*.

ii. Feelers much more than twice as long as head.

Mesonotum very prominent.

q. Feelers about three times as long as head, *L. Fryeri*.

r. Feelers nearly three-quarters as long as body,

L. imperialis.

- B. Mucro stout, with the terminal tooth relatively small and not directed dorsalwards, *L. Gardineri*.

All these species have eight ocelli on each side of the head, arranged in the manner characteristic for *Lepidocyrtus* (Pl. XVI, fig. 44). The empodial appendage of the front foot (fig. 48) is in all cases less elongate than that of the intermediate and hind pairs (fig. 49).

***Lepidocyrtus silvestris* sp. nov.**

(Plate XV, figs. 28–30.)

Mesonotum moderately prominent, twice as long as metanotum; fourth abdominal segment five times as long as third. Feelers rather less than twice as long as the head; proportion of their segments as 5:7:7:4 (fig. 28). Foot-claw with a single minute tooth, empodial appendage narrowly lanceolate, tenent hair feebly clubbed at the tip (fig. 29). Spring half as long as body; manubrium stout, equal in length to dens and mucro together; mucro (fig. 30) narrow, with slender teeth, the dorsal spine long and acute.

Length 1.1 mm. Colour deep violet: only the intersegmental sutures, the spring and the tips of the feet pale.

Locality.—Mahé: Forêt Noire, 1000 ft. (October, 1908).

Of all described *Lepidocyrti* known to me, this species comes nearest to *L. caeruleus* Ritter ('12, pp. 389–390), from Ceylon, in which the feelers are proportionately shorter, and the foot-claw has a distal tooth on the inner edge.

***Lepidocyrtus obscuricornis* sp. nov.**

(Plate XV, figs. 31–33.)

Mesonotum but slightly prominent, less than half as long again as metanotum; fourth abdominal segment five times as long as third. Feelers nearly twice as long as head, proportion of their segments as 5:9:9:11 (fig. 31). Foot-claw with two rather strong internal teeth (fig. 32). Spring nearly half as long as body, manubrium stout, as long as dens and mucro (fig. 31); mucro (fig. 33) with very prominent teeth, the dorsal spine slender and slightly curved.

Length, 2 mm. Colour, pale yellow, except for lateral violet specks on fourth abdominal sterna and a violet suffusion on the feelers from the tip of the second segment to that of the fourth.

Locality.—Mahé: Cascade, 1000 ft. (1908, many specimens).

In its type of colouration, structure of mucro, and the hairy feelers, this species resembles *L. scaber* Ritter ('12, pp. 390–1), from Ceylon; the latter, however, has the empodial appendage broadened at the tip.

Lepidocyrtus annulicornis sp. nov.

(Plate XV, figs. 34-36.)

Mesonotum very prominent, two and a half times as long as metanotum; fourth abdominal segment four and a half times as long as third. Feelers half as long again as the head, proportion of their segments as 3:5:8:9 (fig. 34). Foot-claw with vestiges of teeth, empodial appendage very slender (fig. 35). Spring, three-sevenths length of body, manubrium equal in length to dens (fig. 34); mucro narrow and elongate (fig. 36).

Length 1.75 mm. Colour yellow, with violet tips to all the antennal segments and the thighs, and lateral violet streaks on the body segments, those on the fourth abdominal long and furcate (fig. 34).

Localities.—Mahé: Cascade, 1000 ft. (1908, 2 specimens); Forêt Noire, 1000 ft. (October, 1908, 2 specimens).

This species is very readily distinguished from other members of the genus on account of its darkly annulated feelers and the dark-blue body-markings, which give it the aspect of an *Entomobrya*.

Lepidocyrtus stramineus sp. nov.

(Plate XV, figs. 37-39.)

Mesonotum moderately prominent (fig. 37), two and a-half times length of metanotum. Fourth abdominal segment three and a-half times as long as third. Feelers one and three-quarters times as long as head, proportion of their segments as 5:9:10:11. Foot-claw with minute internal teeth (fig. 38). Spring more than half as long as body, dens slightly longer than manubrium; mucro relatively short, with teeth very strongly procurved (fig. 39).

Length 2 mm. Colour pale yellow, except for violet patches at end of fourth abdominal sterna and at tip of hind thighs.

Localities.—Mahé: Forêt Noire, 1000 ft. (3 specimens, October, 1908).

This species is somewhat near *L. dahlia*, Schäffer ('98, pp. 419-420), from Ralum in the Bismarck Archipelago; the latter species has a less acuminate empodial appendage, and a differently arranged pattern of dark-blue markings on its prevailing yellow ground-bue.

Lepidocyrtus Fryeri sp. nov.

(Plate XVI, figs. 40-42.)

Mesonotum very prominent, three times as long as metanotum (fig. 40). Fourth abdominal segment five times as long as third. Feeler nearly three times as long as head, proportion of its segments as 5:12:17:18 (fig. 40).

Foot-claw relatively short, with proximal and distal internal teeth (fig. 41). Spring half as long as body, dens slightly longer than manubrium; mucro narrow, with teeth somewhat short; dorsal spine straight (fig. 42).

Length 1.75 mm. Colour pale yellow, with tips of second and third, and most of the fourth antennal segments, a few lateral spots on the body-segments, and broad bands on the hind thighs deep violet.

Localities.—Mahé: Mare aux Cochons, 1000–2000 ft. (1 specimen, Jan. 1909).

***Lepidocyrtus imperialis* sp. nov.**

(Plate XVI, figs. 43–46.)

Mesonotum excessively prominent, three times as long as metanotum. Fourth abdominal segment eight times as long as third. Feeler three-quarters as long as body, proportional length of its segments as 13 : 17 : 26 : 28 (fig. 43). Foot-claw elongate and straight, with small proximal and distal teeth; empodial appendage narrowly lanceolate (fig. 45). Spring two-thirds as long as body, the manubrium rather longer than the dens (fig. 43), mucro strong with the dorsal tooth broad and the terminal somewhat flattened (fig. 46).

Length 2.5 mm. Colour pale yellow, with irregular lateral violet streaks on the thoracic and fourth abdominal segments; the tips of the second and third, and almost the whole of the fourth antennal segments violet, also the hind thighs (fig. 43).

Localities.—Mahé: Forêt Noire, 1000 ft. (2 specimens, 1908); Cascade, 1000 ft. (2 specimens, 1908). Silhouette (4 specimens, 1908). Félicité (6 specimens with feelers rather shorter than those from other islands, February, 1909).

This and the preceding species resemble the West African (Cameroon) spring-tail, *L. maximus*, Schött ('93, pp. 11–13, pl. iii), in the relatively long feelers, the very prominent mesonotum, and the type of coloration. *L. maximus* has the mucro like that of *L. Fryeri*, and the foot-claw and appendage like those of *L. imperialis*; it is considerably larger than any examples of the genus from the Seychelles. *L. robustus* Imms ('12, p. 94) from Travancore South India, and *L. pictus* Schäffer ('98, pp. 4.6–4.17) from the Bismarek Archipelago, are also allied to this group.

***Lepidocyrtus Gardineri* sp. nov.**

(Plate XVI, figs. 47–50.)

Mesonotum not very prominent, nearly three times as long as metanotum. Fourth abdominal segment seven times as long as third. Feeler nearly three times as long as head, proportion of its segments as 4 : 9 : 10 : 12 (fig. 47). Foot-claw very long, with conspicuous proximal and distal internal teeth, the

empodial appendage very long, narrowly lanceolate (figs. 48–49). Spring three-fifths as long as the body, the manubrium as long as the somewhat robust dens (fig. 47). Mucro (fig. 50) stout, with the terminal tooth small, not procurved dorsalwards and the dorsal tooth close to the terminal.

Length 2.5 mm. Colour pale yellow, with the greater part of the second, and the whole of the third and fourth antennal segments, the tip of the hind thigh, the lateral borders of the meso- and metanotum, lateral patches on the fourth abdominal tergum and sterna, and the tip of the sixth abdominal segment deep violet.

Localities.—Mahé: Cascade, 1000 ft. (many specimens, 1908); Forêt Noire, 1000 ft. (many specimens, October, 1908).

This is a very interesting species, showing the long feelers, legs, and spring, and the type of coloration found in the two preceding species and their African and Oriental relations, while the relatively short and blunt mucro recalls that of the common European *L. lanuginosus*, Tullberg.

Acanthurella Börner.

Acanthurella was established by Börner ('06, p. 176) as a sub-genus of *Lepidocyrtus* for the species from the Seychelles here recorded and another species from Java. The presence of strong spines on the dentes of the spring, the modification of the mucro, and a characteristic facies differing from that of typical *Lepidocyrtus*, may warrant the recognition of *Acanthurella* as of generic rank.

Acanthurella Braueri Börner.

Apparently this is the only species of *Collembola* hitherto recorded from the Seychelles. Börner ('06, p. 176) describes its structural features, but gives no figures, nor any precise locality. From the number of specimens from all the stations mentioned in the present collection, it appears to be common in the islands of Mahé and Silhouette.

Localities.—Mahé: Forêt Noire, 1000 ft. (1908); Cascade, 1000 ft. (Oct., 1908); Mare aux Cochons, 1000–2000 ft. (January, 1909). Silhouette (1908). Numerous specimens from all localities.

There is little to be added to Börner's description of this spring-tail. The feeler is less than twice as long as the head, the proportional length of the segments being as 5:11:11:12. The mesonotum is twice as long as the metanotum, the fourth abdominal segment five times as long as the third. The two posterior inner ocelli are much smaller than the other six (fig. 52). The mucro of the spring is very characteristic in form, having a small, almost straight, terminal tooth, and a broad and very prominent dorsal tooth; the spine is long and distinctly curved (fig. 54).

PARONELLINI.

Microparonella gen. nov.

Body scaled. Feelers relatively short, four-segmented with the segments not markedly disproportionate. Legs spinose; foot-claw normal, empodium narrow, tenent hair feebly clubbed. Ventral tube elongate, with large protrusible bilobed sac. Fourth abdominal segment from three to four times as long as third. Spring elongate, with slender, rigid (Paronelline) dentes; dens with a row of strong spines, but without terminal scale-appendage; mucro of the broad (Paronelline) type, with four or five blunt teeth.

Type, *Microparonella caerulea* (sp. nov.) Seychelles.

This genus is of considerable interest, as it combines the distinctive Paronelline characters of the spring with the general aspect of an Entomobryine insect. In the inconspicuous feelers and the relatively short fourth abdominal segment, it seems much more primitive than most members of the Paronellini, and illustrates an annectant type of structure that might, perhaps, be expected in some members of the fauna of such islands as the Seychelles. *Microparonella*—as its name implies—differs from most Paronelline genera in the small size of its species. On the whole, it comes nearest to *Dicranocentroides*, Imms ('12, p. 102), founded on a North Indian species from the Himalayan foot-hills, with which it agrees in the spinose dentes, but from which it may be readily separated by the much shorter feelers and fourth abdominal segment, and by the smaller size of the insects.

The two species referred to *Microparonella* may be distinguished thus:—

- A. Colour blue, three ocelli on each side, foot-claw with no distal tooth, mucro broader, *M. caerulea*.
 B. Colour yellow, eight ocelli on each side, foot-claw with strong distal tooth, mucro narrow, *M. flava*.

Microparonella caerulea sp. nov.

(Plate XVII, figs. 55–58.)

Feeler twice as long as the head, proportional length of its segments as 5:9:9:12 (fig. 55). Ocelli three only on each side (fig. 56). Fourth abdominal segment three and a-half times as long as third. Foot with slender sensory bristle, no tenent hair; claw (fig. 57) with strong proximal teeth, but without distal tooth. Spring four-fifths as long as body, the dens slightly longer than the manubrium; mucro (fig. 58) twice as long as broad, five prominent teeth, a ventral, two terminals, a dorsal, and a lateral.

[G 2]

Length 1 mm. Colour violet-blue; only the head, the spring, and the segmental junctions yellow.

Localities.—Mahé: Forêt Noire, 2000 ft. (four specimens, October, 1908).

***Microparonella flava* sp. nov.**

(Plate XVII, figs. 59-62.)

Feeler twice as long as head, proportional length of its segments as 5:8:6:12 (fig. 59). Eight ocelli on each side. Fourth abdominal segment three times as long as third. Foot with slender tenent hair; claw with very prominent proximal and distal teeth (fig. 60). Spring four-fifths as long as body, dens rather shorter than manubrium; mucro (fig. 62) relatively narrow, with five teeth—a terminal, three dorsal, and a lateral.

Length 1 mm. Colour yellow, except for the feeler and a few mottlings on the head and abdomen, blue.

Localities.—Mahé: Forêt Noire, 1000 ft. (one specimen, October, 1908).

This species is evidently nearly related to *M. caerulea*, but the structural differences are quite definite, as well as the colour-distinction. The long, cylindrical ventral tube is characteristic in this genus as in *Dicranocentroides* Inms; it is conspicuous in both the Seychelles species, and the large bilobed sac is protruded in some of the specimens preserved (figs. 55-61).

***Cremastocephalus* Schött (1897).**

Pterikrypta, Ritter (1912).

First described by Schött for a Mexican species ('97, p. 175), this genus is now known to be well represented in the Eastern tropics. It is remarkable among the Paronellini for the absence of scales on the body, the very long feelers, the broadly laminate empodial appendages of the feet, and the presence of a scale-like organ (figs. 66-70 *a*, on the dens, close to the base of the mucro. All these characters are distinctive of Ritter's genus *Pterikrypta* ('12, p. 385), he having apparently overlooked Schött's paper.

The two Seychelles species may be distinguished thus:—

- A. Mucro of spring thrice as long as broad, colour yellow with broad violet bands and streaks, *C. Scotti*.
 B. Mucro of spring less than twice as long as broad; colour yellow with narrow lateral violet streaks, *C. pallidus*.

***Cremastocephalus Scotti* sp. nov.**

(Plate XVII, figs. 63-66.)

Feelers rather longer than whole body (including head and spring), proportional length of antennal segments as 4:9:7:5 (fig. 63). Eight

ocelli on each side, the two hind inner ones very small (fig. 64). Fourth abdominal segment four times as long as the third. Foot (fig. 65) with the claw strongly curved, with distinct inner basal teeth and a feeble distal tooth; empodial appendage short and broad, the two supporting lamellae of almost equal length; tenent hair very long and stout. Spring three-quarters as long as body; dens rather longer than manubrium (fig. 63); mucro relatively narrow, thrice as long as broad (fig. 66), with three terminal teeth, the median very blunt.

Length 2 mm. Colour pale yellow, with conspicuous violet markings, including a ring at each end of the first antennal segment, a broad ring at the tip of the second, the distal three-fourths of the third, and the whole of the fourth; broad transverse bands on the mesothorax and the second and third abdominal segments; broad paired, lateral bands on the fourth abdominal segment, and the whole of the last two segments (fig. 63).

Localities.—Mahé: Forêt Noire, 1000 ft. (six specimens, October, 1908,; Cascade, 1000 ft. (six specimens, 1908).

This species is nearly related to *C. indicus*, Imms. ('12, pp. 104-5 figs. 58, 59), from Calcutta, but it may be readily distinguished from that, not only by the coloration, but by the much more prominent teeth at the end of the mucro. In *C. celebensis* Schäffer ('98, pp. 407-8) the mucro is narrow, as in *C. Scotti*, but its teeth are blunt and rounded. As might be expected from the excessive length of the feelers in these insects, very few specimens are perfect. Interesting cases of regeneration, with a reduced number of antennal segments, may often be observed—for example, the two-segmented right feeler shown in fig. 63.

***Cremastocephalus pallidus* sp. nov.**

(Plates XVII, figs. 67-70, and XVIII, figs. 78-81.)

Feelers (imperfect in all specimens) longer than the whole body, first segment may be twice as long as head (fig. 67). Eight ocelli on each side, the two hind inner ones much smaller than the others (fig. 68). Fourth abdominal segment six times as long as third. Foot (fig. 69) with claw slightly curved, inner basal teeth distinct, distal teeth obsolete; empodial appendage with outer supporting lamella longer than inner. Spring three-quarters as long as body; dens rather longer than manubrium; mucro (fig. 70) hardly twice as long as broad, with three terminal teeth, the median one truncated.

Length 2.5 mm. Colour pale yellow, except for violet streaks on the head and along the edges of the body-segments, and violet patches on the thigh-tips and shins (fig. 67).

Localities.—Mahé: Forêt Noire, 1000 feet (many specimens, October, 1908); Cascade, 1000 feet (many specimens, 1908).

This species is distinctly larger than the preceding, and easily recognizable by structural characters as well as by its coloration. Its mucro is rather like that of *C. montanus* Imms ('12, pp. 105-6, fig. 60), from the eastern Himalaya, but in that species the scale-like appendage is quadrate, whereas in both the Seychelles insects that structure is rounded. This latter character is shown also in the American species *C. trilobatus*, Schött ('97, pp. 175-8), which has, however—like *C. affinis* Folsom ('99 a, pp. 265-6) from Japan—the hairs on the dentes feathered, a condition not found in either of the Seychelles insects, nor apparently in Imms' Indian species. From Ritter's somewhat rough figures ('12, p. 386), his *Pterikrypta sulcata* from Ceylon must be very closely allied to *C. pallidus*, the form of the mucro agreeing almost precisely, and the foot-claws apparently differing but slightly, "eine flache Erhebung," according to Ritter's description and figure occupying the place of the sharp basal tooth; the coloration also, as described by Ritter, is strikingly like that of *C. pallidus*, so that a comparison of types might establish specific identity between the two forms.

As no study of the jaws of any member of the Paronellini appears ever to have been made, some account of these structures in *Cremastocephalus* may be given with advantage (Plate XVIII, figs. 78-81). There is a remarkable general uniformity in these organs throughout most groups of Collembola. In *Cremastocephalus* the *mandible* (fig. 78) is of the usual form, and calls for no special remark. The *maxillula* (fig. 79 *Mxl*) has an acute apex at its inner distal corner, and beneath this a small, blunt lobe; the teeth at the base of the inner margin are somewhat short and strong. In the *maxilla* (fig. 79) the *cardo* and *stipes* are of the usual form; the *galea* (fig. 72 *g*) has a delicate lobe surrounding its apex, and the *palp* is very small (fig. 79 *p*), with a strong, straight bristle. The head of the *lacinia* (figs. 79 *l*, 80, 81) is almost circular in outline, its three outer teeth (figs. 80, 81 *t*) hardly projecting beyond the edge of the evenly rounded lamellae, which are supported by series of radially arranged bristles. The *tongue* (fig. 79 *hy*) has conspicuous rounded distal lateral lobes and a pair of strong supporting ridges towards the centre; its *foot* (fig. 79 *pd*) and the supporting arm (fig. 79 *br.*) of the *maxillula* resemble those of other genera of the Entomobryidae.

CYPHODERINI.

The spring-tails of this tribe are blind, white insects, living in underground or concealed situations, such as caves, or the nests of ants and termites. Several genera have been described, and a useful synopsis of the

group has lately been published by Börner ('13 *a*). The great majority of the known species belong to the widespread genus *Cyphoderus* Nicolet, in which must be placed the only representative of the group in the Seychelles collection.

Cyphoderus Nicolet.

This genus is characterized by the normal build of the head and the foot-claw (except for the excessively long basal tooth, see fig. 72 *b*), the presence of a very elongate lamella (fig. 72 *lm*) on the empodial appendage, eleven elongate scales (an inner row of five and an outer row of six), on the dens, and usually the great length of the mucro in proportion to the dens.

Cyphoderus insularum sp. nov.

(Plate XVII, figs. 71-73.)

Feeler half as long again as head, relative length of segments as 2 : 5 : 3 : 6 (fig. 71). Foot (fig. 72) with stout tenent hair, the claw with slender basal tooth (*b*), proximal teeth hardly apparent; empodial appendage (*em*) long, sharp, and curved, with acute basal lamella (*lm*). Spring half as long as body; manubrium slightly longer than dens and mucro together; dens half as long again as mucro (fig. 73), which has a small upturned apical tooth and two stout dorsal teeth. Inner distal scale of dens (fig. 73 *sc*) from two-thirds to four-fifths the length of mucro.

Length 1 mm. Colour white.

Localities.—Praslin: Vallée de Mai, "swarming among termites—probably *Arrhinotermes canalifrons* (Sjöst.)—in fallen log" (December, 1908). Mahé: Cascade, 1000 feet (three specimens, 1908).

In the form of the mucro and its proportion to the long dental scale this species resembles *C. bidenticulatus*, Parona (see Börner, 13*a*, p. 277), inhabiting ant and termite nests in Italy and South Africa; as well as *C. termitum* Wahlgren ('06, pp. 19-20), a termitophile from the Sudan, and (still more closely) *C. genneserae*, Carpenter ('13), from a salt spring near Tiberias. In the Seychelles insect, however, the mucro is of excessive length as compared with the dens. As regards the structure of the foot-claw, *C. insularum* is like the European *C. albinos* Nicolet in the absence of internal teeth.

NOTE.

A full set of the specimens described in this paper is deposited in the British Museum (Natural History). A large number of duplicates are in the Cambridge University Museum, and some—through Prof. Gardiner's kindness—are in the National Museum, Dublin.

DISTRIBUTIONAL NOTES.

In concluding this account of the Apterygota of the Seychelles, some remarks as to the indications afforded by the geographical range of the species or their near allies may be appropriate. There are thirteen species of Thysanura and eighteen of Collembola recorded from the Seychelles archipelago proper and the neighbouring islands of the Indian Ocean. In the first place, it is necessary to tabulate the distribution of these species within the area itself.

I. SEYCHELLES GROUP.

M. = Mahé. S. = Silhouette. P. = Praslin. B. = Bird Isl. F. = Félicité.

THYSANURA.

<i>Corethromachilis Gardineri</i> —M.S.P.	<i>Acrotelsa collaris</i> —M.B.
<i>C. brevipalpis</i> —M.S.	<i>Atelura nana</i> —M.
<i>C. gibba</i> —M.S.	<i>Lepidospora Braueri</i> —M.
<i>Lepisma intermedia</i> —M.F.	<i>Iapyx silvestris</i> —M.S.
<i>Isolepisma bisetosa</i> —M.	<i>Lepidocampa fimbriatipes</i> —M.S.
<i>Ctenolepisma longicaudata</i> —F.	

COLLEMBOLA.

<i>Nannura sexoculata</i> —M.S.	<i>Lepidocyrtus imperialis</i> —M.S.F.
<i>Isotomurus obscurus</i> —M.S.	<i>L. Gardineri</i> —M.
<i>Heteromuricus longicornis</i> —M.S.	<i>Acantharella Braueri</i> —M.S.
<i>Eutomobrya seychellurum</i> —M.S.	<i>Microparonella caerulea</i> —M.
<i>Lepidocyrtus obscuricornis</i> —M.	<i>M. flava</i> —M.
<i>L. silvestris</i> —M.	<i>Cremastocephalus Scotti</i> —M.
<i>L. annulicornis</i> —M.	<i>C. pallidus</i> —M.
<i>L. stramineus</i> —M.	<i>Cyphoderus insularis</i> —M.P.
<i>L. Frageri</i> —M.S.F.	

Eleven of the Thysanura and seventeen of the Collembola are thus known to inhabit the Seychelles archipelago in the restricted sense. Mahé, the largest of the islands, has ten of the Thysanura and all the seventeen Collembola; Silhouette has five Thysanura and seven Collembola; Félicité has two Thysanura (one—*Ctenolepisma longicaudata*, probably an introduced species—not found in any other island) and two Collembola; Praslin has one of each order; finally, from Bird Island has been collected nothing except the single Thysanuran *Acrotelsa collaris*, a house-dwelling species, probably introduced by man.

II. COETIVY.

THYSANURA.

Acrotelsa collaris.

III. AMIRANTE AND FARQUHAR GROUPS.

THYSANURA.

Isolepisma bisetosa. Eagle Isl. (Amirante), Cerf and Providence Isls. Farquhar.

IV. ALDABRA.

THYSANURA.

*Isolepisma bisetosa.**Acrotelsa elongata.**Acrotelsa collaris.**A. Scotti.*

COLLEMBOLA.

Axelsonia thalassophila.

The poverty of the exclusively coral groups (Coetivy, Amirante, Farquhar, and Aldabra) in Apterygota is evident from the above lists (II, III, and IV), and is highly suggestive when compared with the fairly rich fauna of the granite islands of the Seychelles archipelago proper (I). The only Collembolan found outside these granite islands is *Axelsonia thalassophila*, from the coral Aldabra group—a reef-haunting insect already known from the east coast of Madagascar. This spring-tail may be regarded as at least a possible subject for “accidental” dispersal across sea-channels. According to Gardiner’s conclusions, the present Aldabra group could never have formed part of any continental tract, and the transport of small insects by sea-birds is not to be dismissed as impossible. Still the presence of delicate shore-haunting animals on separated islets or analogous stations is strongly indicative of former continuity, or at least approximate continuity; and though Aldabra may be “oceanic,” the ancient existence of continental islands in the vicinity is certain. The presence of *Axelsonia* in Japan is noteworthy in this connexion, pointing to a former very extensive range of the genus.

The *Isolepisma* and the *Acrotelsae* found in the Amirante and Aldabra groups may have been introduced by means of human intercourse or commerce, as some at least of these species frequent the neighbourhood of dwellings, or live indoors. The contrast afforded to the scanty representation of the Apterygota on these coral islands by the comparatively rich fauna of Mahé and Silhouette, from one or both of which come all the *Machilidae*, *Iapygidae*, *Campodeidae* and (except for *Axelsonia*) all the *Collembola* of the

collection, is most remarkable. It appears that the wingless insects of these islands are indeed evidence of former land-connexions, pointing, like the granite rocks, to ancient continental conditions. For if Apterygota be conveyed to any extent by "accidental" means of dispersal, how can the total absence of terrestrial Collembola from the coral islets be explained?

Comparison, from the distributional standpoint, of the Seychelles Apterygota with those of other countries is rendered difficult by the incompleteness of our knowledge of these insects in all tropical regions. Especially with regard to Madagascar—with which comparison would be of great interest—are the records disappointingly few; only three species of Collembola from the great island are included in Börner's recent paper ('07), while in Escherich's account ('10) of the Lepismidae only five Malagasy species are mentioned. In the lists below, in which the Seychelles Apterygota are grouped according to their known geographical affinities, actual specific identity is indicated by an asterisk.

GENERA PECULIAR TO THE SEYCHELLES.

Corethromachilis (its sub-family group, Machilinae, being widespread)
3 spp.

Microparonella (the most primitive genus of a tribe—Paronellini—with circumtropical range) 2 spp.

SPECIES OF WIDELY RANGING GENERA WITHOUT EVIDENT GEOGRAPHICAL AFFINITIES (7).

<i>Isolepisma bisetosa.</i>	<i>Isotomurus obscurus.</i>
* <i>Acrotelsa collaris.</i>	<i>Entomobrya seychellarum.</i>
<i>Iapyx silvestris.</i>	<i>Lepidoocyrtus annulicornis.</i>
	<i>L. stramineus.</i>

SPECIES WITH ALLIES IN MADAGASCAR (2).

<i>Acrotelsa Scotti.</i>	* <i>Arctsonia thalassophila</i> (also Japan).
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SPECIES WITH ALLIES IN AFRICA (3).

* <i>Acrotelsa nana.</i>	<i>Cyphoderus insularum.</i>
* <i>Otenolepisma longicaudata.</i>	

SPECIES WITH ALLIES IN AFRICA AND INDIA (5).

<i>Lepisma intermedia.</i>	<i>Lepidoocyrtus Fryeri.</i>
<i>Lepidospora Braueri.</i>	<i>L. imperialis.</i>
	<i>L. Gardineri.</i>

SPECIES WITH ALLIES IN INDIA AND CEYLON (5).

<i>Lepidocyrtus silvestris.</i>	<i>Heteromuricus longicornis.</i>
<i>L. obscuricornis.</i>	<i>Cremastocephalus pallidus.</i>
<i>L. stramineus.</i>	

SPECIES WITH ALLIES IN MALAYA OR AUSTRALIA (3).

<i>Acrotelsa elongata</i>	<i>Neanura sexoculata</i>
(Australia).	<i>Acanthurella Börneri</i>
	(Malaya).

SPECIES WITH ALLIES IN INDIA, MALAYA, OR JAPAN AND IN
TROPICAL AMERICA (2).

<i>Lepidocampa fimbriatipes</i>	<i>Cremastocephalus Scotti</i>
(Malaya and America).	(India, Japan, and America).

No very definite conclusions can be drawn from the facts of distribution just set forth, mainly because, with the incompleteness of our knowledge of the distribution of tropical Apterygota, it would be unwise to lay stress on negative evidence. With regard to the Seychelles archipelago itself, however, the apparent absence of the Symphypleona, the more highly organized sub-order of the Collembola, and of all Poduridae except one species, is noteworthy, indicating that the islands became separated from the great continental tracts before the majority of genera belonging to those groups had been able to spread far. A somewhat parallel case is afforded by the Apterygote fauna of the Sandwich Islands, from which also the Symphypleona seem to be absent, and the Arthropleona comprise only a single species of Poduridae (see Carpenter, '04) belonging to the same tribe as the Seychellean *Neanura sexoculata*, but to a more primitive genus, *Protanura*. It is noteworthy, also, that the dominant genus of Arthropleona in the Hawaiian archipelago, as in the Seychelles, is *Lepidocyrtus*, and that the other Collembola occurring in Hawaii are an *Isotoma* and two species of *Entomobrya*.

When the Apterygota of the Malagasy and Mascarene Islands shall have been well worked, there will be doubtless recognized many more species with affinity to Seychelles insects than the two mentioned above. The feature that comes out from the analysis with some clearness is the establishment of faunistic links between Africa, the Seychelles, and India; the range of some of the most remarkable of these, such as *Lepidocampa* and *Cremastocephalus*, stretch as far west as South America, and as far east as Java and Japan.

Similar geographical relationships are shown from the studies of various groups of insects and other terrestrial Arthropoda from the Seychelles, as recorded in the Reports of the Percy Sladen Trust Expedition (Gardiner and others, '07-'14).

Taking the Coleoptera (beetles) we find that, in his review of the Seychelles Curculionidae (*op. c.* V (XVI), pp. 393-497),¹ Champion mentions that out of 134 species, 100 are endemic, and the rest introduced, or showing affinity to African, Malagasy, or Ceylonese weevils. In different groups special affinity with the fauna of one or other of these regions is shown by the Seychelles insects. Thus Grouvelle finds (*t. c.*, pp. 93-116) that of the Nitidulidae and Heteroceridae, seven species have affinity with Madagascar, one with Africa, and three with Ceylon and the Malayan Islands. Scott, after study of the Hydrophilidae and Histeridae (*t. c.*, pp. 193-235, pl. 14), finds that the Seychelles species have predominant affinity to those in Madagascar and Africa, much the same result being apparent among the Adephaga (*op. c.* IV (XV), pp. 239-262). In the Lamellicornia, however (*t. c.*, pp. 215-239), there are three distinct Oriental relationships to five African or Malagasy. The Oriental tendency is still more marked among the Pselaphidae, of which Raffray records (*op. c.* V (XVI), pp. 117-138, pl. 10) only one African, and one Indo-African, as compared with four Asiatic and seven Malayan affinities.² Turning to the Diptera, we find that the tropical distribution of most families is too imperfectly known for satisfactory analysis; but with regard to the Tipulidae, Edwards (*op. cit.* IV (XV), pp. 195-214, pls. 10, 11) reckons ten African against four Oriental species. Among the Lepidoptera, Fletcher (*op. cit.* II (XIII), pp. 265-324, pl. 17), dealing with the larger and more conspicuous moths and butterflies, mentions—in addition to many species with a very wide range—thirteen African and eleven Malagasy and Mascarene, as against four Indian and three Malayan species. On the other hand, Meyrick (*op. cit.* III (XIV), pp. 263-307), describing the more primitive Lepidopteran groups of the Tortricina and Tineina, distinguishes between an "ancient and highly specialized fauna" and "all the rest which might have been sporadically derived from the Indian region, excepting two or three which more probably originated in Africa." In many cases like the above, the more primitive orders or groups seem to show Oriental, and the more specialized, African affinities. Thus Burr states (*t. c.*, pp. 123-133), of the

¹ In these references the first volume no. refers to the Reports of the Percy Sladen Trust Expedition, the second (in brackets) to that of the *Trans. Linn. Soc. Zool.*, series 2.

² Kolbe (*Mitt. Zool. Mus. Berlin*, vol. v. 1, 1910), reviewing the beetle-fauna of the Seychelles before the Sladen Reports were available, dwelt on the predominance of the Oriental affinities.

lowly Dermaptera (Earwigs) that the Seychelles species show distinctly more relationship with those of Ceylon than with the African. Bolivar and Ferrière (*op. cit.* IV (XV), pp. 293-300) point out that all the Seychelles Phasmidae show Indian, Malayan, or Australian affinities. And with regard to the Odonata (dragon-flies)—nine species of which had been collected by Wright ('69)—Campion (*op. cit.* IV (XV), pp. 435-446) finds that while the Aldabra and Assumption species are typically African, the Seychelles insects are predominantly Indian. Two Seychelles species are also Malagasy, two African, three both African and Indian, and five Oriental, while of the six endemic Seychelles dragon-flies, the three Zygoptera (demoiselles) have Asiatic, and the three Anisoptera (the more robust Libellulidae and Aeschnidae) have African affinities; most students of the dragon-flies would probably regard the Zygoptera as a more primitive tribe than the Anisoptera.

Now it is noteworthy that the affinities of the Seychelles Apterygota are with Oriental more than with Ethiopian species, and as the Apterygota must be regarded as the most primitive of insects, the distribution of the allies of our Seychelles bristle-tails and spring-tails agrees well with the results obtained from the study of other groups. The establishment of such faunistic links, afforded by delicate insects like the Apterygota, incapable of flight, and living for the most part in concealed situations, is in full accord with the belief entertained by many naturalists, in the existence of a Mesozoic and early Cainozoic continental area joining the countries and archipelagoes now widely separated by the waters of the Indian Ocean. This subject has been discussed from the geographical standpoint by Gardiner ('06, '07-'14), who accepts Neumayer's suggestion of a continuous land tract in Mesozoic times from South Africa by way of Madagascar and the Seychelles to India and Ceylon, besides a wide continent stretching across the South Atlantic from Africa to America. Hirst (*op. cit.* V (XVI), p. 31) points out that the distribution of the scorpionid genus *Lychas* "is very suggestive of the former existence of continuous land between the Oriental region and the southern part of the African continent. In Cainozoic times the Seychelles archipelago must have formed part of the large insular or sub-continental tracts which then, as is generally agreed, occupied much of the area of the Indian Ocean. These geographical changes would explain how the elements of the Seychelles fauna are partly Oriental and partly African in their affinities. Most ancient of all the inhabitants are the purely endemic animals, or those whose range is very wide and discontinuous. Gardiner mentions the serpentine amphibians—the *Caecilia*—as vertebrate examples of this ancient element. They are matched by such Apterygote genera as *Lepidocampa* and *Cremastocephalus*, which tell—unless "accidental" means of dispersal can be supposed to

account for their presence—of vanished land in the areas now covered by the Atlantic and Indian Oceans.

As to the details of these ancient land tracts, much difference of opinion has naturally been expressed. Wallace—as is well known to all students of animal distribution—argued ('92) strongly against the theory of a continuous continent across the Indian Ocean, even in Mesozoic times; and among the most recent writers on the subject, Sarasin ('10, p. 57) denies the probability of such a land area “in der späteren Kreidezeit und im Tertiär.” Blanford, however, in his deservedly famous address ('90, pp. 88-99), while admitting Wallace's contention that the facts derived from mammalian and avian distribution afford but weak support to the theory, spoke convincingly in its favour from the range of lower vertebrates and of mollusca, as well as from the extent of ancient ocean-basins, as shown by the range of marine fossils. The great majority of modern students of distribution accept without hesitation the principle of such a continent. As examples of the support afforded to the theory by advance along different lines of inquiry may be mentioned Germain's study ('09) of the mollusca of equatorial Africa, and Ortmann's admirable essay ('02) on the distribution of freshwater Decapods.

With respect to the fauna of the Seychelles, the question whether the area of the archipelago maintained its latest connexion with Madagascar and Africa, or with India and Ceylon, is of much interest and difficulty. Ortmann (*l. c.*, p. 329) maintains that the connexion of Madagascar with India was interrupted before that with Africa, and a similar view is expressed in one of the maps illustrating Gardiner's paper ('06, p. 323), which shows an early tertiary Afro-Malagasy peninsula, in which the Seychelles are seen near the apex. Germain, on the other hand ('09, p. 172), imagines “une longue péninsule Indo-Malgache qui s'effondra, ne laissant plus subsister au début du tertiaire qu'une chaîne d'îles assez rapprochées. Madagascar est complètement isolé et n'aura plus, par la suite, que des communications temporaires avec l'Afrique.” The series of maps given by Gadow ('13) seem to support in the main this latter view. In Perceval Wright's paper ('71) on the flora of the Seychelles, an outstanding feature is the description of a species of *Nepenthes*. This genus of “pitcher-plants” ranges from tropical Australia to Madagascar, and is—as Wright pointed out—unknown in Africa. Here again the Seychelles show affinity with the Oriental rather than with the Ethiopian region.

The Apterygota cannot be expected to throw much light on geographical details such as these, for our ignorance of extinct members of the group is very great. The predominance of Oriental species in the Seychelles fauna has already been emphasized, and it is remarkable that, with the exception

of *Cyphoderus insularum*, the distinctively Ethiopian and Malagasy insects in our collection do not come from the Seychelles proper at all, but from the island groups to the west—Aldabra and Farquhar. Our knowledge of the Apterygota of Madagascar and the African continent is, however, far too incomplete to allow us to attach great importance to negative evidence on this aspect of the question. But so far as our present information goes, a study of the Seychelles Apterygota indicates that the latest continental connexion of the archipelago was with India and Ceylon rather than with Africa. That the ancestors of these wingless insects did reach their present habitations by means of continuous land-tracts is far more likely than that they were carried over wide seas by winds or on floating objects; and even Wallace, upholding though he does the theory of the permanence of oceanic basins, admits that the Seychelles are not typical "oceanic islands," and suggests their possible former connexion with Madagascar. Their spring-tails and bristle-tails seem to tell us plainly that they were once joined with India and Ceylon. At the same time, the absence from the fauna of many important groups, the specific distinctness of most of the insects, the presence of such an apparently primitive and annectant genus as *Microparonella*, and the elaboration of such highly modified and beautiful types of structure as are exhibited in the species of *Corethromachilis*, all support the conclusion that the islands have long been separated from any continental area.

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EXPLANATION OF PLATES.

THYSANURA, I-XIII.

PLATE I.

Corethromachilis Gardineri.

Fig.

Scaling not shown.

1. Female, side view. $\times 5$.
2. Male. Head, front view, showing eyes (*e*); median ocellus (*m. o.*), paired ocelli (*p. o.*); labrum (*lbr*); and base of right feeler. $\times 21$.
3. Region from middle of flagellum of feeler. $\times 21$.
4. Mandible (left) of female. *c*, condyle; *a*, apex; *m*, molar area; *ad*, *ad'*, adductor muscles; *re*, retractor muscle. Viewed from behind. $\times 50$.
5. Portion of tongue (*hy*) with its right peduncle (*pe*), and right maxillula (*Maxl*); *g*, galea; *l*, lacinia; *p*, palp. From female, front view. $\times 50$.
6. Left maxilla of male, front aspect: *te*, tentorium; *c*, cardo; *st*, stipes; *l*, lacinia; *g*, galea; *p*, palp. $\times 21$.
7. Right maxilla of female: head of lacinia from behind, showing apical teeth (*t*), lamellae (*la*), lateral teeth (*t*), and "brush" (*br*) composed of lanceolate spines. $\times 84$.
8. The same, viewed from within. $\times 84$.
9. Left maxilla of male: inner edge of galea and apex of lacinia, front view. $\times 84$. (Lettering same as in figs. 7 and 8.)
10. The same, outer corner of galea. $\times 84$.
11. A sensory spine from galea. $\times 460$.
12. Part of labium of male with left palp (*sm*, submentum; *m*, mentum; *p*, palp; *g*, lobes of galea; *l*, of lacinia). $\times 21$.
13. Apex of labial palp with flattened sensory spines. $\times 230$.
14. Male: shin and foot of hind-leg. $\times 21$.
15. Coxal process of second leg. $\times 21$.
16. Coxal process of third leg. $\times 21$.
17. Tip of foot showing claws and scopula. $\times 125$.
18. Extremity of a lanceolate spine of the scopula. $\times 460$.

PLATE II.

Figs. 19-26, *Corethromachilis Gardineri*; 27-34, *C. brevipalpis*. Abdominal segments. Scaling not shown.

In all figures, *sm*, sternum; *s. c.*, sub-coxa; *st*, stylet; *e. v.*, exsertile vesicle; *go*, gonapophysis; *pe*, penis.

Fig.

19.	<i>C. Gardineri</i> .	Male.	1st abdominal segment.	× 21.
20.	do.	do.	2nd do.	× 21.
21.	do.	do.	3rd do.	× 21.
22.	do.	do.	4th do.	× 21.
23.	do.	do.	7th do.	× 21.
24.	do.	do.	8th do.	× 21.
25.	do.	do.	9th do.	× 21.
26.	do.	do.	Distal parts of hind gonapophysis.	× 84.
27.	<i>C. brevipalpis</i> .	Male.	1st abdominal segment.	× 21.
28.	do.	do.	2nd do.	× 21.
29.	do.	do.	3rd do.	× 21.
30.	do.	do.	4th do.	× 21.
31.	do.	do.	7th do.	× 21.
32.	do.	do.	8th do.	× 21.
33.	do.	do.	9th do.	× 21.
34.	do.	do.	Anterior gonapophysis.	× 84.

PLATE III.

Corethromachilis brevipalpis.

Scaling not shown.

35. Female. Head, front view, showing eyes (*e*), median ocellus (*m. o.*), paired ocelli (*p. o.*), labrum (*lbr*), and base of right feeler. × 21.
36. Region from middle of flagellum of feeler. × 21.
37. Mandible (left) of female: *e*, condyle; *a*, apex; *m*, molar area. Front view. × 50.
38. Tongue (*hy*) and left maxillula (*Mxl*), front view; *pc*, peduncle of tongue; *p*, palp; *g*, galea; *l*, lacinia of maxillula. From female. × 50.
39. Left maxilla of female, hinder aspect: *c*, cardo; *st*, stipes; *g*, galea; *l*, lacinia; *p*, palp. × 21.
40. Tip of galea and head of lacinia of same, showing apical teeth (*t*), lamella (*la*) with lateral teeth (*l'*), and brush (*br*). × 84.
41. Part of labium of female with left palp (*p*); *s. m.*, sub-mentum; *m*, mentum; *g*, galea; *l*, lobes of lacinia. × 21.
42. Coxal process of second leg of female. × 21.
43. Hind-leg of female: *c*, coxa; *pcr*, coxal process; *tr*, trochanter; *fe*, thigh; *ti*, shin; *ta*, segments of foot. × 21.
44. Tip of foot, showing claws (*cl*) and scopula (*sc*). × 125.

PLATE IV.

Corethromachilis gibba.

Scaling not shown.

Fig.

45. Male, side view. $\times 5$.
46. Head of male, front view, showing eyes (*e*), median ocellus (*m. o.*), and paired ocelli (*p. o.*). $\times 21$.
47. Head of male, side view. $\times 21$. (Lettering as in fig. 46.)
48. Region from middle of flagellum of feeler. $\times 37$.
49. Left mandible of female: *e*, condyle; *a*, apex; *m*, molar area. $\times 50$.
50. Tongue (*hy*) and left maxillula (*Mxl*) of female, front view; *pe*, peduncle of tongue; *p*, palp; *g*, galea; *l*, lacinia of maxillula. $\times 50$.
51. Left maxilla of female, front view: *c*, cardo; *st*, stipes; *l*, lacinia; *g*, galea; *p*, palp. $\times 21$.
52. Part of labium of female with right palp (*p*): *s. m.*, sub-mentum; *m*, mentum; *g*, galea; *l*, lobes of lacinia. $\times 21$.
53. Coxal process of second leg of female. $\times 21$.
54. Hind-leg of female: *c*, coxa; *pr*, coxal process; *tr*, trochanter; *fe*, thigh; *ti*, shin; *ta*, segments of foot. $\times 21$.
55. Tip of foot, showing claws (*cl*) and scopula (*sc*). $\times 125$.
56. Second abdominal segment of male: *sm*, sternum; *s. c.*, sub-coxa; *st*, stylet; *e. v.*, exsertile vesicles. $\times 21$.
57. Third abdominal segment of male. $\times 21$.
58. Sixth do. do. do. $\times 21$.
59. Eighth abdominal segment of male (right half): *go*, left gonapophysis. $\times 21$.
60. Left ninth abdominal sub-coxa (*s. c.*) and stylet (*st*), with penis (*pe*) and right gonapophysis (*go*). $\times 21$.
61. Left anterior gonapophysis of male. $\times 84$.
62. Left hind gonapophysis of male. $\times 84$.

PLATE V.

- Figs. 63–66. *Corethromachilis brevivalpis*, female. 67–70. *Lepisma intermedia*.
63. *Corethromachilis brevivalpis*, female. Eighth abdominal segment, ventral view, showing sub-coxa (*s. c.*), stylets (*st.*), and left gonapophysis (*go*). $\times 21$.
64. Ninth abdominal episterna (*epst*), sub-coxae (*s. c.*), showing stylet (*st*) on left; abductor muscle (*abd*) and gonapophysis (*go*) on right side. $\times 21$.

Fig.

65. Left gonapophysis of eighth abdominal segment, showing (A) attachment and segmentation near base, (B) near middle, and (C) at tip, adductor (*ad*) and extensor (*ext*) muscles. $\times 50$.
66. Two scales from abdominal sub-coxae. $\times 210$.
67. *Lepisma intermedia*. Male. Dorsal view. Scaling not shown. $\times 17$.
68. Right sub-coxa (*s. c.*) and stylet (*st*) of ninth abdominal segment. $\times 116$.
69. Tip of thigh (*fe*), shin (*ti*) and foot (*ta*) of hind-leg. $\times 116$.
70. Sensory bristle from shin of hind-leg. $\times 580$.

PLATE VI.

Isolepisma bisetosa.

Scaling not shown.

71. Male, dorsal view. $\times 8$.
72. Face (*f*) and labrum (*lbr*). $\times 62$.
73. A bifid bristle from the face. $\times 210$.
74. Two scales from the body. $\times 210$.
75. Right mandible, seen from behind: *c*, condyle; *a*, apex; *re*, retractor; *ad. p.*, posterior adductor, and *ad*, median adductor muscles. $\times 62$.
76. Apex (*a*) and molar area (*m*) of left mandible, front view. $\times 62$.
77. Tongue (*hy*) and left maxillula (*mxl*); front view, *pe*, peduncle of tongue. $\times 62$.
78. Right maxilla seen from the front: *c*, cardo; *st*, stipes; *g*, galea; *l*, lacinia; *p*, palp; *pr*, protractor; *ad*, adductor muscles; *l. m.*, adductor of lacinia; *g. m.* of galea. $\times 62$.
79. Labium with left palp. (*p*); *s. m.* sub-mentum; *m*, mentum; *g*, galea; *l*, lacinia. $\times 62$.
80. Terminal abdominal segments of male, ventral view; *viii*, 8th sternum; *s. c.* 9th sub-coxa; *st*, 9th stylet; *pe*, penis. $\times 25$.
81. Left sub-coxa of ninth abdominal segment, dorsal view (internal), showing base of stylet with muscles. $\times 62$.
82. Terminal abdominal segments of female, ventral view: *vii*, *viii*, *ix*, stylets of 7th, 8th, and 9th segments; *go. viii* and *go. ix*, anterior and hinder gonapophyses; *s. c.* 9th sub-coxa. $\times 25$.

PLATE VII.

Acrotelsa elongata, female.

Scaling not shown.

83. Dorsal view. $\times 8$.
84. Left mandible, front view; *ad*, adductor muscle. $\times 58$.

Fig.

85. Distal region of mandible, showing apex, molar area (*m*), and bifid bristles. × 168.
86. Right maxilla, from behind: *c*, cardo; *st*, stipes; *l*, lacinia; *g*, galea; *p*, palp. × 58.
87. Extremity of galea and lacinia of maxilla. × 168.
88. Labium showing right palp (*p*); *s. m.* sub-mentum; *m*, mentum; *g*, galea; *l*, lacinia. × 58.
89. Edge of terminal segment of labial palp, showing sensory papillae (*s. p.*) × 168.
90. Terminal abdominal segments, ventral view; *viii*, *ix*, stylets of 8th and 9th segments; *s. c.* 9th sub-coxa, *go*, ovipositor. × 21.

PLATE VIII.

Figs. 91–100, *Acrotelsa Scotti*, female. Fig. 101, *A. collaris* (Fab.).

Scaling not shown.

91. *Acrotelsa Scotti*. Dorsal view. × 8.
92. Left mandible, front view. × 58.
93. Apex and molar area of mandible. × 210.
94. A feathered bristle. × 210.
95. Terminal abdominal segments, ventral view. *viii*, *ix*, stylets of 8th and 9th segments; *s. c.* 9th sub-coxa; *go*, ovipositor. × 21.
96. Part of right maxilla, from behind: *st*, stipes; *l*, lacinia; *g*, galea; *p*, palp. × 58.
97. Edges of terga of two adjacent abdominal segments, showing scars of dorsal and marginal combs. × 16.
98. Labium, showing right palp (*p*): *s. m.* sub-mentum; *m*, mentum; *g*, galea; *l*, lacinia. × 58.
99. Edge of terminal segment of labial palp, showing two of the sensory papillae (*s. p.*). × 375.
100. Terminal part of hind leg: *fe*, thigh; *ti*, shin; *ta*, foot-segments. × 58.
101. *Acrotelsa collaris*. Terminal segment of labial palp. *s. p.* sensory papillae. × 58.

PLATE IX.

Lepidospora Braueri Escherich.

Scaling not shown.

102. Female. Ventral view. × 8.
103. Face (*f*) and labrum (*lbr*). × 62.

Fig.

104. Right mandible, front view : *c*, condyle ; *m*, molar area ; *a*, apex ; *re*, retractor muscle ; *ad*, adductor muscles. × 62.
105. Distal portion of left mandible, hind view. × 62.
106. Tongue (*hy*) and right maxillula (*mxl*). × 84.
107. Right maxilla, seen from behind : *c*, cardo ; *st*, stipes ; *l*, lacinia ; *g*, galea ; *p*, palp ; *ad*, adductor muscles of stipes ; *pr*, protractor of cardo. × 62.
108. Tip and inner edge of lacinia, showing apical teeth and comb-process (*c.p.*). × 210.
109. Extremity of comb-process of lacinia, internal view. × 366.
110. Tip of terminal segment of maxillary palp. *s.p.* sensory papillae ; *s.r.* annular sense-organ. × 210.
111. Labium : *s.m.* sub-mentum ; *m*, mentum ; *l*, lacinia ; *g*, galea ; *p*, left palp. × 62. *A.* Sensory papillae on terminal segment. × 366.

PLATE X.

Lepidospora Braueri Escherich.

Scaling not shown.

112. Second leg : *cx*, haunch ; *tr*, trochanter ; *fe*, thigh ; *ti*, shin ; *ta*, segments of foot. × 42.
113. Tip of terminal foot-segment, showing claws and empodium (*em*). × 210.
114. Fifth abdominal sternum with stylets (*st*) and exsertile vesicles (*e.v.*). Muscles indicated on left side. × 42.
115. Terminal abdominal segments of young specimen, side view : *st* 8, *st* 9, stylets of 8th and 9th segments ; *s.c.* 9, 9th sub-coxa. × 42.
116. Tenth tergum of adult male, ventral view, showing base of tail-process (*t.p.*), and apodeme (*ap*), and base of cercus (*ce*) on left side. × 42.
117. Terminal abdominal segments of female, side view. × 42.
118. Eighth abdominal segment of female with appendages, left half. Ninth right sub-coxa with stylet and gonapophysis, ventral view. × 42.
In figs. 117 and 118: *viii*, 8th abdominal sternum ; *s.c.*, sub-coxa ; *st*, stylet ; *go*, gonapophysis, the numbers 7, 8, 9 indicating the abdominal segments.
119. Tip of right hinder (9th) gonapophysis, showing series of recurved hooks on inner ventral aspect. × 210.
120. Tenth abdominal tergum of female. × 42.

PLATE XI.

Iapyx silvestris.

Fig.

121. Head with left feeler (extended), and prothorax with right front leg, dorsal view; from Mahé specimen. $\times 58$.
122. Head with left feeler (contracted), dorsal view; from Silhouette specimen. $\times 58$.
123. Segments from middle region of feeler, showing the passage from contracted to extended condition. $\times 168$.
124. Fourth, fifth, and sixth segments of feeler, ventral view, showing bothriotricha or "auditory" bristles (*s*). $\times 420$.
125. Head, ventral view, showing labium: *g.* gena; *m.* mentum; *l.* lobe (galea and lacinia fused?); *p.* labial palp. $\times 58$.
126. First abdominal sternum of male: *st.* stylet; *v.* vesicle. $\times 58$.
127. Sixth to tenth (*vi-x*) abdominal terga of male with open forceps, dorsal view. $\times 58$.
128. Seventh abdominal sternum of male. $\times 58$.
129. Eighth abdominal sternum of male with extruded genital plate (*g. p.*) and gonapophyses (*go*). $\times 58$.
130. External reproductive organs of female, ventral view as protruded: *g. p.* genital plate; *l.* lobe; *g.* gonapophysis; *vl.* vulva; *spe.* spermathecal opening. $\times 168$.
131. Papilla at tip of gonapophysis. $\times 620$.
132. External male reproductive organs, ventral view, as extruded: *g. p.* genital plate; *go.* gonapophysis; *r.* ridge shielding aperture. $\times 168$.
133. The same, dorsal view; the aperture (*g. a.*) showing through the translucent genital plate (*g. p.*). $\times 168$.
134. Ninth and tenth (*ix. x.*) abdominal sterna of male with closed forceps. $\times 58$.

PLATE XII.

Lepidocampa fimbriatipes, female.

Scaling not shown except in fig. 148.

135. Ventral view: *go*, gonapophyses. $\times 33$.
136. Right half of head and pronotum, with seven proximal segments of feeler, dorsal view: *su*, epicranial suture; *s*, "auditory" bristles. $\times 62$.
137. One of the "auditory" bristles from feeler. $\times 590$.

Fig.

138. Antennal organ at apex of terminal segment of feeler. $\times 590$.
 139. Edge of pronotum with pinnate bristles. $\times 210$.
 140. A scale from the thorax. $\times 210$.
 141. Right mandible, ventral view. $\times 92$.
 142. Tip of mandible, showing apical teeth: ridged molar area (*mo*) and lacinia (*l*). $\times 580$.
 143. Left maxilla, right maxillula (*Mxl*) and tongue (*Hy*), viewed from behind (the left maxilla removed to expose the maxillula): *c*, cardo; *st*, stipes; *g*, galea; *p*, palp; *pe*, peduncle of tongue. $\times 210$.
 144. Tip of maxillary galea, with spines and peg-like sense-organ. $\times 210$.
 145. Labium: inner portion of spinose lacinia (*l*), and palp (*p*). $\times 210$.
 146. Tip of hind-foot, showing paired claws (*cl.*), empodial claw (*emp.*), and fringed pulvilli (*pl.*). $\times 370$.
 147. Left stylet of first abdominal segment. $\times 210$.
 148. Left stylet of fourth abdominal segment. $\times 210$.
 149. Extremity of abdomen, dorsal view, showing hinder edge of tenth tergum and triangular telson (*te*). $\times 92$.
 150. The same, ventral view; the left half of the tenth sternum has been partly removed to expose the anal valve (*vl*); *te*, telson. $\times 92$.

PLATE XIII.

Lepidocampa fimbriatipes. Male (figs. 151-5). Female (figs. 156-7).

Scaling not shown.

151. Male, dorsal view. $\times 33$.
 152. Right half of labium, with part of presternum (*prst.*), and sternum (*st.*) of prothorax: *s. m.*, sub-mentum; *m*, mentum; *l*, lacinia; *g*, galea; *p*, palp. $\times 168$.
 153. Sternum with left stylet of first abdominal segment. $\times 168$.
 154. Hinder abdominal segments (*vii-x*), ventral view: *st*, stylet; *e. v.*, exsertile vesicles; *vl*, anal valve; *cc*, base of cercus. $\times 62$.
 155. Male genital ducts and armature: *viii*, front edge of eighth abdominal sternum; *v. d.*, vas deferens; *d. e.*, ejaculatory duct; *g. p.*, genital plate. $\times 168$.
 156. Female external reproductive organs: *viii*, front edge of eighth abdominal sternum; *g. p.* genital plate; *go.* gonapophysis; *spe.* spermatheca. $\times 168$.
 157. Left maxillula (*Mxl*) with edge of tongue (*Hy*). $\times 250$.

COLLEMBOLA, XIII-XVIII.

PLATE XIV.

Figs. 1-6, *Neanura sexoculata*.

Fig.

1. Left half of head, dorsal view, showing feeler, ocelli (*oc*), post-antennal area (*p. a.*), labrum, right mandible (*mnd*), and left maxilla (*mx*, dotted *in situ*), tips of maxillulae (*mxl*), and tongue (*hy*). × 168.
2. Apex of fourth antennal segment, showing two retractile sense-papillae, sensory bristles, and short spines. × 250.
3. Right maxilla: *p*, palp. × 168.
4. Labium, ventral view. × 168.
5. Terminal segment of leg, showing claw and vestigial empodial appendage (*emp*). × 168.
6. Fourth, fifth, and sixth abdominal segments, dorsal view. On the fifth segment are marked the dorsal (*tb*), the intermediate (*tb*¹), and the dorso-lateral (*tb*²) tubercles. × 62.

Figs. 7-14, *Axelsonia thalassophila* Börner.

7. Side view. × 46.
8. Left group of ocelli, with basal segment of feeler. × 210.
9. End of third and base of fourth antennal segment, with minute intermediate "jointlet"; sensory pegs (*s. p.*) near tip of third segment. × 210.
10. A sensory peg from third antennal segment. × 840.
11. Tip of fourth antennal segment with apical process. × 210.
12. Extremity of hind foot with claw (*cl.*), lateral process (*l. p.*), and empodial appendage (*emp*). × 370.
13. Catch, side view. × 370.
14. End of dens, and mucro of spring. × 370.

Figs. 15-19, *Isotomurus obscurus*.

15. Head, dorsal view, with left feeler. × 62.
16. Left group of ocelli, with post-antennal organ (*p. a.*). × 210.
17. Hind foot, with claw and empodial appendage. × 370.
18. Abdominal sensory bristle (bothriotrichum). × 370.
19. End of dens and mucro of spring. × 370.

PLATE XV.

Figs. 20-24, *Heteromuricus longicornis*.

Fig.

20. Side view. $\times 16$. Scaling not shown, but position of prominent bristles indicated.
21. Ocelli of left side, with base of feeler. $\times 168$.
22. A few "jointlets" of third antennal segment, with whorl of feathered bristles. $\times 210$.
23. Hind foot, with claw and empodial appendage. $\times 168$.
24. End of dens, and mucro of spring. $\times 168$.

Figs. 25-27, *Entomobrya szechellarum*.

25. Dorsal view. $\times 33$.
26. Hind foot, with claw and empodial appendage. $\times 250$.
27. End of dens, and mucro of spring. $\times 250$

Figs. 28-30, *Lepidocyrtus sylvestris*.

Scaling not shown.

28. Head, feeler, and mesonotum, side view. $\times 62$.
29. Hind foot. $\times 370$.
30. End of dens, and mucro of spring. $\times 370$.

Figs. 31-33, *Lepidocyrtus obscuricornis*.

Scaling not shown.

31. Side view. $\times 33$.
32. Hind foot. $\times 250$.
33. End of dens, and mucro of spring. $\times 250$.

Figs. 34-36, *Lepidocyrtus annulicornis*.

Scaling not shown.

34. Side view. $\times 33$.
35. Hind foot. $\times 250$.
36. End of dens, and mucro of spring. $\times 250$.

Figs. 37-39, *Lepidocyrtus stramineus*.

Scaling not shown.

37. Head, feeler, and mesonotum, side view. $\times 33$.
38. Hind foot. $\times 168$.
39. End of dens, and mucro of spring. $\times 168$.

PLATE XVI.

Scaling not shown.

Figs. 40-42, *Lepidocyrtus Fryeri*.

Fig.

- 40. Head, feeler, and mesonotum, side view. $\times 33$.
- 41. Hind foot. $\times 250$.
- 42. Muero of spring. $\times 250$.

Figs. 43-46, *Lepidocyrtus imperialis*.

- 43. Side view. $\times 33$.
- 44. Ocelli of right side of head. $\times 168$.
- 45. Hind foot. $\times 250$.
- 46. End of dens, and muero of spring. $\times 250$.

Figs. 47-50, *Lepidocyrtus Gardineri*.

- 47. Side view. $\times 33$.
- 48. Fore foot. $\times 250$.
- 49. Hind foot. $\times 250$.
- 50. End of dens, and muero of spring. $\times 250$.

Figs. 51-54, *Acanthurella Braueri*.

- 51. Side view. $\times 33$.
- 52. Right group of ocelli. $\times 168$.
- 53. Hind foot. $\times 250$.
- 54. End of dens, and muero of spring. $\times 250$.

PLATE XVII.

Figs. 55-58, *Microparonella caerulea*.

Scaling not shown.

- 55. Side view. $\times 58$.
- 56. Ocelli of left side. $\times 370$.
- 57. Hind foot. $\times 370$.
- 58. Terminal part of dens, with muero. $\times 370$.

Figs. 59-62, *Microparonella flava*.

Scaling not shown.

- 59. Head, with feeler. $\times 58$.
- 60. Tip of hind foot, with claw and empodial appendage. $\times 370$.
- 61. End of ventral tube, with protusible sac (*v*). $\times 92$.
- 62. Tip of dens, with muero. $\times 370$.

Figs. 63-66. *Cremastocephalus Scotti*.

Fig.

63. Side view, the right feeler regenerated. $\times 33$.
 64. Ocelli of left side, with base of feeler. $\times 168$.
 65. End of hind foot. $\times 370$.
 66. Tip of dens, with mucro (*m*) and scale-appendage (*a*). $\times 370$.

Figs. 67-70, *Cremastocephalus pallidus*.

67. Side view of head and thorax, with basal antennal segment and fore and intermediate legs. $\times 33$.
 68. Ocelli of left side. $\times 168$.
 69. End of hind foot. $\times 370$.
 70. Tip of dens, with mucro (*m*) and scale-appendage (*a'*). $\times 370$.

Figs. 71-73, *Cyphoderus insularum*.

Scaling not shown.

71. Head and feeler. $\times 33$.
 72. End of hind foot: *b*, basal tooth of claw; *em*, empodial appendage; *lm*, its lamella. $\times 370$.
 73. Tip of dens from inner aspect and mucro (*m*), inner (*sc*) and outer (*sc'*) dental scales. $\times 250$.

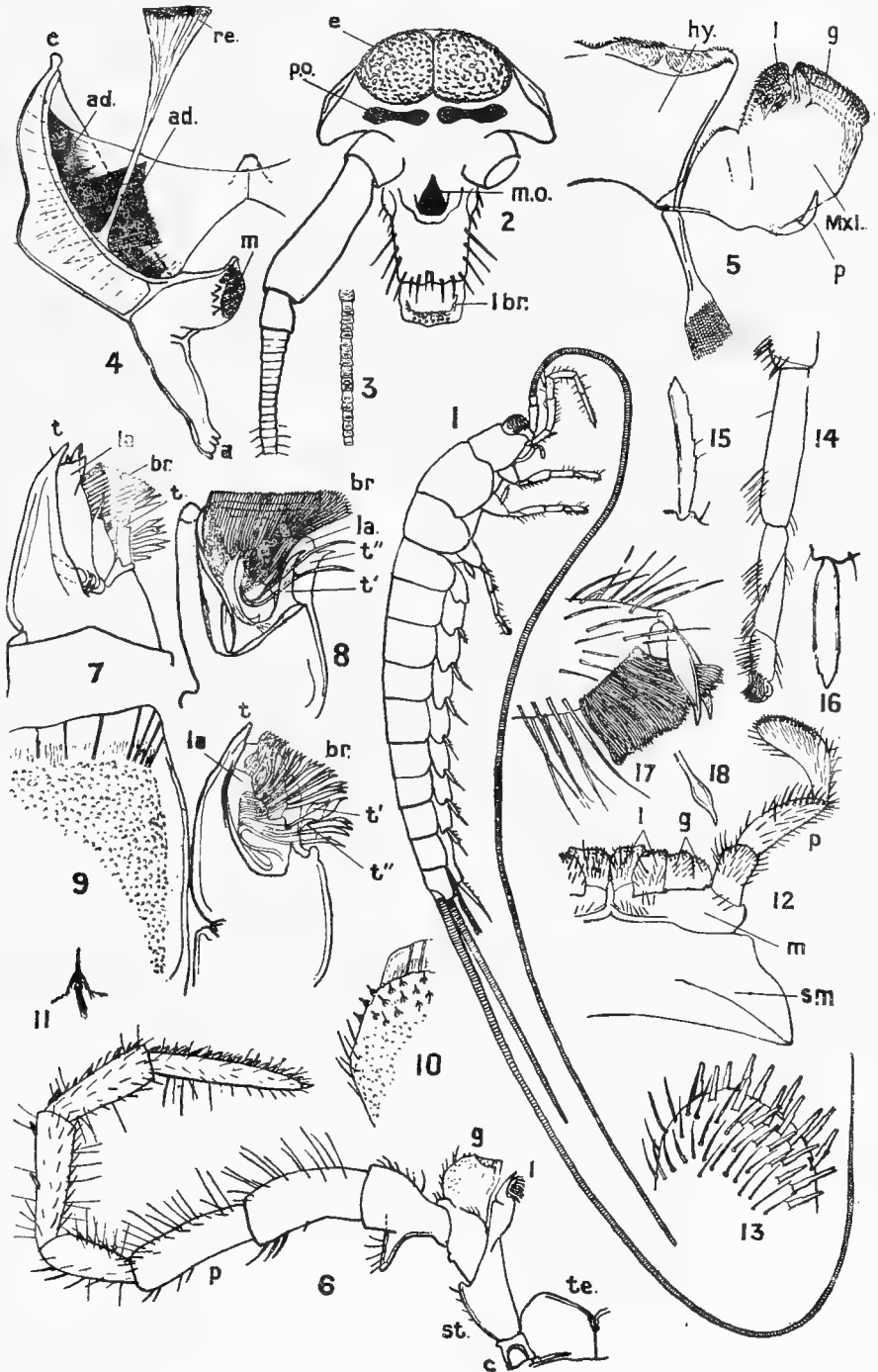
PLATE XVIII.

Figs. 74-77. Jaws of *Heteromuricus longicornis*.

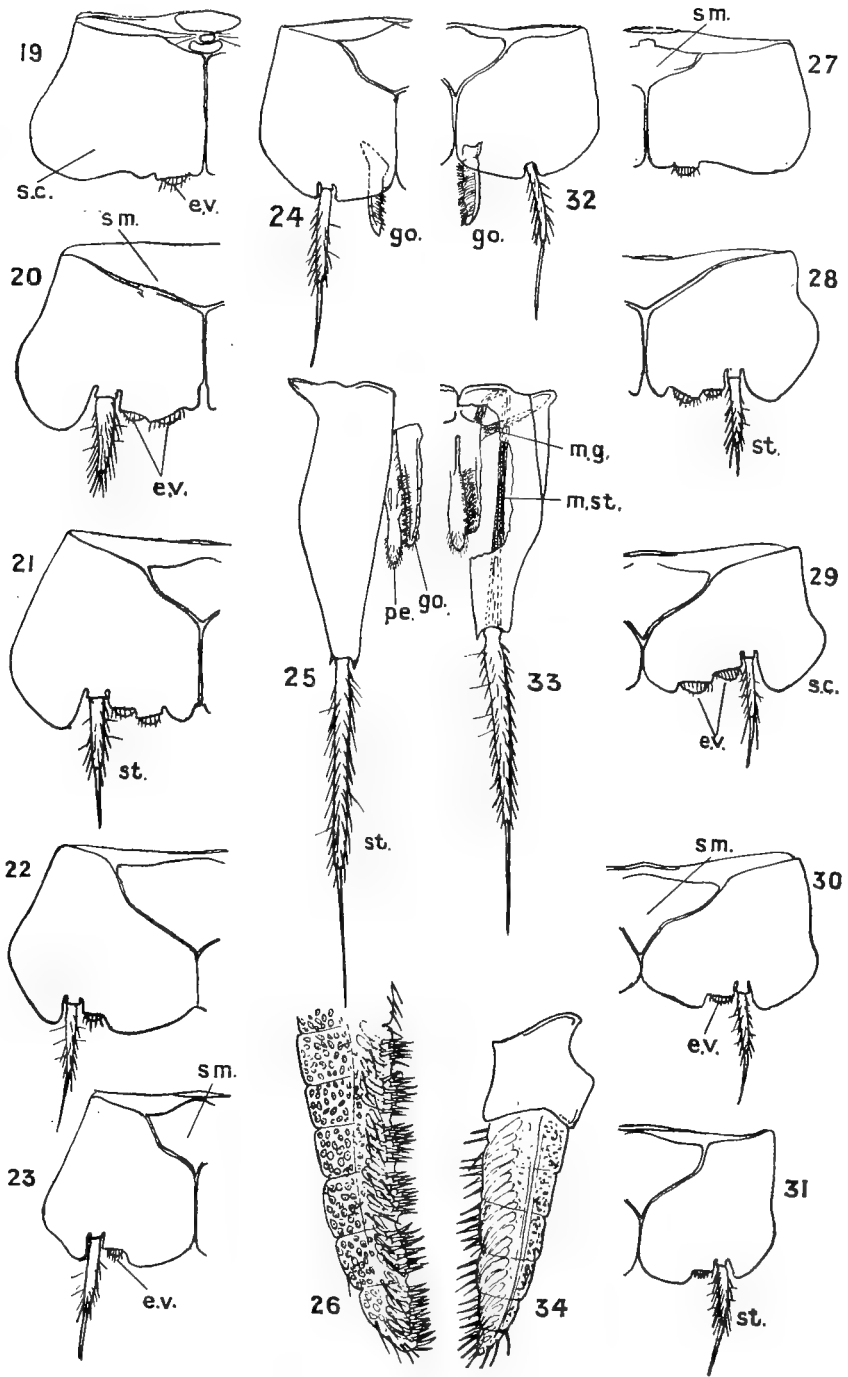
74. Right mandible, front view: *a*, apical teeth; *m*, molar area; *c*, condyle. $\times 210$.
 75. Distal part of left mandible, hind view: *a*, apical teeth; *m*, molar area. $\times 210$.
 76. Left maxillula (*Maxl*), tongue (*hy*), and right maxilla: *c*, cardo; *st*, stipes; *l*, lacinia; *g*, galea; *p*, palp; *pl*, right foot of tongue, front view. $\times 210$.
 77. Head of lacinia: *t*, teeth; *br*, brush; *lm*, lamellae. $\times 375$.

Figs. 78-81. Jaws of *Cremastocephalus pallidus*.

78. Right mandible, front view: *a*, apical teeth; *m*, molar area; *c*, condyle. $\times 370$.
 79. Left maxillula (*Maxl*), with its supporting arm (*br*); tongue (*hy*), with its right foot (*pl*); and right maxilla: *c*, cardo; *st*, stipes; *l*, lacinia; *g*, galea; *p*, palp. Front view. $\times 370$.
 80. Head of lacinia: *t*, teeth; *lm*, lamellae. Front view. $\times 750$.
 81. Head of lacinia, hind view. $\times 750$.

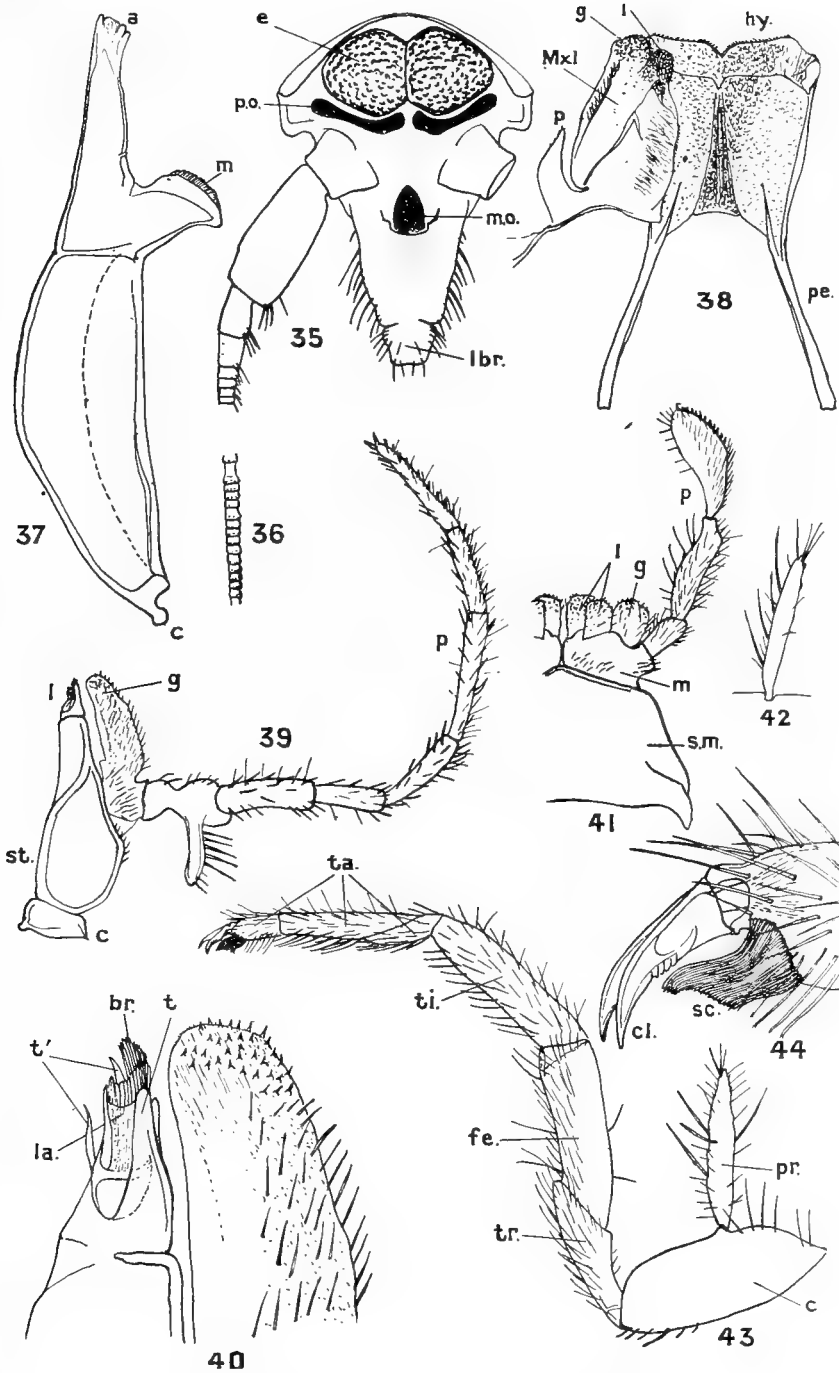


CARPENTER.—APTERYGOTA OF THE SEYCHELLES.
THYSANURA.



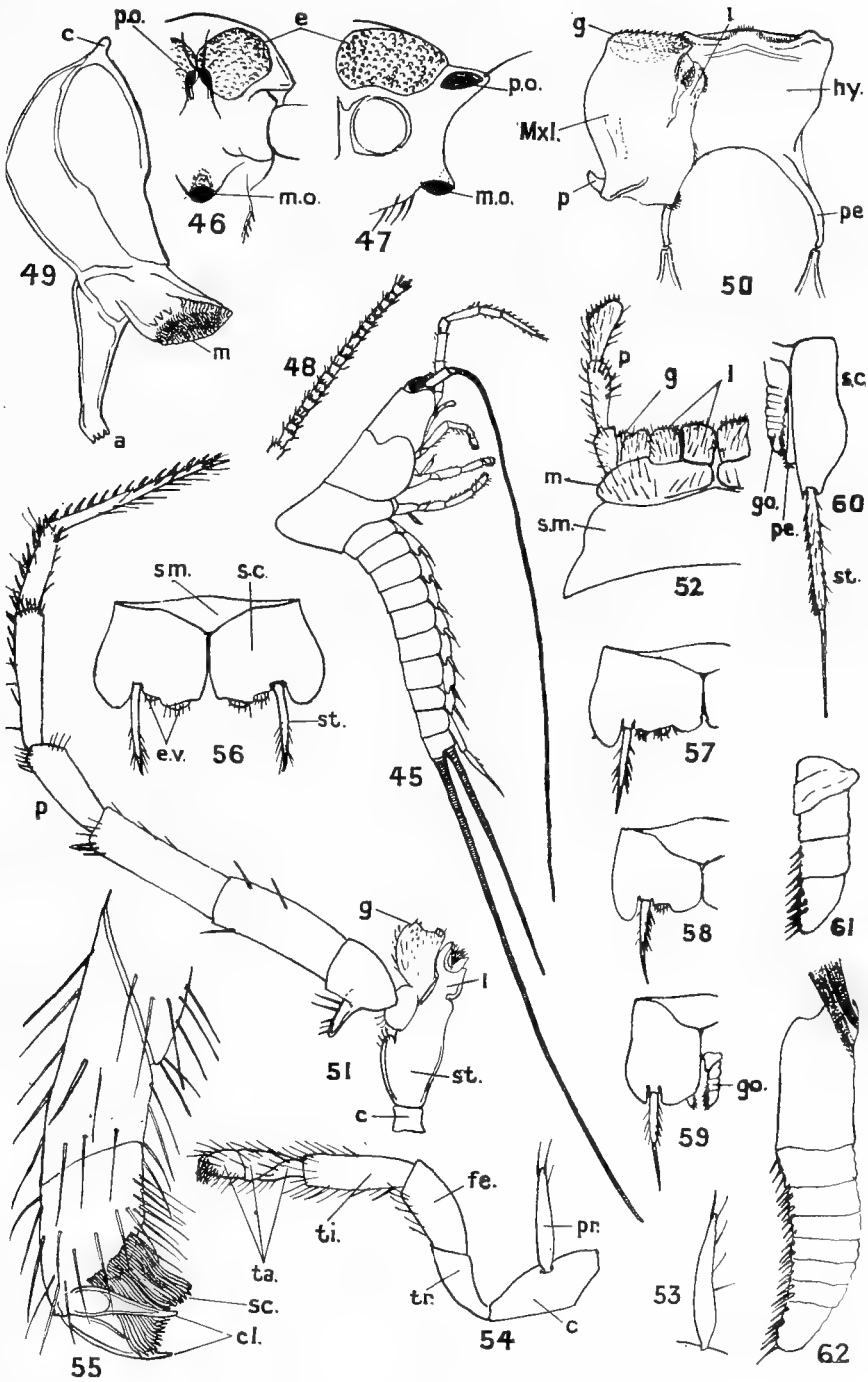
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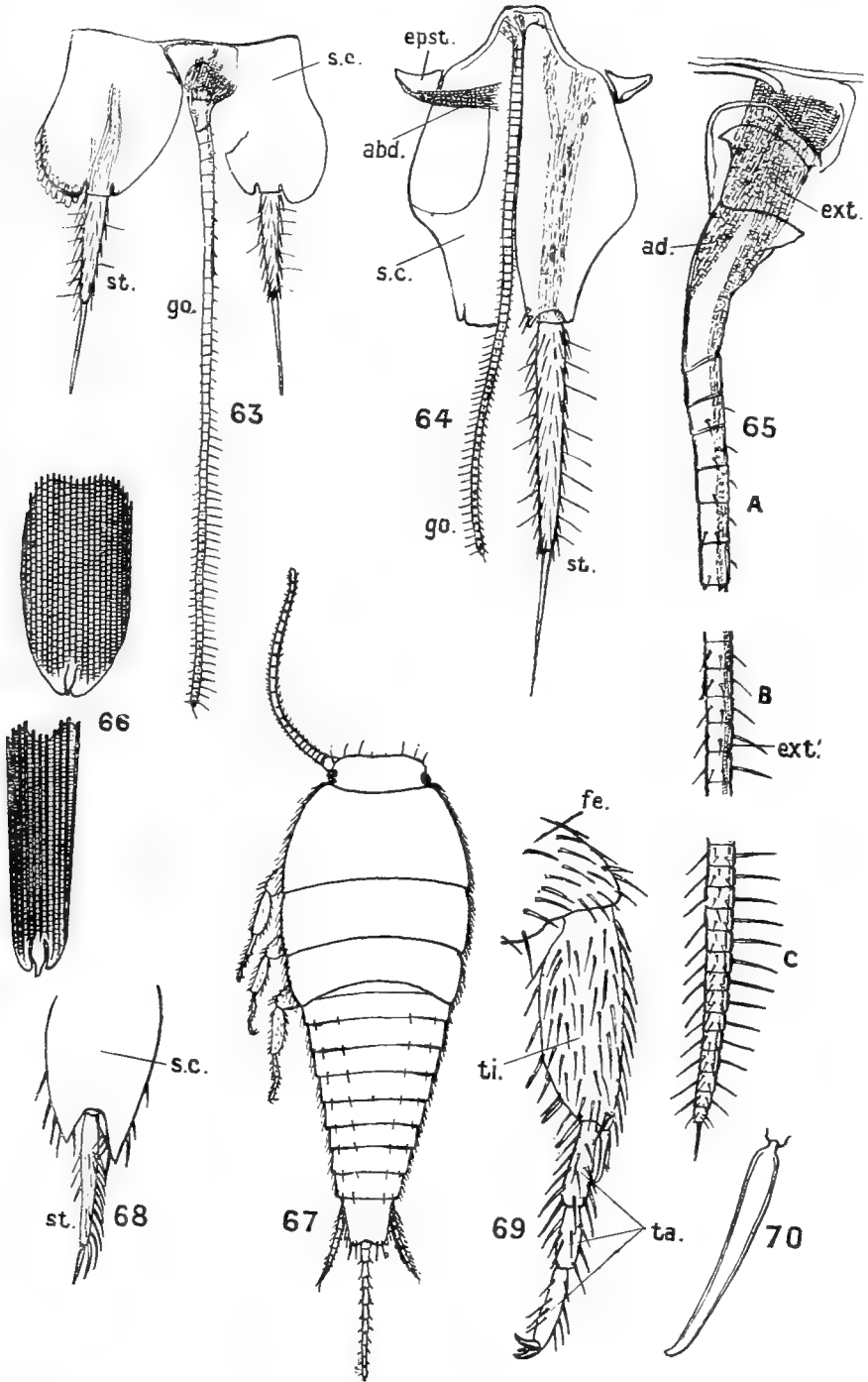
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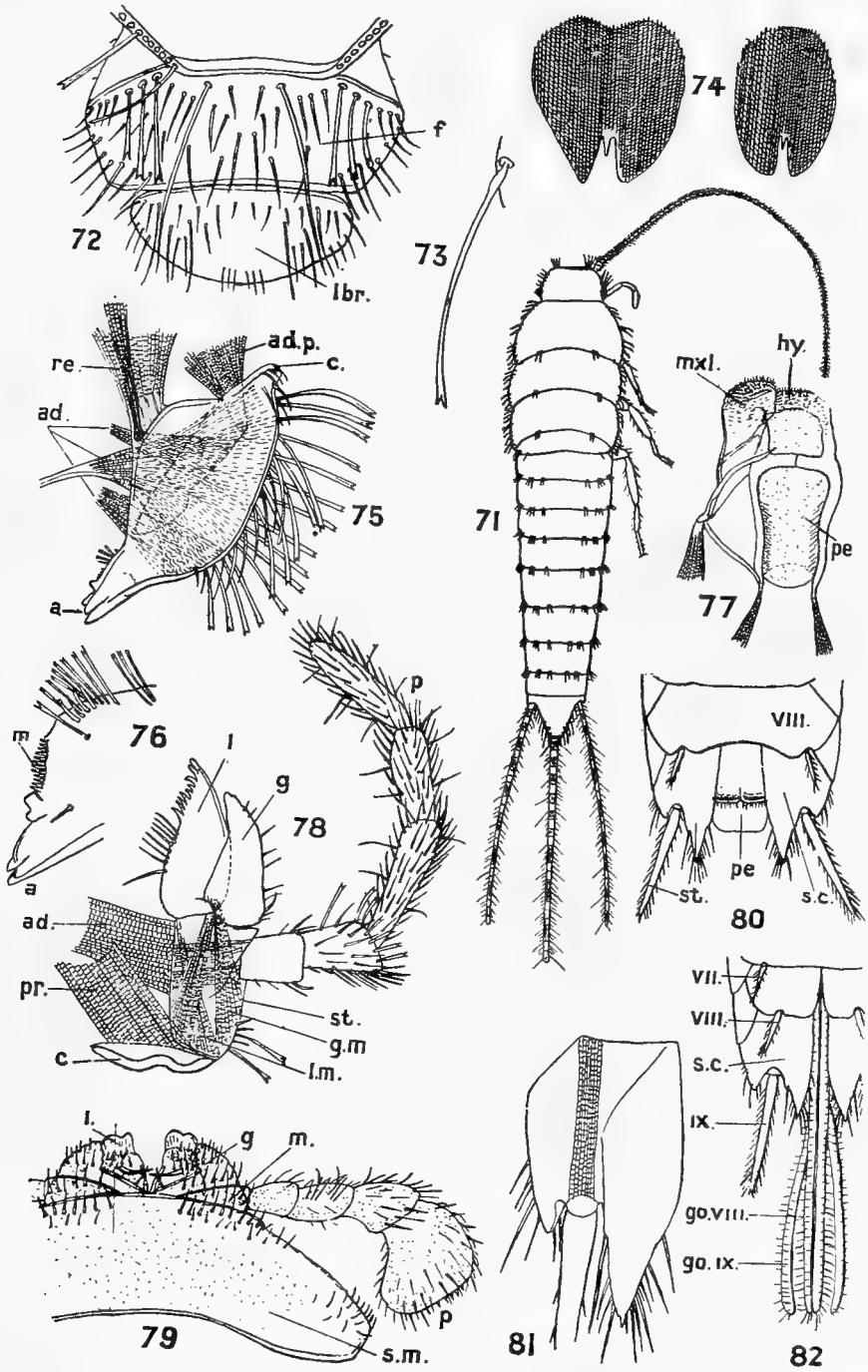
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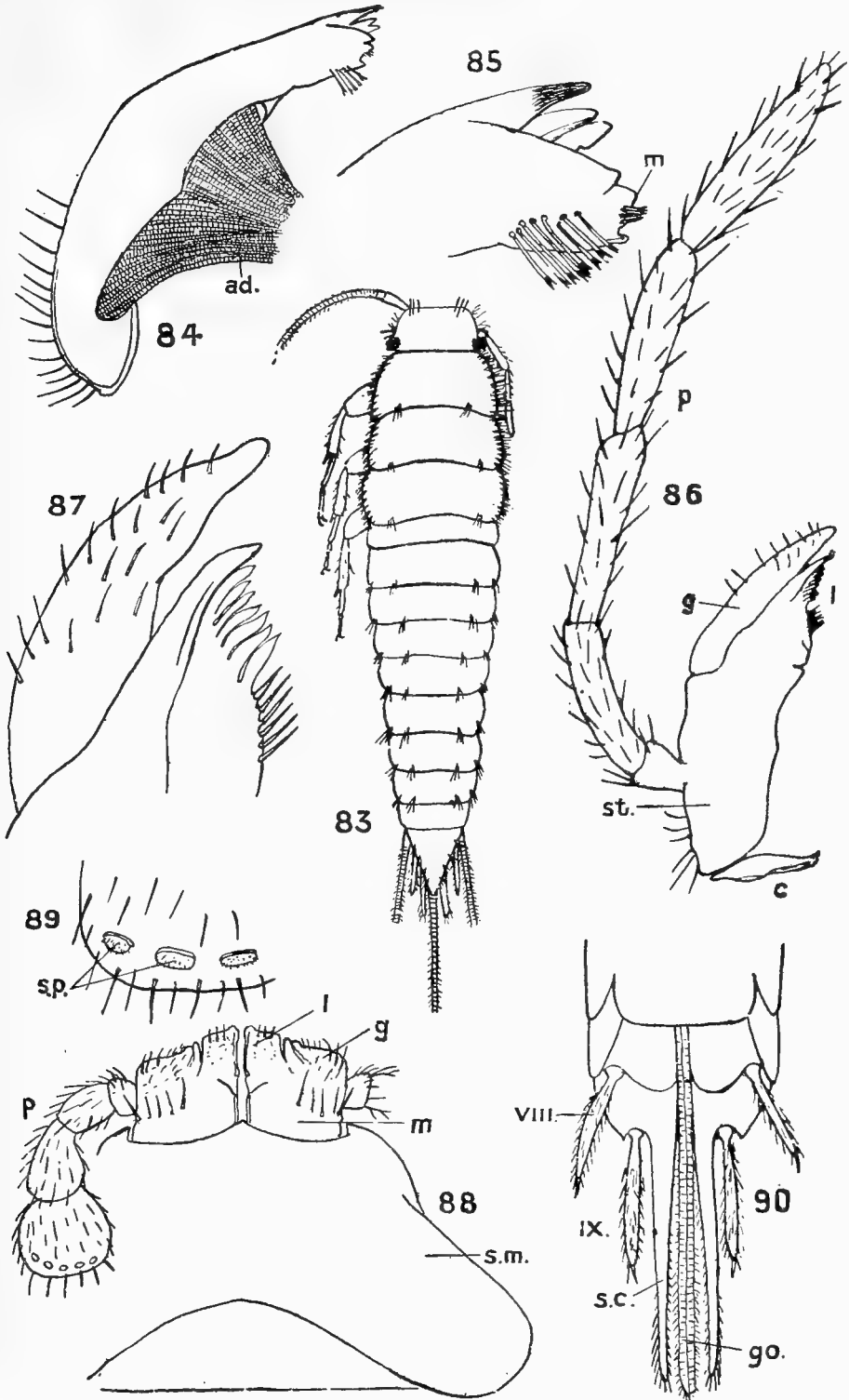
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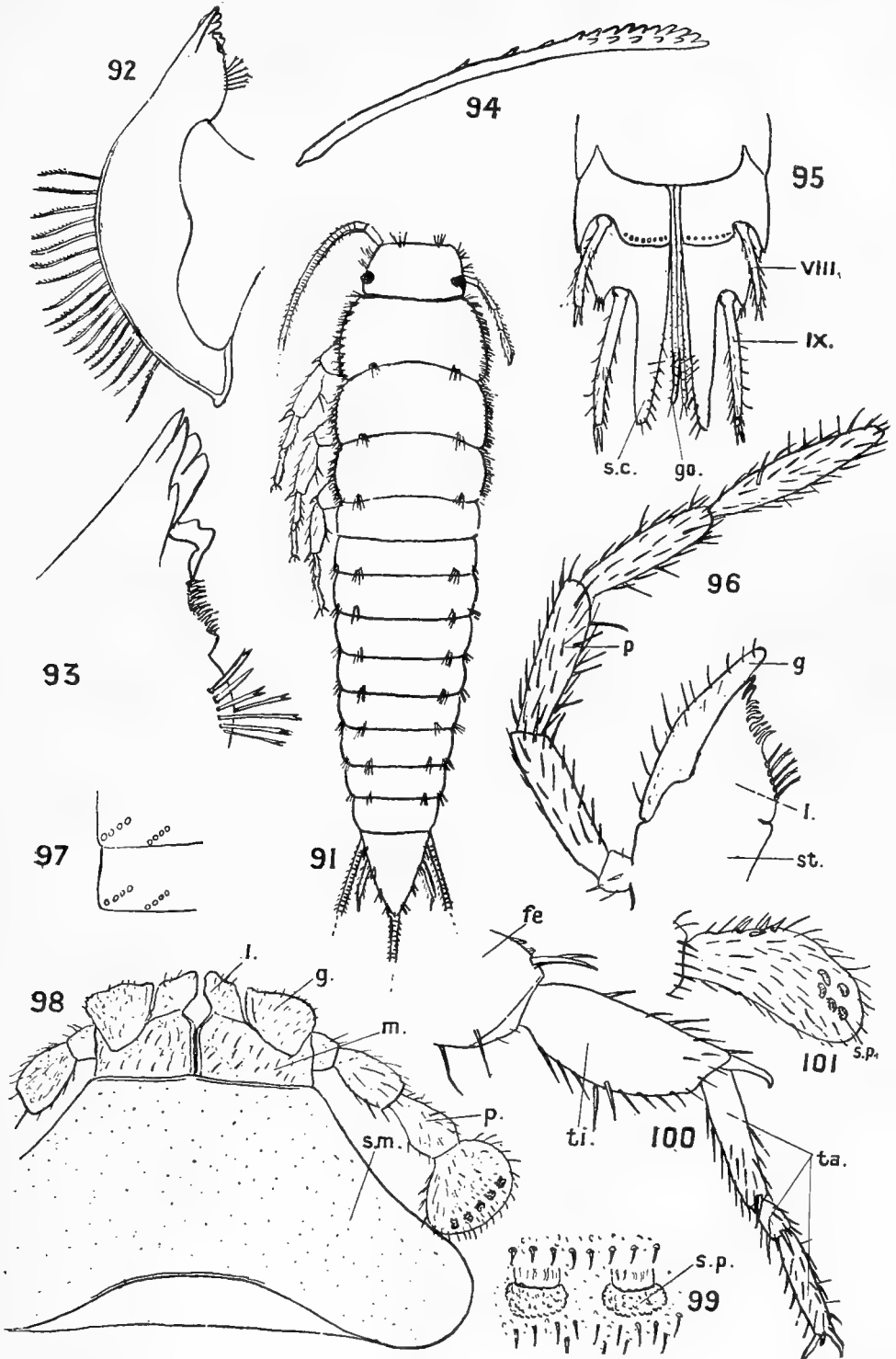
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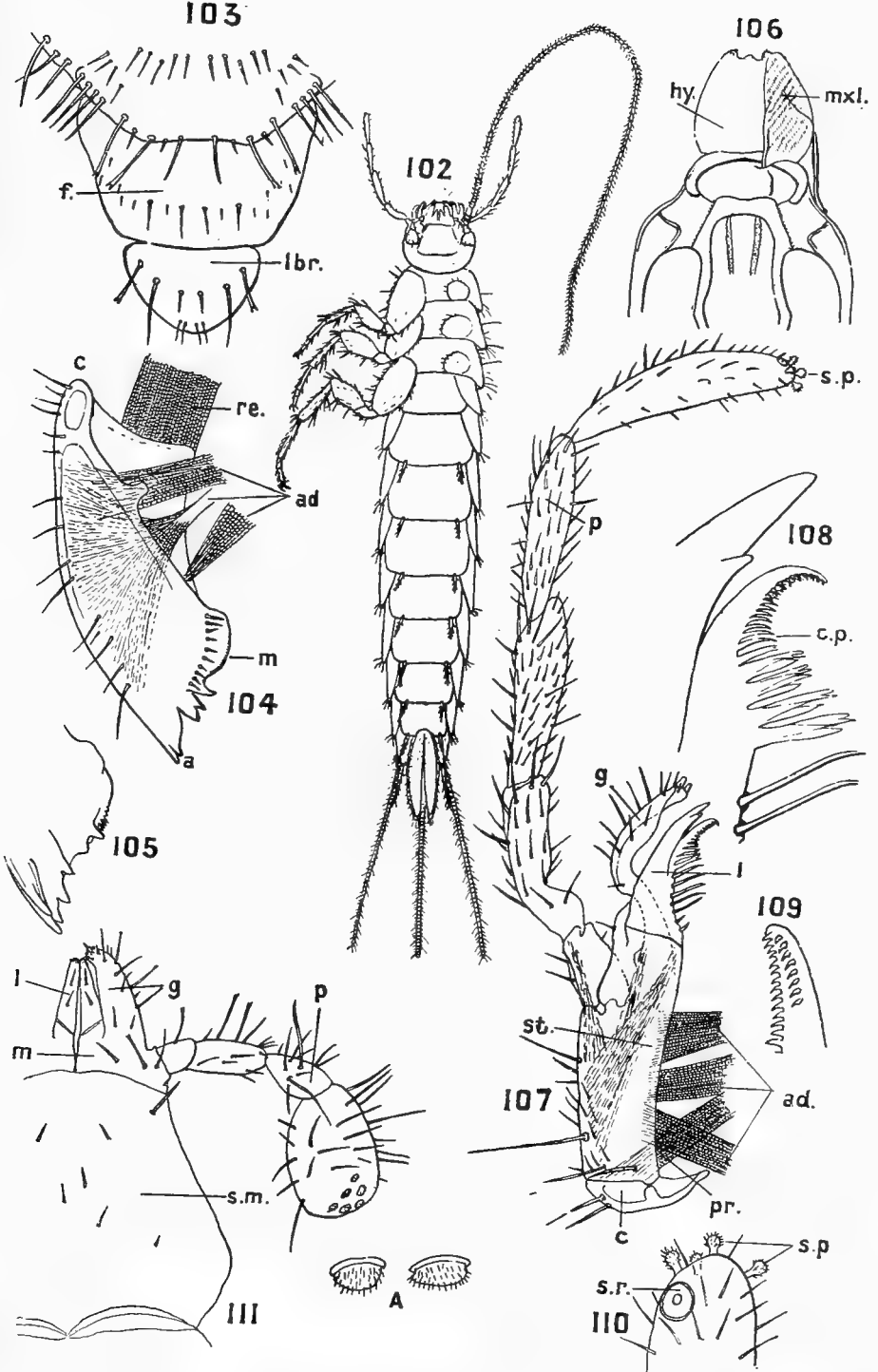
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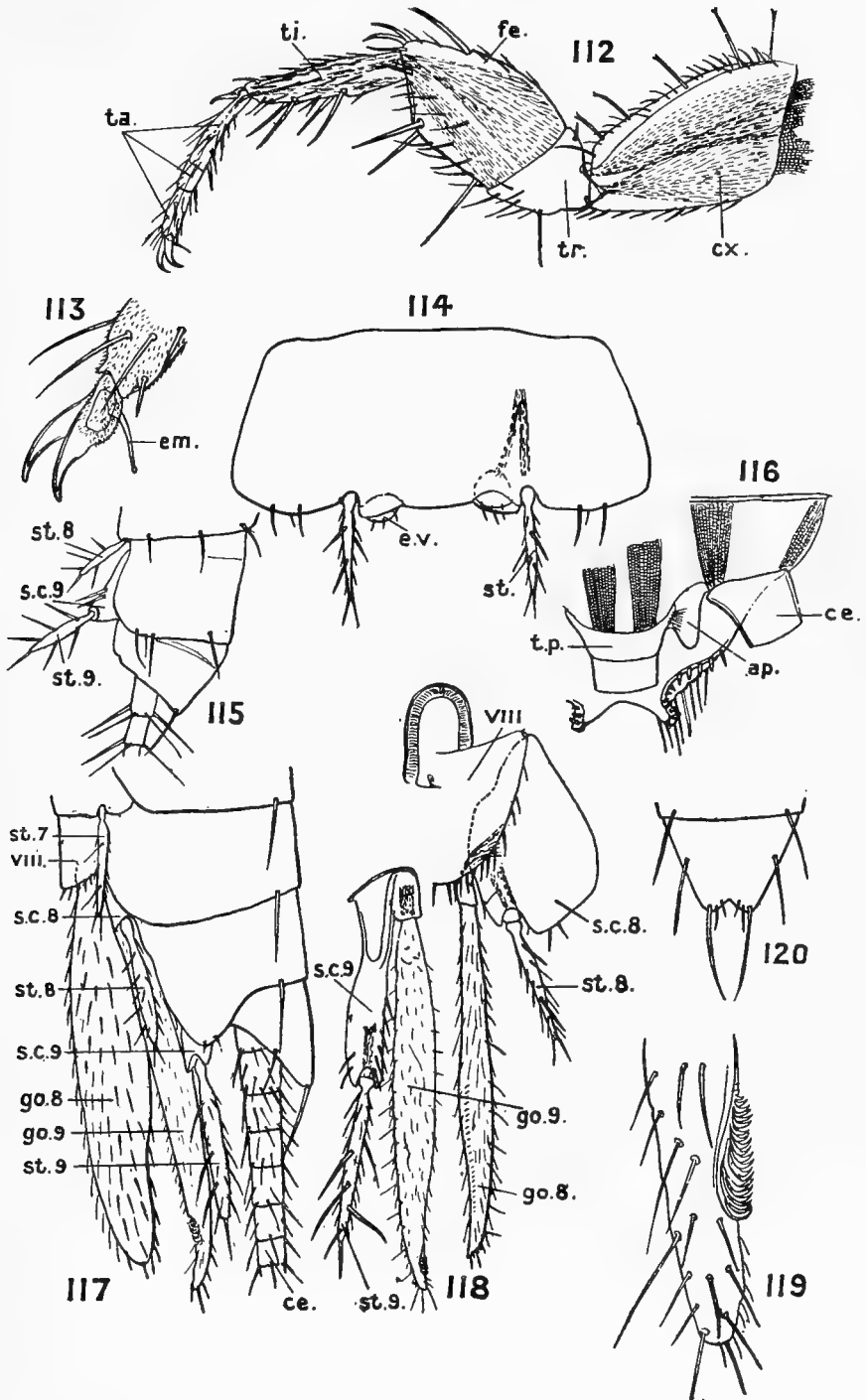


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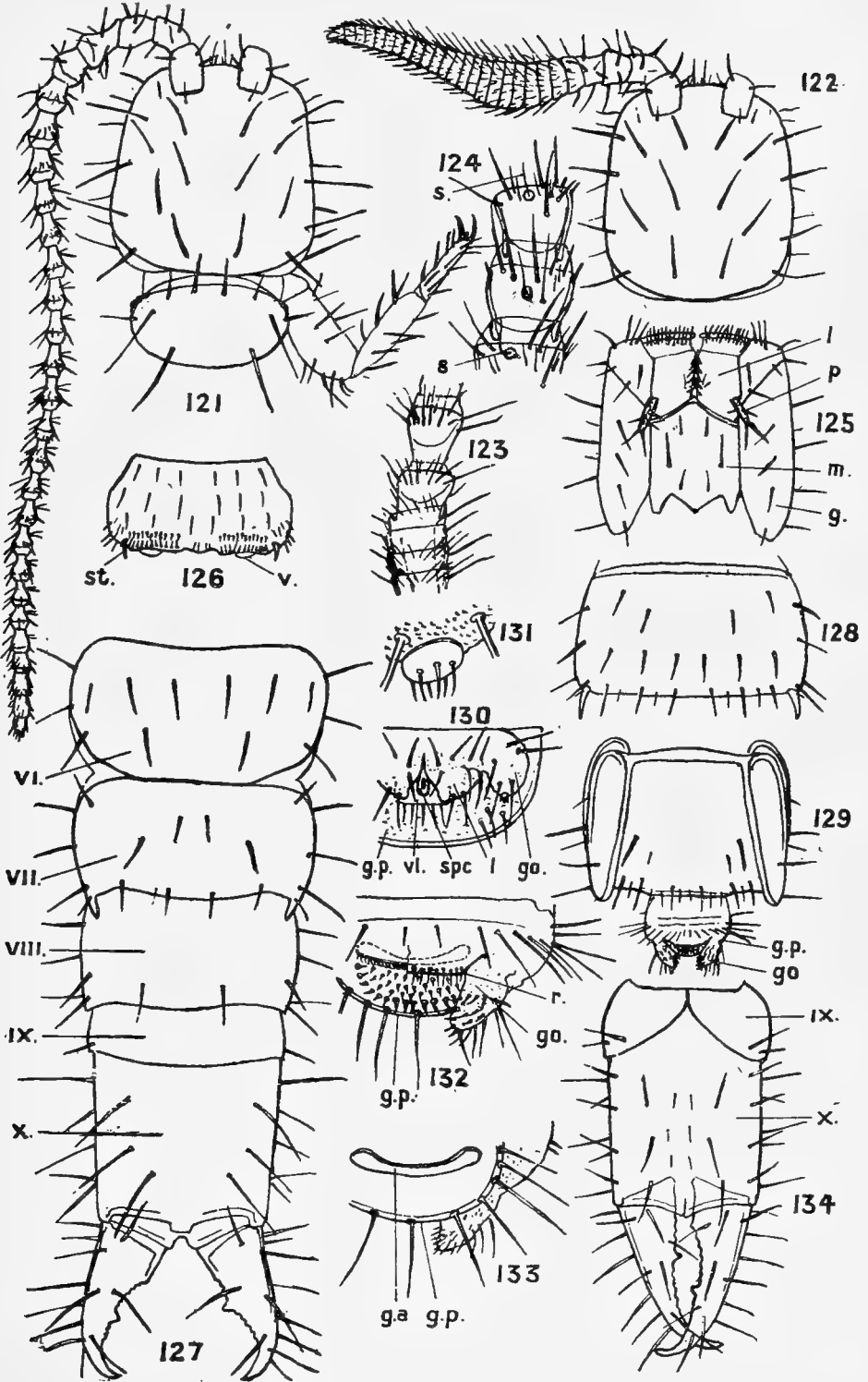


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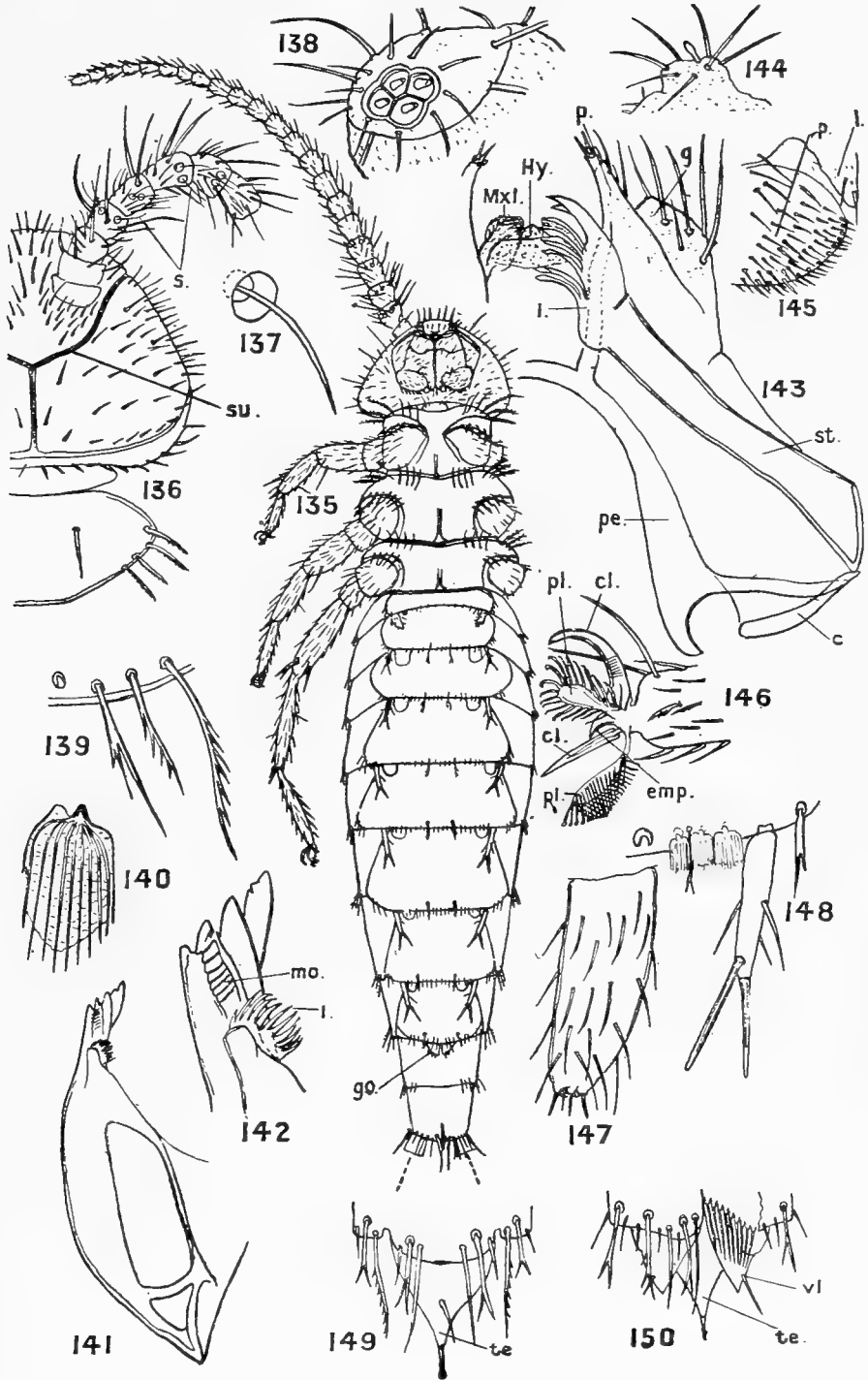
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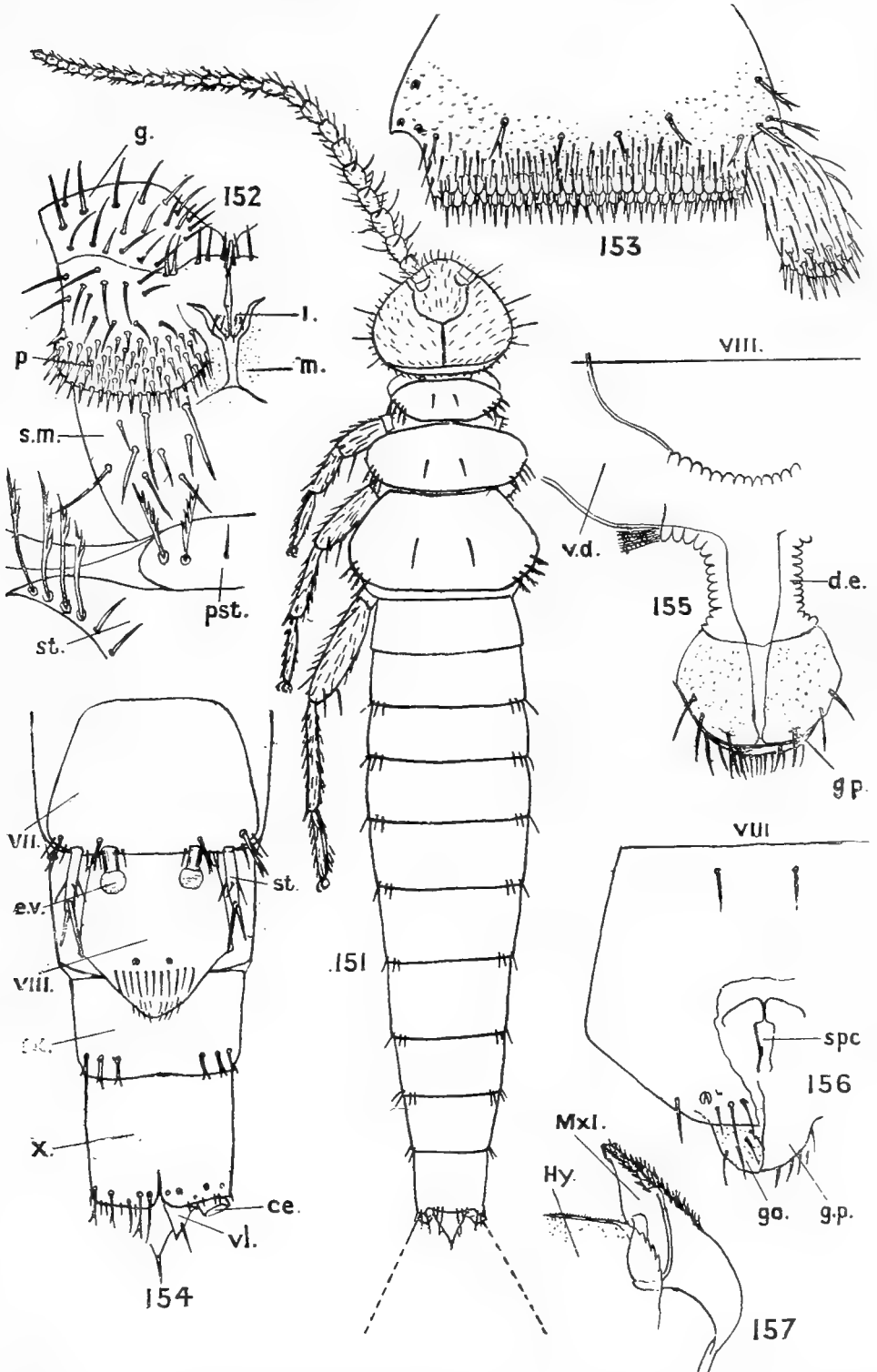
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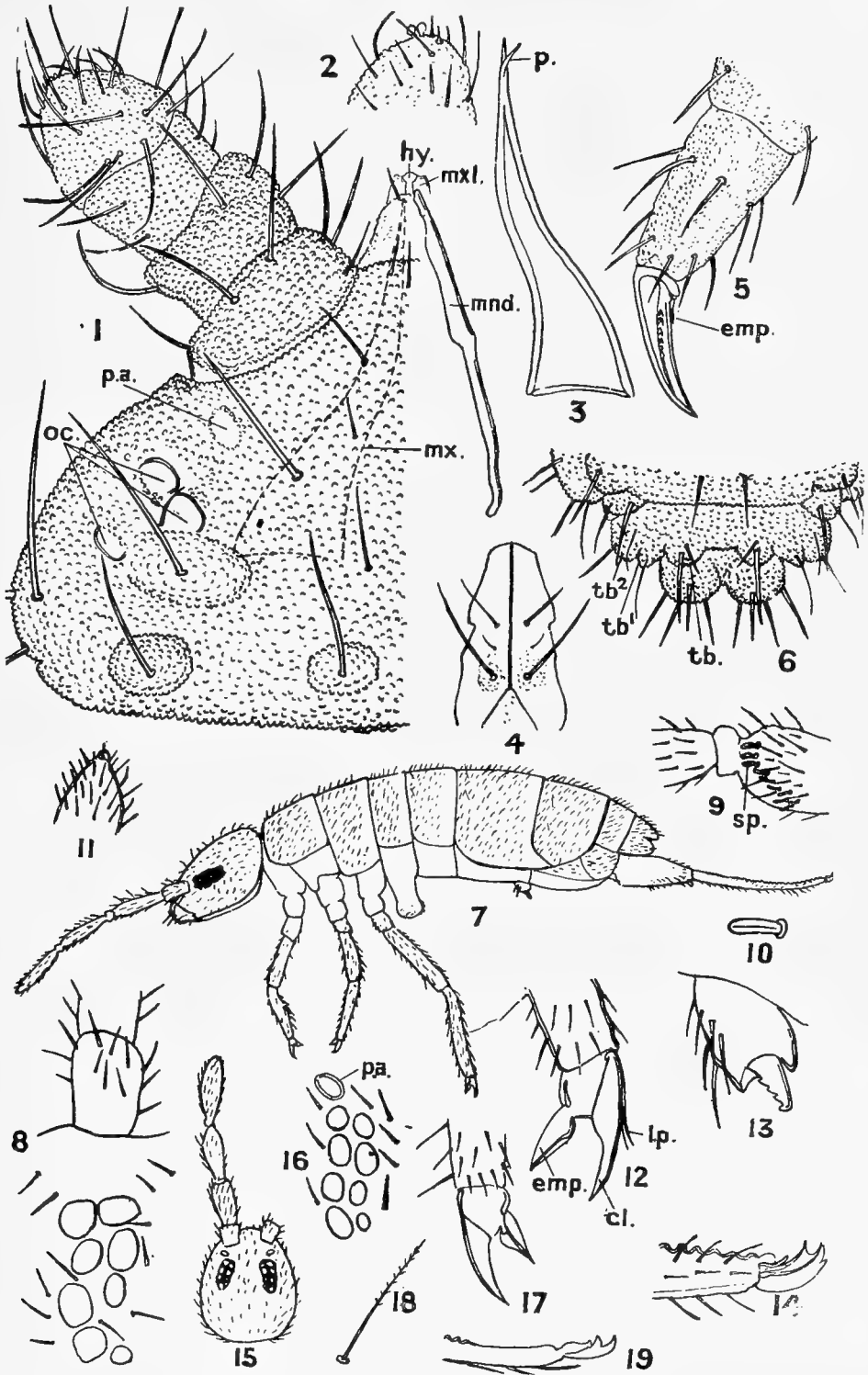
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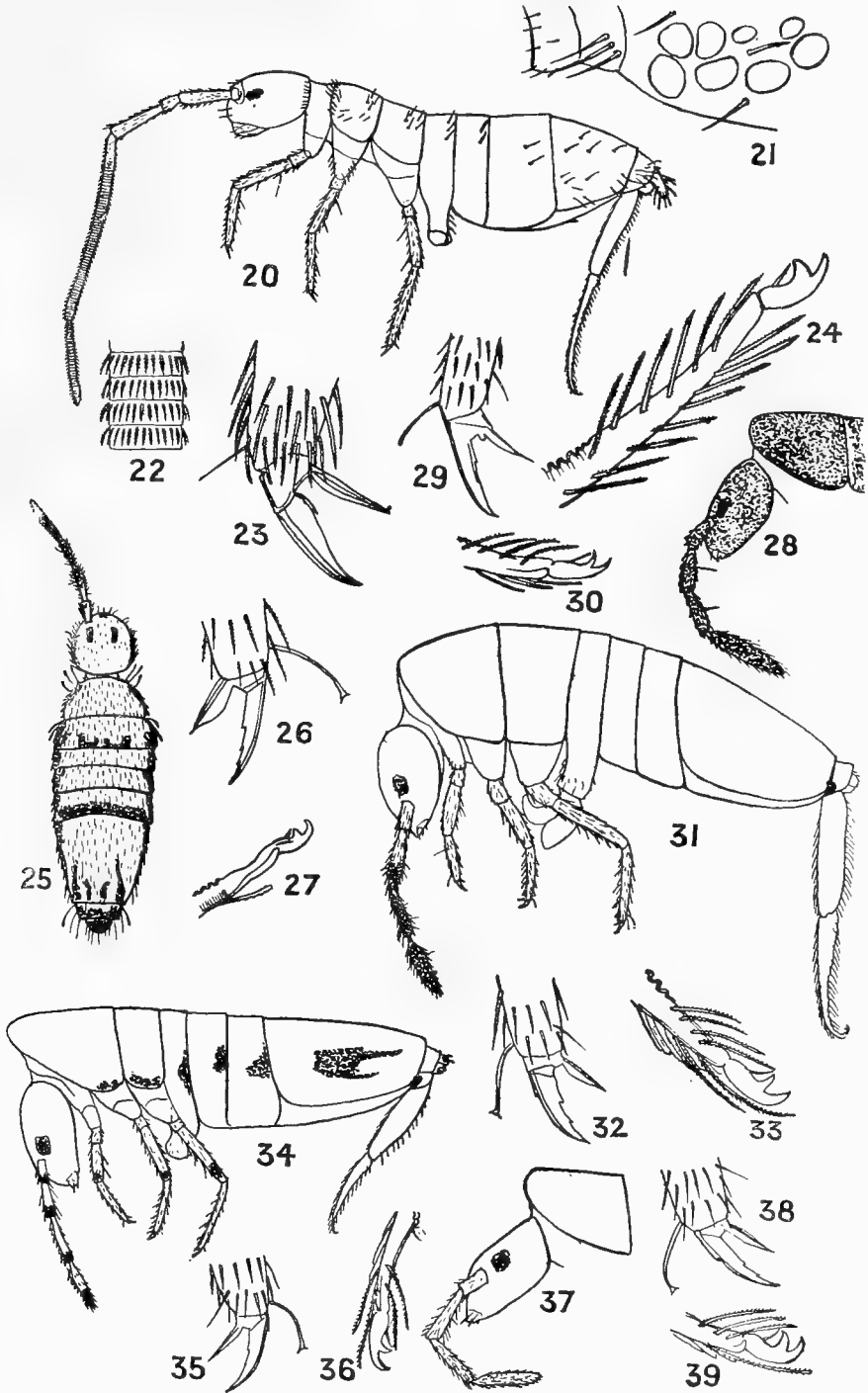
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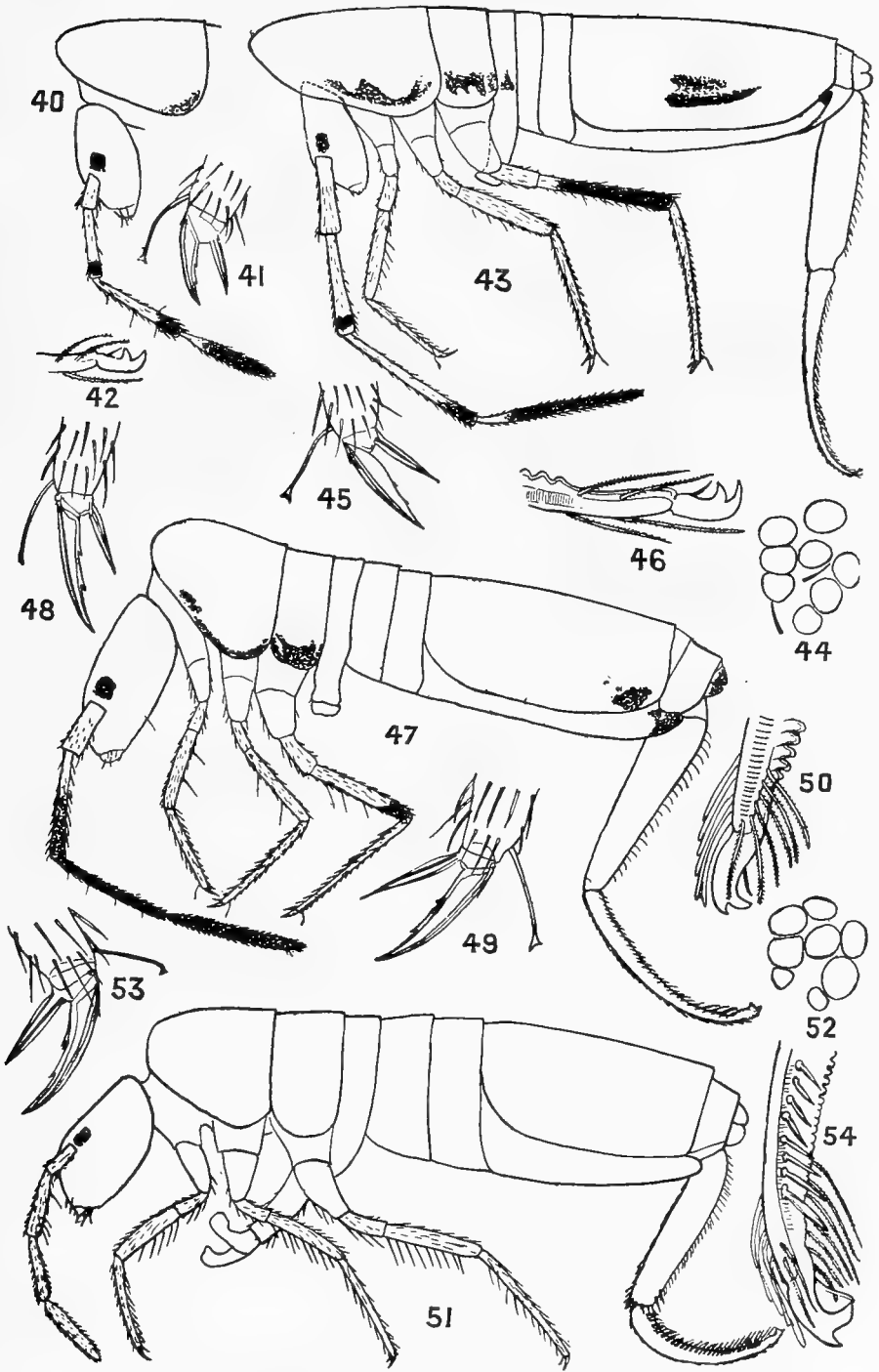


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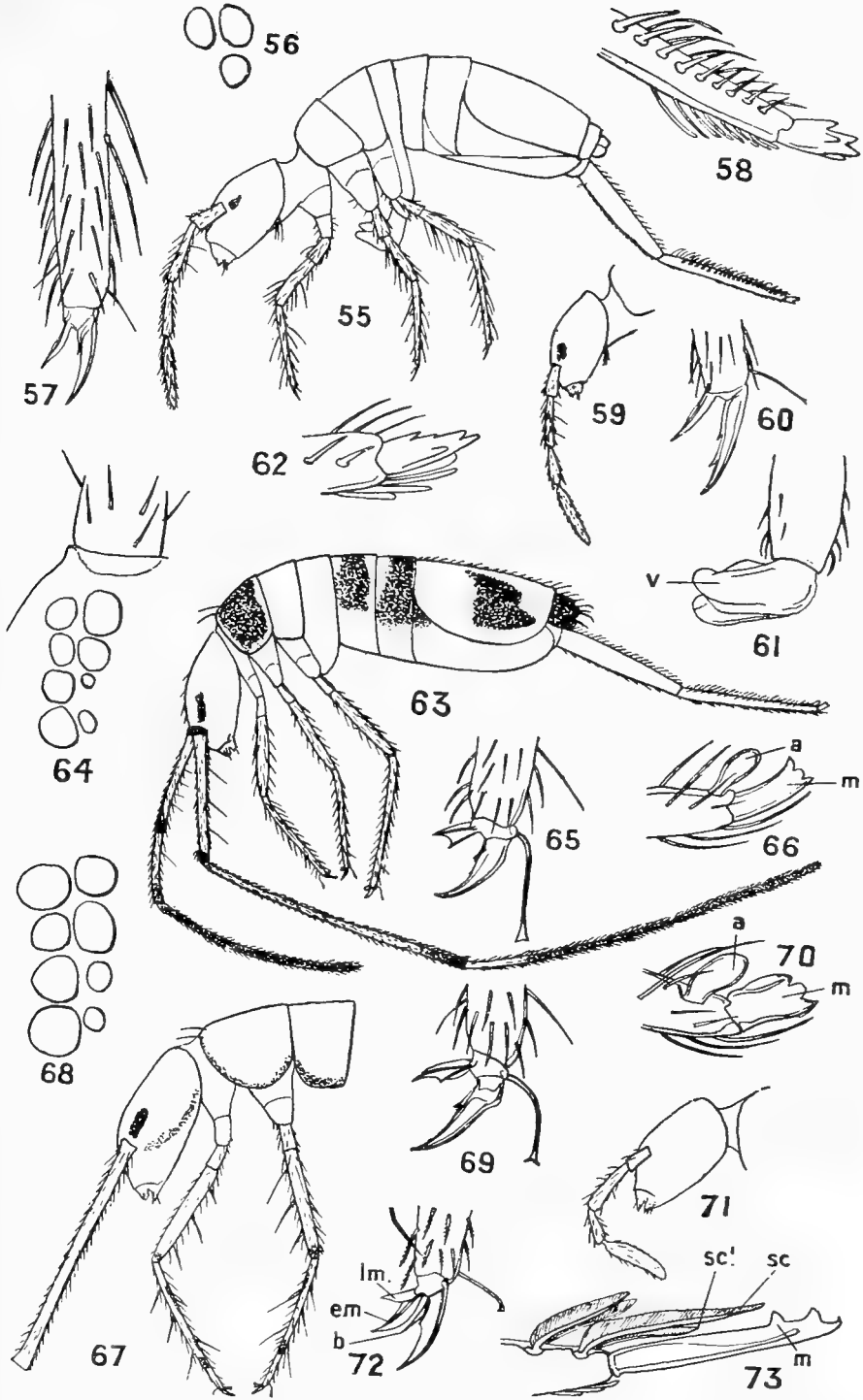
COLLEMBOLA.



CARPENTER.—APTERYGOTA OF THE SEYCHELLES.
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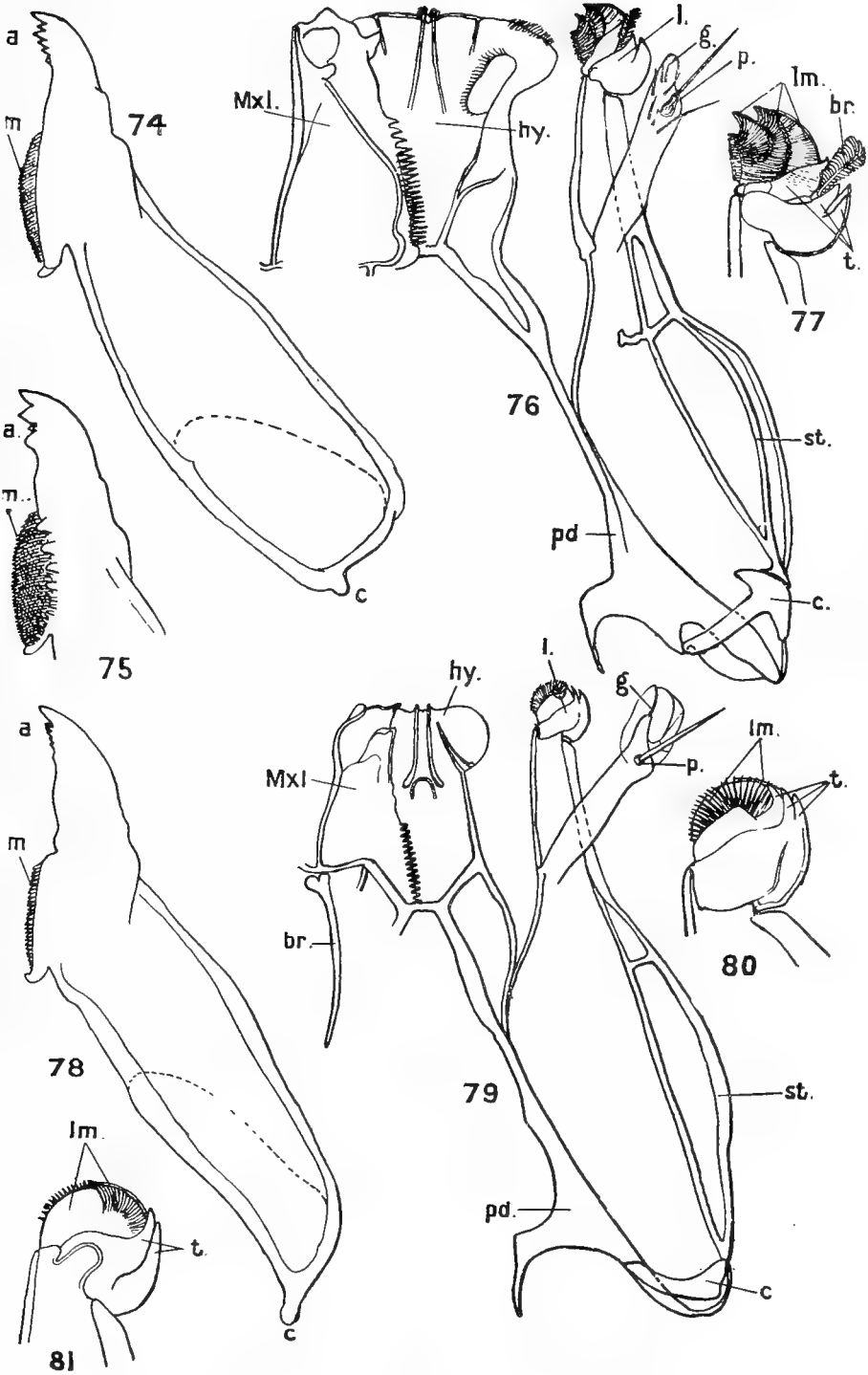


CARPENTER.—APTERYGOTA OF THE SEYCHELLES.
COLLEMBOLA.



CARPENTER.—APTERVGOA OF THE SEYCHELLES.

COLLEMBOLA.



CARPENTER.—APTERYGOTA OF THE SEYCHELLES.
COLLEMBOLA.

II.

A SYNOPSIS OF THE FALSE-SCORPIONS OF BRITAIN AND IRELAND ; SUPPLEMENT.

By H. WALLIS KEW.

[COMMUNICATED BY PROFESSOR G. H. CARPENTER, M.SC.]

Read MARCH 16. Published JULY 7, 1916.

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SINCE the publication of "A Synopsis of the False-Scorpions of Britain and Ireland" in these Proceedings in 1911 (20), two additions have been made to this part of our fauna: one in Britain and one in Ireland. The former is a *Chelifer (Chernes)*, allied to *Chelifer (Chernes) Wideni* C. L. Koch, and found in several places in England and Wales; while the latter is a *Chthonius*, a small and very distinct species, the discovery of which by Mr. J. N. Halbert, M.R.I.A., at Malahide, Co. Dublin, is one of the surprises of recent field-work in Ireland. After a prolonged investigation, both have to be established as new species. Moreover, the known false-scorpion-fauna of Ireland has been enriched, during the last few years, by the addition of several species already known in Britain; and it has been thought useful to include in this communication a brief report on the state of our knowledge of the occurrence of these animals in this country. Finally, a classified list of the British and Irish species is given; and this list has been marked so as to show at a glance the respective faunas of the two countries.

I. A NEW SPECIES OF CHELIFER.

In 1913, an opportunity occurred for the examination of abundant material of the false-scorpion here distinguished as *Chelifer (Chernes) Powellii*. A large number of specimens had then recently been collected by Mr. H. L.

Powell and myself, at Kirby-le-Soken (Essex), in an old brick-building long used for stabling an ass and containing a quantity of refuse of old hay, etc.; and a re-examination of my collections showed that it had already occurred in other places: at Ewhurst (Surrey), found by Capt. Aird Whyte, in a cowshed; in London, found by Mr. A. J. Chitty, in a granary; near Lancaster, found by Mr. F. H. Gravely on his own body after camping on a bed of hay; in Eggerslack Wood (Lancashire), found by Mr. R. Standen (8), possibly, as he now thinks, about the nests of small mammals; more recently I found it at Machynlleth (Montgomeryshire), in a stable-loft where fowls nested; and, since it thus appears to be associated with the homes of vertebrate animals, it will no doubt be shown eventually to inhabit hollows of trees and other covered places inhabited by bats, owls, etc.

The animal is allied to *Chelifer (Chernes) Wideri* C. L. Koch, and has been confused with that species, or recorded as *C. phaleratus* Sim., which is a synonym of *C. Wideri*.¹ That species was established by C. L. Koch (1), on Bavarian specimens, found "in dem faulen Holzstaube einer Eiche"; Simon (3) found it in the forest of Fontainebleau "sous les écorces de chênes"; while in Britain we know it in Sherwood Forest, in the old forest-land of Richmond Park, and in a small remnant of forest at West Wickham (Kent), always under the bark of old oaks; and, unlike other tree-species, it is usually found where the small space between the bark and the wood is choked with a characteristic reddish powdery debris. The two species thus appear to have different habitats; and they are certainly distinct.

The confusion of the two animals has resulted from the fact that they possess in common a number of good characters which would not be expected to co-exist in more than one species. By these characters they are separated at first sight from all other species of *Chelifer (Chernes)* represented with us. Together, and no doubt with other species occurring in Europe and as

¹That *C. Wideri* C. L. Koch, 1843, and *C. phaleratus* Sim., 1879, are identical is suggested by Simon's account of his species (3), and is confirmed by paratypes (from Fontainebleau) given to me by him. With regard to Simon's statement that L. Koch, to whom he had sent specimens, found them to differ from *C. Wideri*, the explanation probably is that the comparison was made with the animal found by L. Koch at Nürnberg "in Häusern" (2), probably *C. Powellii*. It is true that Ellingsen (who has retired from zoological work) regarded *C. Wideri* and *C. phaleratus* as separate species; and, since he stated (7) that the latter was distinguished by less robust palps, it was presumably *C. Powellii*; and I certainly found that species among specimens labelled "*C. phaleratus*" lent to me by Dr. R. Gestro from the Museo Civico at Genoa. But it must not be assumed that all the records of "*C. phaleratus*" relate to either one or the other of these species: e.g. *C. phaleratus* (Sim.) Cambridge (10) = *C. scorpioides* Herm.; *C. phaleratus* (Sim.) Cambridge (5) = *C. Panzeri* C. L. Koch; *C. phaleratus* (Sim.) Godfrey (4) = *C. dubius* (Camb.); etc.

yet imperfectly known, they form a well-marked group within the subgenus. The cephalothorax is of distinctive shape; as also are the palps, of which the tibia is without marked antero-proximal convexity; and an unusually bold granulation is combined with short strongly clavate bristles. Moreover, the bristles of the ventral face of the abdomen (sternites vii.-xi.), instead of being as usual simple or nearly so, are clavate like those of the dorsal face; and the usual tactile hairs of the extremity of the abdomen (tergite-sternite xi.) are absent.

As regards the characters by which the two species are distinguished I refer to the comparative descriptions given below.¹ It will be seen that the main differences are in the palps; they are sufficiently marked in the palps of the females; but much more so in those of the males; a striking fact being that the modifications of the palps of the male take in the two species opposite directions. The palps of the male are more robust than those of the female in *C. Wideri* and more slender than those of the female in *C. Powellii*. Of other differences, those of the bristle-armature of the abdominal tergites are of practical importance, the bristles of the posterior marginal row being rather closely set in *C. Wideri* and rather widely set in *C. Powellii*. The number of bristles in the row is not a fixed character; but it is always greater in *C. Wideri* than in *C. Powellii*. Taking tergites vi.-viii. of the male (the bristles are a little more numerous in the female in both species), the average number in the row is perhaps 19-20 in the first species and 12-13 in the second. The bristles of the sternites are similarly less numerous in the latter species, and thus the difference on the whole abdomen is great. The bristles of *C. Wideri* are in general somewhat more strongly clavate; and this is particularly noticeable on the sternites. Neither species has a tactile hair on tarsus iv.; but *C. Powellii* is distinguished from its ally by the presence, about $\frac{3}{4}$ removed from the base of the tarsus, of an obtuse bristle longer and less decumbent than the rest. The granulation presents small differences, e.g. that of the palp-femur is noticeably the stronger in *C. Wideri*. That species, finally, is a little the larger and less deeply coloured; and the "lyriform organs" of its abdominal tergites (examined in liquid) are less conspicuous.

¹ As regards *C. Wideri*, the description is a revision of that previously given by me (20). That description relates solely to *C. Wideri*, without admixture of *C. Powellii*, and the illustration (20, fig. 6) represents the female; but "Ewhurst" among the localities belongs to *C. Powellii* and should be cancelled. In the former paper, and again here, the length of the body is given in millimetres and tenths; but from the extensible abdomen such measurements, valueless in themselves, merely give an idea of the relative size of the animals. This character of the abdomen has to be borne in mind also when referring to the drawings; they illustrate primarily the general shape of the palps. Some of the tactile hairs are shown; but all the bristles are omitted.

Chelifer (Chernes) Wideri C. L. Koch.

Chelifer Wideri C. L. Koch, 1843 (1). *Chelifer phaleratus* Simon, 1879 (3).

Palps and cephalothorax red-brown, abdominal tergites yellowish-brown; dull or nearly so, with clavate and toothed bristles. Cephalothorax strongly granulate, both grooves distinct; abdominal tergites granulate with short strongly clavate bristles, those of the posterior marginal row rather closely set, scar-spots moderately distinct, interstitial membrane of dorsum wrinkled almost granulate, bristles of sternites vii.–xi. clavate, tergite-sternite xi. without tactile hairs; galea (♀) moderately long, distally with small processes; palps (♀) femur rather robust, as broad as the tibia, three times as long as broad, in front after well-marked elevation from stalk nearly straight, above rising abruptly from stalk, behind the increase is abrupt oblique almost straight with obvious but rounded proximo-posterior corner, beyond this the outline is nearly straight till gently rounded off to the extremity; tibia in

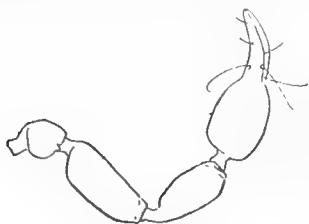


Fig. 1.

Chelifer (Chernes) Wideri C. L. Koch, palp ♂.

front rising gently from stalk and only a little convex, behind beyond stalk very slightly then moderately convex; hand rather narrow nearly parallel descending rapidly to fingers, movable finger slightly longer than hand; anterior margin of fingers with an isolated accessory tooth; the palp is strongly granulate; bristles of palp short, for most part rather strongly clavate; lower face of maxillae granulate; coxae iv. (♀) broad, posterior margin longer than inner; legs iv. tibia and tarsus without tactile hairs. ♂ (compared with ♀) with galea poorly developed; palps (fig. 1) a little shorter relatively stouter: femur relatively broader and higher, increasing still more abruptly from stalk, less than three times as long as broad (scarcely 2·8); tibia a little shorter and a little more convex; hand distinctly shorter relatively broader and slightly higher; fingers closing with wider gape; coxae iv. somewhat less broad at base, posterior margin longer in proportion to inner L. 2·4.

Under bark of old oak-trees: Sherwood Forest; Richmond Park; West Wickham (Kent).

Chelifer (Chernes) Powellii sp. nov.

Palps and cephalothorax red-brown, abdominal tergites horny-brown; dull or nearly so, with clavate and toothed bristles. Cephalothorax strongly granulate, both grooves distinct; abdominal tergites granulate with short

clavate bristles, those of the posterior marginal row rather widely set, scar-spots moderately distinct, interstitial membrane of dorsum wrinkled almost granulate, bristles of sternites vii.-xi. moderately clavate, tergite-sternite xi. without tactile hairs; galea (♀) moderately long, distally with small processes; palps (♀) femur less robust than in preceding species, not quite as broad as the tibia, more than three times as long as broad (about 3·3), in front with slight elevation from stalk and beyond middle faintly concave, above rising from stalk less abruptly than in preceding species, behind also the increase is less abrupt obliquely convex without obvious proximo-posterior corner, and beyond this the outline is gently convex to the extremity; tibia in front rising gently from stalk and only a little convex, behind beyond stalk nearly straight then moderately convex; hand compared with that of preceding species a little broader at base descending a little more gently to fingers, movable finger about equal to or slightly shorter than hand; anterior

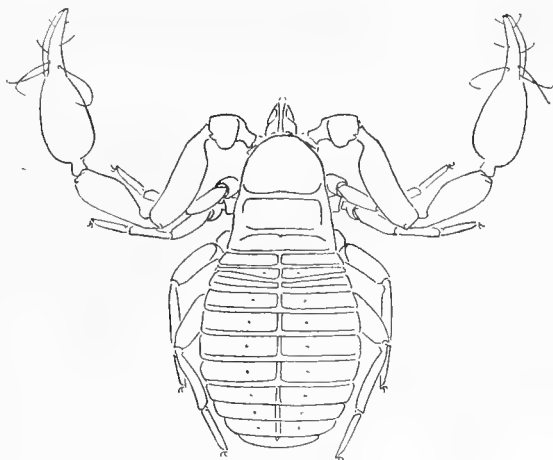


Fig. 2.—*Chelifer (Chernes) Powellii* sp. nov., ♂.

margin of fingers with an isolated accessory tooth; the palp is rather strongly granulate; bristles of palp short, for most part moderately clavate; lower face of maxillae granulate; coxae iv. (♀) broad, posterior margin longer than inner; legs iv. tibia and tarsus without tactile hairs. ♂ (compared with ♀) with galea poorly developed; palps (fig. 2) a little shorter much more slender: femur increasing more gently from stalk, about 3·4 as long as broad; tibia behind beyond stalk and before distal convexity faintly concave; hand narrower and more parallel; fingers not closing with wider gape; coxae iv. somewhat less broad at base, posterior margin longer in proportion to inner. L. 2·3.

In old stables, etc., among refuse of hay, etc.; widely distributed: Surrey, Middlesex, Essex, Lancashire, Montgomeryshire.

2. A NEW SPECIES OF CHTHONIUS.

The Chthonius here distinguished as *Chthonius Halberti* was discovered by Mr. J. N. Halbert in 1915 at Malahide, Co. Dublin. Four specimens were obtained: in May, 1 ♂; and in August, 2 ♂ 1 ♀. They occurred just south of Malahide Inlet, on a rocky patch (limestone) of sea-shore, under stones, the level being below that of the band of orange-lichens and immediately above that of *Pelvetia canaliculata*, that is to say just above ordinary high-water mark; but the stones would certainly be overflowed by high spring-tides; these stones were resting on moist shelly sand and gravel; and they sheltered, in addition to the Chthonius, *Aëpus marinus*, Gamasid mites, centipedes, insect-larvae, etc.

Chthonius is already represented in the Britannic list by *Chth. Rayi* L. Koch, *Chth. orthodactylus* (Leach), *Chth. tenuis* L. Koch, and *Chth. tetrachelatus* (Preys.): four well-known species, all larger than *Chth. Halberti*, which is not closely related to any of them. In this genus, as observed by With 6), good specific characters are found everywhere; but especially the teeth of the palp-fingers provide valuable distinctions; and in this respect *Chth. Halberti* is entirely unlike the other four. In *Chth. Rayi*, *Chth. orthodactylus*, and *Chth. tenuis* the fixed finger has large teeth, well separated from each other, triangular, acute, and inclined backwards: in *Chth. tetrachelatus* it has similar large teeth, widely separated, triangular, acute, and erect; but in *Chth. Halberti* we find the teeth small, in a dense close-set row, parallel and truncate. Among other characters, the cephalothorax is provided with at least 22 full-sized bristles instead of 20 as in *Chth. Rayi* or 18 as in *Chth. orthodactylus*, *Chth. tenuis*, and *Chth. tetrachelatus*, the posterior margin having at least 6 such bristles instead of 4 as in *Chth. Rayi* or 2 as in the other three species. For the rest, the arrangement of the bristles is much the same, except that the median lateral bristle has a position more removed from the lateral margin. Other noteworthy features are the prominence of the median point of the cephalothorax and the small less strongly developed eyes. In the median position of the two tactile hairs of the hand, the presence of bristle-groups on coxae ii. and iii. (and not on coxae i.), and in the general character of the genital opening in the male, this species agrees approximately with the other four.

Other species of Chthonius with small palp-teeth are known; but no species has been named from any part of Europe, or indeed from any part of the world, to which the present one can be referred. It is unlikely, how-

ever, that the animal is peculiar to Ireland; it may yet be found in Britain; and it almost certainly occurs in Europe.¹

Chthonius Halberti sp. nov.

Palps pale horny more or less reddish, chelicerae reddish-horny, cephalothorax and abdominal tergites yellowish-horny. Cephalothorax moderately broader in front than behind, with at least 22 full-sized bristles, at least 6 on posterior margin, anterior margin towards middle minutely serrated produced into a well-marked obtuse median point; eyes small, eye i. more than 1 diameter from front, eye ii. obscure; chelicerae robust; palps (fig. 3) femur with 6 bristles in antero-dorsal row, hand without dorsal depression, fingers much longer than hand (about 1.9), teeth of fixed finger in dense close-set row small parallel and truncate, those of movable finger also in dense close-set row similar but a little lower. L. 1.2.

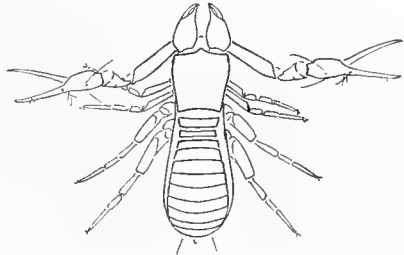


Fig. 3.

Chthonius Halberti sp. nov., ♂.

Ireland: Malahide, Co. Dublin, 1915; on the sea-shore between the levels of orange-lichens and *Pelvetia*; under stones (J. N. Halbert).

3. ON THE STATE OF OUR KNOWLEDGE OF THE OCCURRENCE OF FALSE-SCORPIONS IN IRELAND.

These animals have received attention from time to time from several naturalists in Ireland. Specimens have been collected, for instance, on various trips organized by the Fauna and Flora Committee of this Academy, and these specimens have found a home in the National Museum in Dublin. Others have been brought to meetings of the Dublin Microscopical Club, and, in some cases, have been placed in the same Museum. For several years past, moreover, they have been searched for on the excursions of the Belfast Naturalists' Field Club; and, in particular, Mr. Nevin H. Foster, M.R.I.A., who has had a large share in the organization of those excursions, has collected these animals with enthusiasm in many parts of the country. As

¹ Ellingsen (7) has mentioned a *Chthonius* (Italian specimens) "characterized by the very dense row of small teeth on the fixed finger of the palps"; he referred it to *Chth. orthodactylus* (Leach), but incorrectly; and it is possible that his animal was identical with ours; on *Chth. orthodactylus* (Leach) and the specimens of *Chthonius* (including the type of this species) in Leach's collection in the British Museum, cf. Kew (20).

the result of what has already been done it has become possible to draw up a list of fourteen Irish species. This total, which is likely to be somewhat but not greatly increased, includes two species which are unknown in Britain; but, on the other hand, Britain has ten species which have not yet been found in Ireland. Some of these latter, e.g. *Chelifer (Chernes) scorpioides* Herm. and *Chthonius orthodactylus* (Leach), will almost certainly be the rewards of future field-work. But others, which are eastern or south-eastern in distribution in Britain, e.g. *Chelifer Latreillii* Leach, *Chelifer (Chernes) Wiederi* C. L. Koch, *Chelifer (Chernes) cyrneus* (L. Koch), and *Chthonius tenuis* L. Koch, are probably absent. Of the two main divisions of the Order—Panctenodactyli and Hemictenodactyli—Ireland is rich in the latter, but remarkably poor in the former.

The plan adopted here is that of giving the first known occurrence of each species in the recognized county-divisions, i.e., those of Praeger's "Irish Topographical Botany." In the case of all the divisions listed the specimens have been seen by me. When the occurrences have been already made known in print, that fact is indicated by numbers corresponding to those in part ii of the list of books, etc., which appears at the end of this paper. That part of the list is, I believe, a complete bibliography to date of this section of the Irish fauna.

1. *Chelifer (Chernes) nodosus* Schr.—This species, and the next, occur in manure-heaps, accumulations of garden-refuse, etc., and their range is influenced by man. They have the habit of attaching themselves, by closure of the fingers of one of the palps, to the legs of flies, and they are apt to come to notice in this position in autumn.

Down. Downpatrick 1911 (24): on flies' legs—R. Patterson.

2. *Chelifer (Chernes) Godfreyi* Kew.—In "The Irish Naturalist," 1910, p. 138 (19), is a record (headed "*Chelifer cancroides*," but relating probably to this species) of two specimens taken in 1908 from legs of a house-fly at Rathmines, Co. Dublin. Specimens taken in 1910, and seen by me, were from the same house at Rathmines. *Musca domestica* is the fly to the legs of which this species, and the preceding one, usually attach themselves; but Mr. Halbert recently sent me *C. Godfreyi*, one of two individuals found in September last on the legs of *Stomoxys calcitrans*, at Glasnevin, Co. Dublin.

Dublin. Rathmines 1910 (20, 23): on flies' legs—N. H. Stephens.

Antrim. Belfast 1915: on flies' legs—J. A. S. Stendall.

3. *Chelifer (Chernes) dubius* (Camb.).—This is a ground species, occurring usually under embedded stones and less commonly under loose stones or among debris. A record by Robert Templeton, in 1836 (9), of *Chelifer parasita* Herm. "caught in Island Magee, county Antrim, and at present in

Mr. Patterson's cabinet, Belfast," possibly relates to this species. *C. parasita* Herm. usually figures as a synonym of *C. nodosus* Schr., but since the animal from Island Magee had "spatulate hairs" it was not that species; the specimen itself, according to inquiries made in Belfast by Mr. Foster, cannot now be traced. The under-noted record for Co. Wicklow is almost certainly correct; but is marked with an indication of doubt because the single carded and somewhat damaged specimen did not admit of entirely satisfactory examination (16); at the time of its occurrence it was recorded, owing to confusions of nomenclature, as *C. phaleratus* Sim. (13).

Wicklow. Ovoca [Woodenbridge] 1895 (16)?—Halbert.

Antrim. Glynn 1913 (27)—Kew.

4. **Chelifer (Chernes) Panzeri** C. L. Koch.—*C. Panzeri* and its diminutive associate *Cheiridium museorum* are of frequent occurrence in old stables, barns, hay-lofts, etc., and are no doubt dispersed by man. In Britain, but not yet in Ireland, they have been found also, apart from man, about old nests of birds, etc.

Down. Hillsborough 1913 (27): in a stable-loft—Foster.

5. **Chelifer cancroides** (Linn.).—This species occurs in Britain in old stables, lofts, corn-stores, etc., and has been well established in such places for very many years; but it is doubtfully indigenous. I have not been able to ascertain the conditions in which the Limerick specimen was found.

Limerick. Limerick 1894 (16)—F. Neale.

6. **Cheiridium museorum** (Leach).—This little species has already been referred to under *C. Panzeri*. It was first recorded for Ireland, but without locality, by Robert Templeton in 1836 (9).

Dublin. Dundrum 1903 (16)—Scharff.

Monaghan. Glaslough 1915: in a stable-loft—Foster.

Armagh. Poyntzpass 1915: in a stable-loft—Foster.

Down. Hillsborough 1913 (27): in a stable-loft—Foster.

Antrim. Torr 1915: in a hay-loft—Miss M. L. Foster.

7. **Obisium (Ideoroncus) Cambridgii** (L. Koch.)—*O. Cambridgii* is found under stones and among debris, in the open and in woods, and is plentiful where it occurs. In Scotland and England it is western and more or less maritime; but it may possibly be generally distributed in Ireland.

Kerry South. Glencar 1911—Kew.

Kerry North. Killarney 1911—Kew.

Cork West. Inchigeelagh 1907—R. Standen.

Antrim. Giant's Causeway 1913 (27)—C. Oldham.

Londonderry. Benevenagh 1912 (26)—Foster.

8. **Obisium (Roncus) lubricum** (L. Koch.)—This species occurs under stones,

at roots of grass, among moss, etc.; but is rather scarce and difficult to find. In England it is known in the south from Cornwall to Kent, but has not yet been found in the north of England or in Scotland. Mr. Foster's discovery of the animal in Co. Down—in perfectly natural conditions in Corry's Glen, Hillsborough—suggests that it may be widely distributed in Ireland.

Down. Hillsborough 1912 (25)—Foster.

9. *Obisium muscorum* Leach.—Found under stones, among dead leaves, moss, etc., in the open and in woods, from sea-level to near the tops of our mountains; widely distributed and abundant. Recorded for Ireland, without locality, by Cambridge in 1892 (10) and by Carpenter and Evans in 1895 (11).

Kerry South. Kenmare 1899 (16)—Halbert.

Kerry North. Killarney 1893 (16)—Nat. Mus. Col.

Cork West. Glandore 1896 (16)—Halbert.

Carlow. Fenagh 1909 (18)—Pack-Beresford.

Galway West. Leenane 1897 (16)—Halbert.

Wicklow. Ovoca 1894 (16)—Nat. Mus. Col.

Dublin. Lucan 1892 (16)—Scharff.

Mayo West. Delphi 1897 (16)—Halbert.

Donegal East. Bundoran 1913—Foster.

Tyrone. Albany 1910—Foster.

Armagh. Loughgilly 1893 (16)—W. F. Johnson.

Down. Hillsborough 1910—Foster.

Antrim. Kinbane 1897 (16)—R. Welch.

10. *Obisium Carpenteri* Kew.—This fine species was ascertained in 1909 to inhabit Ireland, having been found in the extreme south-west, at Glengariff, Co. Cork (17). It occurs there on a rocky wooded hill-side, under the flaking outer-bark of Arbutus-trees, in rock-crevices, and among dead leaves (20). The animal is unknown in Britain. Its range with us may perhaps be as restricted as that of Arbutus and Geomalacus; and in this connection, in view of facts known to everyone, it would be of interest to ascertain its continental distribution. As already stated (18), however, confusions of nomenclature leave us little that is certain; but it is perhaps significant that the animal is in France, according to Simon, a southern species, rare in the environs of Paris, and on the contrary commonest of all in Corsica and in Algeria.

Cork West. Glengariff 1909 (17)—Kew.

11. *Obisium maritimum* Leach.—*O. maritimum* lives on the sea-shore between neap-tide levels, where it is the largest member of an interesting society of terrestrial creatures, inhabiting crevices from which the air is not entirely expelled by the water. It occurs in old deep-seated rock-fissures and

under large stones lying more or less embedded in permanent resting-places ; and will probably be found all round Ireland.

Kerry South. Kenmare Bay 1909 (16)—Kew.

Cork West. Bantry Bay 1909 (17)—Kew.

Dublin. Malahide 1915—Halbert.

Mayo West. Clare Island 1910 (20)—Kew.

Down. Ballymacormick Point 1916—Stelfox.

12. **Chthonius Halberti** sp. nov. This is the animal discovered by Mr. Halbert at Malahide, Co. Dublin, and described in the present paper. It has not yet been found in Britain.

Dublin. Malahide 1915—Halbert.

13. **Chthonius Rayi** L. Koch.—Found under stones, etc. ; widely distributed and abundant.¹

Kerry South. Kenmare 1909 (17)—Kew.

Kerry North. Killarney 1909 (17)—Kew.

Cork West. Glandore 1898 (16)—Halbert.

Cork Mid. Corrigrohane 1907—W. D. Roebuck.

Waterford. Waterford 1910—Kew.

Kilkenny. Goresbridge 1909—Pack-Beresford.

Wexford. Wexford 1910—Kew.

Carlow. Borris 1895 (16)—Halbert.

Wicklow. Ovoca 1894 (16)—Scharff.

Dublin. Lucan 1892 (16)—Scharff.

Meath. Beau Parc 1912 (26)—Foster.

Longford. Longford 1915—Miss Mabel Murphy.

Roscommon. Kiltoom 1910—Stelfox.

Sligo. Grange 1913—Foster.

Leitrim. Kinlough 1913—Foster.

Louth. Clogher Head 1912 (26)—Foster.

Monaghan. Monaghan 1912 (26)—Foster.

Fermanagh. Castle Caldwell 1912—Foster.

Donegal East. Bundoran 1913—Foster.

Armagh. Navan Fort 1895—J. N. Milne.²

Down. Hillsborough 1912—Foster.

Antrim. Garron Tower 1909—Pack-Beresford.

¹In addition to the references appearing in the text, cf. Carpenter (12, 15) and Foster (22).

²The record (16) "Londonderry 1895 (J. N. Milne)" is a mistake, the specimens having been collected at Navan Fort near Armagh city.

14. *Chthonius tetrachelatus* (Preys.).—Found under stones, etc.; abundant near the sea and on mountains, and often found elsewhere in old gardens, etc. A record of *Chth. orthodactylus* (Leach) for the Belfast district (14) relates in reality to this species.

Kerry South. Between Templeoe and Sneem 1909 (17)—Kew.

Kerry North. Galway's Bridge 1909 (17)—Kew.

Cork West. Southern slopes of Esk-mountain near Glengariff 1909 (17)—Kew.

Wicklow. Greystones 1911—N. E. Stephens.

Dublin. Dublin 1894 (16)—Halbert.

Roscommon. Rockingham 1915: in a greenhouse—Miss A. B. Foster.

Mayo West. Westport 1909 (21)—Pack-Beresford.

Louth. Clogher Head 1912 (26)—Foster.

Down. Ballynahinch 1915—Miss M. L. Foster.

Antrim. Belfast 1896 (16)—A. G. Wilson.

Londonderry. Benevenagh 1913 (27)—Foster.

4. CLASSIFIED LIST OF THE FALSE-SCORPIONS OF BRITAIN AND IRELAND.

(* Species found in Great Britain; † species found in Ireland.)

PSEUDOSCORPIONES.

I. *Panctenodactyli*.

CHELIFERIDAE.

Chelifer.

1. *Chernes*.

- * † 1. Chelifer (*Chernes*) *nodosus* Schr., 1803.
- * † 2. Chelifer (*Chernes*) *Godfreyi* Kew, 1911.
- * 3. Chelifer (*Chernes*) *Chyzeri* (Töm., 1882).
- * 4. Chelifer (*Chernes*) *scorpioides* Herm., 1804.
- * † 5. Chelifer (*Chernes*) *dubius* (Camb., 1892).
- * 6. Chelifer (*Chernes*) *Powellii* sp. nov.
- * 7. Chelifer (*Chernes*) *Wideri* C. L. Koch, 1843.
- * † 8. Chelifer (*Chernes*) *Panzeri* C. L. Koch, 1836.
- * 9. Chelifer (*Chernes*) *cyrneus* (L. Koch, 1873).
- * 10. Chelifer (*Chernes*) *cimicoides* (Fabr., 1793).

2. *Chelifer*.

- * 11. Chelifer (*Chelifer*) *Latreillii* Leach, 1817.
- * † 12. Chelifer (*Chelifer*) *cancroides* (Linn., 1758).

3. Withius.

- * 13. *Chelifer* (*Withius*) *subruber* Sim., 1879.

Cheiridium.

- * † 1. *Cheiridium museorum* (Leach, 1817).

II. *Hemictenodactyli.*

OBISIIDAE

Obisium.

1. Ideoroncus.

- * † 1. *Obisium* (*Ideoroncus*) *Cambridgii* (L. Koch, 1873).

2. Roncus.

- * † 2. *Obisium* (*Roncus*) *lubricum* (L. Koch, 1873).

3. Obisium.

- * † 3. *Obisium* (*Obisium*) *muscorum* Leach, 1817.

- † 4. *Obisium* (*Obisium*) *Carpenteri* Kew, 1910.

- * † 5. *Obisium* (*Obisium*) *maritimum* Leach, 1817.

CHTHONIIDAE.

Chthonius.

- † 1. *Chthonius Halberti* sp. nov.

- * † 2. *Chthonius Rayi* L. Koch, 1873.

- * 3. *Chthonius orthodactylus* (Leach, 1817).

- * 4. *Chthonius tenuis* L. Koch, 1873.

- * † 5. *Chthonius tetrachelatus* (Preys. 1790).

5. LIST OF BOOKS, PAPERS, ETC., REFERRED TO IN THE TEXT.

Part I.

1. KOCH, C. L.—*Die Arachniden*, x. Nürnberg, 1843.
2. KOCH, L.—*Verzeichniss der bei Nürnberg bis jetzt beobachteten Arachniden. Abhandlungen der Naturhistorischen Gesellschaft zu Nürnberg*, vi. pp. 113–198. Nürnberg, 1877.
3. SIMON, E.—*Les Arachnides de France*, vii. Paris, 1879.
4. GODFREY, R.—*Chernetidea or False-Scorpions of West Lothian. Annals of Scottish Natural History*, x. pp. 214–217. Edinburgh, 1901.
5. CAMBRIDGE, O. P.—*On New and Rare British Arachnida. Proc. Dorset Natural History etc. Field Club*, xxvi. pp. 40–74. Dorchester, 1905.

6. WITH, C. J.—The Danish Expedition to Siam, 1899–1900. Chelonethi: an Account of the Indian False-Scorpions, together with Studies on the Anatomy and Classification of the Order. Kgl. Danske Videnskabernes Selskabs Skrifter, (7) iii. pp. 1–214. Copenhagen, 1906.
7. ELLINGSEN, E.—Contributions to the knowledge of the Pseudoscorpions from material belonging to the Museo Civico in Genova. Ann. Museo Civico di Storia Naturale, (3) iv. pp. 205–220. Genova, 1909.
8. STANDEN, R.—The False-Scorpions of Lancashire and some adjoining counties. Lancashire Naturalist, v. pp. 7–16. Darwen, 1913.

Part II.

9. TEMPLETON, R.—Catalogue of Irish Crustacea, Myriapoda, and Arachnoida, selected from the Papers of the late John Templeton. Loudon's Magazine of Natural History, ix. pp. 9–14. London, 1836.
10. CAMBRIDGE, O. P.—On the British Species of False-Scorpions. Proc. Dorset Natural History etc. Field Club, xiii. pp. 199–231. Dorchester, 1892.
11. CARPENTER, G. H., & EVANS, W.—A List of Phalangidea (Harvestmen) and Chernetidea (False-Scorpions) collected in the neighbourhood of Edinburgh. Proc. Royal Physical Society, xiii. pp. 114–123. Edinburgh, 1895.
12. CARPENTER, G. H.—*In* [Proceedings of] Dublin Microscopical Club. Irish Naturalist, iv. p. 133. Dublin, 1895.
13. CARPENTER, G. H.—*In* [Proceedings of] Dublin Microscopical Club. Irish Naturalist, v. p. 215. Dublin, 1896.
14. C[ARPENTER], G. H.—*In* A Guide to Belfast and the counties of Down and Antrim (British Association Handbook). Belfast, 1902.
15. C[ARPENTER], G. H.—*In* Handbook to the City of Dublin and the surrounding District (British Association Handbook). Dublin, 1908.
16. KEW, H. W.—Notes on the Irish False-Scorpions in the National Museum of Ireland. Irish Naturalist, xviii. pp. 249–250. Dublin, 1909.
17. KEW, H. W.—A Holiday in South-Western Ireland. Notes on some False-Scorpions and other animals observed in the counties of Kerry and Cork. Irish Naturalist, xix. pp. 64–73. Dublin, 1910.
18. KEW, H. W.—On the Irish Species of Obisium; with special reference to one from Glengariff new to the Britannic fauna. Irish Naturalist, xix. pp. 108–112. Dublin, 1910.
19. STEPHENS, N. E.—Additional record of Chelifera cancroides. Irish Naturalist, xix. p. 138. Dublin, 1910.

20. KEW, H. W.—A Synopsis of the False-Scorpions of Britain and Ireland. Proc. Royal Irish Academy, xxix B. pp. 38-64. Dublin, 1911.
21. KEW, H. W.—Pseudoscorpiones. *In* Clare Island Survey. Proc. Royal Irish Academy, xxxi. (38) pp. 1-2. Dublin, 1911.
22. [FOSTER, N. H.]—*In* Annual Report and Proceedings of the Belfast Naturalists' Field Club, (2) vi. pp. 367-370. Belfast, 1911.
23. STEPHENS, N. E.—*In* [Proceedings of] Dublin Naturalists' Field Club. Irish Naturalist, xxi. p. 25. Dublin, 1912.
24. CARPENTER, G. H.—*In* [Proceedings of] Dublin Microscopical Club. Irish Naturalist, xxi. p. 117. Dublin, 1912.
25. FOSTER, N. H.—*Obisium lubricum*, a False-Scorpion new to the Irish fauna. Irish Naturalist, xxi. p. 245. Dublin, 1912.
26. FOSTER, N. H.—*In* Annual Report and Proceedings of the Belfast Naturalists' Field Club, (2) vi. pp. 588-608. Belfast, 1913.
27. KEW, H. W.—*In* Annual Report and Proceedings of the Belfast Naturalists' Field Club, (2) vii. p. 93. Belfast, 1914.
28. KEW, H. W.—*In* Annual Report and Proceedings of the Belfast Naturalists' Field Club, (2) vii. p. 167. Belfast, 1915.

III.

DIKETONES DERIVED FROM DIACETORESORCINOL-DIMETHYLETHER.

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Read MAY 22. Published JULY 7, 1916.

IN a paper by Ryan and O'Neill (Proc. Royal Irish Acad., xxxii (1915), B, p. 48) two syntheses of diflavone are described. The first consisted of the preparation of dibenzylidene-diacetoresorcinol which was then acetylated and brominated. By this means was obtained the tetrabromide of dihydroxy-dichalkone-diacetate which, when warmed with alcoholic potash, gave diflavone. In the second synthesis diacetoresorcinol-dimethylether was condensed with benzoic ester, and the diketone thus formed was heated with concentrated hydriodic acid. In this manner diflavone was again obtained.

Using the first method, attempts were made by Ryan and Algar (Proc. Royal Irish Acad., xxxii (1915), B, p. 185) and by Ryan and Walsh (*ibid.*, p. 193) to obtain other diflavone derivatives from dianisylidene-diacetoresorcinol and diveratrylidene-diacetoresorcinol. The reaction, however, gave dicoumaranone derivatives in each case instead of diflavone derivatives. The present research was undertaken with a view to preparing diflavone derivatives by the second method. Diketones are described which were obtained by the condensation of diacetoresorcinol-dimethylether with anisic, phenyl-acetic, acetic, and oxalic esters. The condensations with anisic and phenyl-acetic esters both gave small yields of the diketone, consequently it was impossible to test the action of hot concentrated hydriodic acid on these diketones. The diketones obtained from acetic and oxalic esters were formed in larger quantities, and the action of concentrated hydriodic acid on these compounds was investigated. In both cases the results were extremely unsatisfactory, the products being either resins or non-crystallisable oils. On prolonged heating of diacetylacetoresorcinol-dimethylether with hydriodic acid and purification of the product, a very small quantity of a colourless substance was isolated, which dissolved in concentrated sulphuric acid, the solution having the strong, green fluorescence characteristic of chromone

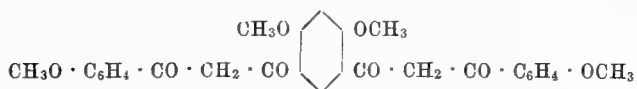
derivatives. The amount of the substance obtained was, however, insufficient to allow of further examination.

Heywang and von Kostanecki (Ber., 35, 1902, p. 2887) condensed o-hydroxyacetophenone with oxalic ester by means of sodium, and on heating the oily diketone thus formed with alcoholic hydrochloric acid they obtained chromone. In order to prepare dichromone this reaction was tried, using diacetoresorcinol instead of o-hydroxyacetophenone. The reaction was tried under various conditions, but no indication of the formation of a diketone was obtained, diacetoresorcinol being recovered unchanged.

Of the diketones described in this paper diacetylaceto-resorcinol-dimethylether and di-*a*-phenylacetylaceto-resorcinol-dimethylether are colourless compounds; dianisoylaceto-resorcinol-dimethylether is coloured slightly yellow, but dimethoxy-isophthaloyl-dipyrucic ethyl ester, in which the methyl, anisyl, and benzyl radicals of the former compounds are replaced by the more acidic carboxyl radical, has a strong yellow colour.

EXPERIMENTAL PART.

Dianisoylaceto-resorcinol-dimethylether.



Eight grams of diacetoresorcinol-dimethylether were dissolved with warming in 84 grams of anisic methyl ester, and 3.5 grams of sodium were added. When the reaction had subsided, the mixture was heated in an oil-bath at 120–130° C. for twenty minutes, and then allowed to stand overnight. Excess of sodium was removed with moist ether and water added to dissolve the sodium salt of the diketone. The aqueous layer was separated, and carbon dioxide was passed through it. The small amount of yellow solid which was precipitated was filtered, washed with water, and crystallized from a mixture of chloroform and alcohol, and also from xylol.

On analysis it gave the following results:—

0.1429 substance gave 0.3567 CO₂ and 0.0727 H₂O
 corresponding to C 68.07, H 5.65
 C₂₃H₂₆O₈ requires C 68.54, H 5.34.

The substance analysed contained a small amount of ash.

Dianisoylaceto-resorcinol-dimethylether crystallizes from boiling xylol in light-yellow prisms, which melt at 232–234° C. It is insoluble in cold alcohol and acetone, somewhat soluble in cold chloroform and hot alcohol,

soluble in hot chloroform, and sparingly soluble in hot benzene and xylol. Its alcoholic solution gives a brownish-red colour with ferric chloride.

Owing to the small yield obtained in this condensation, it was impossible to determine whether a diflavone derivative was formed when the substance was heated with hydriodic acid.

Di- α -phenylacetylaceto-resorcinol-dimethylether.



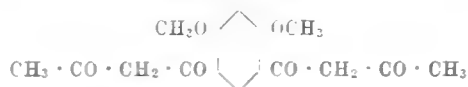
Five grams of diaceto-resorcinol-dimethylether were dissolved with warming in 50 c.c.s. of phenyl-acetic ester, and 2 grams of sodium wire were then added. The reaction was slow at first, but on heating for a short time on a sand-bath it became very vigorous, and a brownish solid separated. The mixture was further heated for 15 minutes on the water-bath, and allowed to stand 12 hours in a stoppered flask. Moist ether was then added, and the diketone extracted with dilute potash. A certain amount of oily matter was obtained, which did not dissolve in the ether, and was only sparingly soluble in potash. Acidification of this oil, and attempted crystallization from alcohol, gave only a very small amount of crystalline substance. The potash extract was acidified with carbon dioxide, when a small amount of yellowish solid separated. This solid was filtered, washed with water, and recrystallized several times from alcohol, being finally obtained as colourless needles, which melted at 131-132° C.

On analysis it gave the following results:—

0.1499 substance gave 0.404 CO₂ and 0.0805 H₂O
 corresponding to C 73.50, H 5.96
 C₂.H₂.O₆ requires C 73.36, H 5.67.

Di- α -phenylacetylaceto-resorcinol-dimethylether is soluble in cold acetone and benzene, readily soluble in cold chloroform, slightly soluble in cold, and soluble in hot, alcohol. It was not obtained in sufficient quantity to test its behaviour on heating with concentrated hydriodic acid.

Diacetylaceto-resorcinol-dimethylether.



A mixture of 5 grams of diaceto-resorcinol-dimethylether and 50 c.c.s. of acetic ester was heated to boiling, and after 1.5 gram of sodium wire was added the mixture was warmed on the water-bath for half an hour. The

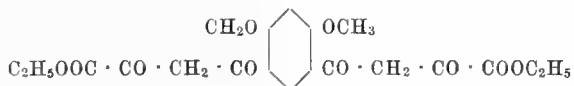
semi-solid brown mass which separated was allowed to stand at the ordinary temperature for twenty-four hours. It was then mixed with ether, and water was added, until a clear, dark-red aqueous layer was obtained. On separating and acidifying it with hydrochloric acid a yellow solid was precipitated which was filtered and dried. It crystallizes from chloroform in colourless prisms which melt at 116–118° C. On analysis it gave the following results:—

0·1689 substance gave 0·3891 CO₂ and 0·0928 H₂O,
 corresponding to C 62·81, H 6·10,
 C₁₆H₁₈O₆ requires C 62·74, H 5·88.

Diacylacetoresorcinol-dimethylether is sparingly soluble in carbon bisulphide, soluble in benzene, ether, or alcohol, and very soluble in chloroform. Its solution in alcohol gives a dark-red colour with ferric chloride.

An attempt was made to prepare a dichromone by heating diacylacetoresorcinol-dimethylether with hydriodic acid (s.g. 1·7). The reaction was tried under various conditions, but in all cases gave unsatisfactory results. When the diketone was heated for six hours with hydriodic acid, and the oily product purified, an extremely small amount of a colourless substance was isolated, which dissolved in concentrated sulphuric acid forming a colourless solution with an intense green fluorescence. It seems probable, therefore, that this product was a dichromone, but the quantity formed was too small to admit of examination.

Dimethoxy-isophthaloyl-dipyrvic ethyl ester.



10 grams of diacetoresorcinol-dimethylether were dissolved with heating in 100 c.cs. of diethyl oxalate. The solution was cooled, and 4·2 grams of sodium wire were added. When the reaction had subsided, the mixture was warmed in an oil bath to 120° C. for fifteen minutes, and then allowed to stand in a stoppered flask for twelve hours. A brown solid separated, from which excess of sodium was removed with moist ether. Water was then added to dissolve the sodium derivative of the diketone. The alkaline solution was separated from the ether and acidified. The yellow solid which separated was filtered and crystallized from a mixture of chloroform and alcohol.

On analysis it gave the following results:—

0·1528 substance gave 0·3179 CO₂ and 0·0749 H₂O
 corresponding to C 56·74, H 5·44
 C₂₃H₂₂O₁₀ requires C 56·87, H 5·21.

Dimethoxy-isophthaloyl-dipyruvic ethyl ester crystallizes from alcohol in yellow felted needles, which melt at 186–188° C. It is soluble in cold chloroform and acetone, insoluble in ether, sparingly soluble in benzene and alcohol, and readily soluble in boiling alcohol. Its alcoholic solution gives a brownish-red colour with ferric chloride. Concentrated sulphuric acid colours the crystals orange, and dissolves them, forming an orange solution.

Heating the diketone with concentrated hydriodic acid, with a view to obtaining a dichromone derivative, gave a non-crystallizable tarry product. The substance was also heated with concentrated hydrochloric acid, in a sealed tube, at 160° C., for three hours. The product in this case was so resinified that it could not be crystallized.

Dimethoxy-isophthaloyl-dipyruvic methyl ester.



Dimethoxy-isophthaloyl-dipyruvic methyl ester was prepared by the condensation of diacetoresorcinol-dimethylether with dimethyl oxalate, in a manner similar to that described for the condensation with diethyl oxalate.

On analysis it gave the following results :—

0.137 substance gave 0.2724 CO₂ and 0.0629 H₂O
 corresponding to C 54.22, H 5.1
 C₁₈H₁₄O₁₀ requires C 54.82, H 4.56.

The substance crystallizes from alcohol in bright-yellow needles, which melt at 205–206° C. Its properties are similar to those described for the ethyl ester.

IV.

ON THE TINCTORIAL CONSTITUENTS OF SOME LICHENS
WHICH ARE USED AS DYES IN IRELAND.

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THE use of certain species of Lichens for producing purple or blue dyes—Archil and Litmus—has been known in many European countries for a long time, the discovery of these dyes being said to be due to a Florentine named Frederigo about 1300 A.D.

Besides these dyes, the inhabitants of Ireland, Scotland, and other parts of Northern Europe, have long been acquainted with the use of certain other species of Lichens for dyeing wool various shades of yellow or reddish-brown. Thus, in "The Antient and Present State of the County and City of Cork," by Charles Smith, M.D. (Dublin, 1749), it is stated (vol. ii, p. 360) that *Lichenoides tatareum lividum scutellis rufis*, or red-spangled lichenoides, which was found on rocks at Rathpecan, Co. Cork, dyes wool a lemon colour. Again, in an "Essay towards a Natural History of the County of Dublin," by John Rutty, M.D. (Dublin, 1772), it is mentioned in vol. i, p. 138, that *Lichen petraeus Derbiensis*, also called Cork or Corker, was used for dyeing wool a brown-reddish colour, and also for compound dyeing. On page 140 of the same volume it is stated that *Lichenoides crustafoliosa*, which, it is said, was probably identical with the stone-crotal of the north of Ireland, was used in this country and in the Isle of Man to dye woollen cloth an orange colour. When serge was heated in a mixture of the lichen with water, it acquired a lemon colour. Again, on page 141 it is mentioned that *Lichenoides pulmoneum reticulatum*, called Hazel-rag or Hazel-crottles in the North of Ireland, on boiling with wool in water imparts a durable orange colour to the wool. Further, in the Introduction to O'Curry's "Manners and Customs of the Ancient Irish" (page cccci), W. K. Sullivan states that, amongst others, two species of lichen, called Crotal, *Parmelia saxatilis* Ach.

and *Parmelia omphalodes* Ach., have been used in Ireland for dyeing wool a yellowish-brown shade.

In regard to more modern dyeing practice, it is stated by Mrs. A. Mackay, in a pamphlet issued by the Scottish Home Industries Association, Limited, Edinburgh, that a black lichen (crotal), which grows on rocks, is largely used in the Highlands for producing a brown colour on wool. The wool is dyed by merely boiling it with an equal weight of the lichen for 1-1½ hour. Another lichen is used for dyeing a terracotta red, the colour varying to dark red-brown according to the amount of lichen used.

It has been ascertained from the Donegal dyers that lichens are not very plentiful, and, presumably, are therefore not used in that county; but, on the other hand, certain lichens are still used in parts of Connaught to dye woollen materials a dull saffron or brown colour. The actual dyeing process is similar to that employed in the Highlands, the wool being heated in water to just below the boiling-point of the water with a sufficient amount of the lichen to produce the desired tint.

A specimen of a lichen used for dyeing at Maam Cross, Co. Galway, and a sample of wool dyed with it, having been obtained, it was thought that an attempt to isolate the tinctorial constituent of the lichen might be of some interest.

The lichen, which is known in that part of Co. Galway as Sraith Cloch, was very kindly identified by Miss M. C. Knowles, of the Botanical Department of the National Museum, as *Parmelia saxatilis* Ach.—*Parmelia saxatilis* var. *retiruga* Th. Fr.—*Imbricaria retiruga* D. C.—*Imbricaria saxatilis* Krbg.—*Lichen saxatilis* Linn.

According to Mr. N. Colgan, M.R.I.A. (Proc. R. I. A., vol. xxxi, Clare Island Survey, Part 4, page 14), the name Sraith Cloch is employed by the country folk in the Carna district in Galway to designate another lichen—*Ramalina scopulorum* Ach.—which they use to dye wool a yellow colour. In Clare Island, however, the name Sraith Cloch is given to *Parmelia saxatilis* Ach., and the *Ramalina scopulorum* Ach. is given another name—Feitog liath. The colour given by *Parmelia saxatilis* Ach. is stated to be of a better quality than that given by *Ramalina scopulorum* Ach., but both lichens are employed to dye wool in the west of Ireland.

This lichen—*Ramalina scopulorum*—occurs in considerable quantities in Howth, as does also another lichen—*Ramalina cuspidata* Nyl.—which, although morphologically identical with *Ramalina scopulorum*, is classified by botanists as a distinct species, since with caustic potash solution it is stained differently from the *Ramalina scopulorum* (Miss M. C. Knowles, Sci. Proc. R. Dub. Soc., vol. xiv (N.S.), No. 6, page 88).

These lichens then, being available in fairly considerable quantity, and, at least one of them, having been used for dyeing in the West of Ireland, their examination was undertaken with the same end in view as in the case of the *Parmelia saxatilis*.

The lichens—*Parmelia saxatilis* Ach., *Ramalina scopulorum* Ach., and *Ramalina cuspidata*—have all been examined previously (O. Hesse, Journ. f. pr. Chem. (2) 62 (1900), pp. 430-477; *ibid.* 68 (1903), pp. 1-71; W. Zopf, Liebig's Annalen, 295 (1897), p. 222; *ibid.* 352 (1907), pp. 1-44), but neither Hesse nor Zopf makes any allusion to the fact of their having been used in dyeing, or of their containing any substances possessing tinctorial properties. Further, according to Hesse (Journ. f. pr. Chem. 1898 (2), 58, pp. 465-561), the constituents of lichens are not definite for a definite species, but depend to a certain extent on the place of growth, climate, and season. Thus he states that *Parmelia caperata* when grown on limes, rocks, or walls contains d-usnic, capraric and caperatic acids, whilst specimens collected from oaks contain caperin and caperidin in addition; *Xanthonia parietina* usually contains physcione, but this is absent when the lichen has grown on pines and atranorin is present instead; *Parmelia perlata* from Germany contains atranorin only, whereas that from America contains vulpic and usnic acids, and that from India perlatin and lecanoric acid in addition.

Experimental.

The method employed in the examination of these lichens was to extract the ground lichen in a Soxhlet apparatus with various solvents.

The *Parmelia saxatilis*, which was the first of the three to be examined, was subjected to a much more detailed examination than the others, as a result of which it was found that by extracting the lichen first with ether and then with acetone the main, and practically the only, tinctorial constituent was extracted by the acetone, and that further extraction with other solvents removed no appreciable quantities of substances.

The other two lichens were extracted first with ether and then with acetone, and, as in the case of the *Parmelia saxatilis*, it was found that the main tinctorial constituent of the lichen was, in each case, extracted by the acetone.

A.—*Parmelia saxatilis* Ach.

1. *Extraction with Ether.*—The ground lichen (about 70 grams) was extracted with ether in a Soxhlet apparatus for about ten hours. The extract consisted of about two parts—a colourless crystalline substance (*a*), mixed with a dark-coloured oily substance (*b*).

The latter was removed as completely as possible by washing repeatedly with small quantities of ether, and examined separately. There was then left a small amount of the substance (*a*), which was recrystallized from alcohol. It forms colourless prismatic needles, melting at 191–192° C. soluble in ether and alcohol. Its alcoholic solution reddens litmus, and gives a blue-violet colour with a trace of ferric chloride; a few drops of ferric chloride give a cherry-red colouration. Its alcoholic solution gives no colouration with bleaching powder. The substance dissolves in caustic potash, forming a pale yellow-coloured solution which is not altered in colour by gentle heating. When this solution is acidified with hydrochloric acid, a white substance is precipitated. The potash solution readily decolourises potassium permanganate in the cold.

The general behaviour of this substance (i.e. melting-point, ferric chloride reaction. &c.) points to its being identical with stereocaulic acid, which was found by Zopf in *Parmelia saxatilis* (Liebig's *Annalen*, 295 (1897), p. 222), but the amount of the substance available was insufficient to permit of an analysis of it being made.

2. *Extraction with Acetone.*—The lichen after being extracted with ether was extracted with acetone in a Soxhlet apparatus as long as any solid matter was removed (about two days). During the process a white crystalline solid separated from the solution.

The extract, when cooled, deposited a discoloured white solid, and the dark-coloured mother liquor on concentration gave further quantities of this substance. The white solid was washed repeatedly with acetone to remove dark oily matter, and the washings were mixed with the dark substance extracted by ether and examined separately.

On trying to purify this white substance it was found that it was not readily soluble in any of the ordinary solvents, but it dissolved most easily, yet very sparingly, and on heating only, in acetone, alcohol, or glacial acetic acid. It was noticed that prolonged heating with alcohol or glacial acetic acid tended to decompose it, the solution becoming yellow or brown-red in colour. On evaporating these coloured solutions to dryness, brown or brownish-red non-crystalline solids were obtained. Finally, it was found that acetone, although the substance was not so soluble in it as in glacial acetic acid, was the most suitable solvent, apparently not decomposing the substance, to any great extent at least.

It was found also that the crude substance contained a small amount of another white, microcrystalline solid which could be extracted from it by acetic ester. This solid melted at about 215° C. (not sharply); its alcoholic solution gave a brownish-red colouration with ferric chloride; it was soluble

in potash to a yellow solution which on heating turned first brownish-red and finally acquired a light brownish-yellow colour. Its alkaline solution decolourised potassium permanganate. The amount of this substance present in the main substance was, however, very small.

The main constituent, when purified by recrystallization from acetone, forms colourless microscopic needles which on heating begin to turn brown at about 230° C. and become black at about 260° C., without melting. It is insoluble in ether, very slightly soluble in boiling xylene, slightly soluble in alcohol and acetone, and more so in glacial acid. Its alcoholic solution reddens litmus and gives a reddish-violet colouration with a trace of ferric chloride, while with a few drops of the latter it gives a violet-red colouration. It gives no colouration with bleaching powder. The substance itself is coloured reddish-orange by concentrated sulphuric acid, in which it dissolves to an orange-coloured solution. It dissolves readily in caustic alkalis; it also dissolves in alkaline carbonates and bicarbonates, and in ammonia on warming, the solution in each case being yellow in colour. The solution of the substance in caustic alkali, which is initially of a yellow colour, acquires a reddish-brown tint on standing five or ten minutes, and on heating becomes first very deep red, and then deep brown in colour. On acidifying a concentrated potash solution of the substance with hydrochloric acid a red or orange-red precipitate is formed; if, however, the potash solution be first heated until it turns brown and then acidified, a brown precipitate is obtained.

The substance itself when heated in a test-tube at first turns brown and then black, giving a sublimate on the sides of the tube which appears crystalline on cooling. This sublimate decolourises potassium permanganate in the cold. The solution of the substance itself in potash also readily decolourises permanganate in the cold.

The purified substance was dried in an air-oven at 100° C., and gave on analysis the following results:—

- (1) 0.1827 substance gave 0.3744 CO₂ and 0.6580 H₂O, corresponding to C 55.88, H 3.52;
- (2) 0.1601 substance gave 0.3285 CO₂ and 0.0548 H₂O, corresponding to C 55.95, H 3.80.

These analyses, for the latter of which we are indebted to Mr. J. Algar, M.Sc., agree well with the formula C₃₀H₂₄O₁₆ proposed by Hesse (*Journ. f. pr. Chem.* (2) 63 (1901), pp. 522–553) for salazinic acid, which was found by Zopf in *Stereocaulon salazinum* (Liebig's *Annalen*, 295 (1897), p. 222). This formula requires C 56.25, H 3.75. Zopf (*Liebig's Annalen*, 352 (1907), pp. 1–44) proposed for salazinic acid the formula C₁₉H₁₄O₁₀, which requires C 56.7

and H 3.48, and with which our analyses are not in good agreement. The general reactions of our substance, however, agree in every detail with those described by Hesse and by Zopf for salazinic acid. Further, Zopf (Liebig's Annalen, 352 (1907), pp. 1-44), by the action of acetic anhydride on salazinic acid obtained a compound, which he named salazinaric acid, which melted at 206-207° C.; and on repeating this experiment with our substance a crystalline compound was obtained, which, on recrystallization from alcohol, melted at 205-206° C.

In deciding between the two types of formula for salazinic acid—one corresponding to a high molecular weight, such as that of Hesse, and one corresponding to a low molecular weight, such as that of Zopf—the main fact that lends weight to the latter type of formula is that Zopf found the molecular weight of salazinaric acid in benzene solution to agree with the formula $C_{21}H_{16}O_{11}$, which is that of a mono-acetyl derivative of a compound $C_{19}H_{14}O_{10}$. For this reason Zopf concluded that the high molecular weight formula of Hesse could not be correct. It is, however, tacitly assumed here that the salazinic acid, when acted upon by acetic anhydride, simply acetylates without undergoing any other change—an assumption which is not altogether justified, considering the susceptibility of salazinic acid towards reagents. Nevertheless, it was deemed advisable to consider formulæ based on the low molecular weight of salazinaric acid, all the more so as, owing to the very slight solubility of the salazinic acid, a reliable determination of the molecular weight could not be made. On the assumption of a low molecular weight, the analyses obtained for our substance agree well with the formula $C_{17}H_{14}O_9$, which requires C 56.29 and H 3.86; this formula requiring a molecular weight of 362, that demanded by the formula $C_{19}H_{14}O_{10}$ being 402.

Salazinic acid has not, up to this, been found in *Parmelia saxatilis* Ach.; whereas another substance, similar to salazinic acid, namely protocetraric or fumaroprotocetraric acid, has been mentioned as occurring in this lichen. Thus Hesse (Journ. f. pr. Chem. (2) 62 (1900), pp. 430-477) states that *Parmelia saxatilis* var. *panniformis* Ach. contains atranorin, protocetraric acid, and the so-called stereocaulic acid (Usnetinic acid); and again (Journ. f. pr. Chem. (2) 68 (1903), pp. 1-71), he states that *Parmelia saxatilis* var. *retiruga* Th. Fr. (identical with *Parmelia saxatilis* Ach.), contains atranorin, protocetraric acid, and saxatic acid $C_{25}H_{40}O_8$ (melting at 115° C., easily soluble in acetone, ether, and alcohol).

This protocetraric acid is in more recent papers termed by Hesse fumaroprotocetraric acid, the name protocetraric being given to a derivative of fumaroprotocetraric acid (Journ. f. pr. Chem. (2) 70 (1904), pp. 449-502). In its general behaviour it resembles our substance very closely, but differs from

it in that its solution in alkali gives a colourless crystalline precipitate (of protocetraric acid) on acidification, whereas our substance gives a red precipitate. In one respect only does our substance resemble fumaroprotocetraric acid rather than salazinic. Hesse states (Journ. f. pr. Chem. (2) 70 (1904), pp. 449-502) that fumaroprotocetraric acid when heated above 260° C. gives a sublimate of fumaric acid, which would correspond to the sublimate given off when our substance is heated; no such observation is recorded in the case of salazinic acid. The formula given to the fumaroprotocetraric acid by Hesse, $C_{62}H_{50}O_{35}$ (requires C = 54.93, H = 3.72), does not, however, agree with the analyses of our substance, so that the latter is almost certainly identical with salazinic acid.

It may be remarked here that there was obtained no indication of the presence in this lichen of the low-melting substance saxatic acid, nor of atranorin. If present, both of them would have been extracted by ether, so it may be concluded that they are not present, at least not to any appreciable extent, in the specimen of *Parmelia saxatilis* Ach. which we examined.

Treatment of the Dark Oily Substance.

All the dark-coloured washings from the acetone and ether extracts were mixed together and evaporated to a small bulk. The residue, which was an almost black, oily substance, was found to contain a part—

(a) soluble in benzene, and another

(b) insoluble in benzene, but soluble in acetone and in alkali.

(b), which was a black, oily substance, was not examined further;

(a) was found to consist of a part soluble in potash, and a greenish oily substance, insoluble in potash, and which, on examination, proved to be chlorophyll. The former part was dissolved in spirit, boiled with animal charcoal, and filtered, the solution on evaporation giving a brown, vitreous mass.

Further Treatment of Lichen.

After extraction with ether and acetone the lichen was extracted with chloroform, and also with benzene, but neither of these solvents removed any appreciable amount of solid from it. It was then treated with sodium bicarbonate, but again it was found that the latter did not extract anything from the lichen. It was not examined further.

Dyeing Experiments.

The lichen itself, when boiled in water with an equal amount of wool for six hours, colours the wool a deep reddish-brown. The exact shade of colour

obtained depends on the amount of lichen used, and on the time of boiling: if boiled for only two or three hours, the wool is coloured yellow, or brown-yellow.

It was found that the salazinic acid, when boiled with the wool in water, imparted a similar red-brown colour to it. The acid first goes into solution slowly, the solution being yellow in colour. The wool then begins to take colour, the colour deepening gradually, that of the solution also deepening, until when the wool is brown in colour the solution is of a similar colour, and also rather turbid or opalescent.

It was found that the stereocaulic acid extracted by ether did not behave as a dye towards unmordanted wool; but the brown vitreous substance, obtained from the dark-coloured washings, dyed wool a light brown when boiled with it in aqueous methylated spirit.

Thus it is evident that the dyeing properties of this lichen are due to the presence in it of salazinic acid. As salazinic acid is a colourless substance, it is likely that the dye proper is some oxidation—or decomposition—product of salazinic acid which is formed when the latter is boiled with water in a vessel exposed to the air.

B.—*Ramalina scopulorum* Ach.

Collection of Lichen for Examination.

This lichen was collected in Howth, where it is found in abundance in certain localities. As already mentioned there occurs in Howth another lichen—*Ramalina cuspidata*—which is morphologically similar to *Ramalina scopulorum*, but, according to Miss Knowles (Sci. Proc. R. Dub. Soc., vol. xiv (N.S.), No. 6, p. 88), *Ramalina cuspidata* occurs only on the western and south-western (and consequently most sheltered) side of the promontory, while *Ramalina scopulorum* is exceedingly scarce on this side, but is found in abundance on the more exposed southern and eastern sides, *Ramalina cuspidata* not being found at all on these sides.

The lichen examined was collected in Glenaveena on the south-east of Howth, and was identified by Miss Knowles as *Ramalina scopulorum* Ach.

Extraction with Ether.

The ground lichen (about 75 grams) was extracted with ether for about eight hours in a Soxhlet apparatus. The extract, which was brown in colour, gave a yellow crystalline substance on concentrating and cooling. This substance was filtered off, washed with ether to remove brown oily matter, and recrystallized from acetone, in which it is readily soluble.

The substance when crystallized from acetone forms yellow prismatic needles melting at 197–199° C., readily soluble in ether, acetone, and chloroform.

The colour, crystalline form, and melting point of this substance resemble those of d-usnic acid which has been found in this lichen by Zopf (Liebig's *Annalen*, 352 (1907), pp. 1–44), and which occurs in many other lichens (O. Hesse; *Ber. d. Dtsch. Chem. Ges.* 30 (1897), pp. 357–366; Liebig's *Annalen*, 284 (1895), p. 157. As d-usnic acid is very strongly dextro-rotatory in chloroform solution, a solution of our substance in chloroform was examined polarimetrically and found to be strongly dextro-rotatory. Hence, there is no doubt that it is d-usnic acid.

Extraction with Acetone.

The lichen after extraction with ether was extracted for about ten hours with acetone. The solution was brown in colour, and on cooling deposited a white substance, which was treated in a similar manner to the salazinic acid from *Parmelia saxatilis*. The amount of this white substance obtained was about 3 per cent. of the weight of lichen taken.

This substance resembles salazinic acid very closely. When recrystallized from acetone it forms microcrystalline needles turning brown about 225° C. and dark brown about 250° C., with signs of softening, but not melting up to 265° C. It is insoluble in ether, slightly soluble in acetone, but more so than salazinic acid, and slightly soluble in alcohol. Its alcoholic solution turns blue litmus red, and gives a violet-red colour with ferric chloride (more violet than that given by salazinic acid); it gives no colour with bleaching powder.

It dissolves in alkali in the cold, forming a pale yellow solution which turns yellowish-brown on standing five or ten minutes, and red to brown on warming. A cold, concentrated solution in alkali gives a red precipitate on acidification with hydrochloric acid; the brown solution obtained on warming with alkali gives a brown precipitate on acidification. The alkaline solution decolourises potassium permanganate readily in the cold.

The substance itself assumes a light terra-cotta colour on contact with concentrated sulphuric acid, in which it dissolves, forming an orange-coloured solution.

On heating in a test-tube the substance turns brown, and finally black, giving a white sublimate which condenses on the sides of the tube. On cooling this sublimate appears to consist of small concentrically arranged masses of crystals which decolourise a drop of permanganate readily in the cold.

For analysis the substance was recrystallized from acetone and dried in an air oven at 110°C. In two cases the substance left a slight residue of ash which was weighed and allowed for.

The results of three analyses were as follows:—

1. 0.1599 substance gave 0.3344 CO₂ and 0.0596 H₂O, corresponding to C 57.03 and H 4.14.
2. 0.1007 substance gave 0.2090 C₂O and 0.0396 H₂O (ash 0.0005), corresponding to C 56.88 and H 4.39, allowing for ash.
3. 0.1136 substance gave 0.2336 CO₂ and 0.0405 H₂O (ash 0.0005), corresponding to C 56.33 and H 3.97, allowing for ash.

These analyses agree with the formula C₃₁H₂₆O₁₆, which requires C 56.89, H 3.97.

With regard to the identity of this substance, Zopf (Liebig's Annalen, 352 (1907), pp. 1-44) found in this lichen a compound which he named scopuloric acid, and which has properties similar to those of our substance. The formula given by Zopf for scopuloric acid, C₁₅H₁₆O₉, requiring C 58.53, H 4.11, does not agree well with the analyses of our substance, which, nevertheless, is probably identical with Zopf's scopuloric acid.

The formula C₃₁H₂₆O₁₆ for scopuloric acid gives, possibly, an indication of a close relationship between it and salazinic acid C₉H₂₄O₁₆, which it resembles very closely, and of which it may well be a homologue. In this connection it is interesting to note that Zopf, who gives the formula C₁₉H₁₄O₁₀ for salazinic acid, proposes C₉H₁₆O₉ for scopuloric acid, which facts might be interpreted somewhat similarly, scopuloric acid being a desoxy-salazinic acid. Further, the above analyses of scopuloric acid also agree with the formula C₁₈H₁₆O₉, which requires C 57.4, H 4.25, and if we take the formula C₁₇H₁₄O₉ for salazinic acid, this formula for scopuloric acid will also correspond to the next higher homologue of salazinic acid.

Further Treatment of the Lichen.

After extraction with acetone the lichen was found to contain practically no substance soluble in alkali, and was not further examined.

Dyeing Experiments.

The lichen itself, when boiled for six hours with an equal weight of wool, imparts a reddish-brown colour to the wool, this colour being similar to, but not so red as that given by *Parmelia saxatilis*. If boiled for a shorter time than this, the colour obtained is lighter—yellowish-brown or yellow.

It was found that the scopuloric acid, when boiled with the wool in water,

dyed the wool similarly, changes taking place during the process of dyeing exactly the same as were observed with the salazinic acid. Hence it is evident that the tinctorial properties of this lichen are due to its containing scopuloric acid.

C.—*Ramalina Cuspidata* Nyl.

Collection of the Lichen for Examination.

This lichen, like the *Ramalina scopulorum*, was obtained in Howth, being gathered from rocks to the north-west of the Martello Tower at Sutton, a place well within the region named by Miss Knowles as being the locality where it occurs (Sci. Proc. R. Dub. Soc., vol. xiv (N.S.), No. 6, p. 88). It was identified by Miss Knowles as *Ramalina cuspidata* Nyl.

Extraction with Ether.

The ground lichen was extracted with ether for about 8 hours in a Soxhlet apparatus. The extract gave, on concentration, a yellow crystalline substance similar to the d-usnic acid got from *Ramalina scopulorum*, and which was separated in the same way. This substance had the same melting point as the latter one, was similar to it in crystalline form, and was dextro-rotatory in chloroform solution, so that it was in all probability the same substance, d-usnic acid.

Extraction with Acetone.

The lichen, after extraction with ether, was extracted with acetone as before. The extract yielded a white crystalline substance on being treated as in the cases of the other lichens. This substance was somewhat similar to the salazinic acid and scopuloric acid, but was more soluble in acetone than either of them. The lichen contains about 3 per cent. by weight of this substance.

When crystallized from acetone it forms prismatic microcrystalline needles which differ from the salazinic and scopuloric acids in separating from the solvent in granular masses, whereas these separate as fine powders which form flaky masses on drying. The crystals on heating appear to soften about 200° C., and then turn yellow, deepening gradually to brown, and become black about 255° C. or 260° C. without actually melting. Some of the substance when recrystallized from alcohol was found to turn brown about 230° C., and to melt with decomposition at 253° C.

The alcoholic solution of this substance gives a violet-red colour with ferric chloride, this colouration being more violet than that given by either salazinic or scopuloric acid.

The substance dissolves in alkali, forming a pale yellow solution, which

turns a light brownish-yellow colour on standing and a yellowish-brown colour on being gently heated. On warming a fairly concentrated solution of it in alkali it turned red in colour, but the colour did not alter to brown on further heating. The alkaline solution decolourises potassium permanganate in the cold.

The substance was recrystallized from acetone, and dried at 110° C. before analysis:—

0.1030 substance gave 0.2034 CO_2 and 0.0394 H_2O ,
corresponding to C 53.85 and H 4.25.

This analysis agrees with the formulae $\text{C}_{34}\text{H}_{32}\text{O}_{20}$ or $\text{C}_{17}\text{H}_{16}\text{O}_{10}$, which require C 53.7, H 4.2.

It is rather difficult to identify this substance with any known similar compound. O. Hesse (Journ. f. pr. Chem. (2), 62 (1900), pp. 430–477) found in this lichen a compound which he named cuspidatic acid, melting at 218° C., easily soluble in ether, alcohol, and acetone, giving a blue-violet colour with ferric chloride, and having the composition $\text{C}_{16}\text{H}_{22}\text{O}_{10} \cdot \text{H}_2\text{O}$ (requiring for $\text{C}_{16}\text{H}_{22}\text{O}_{10}$ C 51.31, H 5.88), though Hesse does not lay much stress on the correctness of this formula. It does not seem very likely that our substance is identical with this one, since it is not soluble in ether and has got a different decomposition-point. It is, however, evident from its behaviour that our substance is very similar, and probably related chemically, to scopuloric and salazinic acid.

The probable chemical relationship between these three substances is also indicated by the formula of the cuspidatic (?) acid from *Ramalina cuspidata*. If we take as the formula for this acid $\text{C}_{24}\text{H}_{32}\text{O}_{20}$, this differs from the formula $\text{C}_{30}\text{H}_{24}\text{O}_{16}$ for salazinic acid by four CHOH radicals; while if we consider the formula $\text{C}_{17}\text{H}_{16}\text{O}_{10}$, then salazinic acid, $\text{C}_{17}\text{H}_{14}\text{O}_9$ would be anhydro-cuspidatic (?) acid.

Further Treatment of the Lichen.

As in the case of *Ramalina scopulorum*, it was considered unnecessary to examine the lichen further after extraction with acetone.

Dyeing Experiments.

This lichen does not dye wool such deep shades as either of the other two lichens; the colour of the wool after boiling for six hours with an equal weight of the lichen was only a light brown. It was found that its chief acid constituent (cuspidatic (?) acid) when boiled with wool imparted similar shades to the wool, and is consequently the chief tinctorial constituent of the lichen.

D.—*Physcia Parietina* De Not.

Physcia parietina, which is a very widely distributed and well-known lichen, is not much used in dyeing.

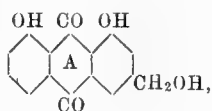
Mrs. A. Mackay, in the pamphlet already referred to, states that a yellow lichen which grows on rocks just above the high-water mark imparts a rose-pink colour to wool mordanted with dichromate. It does not seem to have been used to any extent in Ireland; Sullivan, O'Curry, Ruddy, and Smith make no reference to its tinctorial properties.

E. Paterno (Gazetta Chim. Ital. 1882, pp. 231-261) isolated from this lichen an acid which he termed fiscic acid, and which consisted of reddish brown crystals, melting at 204° C., and dissolving in alkalis to form red salts.

O. Hesse examined the lichen later (Liebig's Annalen, 284 (1895), pp. 157-191) and found in it Paterno's fiscic acid, which, however, owing to its quinonic character, Hesse termed physcione. He showed also that its formula is $C_{16}H_{12}O_5$, that it yields a diacetate and a dibenzoate, and that it reacts with hydriodic acid to form protophyscione, $C_{15}H_{10}O_5$, melting at 198° C., and protophyscihydrone $C_{15}H_{12}O_5$, melting at 210° C.

Later (Liebig's Annalen, 388 (1912), pp. 97-102), Hesse showed that physcione on demethylation, by means of concentrated sulphuric acid at 160° C., formed frangula-emodin, and also that on methylation it yielded frangula-emodin-trimethylether. Further the protophyscihydrone obtained by the action of hydriodic acid on physcione was shown to be emodinol from the identity of its acetylation product with emodinol-tetracetate. The conclusion drawn from these facts is that physcione is identical with frangula-emodin-monomethylether.

It has been shown by E. Leger (Journ. Pharm. et Chim. (7) 4 (1911), p. 241), and by G. A. Oesterle (Archiv. der Pharm. 250 (1912), p. 301), that aloe-emodin, with which frangula-emodin is very closely related, has the formula A—



which, apart from the weakly tinctogenic peri hydroxyls, contains no mordanting groups. Since, however, O. Fischer and H. Gross (Journ. f. pr. Chem. (2) 84 (1911), p. 369) regard frangula-emodin as a trihydroxy-methyl-anthraquinone, having the three hydroxyls in the rings, it seemed possible that this compound, and its derivative physcione, might possess marked

tinctorial properties. Further, owing to its occurrence on rocks associated with *Parmelia saxatilis* and the *Ramalinas*, we considered an examination of physcione and its demethylation product desirable.

Collection of the Lichen for Examination.

This lichen, which is very widely distributed, and often occurs in common with *Parmelia saxatilis*, *Ramalina scopulorum*, and *R. cuspidata* on the same rocks, was collected from rocks on the seashore about a mile and a half south of Skerries, Co. Dublin.

Extraction of Physcione.

About 50 grams of the lichen were extracted at a time with chloroform in a Soxhlet apparatus, until all the physcione had been removed. The solution, on cooling, deposited the physcione as a yellow solid, which was washed with chloroform to free it from a dark-coloured oily matter with which it was mixed, and then recrystallized from benzene. It consists of yellow needles, melting at 207–208° C., and dissolves in alcohol, ether, acetone, chloroform, or benzene. In alkalis or ammonia it dissolves, forming red solutions, from which a yellow solid is reprecipitated by addition of acids. Its solution in concentrated sulphuric acid has a deep purple-red colour.

Wool, or wool mordanted with alumina, is scarcely affected when boiled with a dilute alcoholic solution of physcione, so that this substance, as well as the lichen from which it was extracted, can scarcely be regarded as a dye.

Demethylation of Physcione.

A small quantity of physcione was dissolved in ten times its weight of concentrated sulphuric acid; the solution was heated to 160° C., and kept at that temperature for half an hour. The product was cooled and poured into water. The dark-coloured solid was filtered, washed with water, dried and extracted with boiling benzene. On evaporating the filtrate, frangula-emodin, consisting of brownish-red crystals melting at 245–249° C., was obtained.

When its solution in dilute alcohol was boiled for an hour with unmordanted wool, the latter acquired a dull orange-yellow colour, while wool mordanted with alumina under the same conditions was dyed a bright orange-yellow shade.

V.

ON THE CONDENSATION OF ALDEHYDES WITH KETONES.

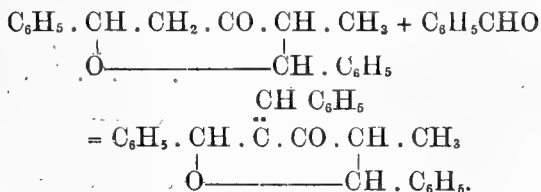
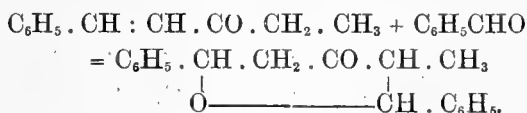
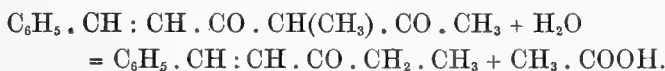
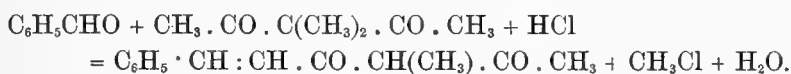
III.—BENZALDEHYDE WITH METHYL-ISOPROPYL-KETONE.

BY HUGH RYAN, D.Sc., AND PHYLLIS RYAN, B.Sc.,
University College, Dublin.

Read NOVEMBER 30, 1916. Published FEBRUARY 6, 1917.

By the interaction of benzaldehyde and dimethyl-acetylacetone, in the presence of anhydrous hydrochloric acid, Ryan and Dunlea (Proc. Royal Irish Acad., 1915. xxxii. B, p. 62) obtained a compound which melted with decomposition at 170°C., and to which they gave the formula $C_{25}H_{23}O_2Cl$. When this compound was boiled with pyridine it lost hydrochloric acid and yielded another crystalline substance, $C_{25}H_{22}O_2$, which melted at 168-169.5°C.

The latter compound formed a dibromide and gave an addition compound with hydroxylamine. The general behaviour of the substance indicated that it was a tetrahydropyrone derivative, and since the same substance was obtained, although in much smaller quantity, from monomethyl-acetylacetone and benzaldehyde, they concluded that in the formation of it from dimethyl-acetylacetone one of the methyl groups of the latter was eliminated. The reactions were formulated in the following manner:—



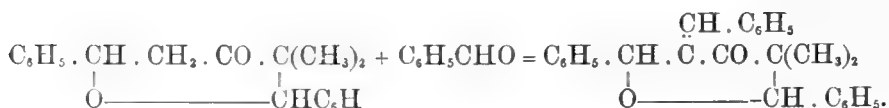
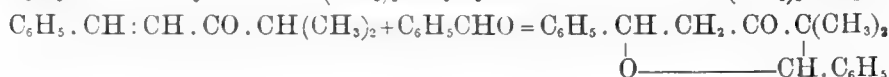
If the last formula correctly represented the constitution of the tetrahydropyrone, then this substance should be obtained by the action of benzaldehyde on the α -benzylidene derivative of methyl-ethyl-ketone.

In conjunction with Miss A. Devine one of us showed (Proc. Royal Irish Acad. 1916. xxxii. B. p. 211) that in the presence of alkali benzaldehyde condenses with methyl-ethyl-ketone to form α -benzylidene-methyl-ethyl-ketone, $C_6H_5 \cdot CH : CH \cdot CO \cdot CH_3$, which condenses further with benzaldehyde in the presence of alcoholic hydrochloric acid to yield a compound $C_{25}H_{20}O$ melting at $156^\circ C.$ and quite different in composition and properties from the tetrahydropyrone which was expected. It was obvious therefore that α -benzylidene-methyl-ethyl-ketone cannot, as Ryan and Dunlea assumed, be an intermediate product in the formation of the tetrahydropyrone and that further investigation of the course of the reaction was necessary.

Since methyl-ethyl-ketone, a product of the hydrolysis of monomethyl-acetylacetone, on condensation with benzaldehyde in the presence of alcoholic hydrochloric acid formed a substance differing from the benzylidene derivative of the tetrahydropyrone, it remained to find how methyl-isopropyl-ketone, a product of the hydrolysis of dimethyl-acetylacetone, would behave under similar conditions.

We found that methyl-isopropyl-ketone and benzaldehyde in the presence of alcoholic hydrochloric acid condense to form, in good yield, the benzylidene derivative of the tetrahydropyrone obtained by Ryan and Dunlea from benzaldehyde and dimethyl-acetylacetone

This result showed that the formula $C_{25}H_{22}O_2$, attributed to the tetrahydropyrone derivative by Ryan and Dunlea, must be replaced by $C_{25}H_{24}O_3$, and also corresponding formulae must be assigned to the hydrochloride $C_{25}H_{25}O_2Cl$, the dibromide $C_{25}H_{24}O_2Br_2$, and the hydroxylamine derivative $C_{25}H_{25}O_2 \cdot NHOH$ of this substance, and with which the analytical results already published (*loc. cit.*) agree as well as, if not better than, with the formulae derived from $C_{25}H_{22}O_2$. The preparation of the tetrahydropyrone derivative may now be formulated in the following manner:—



We also found that the commercial monomethyl-acetylacetone, which

Ryan and Dunlea had employed, had not been freed from dimethyl-acetylacetone, and, therefore, that the formation of the tetrahydropyrone derivative observed by them in this case was due to the dimethyl-acetylacetone contained in the impure parent substance.

After freeing this impure monomethyl-acetylacetone from the dimethyl compound by conversion into its copper derivative and recovery from the latter it interacted with benzaldehyde in the presence of alcoholic hydrochloric acid to form not the compound $C_{26}H_{22}O_2$ melting at $168-169.5^\circ C.$, but a compound $C_{25}H_{20}O$ melting at $158^\circ C.$, which was identical with that got from the condensation of benzaldehyde with methyl-ethylketone.

EXPERIMENTAL PART.

1. *Action of Benzaldehyde on Methyl-Isopropyl-Ketone in the presence of Alcoholic Hydrochloric Acid.*

A solution of 10 c.cs. of freshly distilled methyl-isopropyl-ketone and 30 c.cs. of benzaldehyde in 60 c.cs. of alcohol, which had been previously saturated in the cold with anhydrous hydrochloric acid, rapidly assumed a dark red colour, and on standing several days gave a copious separation (about 10 grams) of nearly colourless crystals. The solid was filtered and recrystallised from a mixture of chloroform and alcohol. When dried at $105^\circ C.$ the substance melted at $169-171^\circ C.$, and a mixture of it with the benzylidene derivative of the diphenyl dimethyl-tetrahydropyrone of Ryan and Dunlea also melted at $168-170^\circ C.$ In appearance and solubilities it was identical with the latter compound. On analysis the following results were obtained :—

0.2188 substance gave 0.6800 CO_2 , and 0.1280 H_2O
 corresponding to C 84.75 H 6.5
 $C_{26}H_{24}O_2$, requires C 84.78 H 6.5.

2. *Action of Benzaldehyde on Methyl-Acetylacetone.*

Monomethyl-acetylacetone was freed from dimethyl-acetylacetone by shaking its solution in ether with an aqueous solution of copper acetate. The copper derivative was first washed with, then suspended in, ether, and shaken with dilute sulphuric acid until the mixture had separated into two clear layers, the upper layer consisting of an ethereal solution of monomethyl-acetylacetone, from which the ketone was recovered by distillation.

After saturating a solution of 3 c.cs. of monomethyl-acetylacetone and 12 c.cs. of benzaldehyde in 30 c.cs. of absolute alcohol with anhydrous hydro-

chloric acid, the mixture rapidly turned a dark red colour, and after three or four days standing in a stoppered flask, at the temperature of the laboratory, crystals began to separate. When the reaction had finished, the solid, which weighed about 3 grams, was filtered and recrystallised from a mixture of chloroform and alcohol. It melted at 158°C ., about two degrees higher than the compound $\text{C}_{23}\text{H}_{20}\text{O}$ obtained from methyl-ethyl-ketone and benzaldehyde, but a mixture of the two substances also melted at $156\text{--}158^{\circ}\text{C}$. The two compounds are, therefore, identical.

3. *Action of Benzaldehyde on Ethyl-Acetoacetic Ester.*

Benzylidene-ethyl-acetoacetic acid, $\text{C}_6\text{H}_5\text{CH}:\text{CH}\cdot\text{CO}\cdot\text{CHC}_2\text{H}_5\text{COOH}$, was obtained by condensing benzaldehyde with ethyl-acetoacetic ester in the presence of dilute alkali.

A solution of 5 c.cs. of ethyl-acetoacetic ester, 8 c.cs. of benzaldehyde, and 3 grams of sodium hydroxide in 100 c.cs. of dilute alcohol, was left for one month in a stoppered flask at the laboratory temperature. Without removing the crystals, which had separated, the mixture was extracted with ether, and the aqueous alkaline layer was then acidified with hydrochloric acid. About 4 grams of a colourless crystalline acid were obtained. It melted with decomposition at 152°C ., and gave on analysis the following results:—

0.2176 substance gave 0.5712 CO_2 and 0.1247 H_2O
 corresponding to C 71.59 H 6.37
 $\text{C}_{13}\text{H}_{11}\text{O}_3$ requires C 71.56 H 6.42

VI.

UNSATURATED KETONES DERIVED FROM DIACETO-ORCINOL.

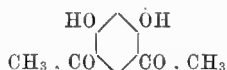
By JOSEPH ALGAR, M.Sc.,
University College, Dublin.

[Read NOVEMBER 30, 1916. Published FEBRUARY 6, 1917.]

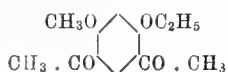
THE preparation of diflavone and of derivatives of diflavanone is described in papers by Ryan and O'Neill (Proc. Royal Irish Acad., 1915, B, pp. 48 and 167.) These substances were obtained from diacetoresorcinol. The ketones described in the present communication were prepared at the suggestion of Professor Ryan with a view to obtaining diflavone and diflavanone derivatives, using diaceto-orcinol as the parent substance.

Diacetoresorcinol was prepared by Eijkman, Bergema, and Henrard (Chem. Weekblad, i, (1905), p. 453, and ii, pp. 59-72, 79-93) by heating resorcinol diacetate with zinc chloride. Heating orcinol diacetate with zinc chloride gave unsatisfactory results; but when the diacetate was heated with anhydrous aluminium chloride, colourless crystals of diaceto-orcinol were obtained.

Eijkman showed that the formula of diacetoresorcinol is



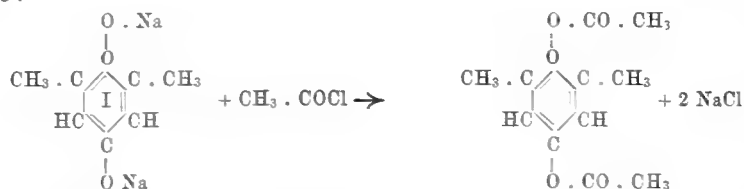
He prepared mixed ethers of diacetoresorcinol of the type



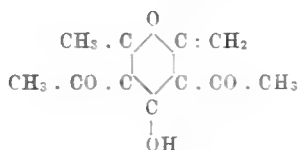
and found that the same mixed ether is formed when the order of introduction of the methyl and ethyl groups is altered. The orientation of the acetyl groups in diacetoresorcinol is therefore as shown in the above formula.

It was at first assumed that diaceto-orcinol had a similar constitution. The substance, however, showed very similar properties to the diaceto-orcinol obtained by Collie (Jour. Chem. Soc., 1904, p. 971) by the action of acetyl chloride on the sodium salt of diacetylacetone. When pure dry acetyl chloride is allowed to react with the sodium salt of diacetylacetone suspended in dry chloroform, and the temperature is kept below 0°C, a compound melting at 75°C. is formed. This compound forms a pyrone derivative when boiled with acids, and diaceto-orcinol when warmed with sodium hydroxide.

Collie explains the reaction as follows, taking I as the formula for diacetyl-acetone:—

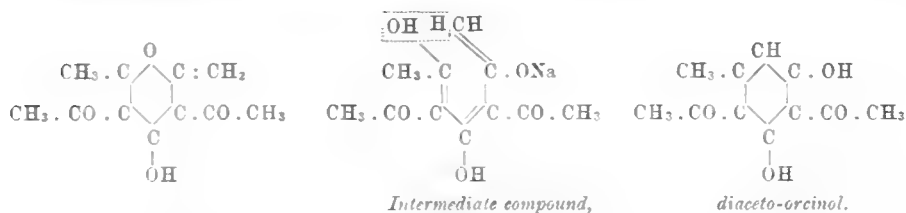


Rearrangement with the elimination of water then takes place with the formation of



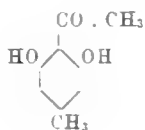
Compound M. P. 75° C.

This compound on warming with sodium hydroxide changes into diaceto-oreinol as follows:—

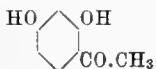


The only formula which can be assigned to diaceto-oreinol prepared by this method is that shown above.

On application to Professor Collie he was kind enough to provide a specimen of the compound obtained by him, and this was compared with the substance prepared by the aluminium chloride method. The melting-point of the mixed substances corresponded exactly with that of the individuals, and in other respects the compounds were identical. It therefore seems certain that the two acetyl groups are in the positions indicated in Collie's formula. This view is supported by the fact (Tambor, Ber., 39, 1906, p. 4038; and 41, 1908, pp. 787 and 793) that when only one acetyl group is introduced into oreinol it preferably enters the position between the two hydroxyls, thus:—

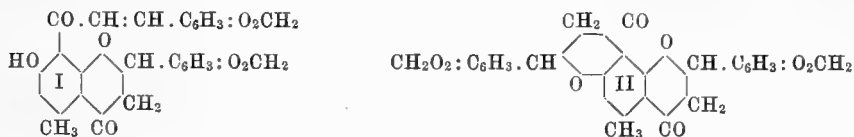


Whereas resorcinol under similar conditions forms resacetophenone.

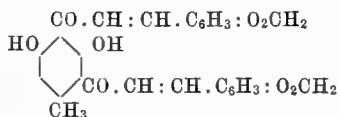


The general properties of the ketones described in this communication closely resemble those of similar ketones prepared from diacetoresorcinol (Ryan and O'Neill, *loc. cit.*); but efforts to obtain diflavone or diflavanone derivatives from them did not meet with success. When the diacetate of dibenzylidene-diaceto-orcinol was brominated, a certain amount of hydrobromic acid gas was eliminated, and when the product was heated with alcoholic potash, a small amount of a brownish amorphous substance separated which did not crystallise, and did not show any of the properties of a diflavone derivative. Similar treatment of dibenzylidene-diacetoresorcinol readily gives colourless crystals of diflavone. When the same reaction was tried with dianisylidene-, diveratrylidene-, and dipiperonylidene-diaceto-orcinol there seemed to be no formation of diflavone or dicoumaranone compounds. An effort was made to prepare diflavanone derivatives by allowing a mixture of diaceto-orcinol and benzaldehyde or anisaldehyde to stand for some days in the presence of alcoholic hydrochloric acid. The results were, however, negative, and further attempts to prepare these compounds were hampered by the difficulty of obtaining a supply of orcinol.

During the preparation of dipiperonylidene-diaceto-orcinol two isomeric substances were isolated, one of which melts at 236°-237° C. and the other at 248-249° C. The former is referred to as α -dipiperonylidene-diaceto-orcinol, and the latter as β -dipiperonylidene-diaceto-orcinol. The β compound is apparently produced from the α compound by the action of warm hydrochloric acid. The α derivative dissolved in potash, but the β derivative seemed to be entirely insoluble. It is, therefore, possible that the β compound has either of the flavanone formulae I or II.

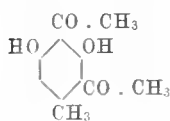


the formula of the α compound being :—



Owing to the small amount of the β compound isolated, it was impossible to further examine the substance with a view to determining its constitution.

EXPERIMENTAL PART.

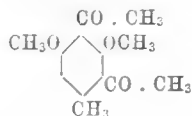
Diaceto-orceinol.

Orcinol diacetate was prepared by adding 20 c.cs. of acetyl chloride to 15 grams of orcinol in a round flask under a reflux condenser. When the energetic reaction which set in had subsided, the flask was heated in an oil-bath to 130° C. until the evolution of hydrochloric acid ceased.

Diaceto-orceinol was obtained from the diacetate by adding 15 grams of powdered anhydrous aluminium chloride to the cold diacetate, the temperature of the mixture was then gradually raised to 160° C., and the heating continued for four hours. The molten mass was cooled, cold water added gradually, and finally some hydrochloric acid. The crystalline residue of diaceto-orceinol was filtered, washed with water, and recrystallised several times from alcohol. About 7 grams of diaceto-orceinol were obtained:—

0.1709 substance gave 0.3955 CO₂, and 0.0919 H₂O
 corresponding to C 63.11, H 5.97
 C₁₁H₁₂O₄, requires C 63.46, H 5.76.

Diaceto-orceinol crystallises from alcohol in colourless needles which melt at 93.5–94.5° C., are somewhat soluble in alcohol, and easily soluble in ether, acetone, chloroform, or benzene. An alcoholic solution of the substance gives a reddish-brown coloration with ferric chloride.

Diaceto-orceinol-dimethylether.

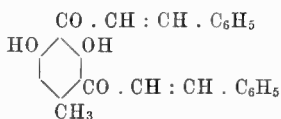
A solution of 6 grams of potash in 15 c.cs. of water was added to 5 grams of diaceto-orceinol in a round flask. The mixture was heated on the water-bath and 10 c.cs. of dimethyl sulphate were added in about three instalments, the contents of the flask being vigorously shaken during the reaction. The liquid was then cooled, made slightly alkaline with potash, and the yellowish oil which separated was extracted with ether. The ether solution was washed with dilute potash, then with water, and dried over calcium

chloride. On evaporation of the ether, diaceto-orcinol-dimethylether remained behind as a colourless oil. It was purified by distillation in vacuo :—

0.1645 substance gave 0.3988 CO₂ and 0.1031 H₂O
 corresponding to C 66.11, H 6.96
 C₁₃H₁₆O₄ requires C 66.10, H 6.78.

Diaceto-orcinol-dimethylether is a colourless oil which boils at 195–197° C. under 30 mms. pressure. It is insoluble in water, but easily soluble in alcohol, acetone, ether, chloroform, or benzene. A solution of the substance in alcohol gave no coloration with ferric chloride.

Dibenzylidene-diaceto-orcinol.

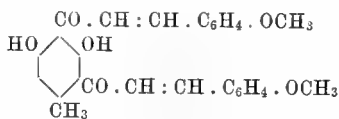


About 12 c.cs. of 50 per cent. sodium hydroxide were added, drop by drop, to a solution of 4 grams of diaceto-orcinol, and 10 c.cs. of benzaldehyde in 100 c.cs. of boiling alcohol, and the mixture heated for about 45 minutes. When the liquid was cooled no solid was precipitated, but on addition of alcoholic hydrochloric acid a yellow solid separated out. This substance was filtered, washed with water and alcohol, and purified by dissolving it in acetone and reprecipitating it with alcohol. In this manner a light yellow non-crystalline substance was obtained. Efforts to obtain it in a crystalline condition were unsuccessful :—

0.1594 substance gave 0.4567 CO₂ and 0.0812 H₂O
 corresponding to C 78.13, H 5.66
 C₂₅H₂₀O₄ requires C 78.12, H 5.21.

Dibenzylidene-diaceto-orcinol is an amorphous light-yellow solid which melts about 143–153° C., and is almost insoluble in alcohol, easily soluble in ether chloroform, acetone, or benzene. It dissolves in concentrated sulphuric acid, forming an orange-red solution. Ferric chloride colours its alcoholic solution brown.

Dianisylidene-diaceto-orcinol.



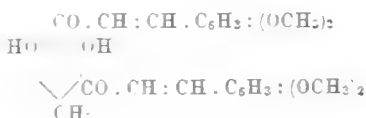
To a solution of 4 grams of diaceto-orcinol, and 10 c.cs. of anisaldehyde in

100 c.cs. of boiling alcohol, was added, drop by drop, 12 c.cs. of 50 per cent. sodium hydroxide, and the liquid was kept gently boiling for about half an hour. The mixture was then cooled and acidified with alcoholic hydrochloric acid. The yellow solid which was precipitated was filtered, washed with water, then with a little alcohol, and purified by dissolving in acetone, and reprecipitating with alcohol. It was finally recrystallised from benzene.

0.175 substance gave 0.4659 CO₂ and 0.088 H₂O
 corresponding to C 72.6, H 5.58
 C₂₇H₁₄O₅ requires C 72.97, H 5.4.

Dianisylidene-diaceto-orceinol crystallises from benzene in orange prisms which soften at 228° C., and melt at 231-232° C. It is almost insoluble in alcohol, and soluble in chloroform, hot benzene or hot acetone. The crystals are coloured dark red by concentrated sulphuric acid, dissolving to a brownish-red solution. An alcoholic solution of the substance gives a brown coloration with ferric chloride.

Diveratrylidene-diaceto-orceinol.

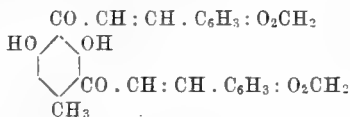


Diaceto-orceinol (4 grams) and veratric aldehyde (10 grams) were dissolved in 100 c.cs. of boiling alcohol, and 12 c.cs. of 50 per cent. sodium hydroxide added gradually to the solution, which was then heated for about ten minutes. The mixture was cooled and acidified with alcoholic hydrochloric acid. The yellow precipitate which separated was filtered and washed with water and alcohol. It was purified by washing with a small quantity of hot acetone and crystallised from benzene. About 2 grams of the substance were obtained.

0.1629 substance gave 0.4106 CO₂ and 0.084 H₂O
 corresponding to C 68.74, H 5.72
 C₂₅H₁₂O₅ requires C 69.01, H 5.59.

Diveratrylidene-diaceto-orceinol crystallises from benzene in orange-yellow prisms which melt at 188-189.5° C., and are almost insoluble in alcohol or acetone, but soluble in chloroform or hot benzene. Ferric chloride produces a deep-brown coloration in an alcoholic solution of the compound. Concentrated sulphuric acid dissolves the crystals, forming a cherry-red solution.

α-Dipiperonylidene-diaceto-orcinol.



A mixture of diaceto-orcinol (3 grams), piperonal (8 grams), and absolute alcohol (70 c.cs.), was heated to boiling, and 10 c.cs. of 50 per cent. sodium hydroxide were added gradually to the solution. The mixture was heated for fifteen minutes, then cooled and acidified with alcoholic hydrochloric acid. The yellow precipitate was filtered, washed with water and alcohol, and crystallised from benzene. It was further purified by solution in alkali and precipitation with hydrochloric acid. The precipitate was filtered, washed with water, dried and crystallised from boiling xylene.

0.163 substance gave 0.4098 CO₂ and 0.0698 H₂O
 corresponding to C 68.56, H 4.75
 C₂₇H₂₀O₈ requires C 68.57, H 4.27.

α-Dipiperonylidene-diaceto-orcinol crystallises from boiling xylene in orange-yellow prisms, which soften at 234° C. and melt at 236-237° C. It is insoluble in alcohol, but soluble in chloroform, and in hot benzene or xylene. A solution of the substance in boiling alcohol gives a faint brownish-yellow coloration with ferric chloride, the weakness of the colour being probably due to the fact that the compound is very sparingly soluble. Concentrated sulphuric acid colours the crystals purple, dissolving them to a purple-red solution.

β-Dipiperonylidene-diaceto-orcinol.

During the preparation of the *α* compound, portion of the product was heated with chloroform and a little alcoholic hydrochloric acid, with a view to decomposing any sodium salt which might be present. As a result a yellow, very insoluble substance was formed. The mixture was evaporated to dryness, and the residue crystallised from boiling xylene, in which it is much less soluble than the *α* compound.

0.1705 substance gave 0.4291 CO₂ and 0.0714 H₂O
 corresponding to C 68.63, H 4.65
 C₂₇H₂₀O₈ requires C 68.57, H 4.27.

β -Dipiperonylidene-diaceto-orcinol crystallises from boiling xylene in yellow prisms, which soften at 245° C., and melt at 248–249° C. It is much less soluble in the usual organic solvents than the α compound, and appears to be quite insoluble in potash. Its behaviour towards concentrated sulphuric acid, is similar to that of the α compound, whilst ferric chloride produces a somewhat fainter colour than that obtained with the latter.

PROCEEDINGS
OF THE
ROYAL IRISH ACADEMY

VOLUME XXXIII

SECTION C.—ARCHÆOLOGY, LINGUISTIC, AND
LITERATURE.



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ERRATA.

SECTION C.

- p. 65, l. 21, for 1738 read 1694.
- p. 100, foot-note 2, for *Angoiss* read *Misfortune*.
- p. 134, l. 22, omit the sacrament of.
- p. 242, last line, for *xiv* read *x*.
- p. 454, l. 14-16, should read Eoghan . . . who having been exiled to Spain married Beara . . . He had a son Oilioll Olom who married Sabia . . .
- p. 478, for (for Mr. P. J. Lynch's survey of the dolmens) by Dr. George Fogerty read by Mr. P. J. Lynch, and delete the foot-note.

PROCEEDINGS
OF
THE ROYAL IRISH ACADEMY
PAPERS READ BEFORE THE ACADEMY

I.

SOME RECENT ARCHAEOLOGICAL DISCOVERIES IN ULSTER.

BY FRANCIS JOSEPH BIGGER, M.R.I.A.

PLATES I-II.

Read NOVEMBER 8, 1915. Published FEBRUARY 14, 1916.

I.

A FIND OF THREE LARGE CINERARY BURIAL URNS FROM THE BANKS OF
LOUGH NEAGH IN ANTRIM.

PLATE I.

THESE two perfect urns and the fragments of another were turned out last spring in a gravel pit by James Nimmo, in the townland of Creggan, in the Parish of Duneane, about half a mile from the banks of Lough Neagh, in Antrim.

The whole of this district is thickly studded with earth-forts, mostly of the single-ring and fosse type with depressed centres. Many are still occupied by primitive cottages and hag-yards, showing continuous occupation for centuries. The place-names all around also prove the land to have been closely inhabited.

The urns were discovered in a gravel bank which was being removed to provide road material. The bank rises gently above a small stream running into the lake to the south. There was no surface-indication of their presence, and there was no cist or stone enclosure around any of them. They were about two feet below the surface, a few feet apart, inverted, resting on rude slabs, covering the bones which were piled below them. On their discovery, word was sent to me, and I at once visited the place. The two urns had

been carefully removed, with the bones, to the adjoining house, and I assisted in gathering up the fragments of the one which had been unintentionally broken in the picking of the gravel. The workmen scarcely noticed the first urn, it being of similar colour to the gravel, until it fell down in pieces, smashed by their tools and the fall. This loss, however, saved the other two urns, which were abstracted with care, and the bones lifted and placed in them, together with the portions of the small bronze knife-dagger, which is of particular value as proving the age of the burial. It is illustrated (Plate I, fig. 4). The bronze object had also undergone the influence of fire, doubtless, at the time the bodies were consumed.

The calcined fragments of bones were submitted by me to Dr. Scharff, of Dublin, and Professor Symington, of Belfast, and they examined same jointly, and have made a joint report, which is as follows:—

“These fragments of bones have been carefully examined by Professor Symington, of Belfast, and Dr. Scharff, of Dublin, in conjunction, and they agree that some of the fragments are human, but certainly some of them are animal, probably either horse or ox. They have been burned and broken into such small fragments that it is almost impossible to identify them with certainty.

Signed,

“J. SYMINGTON.

R. F. SCHARFF.

“12th June, 1915.”

This is a remarkable report, because it goes to prove that the bodies of the warriors or chieftains were burned, most probably with their horses, and this in the Bronze Age.

We thus have simple urn burial, in large, well-made, ornamented vessels, of the burnt fragments of human bodies, combined with animal remains, and a small bronze knife-dagger.

No superficial monument was found, and there was no stone or other enclosure about the urns. They were discovered accidentally during labour; no grave was destroyed and no ancient monument disturbed. The two complete urns are of the largest class, varied as to ornament and shape, as can be seen by the illustrations (Plate I). The fragments of the third urn have been reconstructed, and show that it was smaller than the other two, but of the same type. It may possibly have been ornamented, but the fragments are worn, and it is impossible to be certain on this point. The largest vessel measures $12\frac{1}{4}$ inches in height and $11\frac{1}{4}$ inches in diameter at the mouth; the second urn is 12 inches high and $12\frac{1}{2}$ inches in diameter at the mouth; and the third as retained measures 10 inches in height and $10\frac{1}{2}$ inches in diameter at the mouth,

The two larger urns are ornamented; in one the upper portion of the vessel is decorated with a diamond pattern filled with three and four lines, and in the other with a simple herring-bone design. The urns and fragments belong to what is termed the "over-hanging rim type," and probably may be placed in the latter portion of the Bronze Age. This type is fairly represented in finds made in the counties of Antrim and Down; and Dr. Abercromby's illustrations,¹ 1, Plate LXXIX, figs. 207-10, of urns found in these counties may be compared with the vessels which form the subject of the present paper. These urns have now been presented to the Academy, and are to be displayed in the National Museum as found with the actual earth and gravel around them.

II.

DUMMY STONE CELT FOUND IN A SEPULCHRAL CHAMBER IN THE PARISH OF CARNMONEY IN ANTRIM.

IN the spring of 1915 a friend of mine, a farmer named David Smith, who lives quite close to me in my own parish, was ploughing up new land on the southern slope of Carnmoney Hill, in the townland and parish of that name in the County of Antrim, when the nose of his plough turned aside a flag-stone, revealing a small chamber about 3 feet by 2 feet wide and a foot deep, built

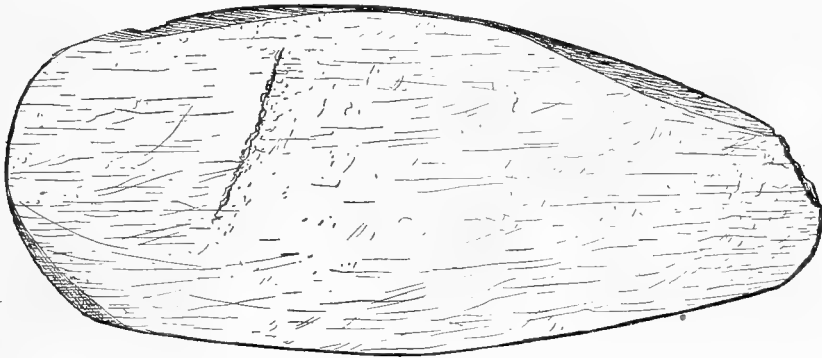


FIG. 1.—Dummy Celt from Carnmoney, County Antrim.

with ordinary flat field stones. The chamber was quite empty, only a little soil and dust being in it, excepting this dummy celt. The farmer at once informed me, and I visited the place, confirming his information.

The celt is at its longest $8\frac{1}{2}$ inches, and at its widest $3\frac{1}{2}$ inches and $\frac{1}{4}$ -inch thick. It is carefully worked, and the edges are well ground, but it shows no appearance of usage. It is made of shale (fig. 1).

¹ *Bronze Age Pottery*, vol. ii.

To carry on his work, the flag-stone was replaced by the farmer, and I brought away the celt. There was nothing unusual in the surroundings; no earth-work was near, and there is no known souterrain in the neighbourhood.

A cairn had stood over a cromleac on the summit of the hill a short distance away. Unfortunately most of it had been destroyed by treasure-seekers before my time.

It is not unusual to find implements with stone-age burials; but it is rare to find delusive ones, although such are on record.

That this celt was made to serve a purpose there can be no doubt, but why so much trouble should have been taken in the making of a dummy, when a real one could as easily have been produced, is the puzzle. Of course this is quite speculative. My sole intention is to place on record the find and the surrounding circumstances.

III.

ORNAMENTED BONE SCOOP FROM LECALÉ, IN DOWN.

THIS bone implement was found near my castle at Ardglass last year, and given to me by the finder. Its age is quite uncertain. In the *Journal of the Royal Society of Antiquaries of Ireland*, vol. xlv, p. 173, five specimens are

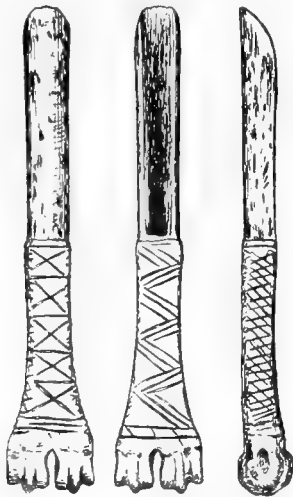


FIG. 2.—Bone Scoop from Lecale, in Down.

described (two similar to this one), some of which are stated to have been found in crannogs, whilst I have one made by a man still living in Belfast, in

the ordinary course of his occupation, from a sheep's trotter, and used as a scoop. These were made, and sold for sixpence, and prove an heredity worth noting. The Lecale specimen, however, shows considerable age and much usage, whilst the ornamentation on the handle is elaborate (fig. 2). Its total length is five inches. It is made of the metatarsal bone of a sheep or goat. Some writers connect these implements with apple-coring. Lecale was not an apple-growing centre; but that is a small point, as such tools were easily carried any distance, and may have even come in by the port.

IV.

THREE WOODEN VESSELS FOUND IN A BOG NEAR DUNAMANY IN
TIR EOGHAIN.

THESE three vessels were dug out of a bog-cutting in the townland of Tír Kernahan, in the parish of Donaghkedy, in Tír Eoghain, by John Gamble.

The small vessel is now much contorted; it was about 6 inches in diameter, and 2 inches in depth. The medium-sized vessel was about 7 inches in diameter, and $2\frac{1}{2}$ inches in depth. Both these vessels were circular.

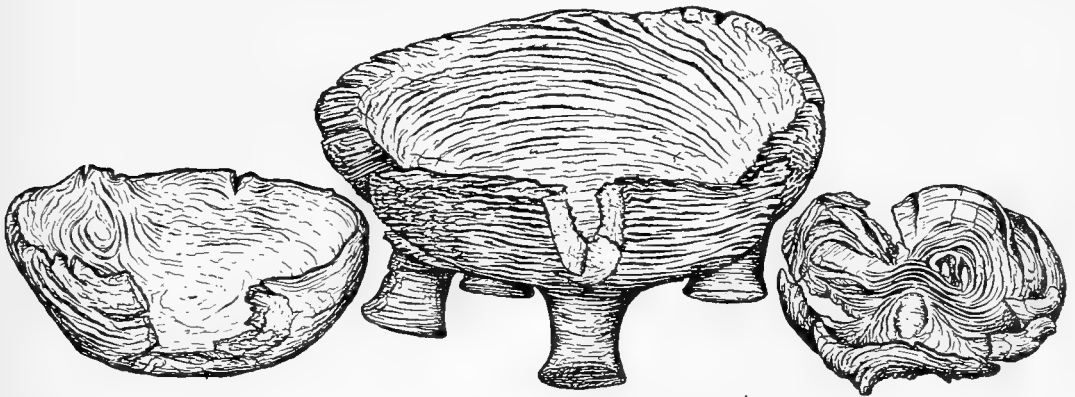


FIG. 3.—Wooden Vessels from Dunamany, in Tir Eoghain.

The greatest interest centres around the large oval vessel on account of its skilful carving, with its four legs, out of one piece of wood. This is quite unusual, proving the use of excellent tools in its manufacture. It was well shaped, cleanly cut out, and neatly rounded. The feet have been carved out of the solid block of wood, and equally spaced on the base. There is no

appearance of handles, and any tool markings that can be traced were done with fine implements. All are illustrated on a much-reduced scale in fig. 3.

The age of these vessels is quite problematical; but judging by their condition, and the situation of their discovery, they are derived from a crannog of mediæval date. Professor A. Henry has kindly examined the vessels, and reports that the large vessel with four legs is made out of a piece of either sallagh or poplar wood, the vessel next in size being made from a piece of alder wood.

V.

EARLY BRONZE PROCESSIONAL CROSS FROM DONAGH, IN THE DIOCESE OF CLOGHER, ALSO THE ANCIENT HIGH CROSS OF DONAGH.

PLATE II.

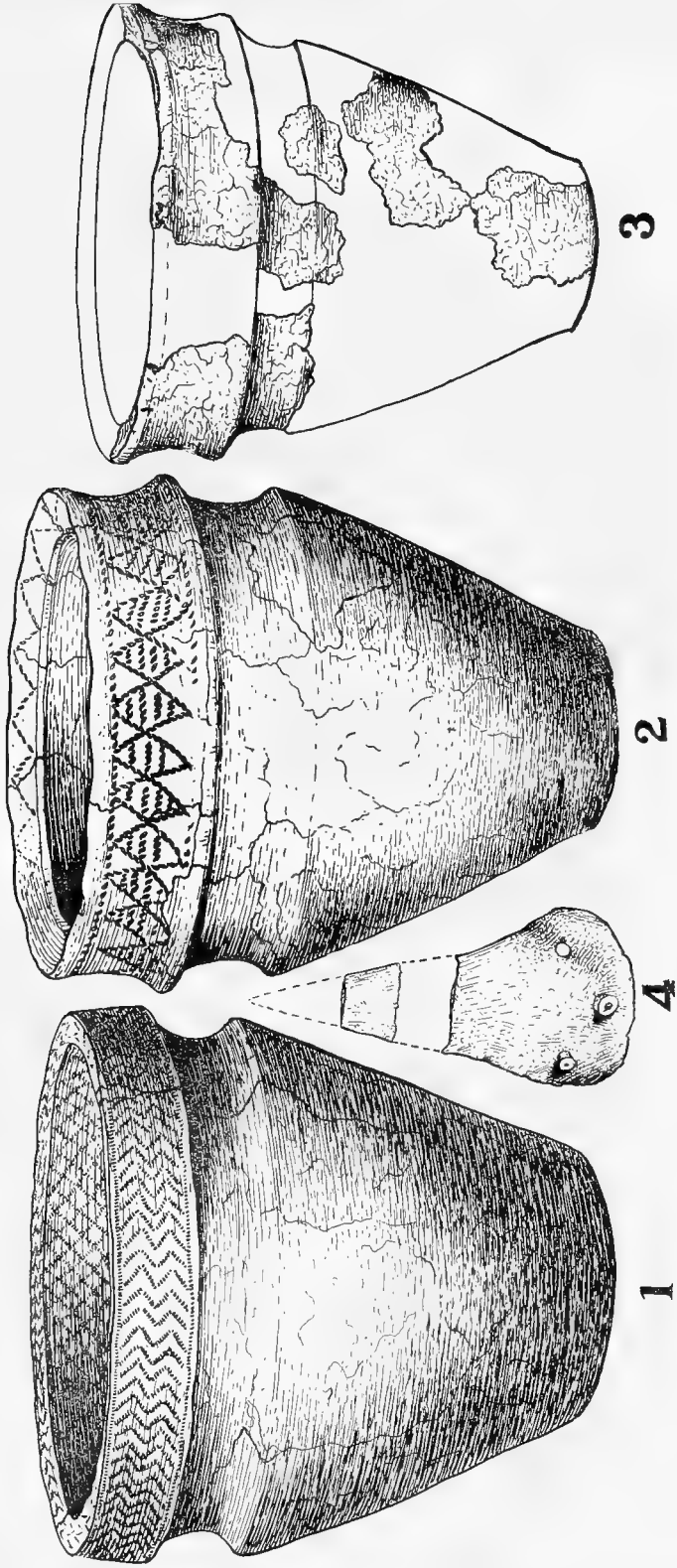
I CALL this rare specimen of an Irish processional cross the bronze cross of Donagh, because it was found there. In 1911 I was stopping at Glasslough, with my friend Mr. Shane Leslie, and after perusing Shirley's "History of County Monaghan" (p. 295), we went to the old graveyard of Donagh, on the summit of a hill, to look for the cross mentioned by Shirley. I was assured on all hands that it had disappeared, and so it had. A close examination of the church ruins convinced me, and I soon satisfied my friend that the old church had been used by the Planters. My friend was of the opinion that the present Protestant church was on the site of the Planters' church. Having got so far, we looked around to find any trace of the cross, thinking it might have been destroyed or removed by the older race to preserve it from desecration, as Monaghan had much turbulence in the Plantation and even later times. After diligent search I came on a mossy stone level with the ground. On removing some grass and earth, I found it unshakable, thus proving it had some depth in the ground. Further excavation revealed the head of the lost cross of Donagh. We did not delay in having it unearthed and set up on its old site in a firm foundation, so that now it is visible for a long distance in every direction. It stands about 5 feet high, and 3 feet wide in the arms, and has upon its east face the figure of our Lord carved in the old Irish way. One thing leads to another. Mr. Shane Leslie still searching a short time afterwards, discovered in a disused room above the sacristy of the old Catholic church at Donagh this bronze crucifix. He at once consulted with me regarding its preservation. My advice coincided

with his wishes. It should be conserved as far as possible without any alteration, save replacements, in the condition in which it was found, and restored to its original use and benefit. This has been done in a way I will tell you, and with the result you can see. It is now in the care and trust of the Most Rev. Patrick Mac Kenna, Bishop of Clogher, and is kept at Saint MacArtin's Cathedral, in Monaghan. This we considered a more worthy way of treating so valuable a relic than even having it carefully preserved amongst the Irish Antiquities in the Royal Irish Academy's Collection in the National Museum, or running the risk of its retention in a private collection.

When found it had only two beads, the one at the right side of the head, and the one at the foot; and the top jewel was missing. The bead at the left side of the head is one I was fortunately able to supply, as well as the jewel at the head of the cross. This bead is an ancient one, and the jewel is most appropriately a polished pebble from Cranfield on Lough Neagh. The cross itself is made of two lengths of brass fastened at the centre one 14 inches long, and the cross-bar 9 inches long, both about $\frac{3}{4}$ inch wide and $\frac{1}{8}$ inch thick. The head and ends of the arms enlarge into circles to hold the jewels. The figure from the drapery and head-dress appears to be of the thirteenth century. It corresponds in some respects to the figure on the cross of Tuam, which is of that date. It is much worn by use. The feet are crossed, and with the hands are fastened, with bronze nails, right through the shaft and arms of the cross. The head inclines to the right; the figure is not what might be called a hanging figure of the dead Christ, but has some of the Celtic spirit of life, with the arms widely expanded, and the eyes open. The remarkable feature is the addition of the beads. They are fastened with bronze pins through the cross, and are clearly of much older origin than the crucifix. The original blue enamelled bead at the right side is a particularly fine specimen, with circular ornament upon it in red, purple, and white. The original bead below the feet is of purple glass; the ancient added bead to the left is of white glass. Further along the arms of the cross are two other openings which are also doubtless made for nails to fasten on beads or other ornaments. There is also one at the back of the head. The original jewel at the right hand is of crystal; that to the left is of purple glass. The one at the head is the Lough Neagh pebble. The jewels on the arms are simple, clasped with bronze indented hoops fastened to the shaft, whilst the one at the head has a similar clasp with a twisted wire around it, and a circle of ball ornament, giving it the appearance of an earlier date than other features would warrant. This ornament may have originally existed around the side jewels, and been

destroyed. The back of the crucifix is perfectly plain. The base of the cross-shaft is slightly expanded with three nail holes in it, clearly showing that it had been fastened into a base or shaft to be held erect. These three holes were used in the new shaft which has been added, as I had no doubt this crucifix was the terminal of a processional cross. A word for the shaft as now restored. Every piece of it is Irish work and material. It is of ancient Irish timber from the oak woods of Ballinderry, in Co. Antrim, used for centuries in the old O'Neill church at Portmore. The serpent head fastening the shaft to the cross is copied from that of the cross of Cong, interlaced with four jewels, marbles, red from Munster, green from Connacht, black from Leinster, and white from Ulster. There is a Celtic bronze ferrule, and an interlaced bronze cross upon the bulb in the centre of the shaft with the simple inscription:—

Τυζ. Σεαν. υδ λαρλαϊζ αν Ἰροϊρ γεο. το. ηδον. μαοδμεταν. Δ. 1911. C.



Cinerary Urns found at Creggan, County Antrim, and Bronze Dagger found in one of them

BIGGER.—ARCHAEOLOGICAL DISCOVERIES IN ULSTER.



FIG. 1.—The High Cross of Donagh, in the Diocese of Clogher.

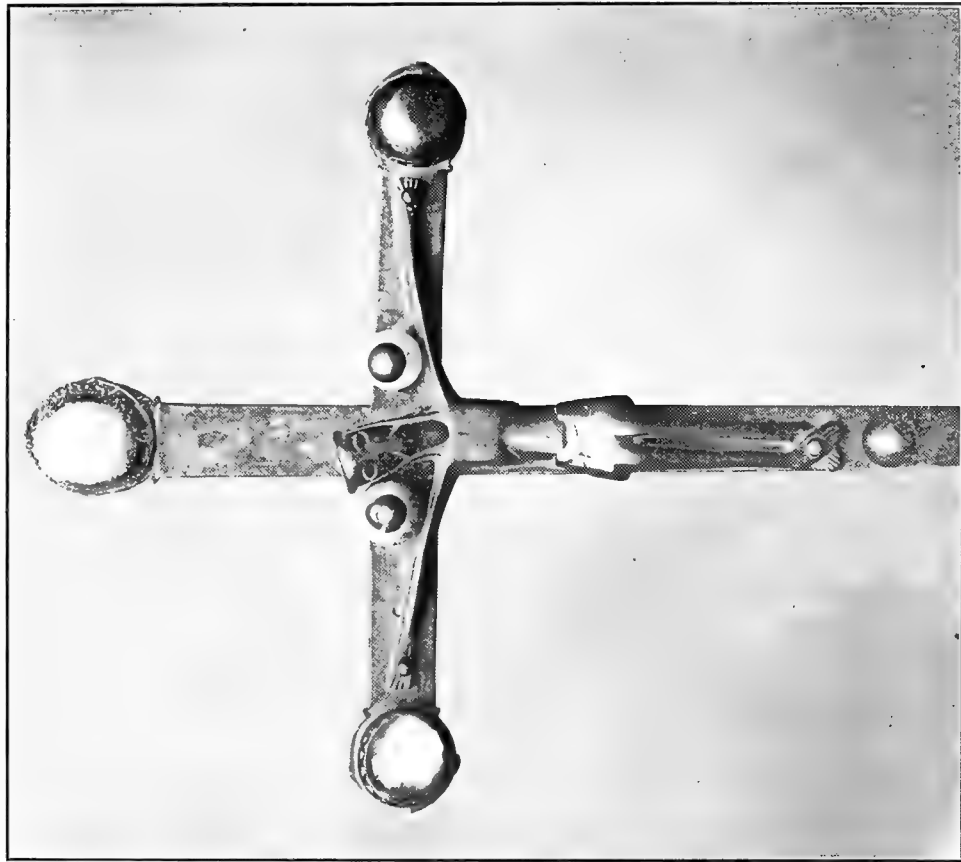


FIG. 2.—The Bronze Processional Crucifix of Donagh, in the Diocese of Clogher.

BIGGER.—ARCHAEOLOGICAL DISCOVERIES IN ULSTER.

Photo. by A. R. Hogg.

II.

ON CERTAIN TYPICAL EARTHWORKS AND RING-WALLS IN
COUNTY LIMERICK.

BY THOMAS JOHNSON WESTROPP.

PLATES III AND IV.

Read NOVEMBER 30, 1915. Published MARCH 16, 1916.

THE study of early Irish forts on any kind of scientific system was hardly known in Ireland a quarter of a century ago. This may seem a startling misstatement, till we see that isolated general descriptions (usually accompanied by some universal theory, and rarely even approximately full and accurate) alone recorded the few forts described in accessible publications. In theory a baseless fabric (supposed to be vouched by a poem written 1000 years after the supposed date of the events it records), as to the stone forts being all the work of a little tribe of Firbolgs, alone held the field—the earth forts, of course, were “Danish.” A few people remembered that the originator of the Firbolg theory, O’Donovan, had the sound common sense to make many exceptions to it, but most persons gave it a universal application. Generalization was impossible; some twenty stone forts, two or three promontory forts, and a small number of earthworks alone were described, some most incorrectly; hardly a correct plan had been published. The great work of Lord Dunraven only describes two types of stone forts, and does not give a single accurate plan. For earthworks, a foreign antiquary could find little but the old-fashioned, and not always correct, views and plans of Wright’s Louthiana and a few plans of earthworks, like Tara and Usnach, in the publications of this Academy and of the Royal Society of Antiquaries, under its various titles. The only efforts to utilize comparative archaeology were vague comparisons of our ring-walls with the city forts of Etruria and Greece. Rarely do we find even a hint in Irish papers on the forts that similar structures remained in Great Britain; none of our antiquaries strove to study what was being done on the Continent. A large class regarded round towers, early churches, and stone forts as the peculiar property and glory of Ireland, and resented any attempt to describe the forts of other countries. Much of the unprogressive character of Irish archaeology springs from its exponents taking no trouble to keep up to date (by reading the

proceedings of the societies). and confining themselves to repeating the many times refuted theories, identifications, and catchwords in books half a century behind modern archaeology. People quoted with approval the poem of the race, "taller than Roman spears," making "their mystic forts," but were too careless to look in old Irish literature and in European archaeology for what would have stripped the epithet "mystic" from the common, practical homesteads of all early and mediæval periods of Irish peoples. Since 1890 we have had to collect our material from every source—the library, and still more the field, before we had any reasonable amount of matter for generalization; let this be an excuse for us workers where the inferiority of our general views is criticized. Yet much has been done in Connacht and Munster, less in the other provinces. In Munster much material is available in Clare and Kerry, and round certain districts in Cork, Waterford, and Tipperary.¹ Only one county has been too much neglected—Co. Limerick.

Still, as ever, a pioneer and beginner, I crave the forbearance of the Academy for laying before it an instalment of this necessary work, covering, it is true, most of (if not all) the types of forts, but giving far fewer examples of each than in previous papers on the other counties of the province of Munster. Some make little allowance for an imperfect survey, but hardly anything else is possible in Ireland, and it is most helpful to publish even such a paper. "The best that every man knows dies with him," but something may be saved. The few who take interest in archaeology (as apart from historical, architectural, and linguistic questions connected with it) will perhaps judge hardly a dry survey, not even pretending to give every fort of importance. Others, more interested in weapons and implements, or in ecclesiastical and genealogical questions, may be even more like those of old, who took no interest in the fort-makers: "Ye also made a ditch between two walls for the water of the old pool: but ye have not looked unto the maker thereof, neither had respect unto him that fashioned it long ago." The inhabitants of each district could make such a survey, but how many persons in Ireland have completed the recording of forts in even one parish? One living far away, and only getting a week now and again to explore a district, may get much; but he certainly can never make a "field-to-field survey," as should be done for a parish or county, before even this limited requirement of completeness is fulfilled. Not by "flying over the country" on a motor, but by going on foot over hills and fields and wildernesses, can such work be done. British antiquaries (foreign ones seem more sympathetic)

¹ See an excellent paper on the earthworks round Tipperary, in *North Munster Archaeological Soc. Journal*, vol. iii, p. 5, by Mr. Paul Flynn.

wonder why we Irish cannot complete the record of even a few parishes. An English parish (with perhaps one or two hill forts, a church and castle, and a few lesser monuments) is finite, and can be completed; but the antiquities in the wilds, and even in tamer parts, of Ireland approach the infinite, and the longer one works the more lesser remains seem left to be recorded after that work is published.

Save for the mote of Shanid, I do not recall a single earthwork in this county which has been described with any clearness before this century, and none with any fullness. I long avoided the subject myself, though my knowledge of several of the forts extends over forty years. I hoped the North Munster Archaeological Society might have done the work; but the Society did nothing of the sort, and it now (since the death of its Secretary, Dr. George J. Fogerty) seems unlikely to undertake it. I know of no local antiquary who is doing anything in that direction. So far I have only published a general plan of the earthworks at Shanid, and detailed ones of those at Kilbradran and Cloncagh.¹ Mr. P. J. Lynch had published one (with sections) of the fine mote at Kilfinnan, along with Dr. G. Fogerty's photograph;² he has also given us a valuable monograph on the dolmens of the county;³ but this does not affect our subject. No elaborate paper on any fort in the county has been published as yet. Even the more casual mention is very rare. FitzGerald's History contains a description of what are stated erroneously to be the remains on Knockfennell⁴ (but probably on another fortified hill), beside Lough Gur; casual mention of "Danish forts" by him and Lewis, and short notes on Shanid, complete the bibliography. Of accessible written material Windele's manuscripts have a few brief notes and rough sketch sections; while the Ordnance Survey Letters—so helpful for the churches and castles of Co. Limerick—hardly describe, even briefly, any of the forts.

Irish archaeological nomenclature is in the making; old-fashioned people resent any desertion from the old but inaccurate terms—for example, from our misleading use of "cromlech"; so we use "castle" for little residential peel towers, hardly ever military works, and "abbeys" for small cells and collegiate churches. We are justified by the usage of mediaeval writers and the local nomenclature, whether in France or Ireland, in using the word "mote" for any earthwork, but will confine it here to

¹ Journal R. S. Antt. Ir., vol. xliii, p. 251 (Cloncagh); Proc. R. I. Acad., vol. xxiv, p. 275 (Kilbradran), and vol. xxv, pl. xviii (Shanid).

² Journal R. S. Antt. Ir., vol. xli, p. 389, Kilfinnane.

³ Limerick Field Club Journal, vols. ii, iii, and N. Munster Arch. Soc., vol. i, sqq.

⁴ *Loc. cit.*, vol. i, p. 313.

platform forts of any height. It no more connotes a work of one type, or of any one period, than do the cognate words "dun," "liss," or "rath."¹

It might have been best to put together all the examples of a particular type under that head; but I think (as this paper is intended to subserve a topographical purpose as well as an archaeological one) that it is better to select in each case a district, and give all the more instructive forts in it, along with the early legends and history, so far as bearing on the forts. I will endeavour to select these groups so as to illustrate the main sections of the county. The tract from the Shannon to Dunganville may serve to illustrate the forts of Ui Chonaill, or Connello; those from the River Deel to Lough Gur may represent the north-eastern and central parts; and Bruree and the group from Aberloe to Bruree and Ardpatrick, in Coshlea, along the Ballyhoura Mountains, are sufficient to show the earliest legends and residences of the royal Dalcassian race.

EARLY DIVISIONS.

As so often, the first glimmer of light shows merely the names of obscure, otherwise forgotten, tribes, such as the Gann, and possibly the Siol Gengann (the Ganganoi of Ptolemy² in A.D. 160), then the ubiquitous Ui Catbar and Ui Corra, who had settlements down the west side of Co. Clare and Connacht, and south of the Shannon, are said to have had colonies in western Limerick. The more definite Gebtini gave their name to Askeaton (Eas Geibhthine) and its island fort Iniskeity, or Inis Geibhthine. A reputed tribe of the Mac Umuir, or Huamorian Firbolgs, named Asal, is said to have given its name to Drom Asail, or Tory Hill.³ The Mairtinigh lay round Emly; these, and possibly kindred tribes (the Dilraighe, Margraighe,

¹ Compare local Irish usage with the "buttes" and "notes" in France: low forts as well as high are so called.

² Petrie identified the Magolicon of Ptolemy with Caherguillamore, "an extensive city" ("Military Architecture," *ms.* R. I. Acad., p. 77). If St. Mochealoc be a real person, it can hardly be Kilmoechaloc or Kilmallock. Some take Brughrigh (Bruree) to be *Rigia Hetera*, but others place it at Athenry. An alleged poem of St. Columba (*Ossianic Soc.*, vol. iv, p. 252): "To Gann was given the country to the pass of Conglas (Co. Cork), and thence to the Luimneach." From the Dal gCais territory only reaching to Carnary it is possible that the Tuath Luimneach were once strong enough, perhaps with aid from Connacht, to hold them back. The poem gives the country from the Luimneach to Eas Ruadh (Asseroe, Ballyshannon) to Seangan and Geanand.

³ *Revue Celtique*, vol. xv (1894), p. 481.

⁴ "The fleet of Luimneach plundered the Martini of Mumhan," *Book of Leinster. Wars of the Gaedhil with the Gaill* (ed. Todd), pp. 15 and 227, and note, p. xlii. The Martini of Imleach are named in O'Huidhrin's *Topographical Poem (ante 1426)*, line 601, but O'Huidhrin is rarely up to date, and ignores the English occupation and other changes. Todd, quoting from *Book of Lismore*, f. 172, and O'Curry, "Battle of Magh Lena," p. 76n, notes this tribe, and the former suggests that Cluain Comairde (Colman's Well) was in their territory.

Sibenraige, Calraige¹) met at "the hill of the Banshee Aine" at Knockaney. Only the Mairtínigh appear in the Annals, which record their extermination, possibly along the Shannon, by the Northmen in A.D. 845. An important tribe, the Uaithne, called by the Normans Wethney and Owey, extended across the Silvermine Hills in Oweybeg Barony in north-west Co. Limerick, and in Wetheney Tire, or Owey and Arra, in Co. Tipperary. The Tipperary families had migrated from Uaithne Cliach, expelled, say the legends, by the race of Cathaoir Mór. The Muscraidhe Chuire lay in Clanwilliam, round Kilpeacon, while close to them, round Crecora, were the O Colochur.² O'Donovan places the Ara Cliach in "western" Co. Limerick by an oversight; he evidently meant "eastern," and they seem to have migrated into Arra, like the Uaithne. They were Rudrician in descent, and the "Tripartite Life" places them to the east of the Ui Fidgeinti in the land of the Ui Cuanach, now Coonagh; the Saimer or Morningstar River³ divided these tribes. The Aradha were raided (according to tradition) by the warriors of Eoghan, son of Ailill Olam, and are represented in modern times by the family of Ui Ciarmhaic or Kirby, of Eoghanacht Aine.⁴ There were three non-tributary races, evidently later conquerors of "pre-Milesian" tribes—the Aine Cliach, the Ui Fidgeinte, and the Dal gCais. The latter were the kings of the district, under the Provincial King of Cashel, and sat "next his shoulder" at banquets; they led the van in his wars, and covered his retirement or retreat. From the tenth century they alleged an alternative right of succession to Cashel; but during the early historic period there is little or no evidence of their having obtained this position until Mathgamhain, son of Cenedig, was made king. But, in the end, the alleged alternative succession, as attributed to the will of the legendary Cathaoir Mór, was accepted, even by their opponents. Later writers interpolated Aedh of Cragliath (circa A.D. 573) and Lorcan son of Lachtna (circa A.D. 860-900) into reigns of the Cashel line, but there was (at best) confusion with Aedh of Cashel, whose kingship is more than doubtful,⁵ and

¹ Egerton, ms. 92, f. 37 v.

² Black Book of Limerick, p. 100 (in 1299).

This pretty name (which FitzGerald, *History of Limerick*, vol. i, p. 320, calls "The River Dawn") arose from a change of Samhair or Samer to Caimher, "the daybreak" or "Morning Star." The real name seems akin to the Persian word Shamar—"The River," (as the Samur, Samara, &c.), in Irish possibly "the Sparkler" (Joyce, "Irish Names of Places," ser. II, chap. xxvi). It is named in Prince John's Charter to the Abbey de Magio (or Monasternenagh), in 1185 (Cart. Roll II, John in 12, confirms it), "To Cillnarath as the Samir runs from it." The corrupt name occurs in 1655 as "the Cavoyer" (Civil Survey, vol. xxxi, p. 1).

³ 1124, "Ui Ciarmhaic of Ane," Ann. Ulster.

⁵ He was ignored by the historians of the Ui Eacach, or O'Mahony clan, in south-west Cork. Not appearing in the most reliable lists.

who was certainly a different person from Aedh of Cragliath, both being named by St. Brendan of Birr¹ as his personal friends. Lorcan was really a son of Culigan, and was not Lorcan of the Cragliath line. The Dal gCais do not appear in the historic Annals before the reign of Cenedig, father of Mathgamhain and Brian Boroimhe. They appear to have split into two lines about 571, one reigning at Bruree and Singland, the other, at first more obscure, at Cragliath, near Killaloe. The first disappears after a great Norse raid in the ninth century;² the other, by a strange chance of fortune and their own fine qualities, fought till they overthrew the Danish rule, and became kings, first of Thomond, then of Cashel, then of Ireland. Innumerable O'Briens, MacMahons, Kennedys, and others represent them all over the world to this day. The Ui Fidgeinte claimed descent from Daire Cearbha, father of Crimthann mac Fidhe (traditional king of Ireland, but probably only of Cashel), on the borderland of history. The group was extensive; its chiefs were later known as O'Donovan; the chief branch was the Ui Chonaill of Connello (the Ui Chonaill Gabhra, or Ui Gabhra), and the later families of Ui Coilean (Collins), Ui Cinfhaelaidh (Kinealy), Ui Flannabhra (Flannery), and MacInneirghe (MacEnergy), spring from this stem. In the time of St. Ita, the Lady of Killeedy (died A.D. 569), they were under the spiritual rule of St. Senan's Island-Monastery of Iniscatha. Of some other divisions must be noted the Corcoithe or Gortcoyth (Macassa), of Newcastle; the Fir Tamnaighe of Mahoonagh;³ the Corca Muicheat of Corcomohide, and the Ui Baithin (O'Meehans), near Ardagh; the Deisi beg lay at Knock Aine, and Cliu Mail mic Ugaine was to the south of it. Aes Greine was called Est Grene by the Normans; at the time of its greatest extension it was held by the Ui Conaing, or O'Gunnings, and extended from the Maigue up to at least Castleconnell, which fortress, and that of Carrigogunnell, once bore the tribe name as Cashlan Ui Chonaing in 1174; Castro Coning, 1242; and Carraic Ui Conaing, 1209.⁴ The district included Singland, the residence of the Dalcaasian King, Carthann, and where St. Patrick is said to have baptized him and his infant son, Eochaidh Bailldearg. The Caenraighe (whose name survives in Kenry, and whose land lay along the Shannon between the rivers Deel and Maigue) were said to be of the kindred of the Ui Fidgeinti, but may have belonged to the group of

¹ Poem of St. Brenann of Birrha in 571, "both are my friends."

² Circa 830, before the rally of the Ui Chonaill in 839.

³ Must I again point out that Mahoonagh is Magh Tamnaige, Motawny, and Tawnagh in all authentic documents, while Magh Gamnagh exists only in O'Donovan's imagination? Medhonach is another "shanachee rendering." See Proc. R. I. Acad., xxvi (c), p. 234, and Journal R. S. Antt. Ir., vol. xii (1871), p. 629.

⁴ Carrig Gunning, 1580: Hardiman's Map, T.C.D., No. 63.

tribes, kindred perhaps to the Mairtinigh, who were reputedly "Firbolgian," and, at another time, were under the tutelage and apparently connected with the *Ui Cairbe Aobhdha*. Like the *Tradraighe*, across the Shannon, opposite to the *Caenraighe*, but in the present Co. Clare, they probably claimed relationship with different tribes in order to secure protection. They were probably weakened by the raid of King *Fiachra* of *Connacht* at the close of the fourth century, and that formidable monarch got what proved to be his death-wound in their territory. The most prominent of their families were the *Ui Maolchallain* (now *Mulholland*), and the *Ui Rosa* or *Ui Beagha*, whose name appears at *Beagh Castle* and *Iveross* parish, where the *Deel* meets the *Shannon*. The intrusive and traditionally fugitive *Deisi* occupied *Deisbeg* or *Small County*. The later baronies arose (besides the ancient tribal districts represented by *Owneybeg*, *Coonagh*, *Kenry*, and the *Connello* group), *Pubblebrian* and *Clanwilliam* out of the *Tuath Luimneach* (*O gConaing* territory), *Small County* out of *Deisbeg*, *Coshlea* out of *Fontymchyll*, and *Atharlach*. *Coshmagh* is a patchwork formed out of portions of several of the divisions. *Pubblebrian* and *Clanwilliam* recall the fourteenth and twelfth century settlements of the *O'Briens* and *Burkes*. I need say no more of the *Dal gCais* princes, or those of the *O'Donovans*, till I describe the fort groups at *Bruree* and in *Coshlea*. It is only important to recall that the first under the successive princes, *Lughaidh Meann*, *Connall Eachluath* (A.D. 377), and *Eanna Airigthech* (after 400), conquered the central part of the present Co. Clare from the *Luimneach* (or *Shannon Estuary*) up to *Inchiquin Lake* and along the hills of *Burren* to *Luchid heath*. This battle, the site of the decisive victory gained by the first king, extended his realm from *Cahernarry* (*Carn Fearadhaig*) to the present border of *Clare* and *Galway*.

EARLY HISTORY OF THE FORTS.

When we bring together everything definite from the *Annals*, and even from later works, like the early ninth-century *Dalcassian tracts* and the *Lives of the Saints*, we feel that a deep gloom broods over the early history of *Limerick* down to the ninth century. In this period numbers of the forts were made and repaired without, apparently, any record being kept. It is, of course, more than probable that the *Norse* and *Danish* raids destroyed valuable monastic annals at *Killeedy*, *Mungret*, *Iniscatha*, *Cloncoraha*, *Knockpatrick*, and possibly other monasteries; but there must be other reasons, as scattered entries occur from the middle of the seventh century. Let us note a few of these stretches of light and darkness. The *Tripartite Life of St. Patrick*, telling of his journey in east and north Co. *Limerick* in

the first half of the fifth century, mentions the forts of Rathcorbry, Rath Broccain, a cathair at Mungaret, Sangal¹ (Singland), and Dunoacfeine, near Donaghmore. Whatever doubt may lie on the missionary travels of St. Patrick in Munster, the record is at least of minute topographical accuracy, and, in its relation to Co. Clare, gives an early state of affairs. At least such sections as the conversion of Carthann at Singland seem accurate in chronology and probable, for (as I said the low-water mark of the Dal gCais territory, during the encroachments of Connacht, lay at Carnarry (Carn Fhearadaigh),² while the conquests across the Shannon made it almost necessary to the conquering princes to move up from their forts at Dunclaire, Duntrileague, and Brughrigh, nearer to the centre of their extended realm. Again, whoever wrote the account of St. Patrick blessing Corcavaskin from Finnine to the west of Donaghpatrick, visualized the view from the summit of Knockpatrick northward in the blessing.³ There is no trace of late tribal or monastic arrangements or attempts to exalt the Dal gCais, or make St. Patrick convert *Limerick* (such as the late writers made him do for *Dublin*), by giving them any special attention from the saint. Also Breacan or Bresail, the son of the then baptized Eochaidh, was an enthusiastic missionary north of the Shannon in the later Thomond and Aran, about A.D. 480, with no hint that his parents were pagans or semi-pagans, such as we find elsewhere told of other early saints. The Tripartite Life also falls in with that lapse in the Dalcassian princes (from Eanna, *circa* 400, to Dioma, *circa* A.D. 630) in which their territory, at least in central Co. Clare, was so little under control that at last it was ruled by a petty prince, Forannan (of a junior branch), and a mere creature of Guaire, the King of Ui Fiachrach Aidhne.⁴

We seem to have an authentic contemporary stanza⁵ on the two Aedhs of Cashel and Cragliath, (in 571), brief, but very instructive as to the breaking away of the "Killaloe line" from the older territory—a move attributed by the later writers to the election of Aedh to the kingship of Cashel, which is not recorded in any reliable early source. It is noteworthy that no

¹ Was it one of the "hillocks" ("Chnoccaib Saingil") on which O'Rourke's head was displayed in 1088? (Fragment of Tigernach, *Revue Celtique*, vol. xviii, p. 9.)

² O'Donovan places it on the south border, where some person has marked its imaginary site on the Ordnance Survey maps (which are full of such imagination in this region). It was on the other border, and Carnarry was originally Carn Fearadhaig till about 1530. See the De Burgo Rental, &c.

³ He points to the Burren Hills and Echtghe, and to "yon green island in the mouth of the sea" (Iniscatha). All are just visible from the church site, none from any spot near Donaghmore, where some local and other writers have located the place of blessing.

⁴ See Life of St. Mochulla; cf. Tract on the Dal gCais.

⁵ Cited before. It is attributed to St. Brendan of Birrha in 571.

Dalcassian king seems to be named after Eochaidh (434) till after 600. The only Saint's "Life" connected with Co. Limerick—that of St. Ita—has early features. The Life of St. Senan (certainly based on authentic very early material) tells us that Iniscatha and the Shannon Islands were ruled by MacTail (King of Hui Fidgeinte, and the Islands of the Luimneach) and another Prince, Nechtan "Long-head," of the same tribe. In the "Life of St. Ita," the importance of the Hui Chonaill (Ui Fidgeinte) and their extension to the Maigue, which runs out at the bounds of the Tuath Luimneach, tallies with the earlier Life.¹ The Life of St. Maidoc has an interesting account of a brief visit of the saint to our district, which we must study later. In the actual Annals, the Ui Fidgeinte appear from A.D. 646 (perhaps their great victory over the Norse at Shanid preserved their Annals) and Brurigh in 715. Mungret Abbey is named only in 845,² the Luimneach, in 851, and Cluain Comharda (Cloncoraha or Colmanswell) in 844. Not a single King of the Bruree line of the Dal gCais is named, nor any of the Killaloe line till King Cenedid, in the middle of the tenth century. The tale of the last effort of the kings of Connacht to retake, not only the present Co. Clare, but evidently to sweep the Dal gCais out of their own territory, and its frustration by King Dioma, about 620–640, is not in the Annals, but only vaguely recoverable in the material collected by King Cormac mac Cuilenan of Cashel at the close of the ninth century.³ This shows how little survived the great Norse raid of about 830, save legends of prehistoric kings and dry tribal pedigrees.⁴

The literature relating to the forts, however, is better than we might expect. In the Tripartite Life in 434 forts at Mungret and Singland and Dun Bleisic (Doon, in Coonagh, "Dunleisg" in 1559), where Fintan founded a cell about A.D. 580, are implied. In prehistoric legend Dungrot, Dun Claire, Duntri-league, and Dun Eochair Maige, or Bruree, occur.⁵ The fort at Mungret is called a cathair; probably (as so often) it was given to the founder of the church in its garth, in this case St. Neassan (mid-fifth century); Rath

¹ Neither Life alludes to the importance of the Dal gCais, which favours the antiquity of their material.

² It has records back to the fifth century, if the Tripartite Life, &c., are reliable.

³ Perhaps the most serious loss to local (if not to Irish) history and archaeology is that of the Psalter of Cashel. It seems to have been extant in the early eighteenth century, and was in Trinity College Library in 1726 (Introduction to Keating's History); later citations may be from extracts. Much, however, may be extant, but its integrity is always doubtful.

⁴ A good idea of those tribal pedigrees is obtainable from the Tract on the Dal gCais in the Book of Ballymote, ed. by the late Mr. R. Twigge, F.S.A., in the North Munster Archaeol. Soc.

⁵ Accounts of these will appear in a later section of this paper.

Ui Dauaidh is named by Annals of Innisfallen in A.D. 596, Rathguala (if it be Rathkeale) was taken about 620.¹ The battle of Carn Feradaig (Carnary), 621; also Cathair Chinnchonn of Rockbarton in 637;² Aine (the Sid Eoghabhail of the Agallamh, and therefore a fairy fort, and perhaps a temple mound) in 666;³ Senati or Shanid fort in 834; Cathair Cuan in the Ui Fidgeinte territory⁴ was plundered by Brian Boroinne in 973, while his brother King Mathgamhain was betrayed by Donnabhan mac Cathail, Prince of the Ui Fidgeinte, at Dun Gaifi in his house, believed to have been at Brurigh. Brian repaired or made forts (1002–1012) at Dun Cliath (? Aine), Dungrot and Cennabrat (near the Ballyhoura pass, Bealach Feabrat) and those on the islands of Loch Cend, Loch Gair (Gur), and Loch Saiglend, besides the important fort of Bruree or Dun Eochair Maige. Dun tri liag burned by Torlough O'Brien on his way to Thomond from Emly in 1054. Dun Aiched (an unknown fort identified by O'Donovan with Dunkip, but only from its sound), Brughrigh, and the Loch Gur forts plundered in 1086,⁵ while the fort at Cromadh (Croom, perhaps the fine fort on the Maigue bank in Islandmore) was burned in 1149.

THE FORTS IN LEABHAR NA GCEART.—The document, whatever its period (whether early or late tenth century or earlier), which gives most about forts in Munster, is the list of those claimed by the King of Cashel in the Book of Rights.⁶ It is unfortunate that they are not given in regular order (as may be seen by the identified names), and that they rarely have any note or epithet to help us. Having recently been dealing with the districts covered by the Tain bo Flidhais, and enjoyed its vivid and most reliable topographical help, I feel all the more the want of a really helpful document for Co. Limerick. I at once avow inability to elucidate all the list of forts, but it calls for study in this connexion, and must be faced. O'Donovan makes most of his uncertain identifications by mere guess, and curiously expends many notes in

¹ Ann. Ulster, 622; Chron. Scot. 623; Ann. Inisf., 616; Ann. Four M., 618; "Expugnatio Rath Guala," by Fiacha: "well known is the strength of its beams."

² 3rd Fragment of Tighernach, Rev. Celt., vol. xxiii (1902). The battle of Carn Fearadaigh in Cliu, where Failbe Flan was victor.

³ Cathair Chinn Chonn, battle won by the Munster men under Oengus Liathain (Annals Ulst., 639 or 637).

⁴ Aine, Ann. Ulster and Four Masters, 666; Chron. Scot., 663; between the Aradha and Hui Fidgeinte. It was a *sidh* or fairy mound—Sith Cliath, Knockaine (Book of Fermoy, R. I. Acad. Irish Texts, p. 9). Cuan King of Ui Fidgeinte slain in 642 at Carn Chonaill.

⁵ Or 1084, Chron. Scotorum.

⁶ The list (I use the poem as probably older than the prose version) is connected with the legendary *Eric* of Fearghus Scannal, which, however, only applied to Ossory (Book of Lecan, f. 225 b and 229 b). It is attributed to Benean, disciple of Patrick, in the fifth century, but is probably several centuries later.

telling us that certain forts are “unidentified” or “unknown to the author.” For example, “Cathair Chuire close to the sea” in the document is identified with Caher Gel, near Cahirciveen, though scores of Caher-names remain all round the coast. I shall give the identifications, with little comment where I am able to suggest them. Brughrigh (Bruree, Limerick); Muilthead Seanchua (Shanahoe near Muskerry, Cork), RosRaeda; Cluain Uamha (Cloyne, Cork); Cathair Chnuis (?Caherrush on the Clare coast);¹ Cathair Fhionnahrach (a stone fort near Kilfenora, Cil Fhionnabhrach, Clare, perhaps Ballykinvarga²); Cathair Thuaigne; Cathair Ghleanna Amhnach (Glanworth, Cork), Cathair Chinn Chon³ (Rockbarton, Limerick); Dun fir Aen Cholga (?Dunae-nir, Kerry);⁴ Dun Gair (Lough Gur, Limerick); Cathair Meathais; Teamhair Shubha (?Teamhair Luachra); Air Bile (Ardvilly near Ballymacelligot, Kerry), “the great wealthy red”; Aenach mBearrain (Lissrawer, Burrane, Clare⁵); Magh Caille; Ard Chonail “the meeting place of hosts,” Ard mic Chonail⁶ with Ard Ruidhe (Caherconnell, Cahermacconal and some fort on the hills above them, Carran, Clare); Tuaisceart Muighe; Magh Saire, “worthy of reckoning with the three Aras of the sea” (Aran Isles, then part of Clare); Aenach Cairpre (Manisternenagh, Limerick);⁷ Druim Mor; Druim Caein. (These two names very common. O’Donovan thinks the first Dromore near Mallow, Cork. Perhaps the last is Dromkeen, Limerick.) Cathair Chuire “close to the sea” (O’Donovan says Caher Gel Kerry, but most uncertain); Murbolcan (Trabolgan, Cork); Geibhtine (Askeaton, Inis Geibhtine and Eas Geibhtine, Limerick); Grafann (Knockgraffan, Tipperary); Aill micCuirr (Father Hogan says near Knockgraffan, probably only from its following that place, but no order is observed in the list); Magh Naei; Magh nEadarba, Uacht Magh; Caechan Boirne “firm the road for the king”

¹This, with Aenach mBearrain, would claim a fort at each end of the Corcavaskin territory, as the ring of forts claimed in the Corcomroes could hold that tribe in check, had the claim been reduced to reality.

²The Dinsenchas gives a Mag Findabrach (*Revue Celtique*, xvi, p. 69) and Brechmag, perhaps Kilfenora and Brechmag or Breffy in north-west Co. Clare, but so connected with the Meath district as to be very doubtful. For Ballykinvarga see *Journal R.S.A.I.*, vol. xxvii, p. 121. *Proc. R.I. Acad.*, vol. vi, ser. iii, p. 429. There are also a Kilfenora near Fenit and a Ballynavenora in Corcaguiny, Kerry; neither has a fort of outstanding size or importance.

³A battle was fought there A.D. 640.

⁴*Journal R. S. Antt. Ir.*, vol. xlii, p. 307.

⁵It is of unusual size among the forts of that district, measuring 235 feet over all. It has a fosse and inner and outer rings. The fort suggested by O’Donovan is not in Burrane.

⁶*Journal R.S.A.I.*, vol. xxix, p. 374; vol. xxviii, p. 367.

⁷Mr. Goddard H. Orpen, *R. S. Antt. Ir.*, vol. xxxiv, p. 34, identified it with Enach Culi in Corbally, and suggests that it is Rathmore.

(Glencurraun, the "blind valley" of Burren, and the triple fort of Cahercommaun above the end of the "Road of the King's Sons," Clare); the great Murmhagh (? Kilmurvey in Aran, O'Donovan says; some sea plain); Magh Eanaigh Rosa; Tuaim nEidhin "with its brow to the land" (Turlough Hill fort, on the brow overlooking the O'Heidhin territory inland);² Asal (Drum Asail or Tory Hill, Limerick); Eibhleó (Sliabh feilim, Limerick; Lissavoora Fort);³ Ucht na rioghna (possibly Ucht na Morrighna, the Paps, Kerry); Cuilleann (Cullen, Tipperary); Cua (Sliabh Cua, Waterford); Claire (Dun Clare, Limerick); Inneoin (Mullaghinnone, Tipperary); Aine⁴ (Knockaney, Limerick); Ord; Uilleann Eatan; Loch Ceann (perhaps in Co. Limerick near Lough Gur); Ceann Nathrach (Inchiquin Hill, Clare); the Houses of Rafann; Druim Caein; Druim Finghin "of the wood and with it Treada na riogh," triple fort of the king (Kilfinnan ridge and the triple-fenced mote⁵ near it, Limerick); Rath Eire; Rath Faeladh (not Rathgel or Rathkeale as O'Donovan says); Rath Arda⁶ (Rath arda Suird, Rathurd, Limerick); Rath Droma Deilg; Beanntraidhe (Bantry, Cork); Greagraidhe; Orbhraidhe (Orrery, Cork); and Ui Chuirp.

In the intervening ten or eleven centuries doubtless many fort names were altered without record of the change. In later days the only important record about the Limerick forts is the repair of those of the "Islands" of Loch Gair, Loch Cend, and Loch Saiglend and the forts of Dun Cliach (? Aine), Dun gCrot, Dun Eochair Maige (Bruree, and Cenn Abhrat (Claire) by King Brian 1002-1112.

NUMBER AND TYPES OF THE FORTS.

It is impossible to give the exact number of forts on the ground, and very hard even to decide how many are recorded on the Ordnance Survey Maps. In 1840 the latter show about 2150 in the county; while over 1900 appear on

¹ So *Caechan* is translated locally. See *Journal R. S. Antt. Ir.*, vol. xxvi, p. 154. *Proc. R.I.A.*, vol. vi, ser. iii, p. 439.

² *Journal R.S.A.I.*, vol. xxxv, p. 224; xxxvii, p. 405.

³ So identified by Rev. J. F. Lynch with great probability in *North Munster Arch. Soc.*, vol. i, p. 114. Ebliu, daughter of Ghuaire, gave her name to the hill (Mesca Ulad, p. 149, *Dind Senchas of Loch Neagh*, *Revue Celtique*, vol. xv, p. 150). It is on a spur of Slewphelim, and parts of its ramparts remain. The dolmen, Tuamanirvore, near it is also known as Guaire's grave (O.S. 6, 7).

⁴ Aine and Aoife were daughters of the Sea-God, Manannán mac Lír.

⁵ There are said to have been five rings, but the name Treada and the lack of any trace of the alleged two outer rings discredit the statement.

⁶ This favours an early date for the list; the Norse name Siward was affixed to it in pre-Norman times. The rath is barely traceable near the curious round castle of Rathurd. The Four Masters attribute it to one of Heber's chiefs in B.C. 1700.

the new maps. In every place known to me, many are omitted. Roughly speaking, there is a fort to about every 317 acres of land; this is regarded by some as important, but means little, as the distribution is most variable.

RING-FORTS.—As to their size, the largest is the great ring, mounds and wet fosse, in which Cloncagh Church stands.¹ The enclosure is 750 feet to 770 feet across, and has a well in the garth and two near it (O.S. map 37). Several forts from 450 feet to 400 feet remain—Rathanny, 450 feet, with a small central mound and two outer rings (40); Dun Clare, 450 feet to 400 feet (49) Ballykinnaugh, 420 feet by 300 feet (47); Croaghane, near Foynes, now levelled, was 470 feet across east and west, and 390 feet north and south (10). The following are about 400 feet across:—Kilmacat (4); Ballinscaula (40); Portauns, a D-shaped fort (47); Greenish Island (10); Killeen, near Springfield (54); Dromin, or Gortroe (36); Boheyclela (30).

Forts 350 feet to 300 feet in diameter—Graige, oval, 350 feet to 250 feet (38); Ballinscaula, 350 feet, with small central mound (40); Morenane, shield-shaped fort (36); Cottage, of two rings (40); Tullymacthomas (45); Crean (31); Dunganville (28); and Glenma (39).

Forts 300 feet to 350 feet across—Feohanagh, D-shaped (45); Lotteragh, near the castle (45); Coolrus (36); and the long oval fort of Toberyquin.

Forts 250 feet across—Lisduff in Gardenfield (54); Shanid, Lower (19); Garranroe (21); Lisnagilla (28); Crean (31); Ballyelough, two forts (38); Ballylinan (44); Rathcahill (44); Kilballymartin in Mundellihy (45). Lastly, those 200 feet in diameter are—Cloncriffa (45); Arnacrohy (36); Clogher (39); Ballyagran (40); Mount Blakeny (47). The rest are usually about 100 feet across, or from 60 feet to 150 feet; some mere house rings, 40 feet to 50 feet across.

CONJOINED FORTS.—Forts of this curious type, like the Forrach and Teach Cormaic at Tara, are scarce in Co. Clare, but abound in Co. Limerick. This is merely a tentative list—Cloughkeating (13); Griston East (49); Inchacomb (57); Boherygella (31); Raheenamadra (41); Knockaunaskeagh or Garrankeagh (47); Baunteen (59); Ballynemoore (59); Ballinscoola, two very close, but not joined (32); Clogher East, two conjoined and two very close (39); Ballykenny, two conjoined forts and an irregular fort with a D-shaped annexe (44); three are conjoined at Doonainy, on Knockaney Hill (31), Doonakemna, not in line (35), and Cush near Kilfinnane (48). The last (as we shall see in a later section) is a really remarkable group of eleven small forts between Glounacroghery Glen and Kilmurry Bridge near Moorestown.

¹ Journal R.S. Antt. Ir., vol. xliii, p. 251.

CRESCENT FORTS.—It is hard to say with assurance that a fort was originally of this plan, but Dunganville is probably such, also, perhaps, Mountplummer (53); Ardpatrick Glen (56); Lisnafulla (53), and perhaps Dungrot. Some may be reduced to this shape by the falling away of the bank or cliff on which they abut when it is undercut by a stream.

STRAIGHT-SIDED FORTS.—These are not numerous, and are possibly late, if not Norman, in origin. It must, however, be remembered that they occur in Ireland far outside the English settlements, and that some in Austria date back to the Bronze Age. The chief examples in Co. Limerick are—Cowpark (small) and Shanbally (11); Monemoyhill (16); Ballycullane Upper, near Glin (17); Ballymartin (22); Cloghonaowney in Roxborough (13); Shanid Upper (19); Garranard (two), Mundellihy, Adare (21); Skaghaphreegaun, Ardroe (23); Garrynagoora (23); Rathjordan (23); Rathbaun, Ballyhurst; Kilduff and Gortanvally (Dromkeen South) (24); Reens (28); Duckstown and Ballywilliam, near Rathkeale (29); Bohora, near Anhid (30); Rathmore South (31). Lisheen, Ballynanty, consists of three small courts and a large one adjoining, 400 feet \times 240 feet over all (31); Ballyrooga; Rathireedy and Ballybrown (37); Fort Middle, Colmanstown (46); Ballinvreena; Garyderk; two in Glenlara: Ballygillane and Ballyfroota (48); Glenlara (49); Kells, 200 feet \times 150 feet (54); Jamestown, 250 feet \times 290 feet, and perhaps Ballymacshaneboy (55); Lackendarragh, two courts adjoining at one corner; Carheen and a second fort in Cullane (57); Bawnlogher, very small (57); Killeedy Castle (44), and Ballyfeerode, the last a ring-fort with a diamond-shaped annexe.

HIGH MOTES.—Shanid, the castle and mote, are described below, also the second platform-fort (19); Kilinnane (56), with three rings, once (it is said) five, and Grian (24), a shapely mote near Pallas Grian. None of these were called *motes* till recent times.¹ Small and lower earthworks are the motes of Knockaunacumsa, Illaunaholata, and Millmount at Kilmallock, a low, small platform; the railway runs through it. The motes of Knocklong and Bulgaden and the Eagle Mount of Bruree may also be named. The list is probably incomplete. Some are probably sepulchral—for example, Eagle Mount has no fosse, and a small pillar rises on its platform, but only excavations can distinguish between the various uses of the mounds.

CRANNOGS.—One remains about a mile east from Rathkeale, near the railway, and several on the eastern shore of the lake, below the modern Castle of Dromore. Marsh forts are more common. The two islands of Lough Gur are recorded as island forts; one appears as repaired about 1002, but neither

¹ *Mote* in Limerick and Clare is usually a low fort.

has been explored. Lough Cenn, where another island fort was repaired, is supposed to be a marshy hollow, south from Lough Gur, but I find no evidence for this.

PILLARS, WELLS, AND SOUTERRAINS IN FORTS.—Ballycasey (12) and Moorestown (48) have souterrains; two were reputed to exist at Attyflin *liss*. Knockegan, near Askeaton, has an alignment of pillar-stones near it three in number. Bronze Age ornaments were, I am told, found not very far away. Lisnacatha is said to have had five fallen pillars in it. I have not seen it. Longstone, in Grian, has a pillar 9 feet 6 inches high in a fort. Dunmoylan, near Foynes, had two fine pillars about 10 feet high in it, but they were thrown down and broken up. If the Mesca Ulad be correct, a group of pillars stood before the great fort of Temar Luachra, and a notable pillar group on Knockaney Hill, supposed to be the *echlása*, or snow shelter of the horses of the Ultonians.¹

Wells occur in forts at Tobermelly; Clonkagh; St. Brigid's Well in Shangarry (36); Lisaniska (36); Paradise Well in Bauragurrahy fort (57). Carheen has a spring at its south-west angle. Very many others have these and wet fosses, such as the "Island" fort at Attyflin; the neighbouring Springfort and Dunganville. Clonkagh has also a stream into its fosse. A dolmen (of which only a few stones now remain) is in the works of Badgersfort, near Kilpeacon (22).

FEATURES.—Apart from the above and fosses and gangways, few features remain. A wall in two sections and the foundation of a gate at Ballylin are the only ones in a cathair known to me. Most of the ring-walls I have examined are absolutely featureless.

DUNGANVILLE (Ordnance Survey No. 28).

Turning aside from the little village of Ardagh, towards the green slopes of Sliabh Luachra, we pass below Reerasta fort, and come to a bridge and wide gully which shows with what mighty floods the Daar River ran down its gorge when no feller had come up upon the endless oak forests of Luachair, and untold acres of mist-condensing woods caught the moisture of the Gulf Stream. It was 150 feet wide, but was a narrow, shallow stream, choked with iris and ragged robin on the glorious June day of my visit in 1913. The old northern bank rises abruptly for 20 feet to the ditch of the *dun*, and twice as high to its platform. The name implies that a *Bilē*, or venerated tree, grew near the fort, as at Altavilla farther westward. O'Donovan regards Emlygrennan as *mbili ghroidhnin*, called after some

¹ Mesca Ulad, Todd Lecture Series V, vol. i (1889), R.I. Acad., vol. i, p. 17.

sacred tree; but this is more than doubtful, and seems to rest (like too many of his derivations) on a guess, for in the earliest documentary form the confirmation of Prince John's grant to Monasteranenagh, in 1199, calls it Imelach dregingi. Crecora is a more probable example; it is Craebh cumhraide according to Dr. Joyce, who, however, nearly always preferred the local to the record form. Still it is doubtful whether even the local form was consistent, for, in 1839, it was Craobh comhartha, and interpreted "bush of the token," and the site of the venerated hawthorn bush, 300 feet north from the church, was pointed out.¹ These *bilcda* frequently grew on or near forts² as at Magh Adhair, Roevehagh, Craebh Thelcha, and Tullaghog, and even in Christian times were objects of veneration, and centres of ceremonial, assembly, and even devotion, still maintained for trees and venerated thorn bushes in some forts in Munster and Leinster.³ The fort may have been a chief "port" and inauguration place of the Ui Chonaill, as Magh Adhair was of their over-chiefs of the Dal gCais. The earliest record of the name known to me is in one of the Inquisitions, taken after the death of Thomas fitz Maurice, on July 5th, 1298, giving the manor of New Castle in Oconyl. There we find a name group Addouan, Glengort; Rouscath mor and beg; Berne 60s.; Asdare 40s.; Donkonewall 13s. 4d.; Lystenbretenauch (Walshes-town) 40s., &c.; here the form Donkonewall is evidently a wild attempt to reproduce the unfamiliar Irish name.⁴ The name appears as Donnwyll in 1452, in the Geraldine Rental of Oconyll, in OBaithin, with most of the others, notably Asdare (Asteragh in 1299), and Dowathkatyn, and again as Downgonewoolly in Peyton's Survey of the confiscated estates of the Earl of Desmond in 1586 (p. 117b), Glandowngonwell wood being also named (p. 118), with Astaregh, Glanestary, and Doacatteen, all in Toghe Meaghan Woughtragh. Rushkeighmore and begg and Downgonewylly were parts of Castlenoa or Newcastle granted by the Crown to Sir William Courtenay of Powderham Castle, Devonshire, in 1591.⁵ In the Civil Survey about 1657 (I.B. 11. 22) George Courtney held (p. 6) Doonigoniweele, and the Courtney

¹ O'Hudhrin's Topographical Poem; see also Ord. Surv. Letters, vol. ii, p. 387.

² In "The King and the Hermit" Tract, 44 g, 101, T.C.D., No. 8 (ed. Kuno Meyer), p. 12, Marban describes the hermitage as near a "Bili ratha," venerated tree of a rath.

³ "They cut down the Ruadh Bheiteach, and demolished its cashel," 1143 (Chron. Scotorum, &c.). 1099, Craebh thelcha (tree of inauguration of the chiefs of Uladh at Creive, Antrim) cut down. "The Neids were near it, in a *longport*" (fortress) (Ann. Loch Cé). Holy trees grow in forts of Forenaghts, Kildare, and Skeaghavadoo, Co. Clare.

⁴ C.D.I., vol. iv, p. 257.

⁵ Fiants, No. 5586.

Rental (now preserved at Newcastle), in 1701 (p. 4), calls it Dongonyweell, granted to Mr. Edward Tanner, for £30 per annum, with the manor dues of wheatmeal, oatmeal, 1 hogg, 1 mutton, and to keep 12 men for the public service, with 12 garrons. The heriot was the best beast, or £4. Evidently Dunganville was a place of some importance on the Manor of Newcastle.

The fort¹ is carved out of the bank of the river, and is well preserved; it was probably crescent-shaped in plan from the first. The central fort is nearly circular, with two rings and fosses abutting on the bank, on the edge of which is left a causeway, showing that the ditch went no farther, and gives no evidence of the cutting away of the bank by the stream. The map of 1839 shows its outer ditch as circular,² but, so conventional is the marking of forts on those maps, I see no reason to regard it as true. There seem to be no existing reaches of stone facing, but other forts of Connello are nearly all faced, and the great steepness of the banks (though the earth is tough clay) may prove that such facing formerly existed here. The rings are thickly covered with hawthorns and elder, and the only entrances through the outer ring and fosse are by irregular cattle paths. The outer ring is only 4 feet high, but looked far loftier from its high bracken and plumes of foxglove. It is 10 feet thick. The fosse is from 6 to 10 feet wide below, and 4 to 5 feet deep. The next ring is 9 to 10 feet thick, and about 5 feet high over the outer fosse, but 13 feet over the great inner one, and 15 feet thick at its base. The main fosse is 15 feet wide below, and (save where filled up to the west by the inner rampart) it is almost uniformly 13 feet deep, and is wet even in dry weather. Where it is partly filled it is 6 feet deep for a short reach, but rapidly deepens to 9 and then to 12 feet. It is from 42 feet to 45 feet wide at the field level. The garth is 16 feet above it, the summit of the central rampart 20 feet to 26 feet, or 4 feet to 10 feet higher than the garth. It is 26 feet thick at the platform, and 9 feet on top. The interior is 140 feet across inside, and 174 feet north and south, to 199 feet east and west, over the rampart. The whole earthwork measures 325 feet east and west, and 252 feet north and south. In the centre is a low mound of stones 9 feet wide, its south wing 27 feet, and its east wing 57 feet long, L-shaped in plan. A similar mound, parallel to the south wing, and 21 feet from the east one, lies to the north. The peasantry believe that there are caves under these, but that they were never open in the oldest memory. From the summit is the fine outlook of those gentle hills westward and to the ring of blue mountains in Clare and east Limerick—

¹ Plan, Plate IV.

² If correct, this would be very like Glenfoyle rath (Kilkenny Soc., R. S. Antt. Ir., vol. i, p. 246), which, however, had no river to cut away the lower garth.

Slieve Bernagh, Thountinna, on Lough Derg, Kimalta, and Knockfierna, raising its cairn-crowned dome and long ridges to the south-east.

The fort being on the east slope of Luachair, probably once among oak groves,¹ and with its high rampart, deep ditches and alleged souterrain, tallies closely with the features of a famous fort in a wild romance. We may well ask was it Temhair Luchra,² the fort of Curoi mac Daire? O'Donovan's identification of Temar with "Bealahantouragh," near Castle Island, does not agree with the Mesca Ulad.³ There is a ring-fort in Ballahantouragh (Kerry O. S. Map 40), about three miles east from Castle Island, but the slopes face *westward*, the place is shut in, and nothing in the minute topography of the Mesca tells of any long march through the hills many miles away from the sunward slopes of East Luachair. No plain exists in its valleys such as the Mesca Ulad presupposes. In brief, if it or Conreagh Fort (quasi Conroi!), Tonreagh on the old maps, be Temar, then, unlike most of our legends, the topography of our only detailed document is radically wrong. To give one single example, the hills rise 1345 feet to the north-east. and 400 feet to the south, and 879 feet to the east of Ballahantouragh, which is about 250 feet above the sea, instead of their slopes facing the rising sun. Irish writers are hopelessly addicted to repeating outworn catchwords *ad infinitum*. Hennessy's identification is far more probable, but still the Mesca Ulad does not quite tally with Portrinard, which his equation of the legendary tale with the note in the Annals of the Four Masters and the letter of Pelham compelled him to adopt.⁴ All the allusions to this Temar are extremely vague. Pelham, in 1580, marched towards Newcastle, and on to Glin, thus passing before (if not near) Dunganville.⁵ From Glin he passed through Glenlogher, and camped at Dowau. The Annalists say: "proceeding to Temar Luachra." All turns on whether they had more than a general idea as to the position of Temar, or

¹ As shown by "Daragh" names near it.

² Like Bregian Tara, it was named, according to the Dindsenchas (Revue Celtique, vol. xv, p. 444), after Tea, daughter of Lugad, son of Ith, wife to Eremon. It was the burial-place of the Kings of the Clann Deadad.

³ Mesca Ulad (ed. Hennessy). The curious lecture on Co. Limerick topography, delivered by Cuchullin, on Knockainy Hill, is on p. 17.

⁴ However, he states cautiously that it was "in a triangle, the base of which" extended from Newcastle West to Duagh, the apex being at Glin. The Onomasticon Goedelicum accepts O'Donovan's identification without giving anything to explain the entire contradiction between it and the Mesca Ulad. After leaving Portrinard Pelham passed on to Tralee (letter in Carew Calendar, March, 1580, p. 236, vol. ii). The Castle Island way seems a meaningless and unnecessary circuit, and unlike other marches of the period (past Licksnaw). He more probably went past Listowel and Abbeydorney.

⁵ He started from Newcastle, and ravaged as he went, all along "the foot of Slewlogher," till he came to Shanid. Carew Cal., vol. ii, p. 236.

only knew that it lay in these hills, and used it for a "district mark." The Cath Fintragh and the Dindsenchas are vague; the Agallamh is still more vague;¹ there only remains the Mesca Ulad to help us. Temar, according to it, lay on the slopes of East Luachair (pp. 19, 21, 23, 25), over a glen noisy with wild fowl, with forts on a ridge beyond a stream eastward.² The Ultonians came straight from Aenach Clochair, at Monasternenagh, to it; they crossed the Maigne, but are not said to have crossed the Deel³ or the Feal, or to have ascended the great hills (p. 21). They came on the same track as Queen Medbh, from the north-east, and over the side of Ir Luachra, from the east.⁴ The sun rose over the slopes of Ir Luachra "against" (opposite to) the Dun and its side (pp. 25-27). The watching Druids fell off the high rampart, one inside, the other outside. The assailants passed up the glen (p. 27). The fort had a "tulchín" or flat top. There was a subterraneous house under wooden and iron houses (p. 41). The enemy advanced to the *liss*, and camped on the green to the east of it. Cuchulaind leaped on to the summit of the *liss* (p. 47), and on to the bridge (*i.e.* the fosse lay inside an earthwork). Alill was on the rampart of the *Dun* watching them. After the capture and plunder of the *Dun* it was never again inhabited, down to the date of the story at least. So that all we can say is that in all the above particulars⁵ Dunganville fulfils the conditions; but whether it was of the first century before Christ, or, if so, whether it was the famous fort of Curoi, has yet to be established. At least it has the broad prospect implied in its name (Portrinard has not), and it adjoins a plain⁶ (and not a narrow river valley like Portrinard), as Temar is said to have done.

¹ Agallamh, *Silva Gadelica*, vol. ii, p. 176, Caeilte and Diarmuid secure the antlers of the red stag on the open lands of Luachair to the south, and the latter brings his to Temar Luachra; p. 181, Finn comes from it to Aine, and p. 238. The latter again rather supports the statements in the Mesca Ulad that the road to it led north of Knockfierna. If the Cladh Ruadh trench, a road from Kerry Head (*Journal R. Soc. Antt. Ireland*, vol. xl, p. 126), led to it, and it were not at Portrinard, the western road may have crossed the hills where the railway runs from Listowel to Barna Pass.

² Three forts lie east of Dunganville in Kilrodane, and one in Enaghgare, across the stream. The latter name implies an *aenach*, or assembly, such as was no infrequent appanage of important early centres.

³ Which does not allow us to attach importance to the silence of the tale about the Feal.

⁴ Perhaps the high ground near Ardagh, if Dunganville be intended.

⁵ Save that no pillars remain before (east) of the fort, but note removal of pillars at Dunmoylan fort, Old Abbey, and Duntrileague fort. Three stand before Knockegan fort near Askeaton, and several near the promontory fort of Lissadooneen, on the Shannon, in Kerry (see *Journal R. S. Antt. Ir.*, vol. xl, p. 15).

⁶ "The plain of Teamhair Luachra" (*Mac Gnimartha Finn*, *Ossianic Soc.*, vol. iv, p. 291). "Luachra was a flowery plain" (*Dindsenchas*, *loc. cit.*, of Temar Luachra.)

RERASTA FORT, ARDAGH (O.S. 28).

Between Ardagh village and Lisbane are several forts, usually small, typical rings, with fosses, and inner and outer mounds. The Cathair, which gave its name to Cahermoyle, is a massive defaced ring-wall, rarely 5 feet high, but 10 feet to 12 feet thick, with coarse facing blocks and large filling. The earthen fort of Rerasta lies on higher ground than the village of Ardagh. It is much overgrown, and, the site being in meadows at my visit, I could only examine it from a path. A deep fosse, nearly straight, runs along the north face, and is over 6 feet deep and 10 feet wide, which, with its massive mound, show it to be a place of importance; the east and west are levelled. The place measures about 300 feet across, being somewhat oblong, and is only interesting from the find in its rampart of the beautiful chalice which has spread the obscure name of Ardagh round the antiquarian and artistic groups of the world. The chalice, as is well known, dates before A.D. 900, and is a calix ministralis;¹ it is formed of gold, silver, brass, bronze, copper, lead, and enamel; with it were found a very fine brooch and a bronze chalice. Early Irish literature, in which we rarely look in vain for light on archaeological phenomena, abounds in mention of objects found in forts and mounds. The great sword, 2 feet broad, dug up in Emania in 1111;² the head-piece of Smethra, brasier of Oengus of Dun Oengusa, found in Sid Cruachain; the diadem of Loeguire son of Luchta, in the Sid Findachann and the draught-board of Crimthann Nia Nair, in the rath of Usnech, may suffice to be named. The Agallamh has also much to tell of the finding of buried treasure. To select a few extracts, a mass of rings and bracelets are found in a burial mound and the excavation of a cairn, in which a shield, weapons, and a skull were found, and gold hidden in a rath's high fence at the base of a monolith.³ The Ardagh objects may have been hidden for safety in the Norse wars, as the shrine of St. Patrick from Armagh was brought to this county for safety, by the comharb who was captured by the Gentiles at Cluain Comharba (? Colman's Well, in this very county), and was taken in the Danish ships to Luimneach in 845.

LISBANE (O.S. 19).

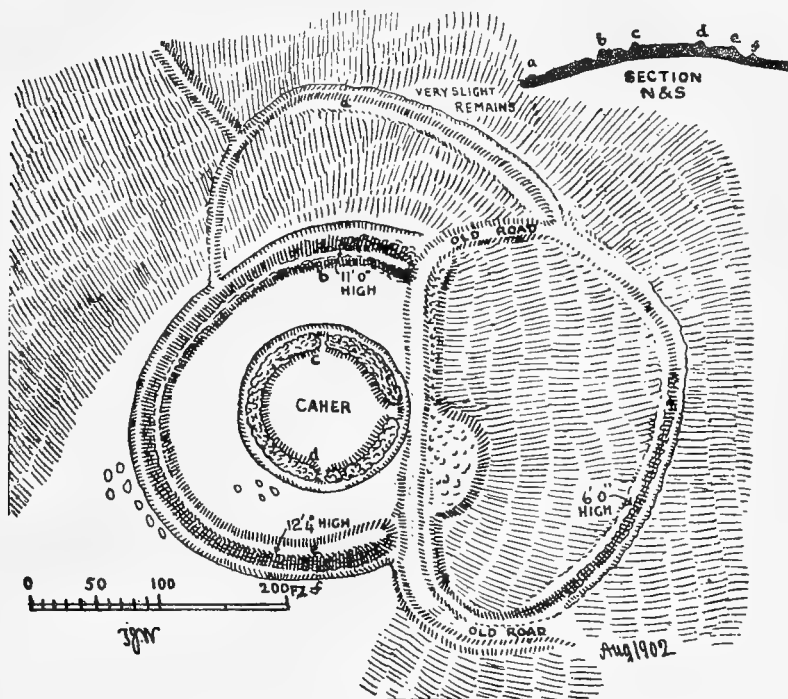
There is a very conspicuous, though low, hill, close to the ruined church of Kilbradran, or, as many call it, "Kilbraydon." Certain terraces appear on its

¹ From which, before the cup was withdrawn from the laity, about A.D. 1000, the deacons and congregation communicated.

² Chron. Scotorum and other Annals.

³ *Agallamh*, *Silva Gadetica*, vol. ii, pp. 126, 153, 237.

summit, which prove to be a remarkable fort,¹ probably the Lisbane of the townland name, and most inadequately marked on the maps. Kilbradran was granted in 1253 to Athassell Abbey, and is named as Kylbraderan in 1291. As the fort was faced with shining grey limestone, the name Lisbane, "white fort," was very descriptive. From its dominant position in the plain from Ardagh to the Shannon, and from the hills of Luachair to the Deel, it was probably one of the chief forts of the Ui Chonail; it gives interesting evidence of extensive modifications, even in early times. The original work



The fort of Kilbradran, County Limerick.

was a strong cathair on the summit; its rampart was of earth 15 feet to 12 feet thick, stone-faced inside and out; it is still 5 feet high, with a slight fosse, 7 feet to 9 feet wide, outside it, probably rather used to supply filling for the wall than to add to its defence. The garth is slightly oval, from 91 feet to 94 feet across. At a lower level, from about 48 feet to 70 feet outside the central fort, was a second stone-faced mound 19 feet to 21 feet thick and 9 feet to 11 feet high, also with a fosse, only 6 feet to 8 feet wide and a few

¹ First noted by J. Windele.

feet deep. It has been altered; an ancient road runs through it, from near the east edge of the central fort, and goes eastward in two branches down to the plain. It is banked along the flanks of the annexe, beyond which it is not traceable. Below this road was the terraced outer enclosure, which was replaced by a later and larger one farther down the slope, about 300 feet north and south and 187 feet across; its mound is 4 feet to 6 feet high and thick, with the usual slight fosse 6 feet wide. To the north of the main rings is a similar annexe 118 feet across and 5 feet high. The fosses were carefully kerbed by large limestone blocks. The mounds are dotted with a few weird old thorns leaning from the west wind. There is a fine view from Shanid to Rathkeale, with the Galtees beyond, and to the north the grey terraced hills of Mullach and Glasgeivnagh, outposts of the Burren of Co. Clare.

LISMAKEERY (O.S. 19).

Lismakeery was another appanage of Keynsham Abbey down to the dissolution. Its church is first named in the Papal Taxation of 1302-7. Not to follow the history, the name appears as Lismakyre, Lisvikerry, Lismackerry, and Lismaedyrrye in 1591, and Lissakaire, alias Tryenlassamaddirry, in 1609.

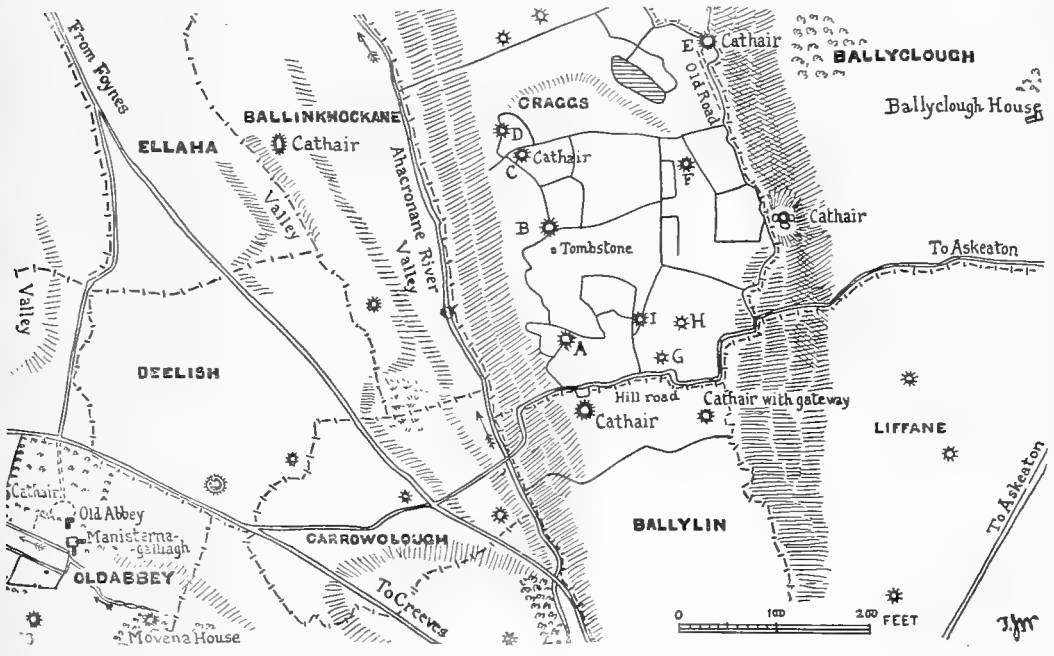
The fort is a fine earthwork on a low green hill, and is a low mote or platform 16 feet higher than the fosse, and from 12 feet to 14 feet above the field, save to the south, where it is only 6 feet high. It has no outer ring, and the inner one rises hardly 2 feet above the garth to the west and south-west, most being levelled. The fosse is 6 feet to 8 feet wide below and 10 feet to 12 feet at the field level. The fort rises very steeply 16 feet, with a base of 6 feet, or 1 foot in $2\frac{1}{2}$ feet to 1 foot in 3 feet; much of the stone facing remains to the south—small, beautifully fitted masonry; the north facing has been very recently thrown down, and lies in heaps in the fosse. The platform is oval, 114 feet north and south by 102 feet east and west. The late fifteenth-century church stands beside it, making a conspicuous object from Askeaton Station. The low, broken castle is in the fields below. From the summit, Shanid Castle is just visible over the ridge of Craggs, and the great keep of the Desmonds' Castle, with the clustering houses of Askeaton, is well seen.

On the opposite side of the Craggs ridge, in Ballinknockane, is a fort of curious plan in outline like a barrel, the north and south ends straight, the sides slightly curved. It is 120 feet long north and south, and from 54 feet to 90 feet across, a few feet high; it had once a stone wall 9 feet thick, now nearly removed.

CRAGGS GROUP (O.S. 19).

This is an interesting group of true ringwalls on a long ridge of thicket-covered crags, like a portion of the Burren of Co. Clare. It lies in Ballylin and Craggs, running to Creeves and Ballyclough. It is best reached by the steep old road across the ridge, with Ballylin and Liffane to the south, and Craggs and Ballyclough (names most descriptive of the rocky fields) to the north.

“The Caher” of Ballylin lies nearly south of the sharp bend of the road



Craggs Group of Forts.

in that townland. It is the only fort wall with two sections so far noted by me in Co. Limerick.¹ The type is believed to be the “*murum duplex*” of Caesar, and occurs in counties Clare, Kerry, and Galway (in some cases even with three sections), as well as in Great Britain and France, in the Alpes Maritimes. Though only 3 feet to 5 feet high, the well-marked foundation of a gateway remains to the south-east. The passage tapers from 3 feet 10 inches outside to 4 feet 6 inches inside, as at Croaghateun and Ballyganner South, in Co. Clare, the sides elsewhere being more usually parallel, or with an offset. The piers are of large, well-laid blocks, like the facings of the walls. The two

¹ Plate III, No 3; and plan, Plate IV.

sections measure at the gateway 5 feet 6 inches and 2 feet 10 inches, the last being outside; usually the outer is the thickest, but similar inversions are at Caheridoula and the crescent two-walled fort in Carran Valley, Co. Clare. The wall has a slight batter, usually of 1 in 6. The garth and even part of the walls are so overgrown that I cannot give the dimensions. The wall is at other points 8 feet to 9 feet thick. A second but more defaced Cathair lies to the west edge of the ridge, also in Ballylin—a mere overgrown ring of small filling, 12 feet to 15 feet thick and a few feet high, with only a few facing blocks *in situ*, and early house enclosures inside.

In Craggs, to the north of the road, the forts are greatly levelled. (A) The first lies in the south-west corner of the townland near a conspicuous ruined cottage, and is a mere ring of filling on a low, craggy knoll. (B) Northward from the east is an earthen fort with a slight fosse, the ring barely 4 feet high and 8 feet thick, in an almost impenetrable bramble-brake and thicket. Between these forts, in a shallow, grassy depression, one finds with surprise a tombstone inscribed: "This stone was erected by Bridget Molon . . . / in memory of her husband James Heal/y who departed this life / Mi 18 A.D. 1791, aged / 62 years." I have found such derelict monuments elsewhere; they were possibly cut on the spot, and for monetary reasons or procrastination never taken to the grave. (C) Farther north is the foundation of a Cathair on level crag. (D) To the N.N.W., in the next field, is another ring-wall 5 feet 8 inches thick and 5 feet high, probably later than the other forts, though with fairly good facing, larger outside (as usual) than the inner. The western half is destroyed. There are no house sites visible, so it may be a bawn for cattle. The maps show yet another ring to the north-east, which I could not reach in the thickets.

From this point a grassy depression runs eastward with an overgrown ridge to the south. In it is a large temporary pool covered with unusually large-leaved "silver weed" (on my visit, September, 1908) and shimmering like water. At the north-eastern edge of the townland and the main ridge lies a large cathair (E) levelled to supply material for a boundary wall. It is a ring of fairly large filling, rarely over 3 feet high, 120 feet over all, and with remains of large fine facing, evidently the chief fort of the settlement from its size and choice site on a bold knoll with a fine outlook to the Shannon and Co. Clare. The ruin is much hidden by hazel, holly, and sloe. The trace of an old road runs southward along the edge of the ridge beside the fort on the west. (F) Another fort lost in a thorny thicket I could barely locate. Three reputed forts are on the low ridge near the old road in the south-east corner of the townland. (G) The first is a nearly levelled late cattle-pen; (H and I) are mere foundations. The whole group, though so defaced, is a

very instructive and typical settlement, and brings Limerick into comparison with the better-preserved settlements in Clare and Galway.

In Ballyclough on a furze-grown bold knoll, on the edge of the slope, another fort stands about 220 feet above the sea. It is a ring-wall, 7 feet to 8 feet thick and 66 feet over all, with two faces of coarse masonry and large filling. On the north side of the garth is a hut site, and a large slab like a dolmen cover lies on the slope to the north-west. Three loops of wall adjoin the cathair, making it like a three-petalled flower in plan.

The forts near the public roads along the foot of the ridge are all greatly defaced. A small, very defaced house-ring is at the cross-road to Old Abbey. A foundation of large blocks, 3 feet to 4 feet long, lies to the south of the road to Rathkeale, near Creeves Cross. The last was once a very fine ring-wall. Fort names abound in the district—Lismeenagh, Duncaha, Bally-doorlis, Dunmoylan, Lisbane, Lissatotan, Lismakeery, Lissakettle, Lismeale, Lissard, Lisnacullia, Lisnamnaroe.¹

FOYNES AND OLD ABBEY GROUPS (O. S. 10. 19).

Going southward along the hill road above Corgrig from Foynes along the ridge crowned by Knockpatrick church and farther on by Shanid Castle, we find several earthworks worthy of study. In Knockpatrick fort the garth is terraced upon the slope rising 3 feet above it up hill and 10 feet down hill to the east. This type is characteristic of the Tulla-Bodyke district in East Clare. The garth is 87 feet across the ring, 12 feet to 15 thick, with traces of a fosse of equal width. Near it is a large oval earthwork called Croaghane. The south-eastern part in Sroolane has been destroyed since 1839 by an "improving tenant."

The fort is more or less levelled, and only to the north-west is the fosse traceable. It measures 390 feet north and south and 470 feet east and west, measured on the garth. Two large ring-forts, one 250 feet over all, the other nearly levelled, lie farther back in the hills in Shanid Lower, and a finely situated one about 150 feet across, 528 feet above the sea in the same townland on the summit of Knockoura, a normal ring and fosse, 110 feet inside and 200 feet over all; no fort remains in Doonskerdeen.

OLD ABBEY.—This group is centred by the venerable and very interesting thirteenth-century Augustinian Nunnery of St. Catherine of O conyll,² with

¹ Inquisitions of Exchequer, Co. Limerick, No. 10. No. 11, ann. xxi and xxvi Eliz., 1578, 1583, mentions a fort Cahergony or Catheryon, or Corgraig. I found no trace of a ring-fort at Corgrig House.

² See its history by Professor John Wardell (R. S. Antt. Ir., vol. xxxiv, p. 41. and a description, p. 53).

its fish-pond, garths, gates, bridges, and pigeon-house. The subject of my paper confines me to the forts. In the large field to the west of Old Abbey lawn, are a really curious set of enclosures¹ connected with two ring-walls. Unfortunately a high park wall runs through the more eastern, and was built out of its material, every trace being swept away for 7 or 8 yards beside it. Subsidiary enclosures and a late house-site lie to the east of it in the lawn. The cathair had a rampart 9 feet thick, with two faces of large stones usually over 2 feet long and 18 inches deep and high. It is 105 feet across the garth and 123 feet over all, regularly curved, and with a house enclosure to the west. Strange curved enclosures of doubtful age and at least twice modified run westward for 244 feet; north of them was an oval hut, 18 feet by 19 feet. About 400 feet from the east fort is another foundation of a cathair of large but coarser blocks. Its wall is only 6 feet thick (another late indication in ring-walls). It is about 80 feet north and south and 68 feet east and west, and has a curved annexe, 10 feet deep to the west. Its wall is 15 feet thick, and possibly part of an older fort replaced by the lesser ring. The blocks are from 2 feet to 3 feet long and 22 inches thick and wide. The whole network recalls settlements at Hazelwood, Rossroe, and Caheridoula in Co. Clare. In the field next the pigeon-house is a stone 3 feet 6 inches high and 3 feet by 2 feet wide. It is possibly an old bounds stone.

LISNABROCK.—“The Badger’s Fort.” A fine well-preserved typical ring-fort of earth thickly overgrown. It measures 81 feet inside, 117 feet across the ring and 135 feet with the fosse, and is 5 feet to 6 feet higher than the field and 11 feet to 12 feet above the fosse; it is level with the field to the west. It is 546 feet round in the fosse, and was faced with coarse stonework of large boulders and slabs. The fosse is 10 feet to 16 feet wide below, and the outer ring 4 feet to 7 feet high inside, and about 12 feet thick, being levelled with the field. The revetment rose as a ring-wall above the garth, in which its large inner blocks are *in situ*; part has fallen into the fosse. Like so many other forts, this illustrates the valuelessness of the oft-proposed division into forts of earth and stone.

In the same field is a defaced ring-wall or rather a bawn of stone-walling to the east, but of earth faced and topped with stone to the west about 5 feet high and 12 feet thick, of fairly good masonry, partly rebuilt to protect a grove of beech trees inside.

LISSADINWARVE.—“The fortified fort of the dead.” No signs of burial are visible, nor any tradition about its grim name. A low, stone-faced earth-

¹ Plate IV.

ring, 90 feet inside, its ring 18 feet to 20 feet thick, and only 5 feet above the fosse, which is 9 feet to 12 feet wide. The outer ring about 12 feet thick, but spread in parts to 24 feet.

Between the convent and Movannan is a fort similar to the last in every respect, but with a deep fosse, 8 feet to 9 feet deep, with inner and outer rings, 12 feet thick, and completely overgrown. It is on the edge of a marshy field, possibly once a shallow lake, with rank vegetation and little minnow-haunted brooks.

DUNMOYLAN.—The place bore its present name Dunmoylan in 1291, being held by Raymond de Valle (Wall), and was an interesting dun 90 feet across, with two lofty pillars 8 feet to 10 feet high, leaning towards each other. They were broken up, and the fort levelled, being just traceable. There was a small circle of pillar-stones (now also removed) in Old Abbey next Deelish, and as I noted a line of three pillars at the fort of Knockegan.

DEELISH.—North of the Creeves road opposite the north-east corner of Old Abbey. It is also an earthwork, faced and topped with stone. Most of this has been removed, and a massive modern ring-wall built outside the old works. There is a small limekiln in the fosse. The fort is 99 feet inside; a few heaps of stone lie half hidden in bracken in the garth. The main ring is 23 feet to 27 feet thick and 9 feet high; the fosse is 9 feet wide and 5 feet deep; and the outer ring is 7 feet to 9 feet thick. The gateway faced the south, and had a gangway across the garth. The walls had two faces with small filling.

SHANID CASTLE (O. S. 19).

In a study of typical forts I wish to confine myself as far as possible to their description and to such part of the history of each place as may elucidate the name and the structural history and identity of the remains. This, however, compels me to study an attempt to bring what I hope to show are entirely irrelevant documents into that history. To begin with the undoubted records, they are most scanty. The name Shanid, *Sean ait*, means the old residence or house-site. It first appears in history as *Senati*, where the Ui Fidgeinti and Ui Chonail Gabhra, in a fierce battle, routed the Norsemen with great loss, in 839.¹ In Norman times, though records of the grants of other territories and the foundation of many other castles have reached us, none, so far, have been recovered about Shanid or the Geraldine settlement which played so great a part in the history of Co. Limerick.

¹ Annals, e.g. Ann. Four Masters, Ann. Ulster, &c.

Before 1230, Thomas fitz Maurice held it,¹ and with sufficient permanence to grant part to the See of Limerick to found a convent at Old Abbey. In 1282, John fitz Thomas "held a cantred in Cunyl called Shenede."² Only in 1298 is the actual castle named to locate a smith's house.³ John de Londres was its Baily in 1346. Shanid is the leading manor in Oconyll in the valuable rental of 1452; from which time, in the Inquisitions and Surveys of the Geraldine estates, in 1584-5, and the Down and Civil Survey, in 1655-7, and every record, till the barony was broken into Glenquin and Shanid, it is always located in Connello. Despite the obscurity of its history and the greater importance of Newcastle and Askeaton from about 1280 onward, it was recognized as the chief and oldest house of the Geraldines,⁴ and their battle-cry "Shanid aboo!" is thus marked as very old.⁵

Mr. Goddard Orpen⁶ endeavours to get extra light on the origin of the Castle and Manor by arguing that Shanid was the castle of the district of Fontimel. He supposes that I identified Ardpatric, in the 1199 grant of Fontimel, with Ardpatrick (now Knockpatrick) in Ui Chonaill, and connects the name Fontimel, or Fontymchill, with Tinnakilla, to the north-west of Shanid. He suggests that I, and subsequently Rev. John Begley, had no reason for locating Fontimel as round Kilmallock, except our unfounded belief that Ardpatrick was the church of that name in Coshlea. As his paper on the Limerick Castles forestalled the third part of my Newcastle paper on the lesser castles and the forts,⁷ and I am using the notes on the earthworks in this present essay, an opportunity now for the first time arises to correct these statements and explain my position.

I identified Fontimel and the Ardpatric named in its earliest grant with the district round Kilmallock, but from its mention along with Askeaton regarded the Ardpatrick Castle named in the "Ware's Annals" or "Dublin Annals" as Knockpatrick. My position in the latter case cannot be maintained, but had it even been correct) could not possibly be held as referring to Shanid. As we see, even in the short résumé of the history of Shanid Manor, the latter is always located as in Ui Chonaill, never in any other

¹ Senode Church was granted, *circa* 1230, Black Book of Limerick, p. 1087. Old Abbey lands granted to the nuns. Sir Thomas held lands there from the Bishop of Limerick. Cal. Doc. Ireland, vol. iv, p. 259.

² Cal. Doc. Ir., vol. iii, p. 429 (1282).

³ *Ibid.*, vol. iv, p. 258.

⁴ Carew Calendar of Papers (1580), p. 236, Pelham's letter.

⁵ Irish war cries were abolished by Act of Parliament of Henry VII, but such Acts had little effect.

⁶ Journal R.S. Antt. Ireland, vol. xxxix, pp. 37, 38.

⁷ Promised, but never redeemed, Journal R.S.A.I., vol. xxxix, p. 368. The present section (though omitting the notes on the peel towers) supplies its place so far as the earthworks are concerned; the castle notes are given to the North Munster Arch. Soc.

cantred. It is very probably a fortification of about 1200. As to Fontimel¹—the name in the best attested, because local, records is Fontymchyll or Fontimychyll. The constituent is evidently Michael, Michil, not that of Tinnakilla, *Tigh na cille* according to O'Donovan. Tinnakill in the 1336 Rental is Kyllsynkyll.² I based my former identification on the elaborate and detailed record of the Crown cases in the Plea Rolls of 1289,³ and not merely on the accidental fact that it and “Ardpatric were connected in the grant of September 6th, 1199.” In this document,⁴ Thomas Fitz Maurice was granted “five knights fees in the *tuath* of Eleuri, which is in the cantred of Fontimel,” and five others in the *tuath* of Huamerith in Thomunt, which is upon the water of Sinan.⁵ Ardpatric, with the residue of the cantred of Fontemel, was granted to William de Burgh. Were it even (as I believe) absolutely certain that this is Ardpatrick near Kilmallock, and not Knockpatrick in Connello, the evidence would not be decisive, as the places might be apart, like Fontemel and Huamerith; but my identification rested on another document, which leaves one in no doubt. We have the returns of the Crown cases in 1289, the first return (27) for O Carbry and Fontymchill, the last (40) for the latter cantred alone. The roll (No. 13), though faded (and in the latter part badly injured, as too often, by ill-managed attempts to revive the writing with acid), is legible. I have to thank the Deputy Keeper, Mr. M. J. McEnery, for his kind help long since, and on re-examination for this paper.⁶ In this, Fontymchyll⁷ cantred is connected with Kilmallock and

¹ The chief references, besides the grant of 1199 and the Plea Rolls of 1289, are the (Irish) Rolls Close, anno li Edw. III, No. 73; Patent, anno xx Edw. III, No. 50, anno xxxii, No. 10, anno v Ric. II, No. 167.

² Bishop Maurice de Rupefort's Rental, Black Book of Limerick.

³ Plea Rolls No. 13, anno xviii Edw. I, mem. 27, mem. 40.

⁴ Rotuli Chartarum (ed. T. Duffus Hardy, 1837), anno i John, p. 19.

⁵ Cal. Documents, Ireland, vol. i, No. 93, No. 95. Eleuri is perhaps “Clari,” Clare, or Dun Clare in Coshlea.

⁶ It is a record of much social interest. The escapes of prisoners, helped or hindered by the Irish chiefs, on the borders, the seeking of sanctuary in the churches, and the violent deaths, are curious. Besides the usual disasters common where bridges were rare, of people falling off horses (worth 5s.) and getting drowned at Gortskathe, in mid stream, and children falling down wells, there are three cases of men sitting by fires and scalded to death by boiling pots (worth 4d.), and the “murder” of a man (Hugh White) by three sows (worth 4s.). In these hopeless times we can only wish that the Plea Rolls were properly calendared for their vivid pictures of the obscure dwellers in this country. I may note that *capitulum* may simply be a “chapter” or heading in the record, and not a chapter or council of the “union” of parishes, as I regarded it formerly, the words “chapter of Fontymchyll” being equivocal.

⁷ I prefer this form to *Fontemel*, which is evidently remodelled on the name Fontemeln Dorset. So also Escloun on the Shannon was changed to Askelon! What originated the cantred name I have no means at present to discover, unless it be Kilmihil, near to and south of Kilmallock, with a well Tobervekeel (see Ord. Survey Letters, vol. i, p. 313), not far from Knockaunacumsa note.

Kilcoana (Kilquane) churches; officials of Emly intruded; a robber from Adare fled through it to Cork; Eecholy McEnery took other felons who fled from it, and certain robbers took refuge with Donell O'Brien, evidently of Aherloe.¹ The villate of Dermeho (Darrach Mochua) was fined for harbouring a man who stole two horses from one Nevin O'Cahel, and it supplied a juror, who, of course, was resident in Fontymchill cantred. When, however, we turn to the other record (eliminating all the names in O Carbry), we have even weightier evidence, for there appear fugitives to the churches of Kilmallock (Kylmehallock), Effyn, Duntrileague, and Dermeho;² one of the jurors (necessarily of the district) lived at Effyn; inhabitants of Kilmallock appear as residents. Among the jurors is a Martell of the family of Mortellstown, near Kilfinnane, and a Meagh of Villa Marriott (and Kilmallock). One of the Bailiffs of Fontymchill is Robert Fot, of a family owning Fotisland, Kilmallock.³ Another juror, Thomas Russell, is of Sawyn (the ancient battlefield of Samhain, or Knock Sawna, at Tankardstown) and the villate of Stephen Godmond (Downgodmond⁴ in Particles Parish), all appear. This seems decisive that Ardpatrik in the 1199 grant was, like all the other places, in Fontymchill, and that Fontymchill closely corresponded to the west part of the barony of Coshlea, with Kilmallock and part of Coshmagn west and south of the Morning Star.⁵ This entirely disposes of theories based on the alleged "doubtful location of the cantred of Fontymkill," and establishes the correctness of the identifications of Rev. John Begley and myself, that "it lay to the west and south-west of Kilmallock," and to "the south-east" of that place.⁶ In the same way, I may add that Huamerith is not the alleged unidentified place depending on "the slight indications given by O Huidhrin," for (as the Cathreim Thoirdealbhaigh⁷ shows) it lay near Sixmilebridge in Co. Clare. I write this only to clear a point of topography

¹ Domhnall Carrach Ua Brian was chief of the Cuanach line late in the thirteenth century.

² For these places see Proc. R.I. Acad., vol. xxv, pp. 419, 423-7, and vol. xxvi, pp. 173, 189.

³ Black Book of Limerick, p. 68, *circa* 1234, and Fotislac in 1290, p. 67.

⁴ There was also a Stephenstown in Athenessie, 1655 (Civil Survey, vol. xxv, p. 11).

⁵ In addition Fontymkill was one of the eastern cantreds which supplied the levy of hobilers and foot soldiers against Mac Brene of Nathirlagh (Aherlo), the western half beyond the Maigne not being assessed (Pat. Roll Irish, anno xxxii Edw. III. 1358, No. 10).

⁶ Mr. Orpen's paper, *loc. cit.*, p. 87.

⁷ "They coasted along the Cratalachs . . . entered into Ui Aimrid . . . past hazel woody Baile maoil caisil towards . . . Cullane," May, 1318. It extended (as we see) to the Shannon in 1199. There was another sept of Ui Aimbrit, which, perhaps, was a colony from Thomond, or sent a colony to the debatable land at Tradraighe. It dwelt in Ciarhaighe Luachra, or North Kerry.

and to eliminate irrelevant material for the history and origin of Shanid Castle as a Geraldine appanage from a record of fact.

Shanid in Elizabethan times enjoyed the reputation of being "Desmond's first and most ancient house of Castle Shenet," as Pelham writes in 1580.¹ Three years later the great Desmond Roll (m 11) notes "two old ruinous castles of which one is situated on the top of a very high mount, and is girded with a barbican, which, with the castle, has almost fallen."² Presumably this happened by a natural collapse of the unstable ground on top of the mote.

The remains consist of two earthworks,³ a rath of normal type, and a high mote, with a bailey, very Norman in arrangement.⁴ Probably these were two Irish forts, raised and modified by the early Geraldines. The massive simplering-tower is probably of the early thirteenth century, and it is hard to fancy how, had all the mote been thrown up after 1199,⁵ it could have been consolidated enough to bear the weight so soon. The Tower possibly rested on an older mound, which the Geraldines had capped with new earthwork. The bailey, too, is singular. Though there was plenty of room for a larger one on the fairly level summit between the rath and the mote, it runs down a steep slope, with a perverseness more characteristic of Irish fort-makers than of Norman designers; yet the characteristics imply, I think, an undoubted Norman origin. In various earthworks elsewhere in Ireland we have absolutely certain evidence that high platform forts were gradually raised, and that high-ringed forts were filled up inside to make such an example as the rath of Shanid. This took place in Irish districts as well as in the Norman settlements, and such modifications should always be looked for and, if present, be described. The perfect preservation of the Shanid mote and rath gives no evidence, except, perhaps, at the eastern edge of the mote summit, which may imply that the raising stopped short of that segment, but may equally have been crushed down and broken by the fall of the walls and the removal of the debris.

¹ Carew Cal. Papers, 1580, p. 236.

² Public Rec. Office, Dublin, mem. 11, "Duobus veter. et ruinosis. castell. quorum unum situatum sup. culmine montis altissim. et circuit. barbicano quod cum castello fere cecidit."

³ See plan on Plate IV.

⁴ The occurrence of two forts on a hill is common in Ireland. I find an apposite case in France (Cal. of Documents France, p. 359). Aug., 1142, "The two Castle motes of Mount Barbe, i.e., the greater and the lesser." "Two raths that were on a *tulach*" are named in the Agallamh (Silva Gadelica, ed. late S. H. O'Grady, vol. ii, p. 216).

⁵ A mote and bretasche were made at Roscrea so late as 1245 (Cal. Doc. Ireland); but such structures were long made and used. Wooden castles were taken in Co. Clare, 1558 (Carew mss., Cal. I, p. 276). The palisaded mote of Ballysonan, Co. Kildare, was stormed in 1648 (Journal R. S. Antt., 1856-7, p. 111). So late as 1654 the people of Ardscull petitioned for a grant to fortify the mote there (Journal Kildare, 1896-9, vol. ii, citing General Order Book, Public Rec. Office).

The Castle mote is a beautifully shaped, conical mound,¹ giving in its external surface no clear evidence of having been raised at various periods. Its height is 35 feet to the north, 38 feet to the east and west, and 33 feet to the south-east. It is about 69 feet across on the level summit and 411 feet round its base, its slope rising exactly 1 in 1. The fosse is 12 feet wide in the bottom; going round from the apparent gangway and gate to the south-east, we find it deepened from 70 feet westward, further deepened at 150 feet on the south-west side to 234 feet on the west, rising up towards the east. It is a fine and well-shaped fosse 12 feet below the berm, or terrace, 9 feet to 10 feet wide; outside this was a breastwork, now about 4 feet high, whence the outer slope, some of it the untouched hillock, falls in a steep slope to the plateau.

The Keep² has a massive wall 10 feet 2 inches thick and about 30 feet to 40 feet high, of strong grouted rubble, with neat outer facing, circular inside, and polygonal outside, with shallow faces. It has stepped battlements, with arrow-slits, and the late Mrs. Morgan, of Old Abbey, remembered a small turret³ on the summit, to the west, long since fallen. The tower has no vaulting, or ledges, or corbels for floors; the south-west segment is standing; some of the rock-like masses of the rest lie on the platform or rolled down the mote. One to the north-east has part of a window; part of a second window is in the tower to the north-west. The heads were turned over small planks, not over wicker centres. There is no ramp up to it, nor any sign of a gate. The barbican wall ran round the edge, in part actually touches the keep; the lower part had formerly an exaggerated batter to hold it back from the slope; but this is all quarried out; above the batter it was 4 feet thick; it is 10 feet at the base, and has an extremely narrow summit and thin-stepped battlements, with slits like those of the keep. There were probably wooden platforms inside, as otherwise soldiers could scarcely have moved on the top with safety. The wall is 9 feet 6 inches high to the platform; much of it now leans outward to an alarming degree, and is badly cracked; soon all must fall down the mote, as so much has done in the past. Where the outer ring is

¹ Plate III, fig. 1. Plan and sections, Plate IV.

² I hope some specialist will face the age of the ring-tower. The indications favour its early origin when contrasted with the Castles of Askeaton, Adare, and Newcastle.

³ This appears in a little sketch on the Hardiman map, No. 56 Trinity College Library, circa 1590. I have seen a sketch of the feature, probably late eighteenth century, but cannot recall its owner. The exaggerated view in Hall's "Ireland, its Scenery and Character," vol. i. p. 374, does not show it (circa 1840, "Green Sc."); nor is it mentioned even in FitzGerald's and MacGregor's "History of Limerick." The best printed description is in that work, vol. i, pp. 363-4.

made (and not carved out of the hillock) it is 6 feet or 8 feet high; near the gate, some trace of the stonework of a pier remains.

The Bailey adjoins this to the north-east. Its garth has two terraces, a steep slope falling from the fosse-ring (there 12 feet high), the ring being 30 feet to 33 feet wide; the upper terrace is 18 feet; then there are a slope 15 feet long and a wet terrace, also 18 feet wide, covered with flaggers (yellow iris). The last terrace is raised 13 feet above the fosse in the middle, but 18 feet at the south-east corner; here is a small mound 12 feet across, probably the base of a bretesche or wooden turret. In it is a deep cut, probably made by some persons under the common obsession of treasure-seeking. The opposite corner was formerly covered by bushes, now removed, which led me to suppose that a similar mound was concealed there; but there is none. The fosse is 9 feet wide and 4 feet deep, save at the south-west turn, where, cutting through the hill edge, it is again 13 feet deep. It runs boldly up the slope to the great fosse-ring on either flank of the Bailey, getting nearer to the field level till it runs up the ring, only marked by its outer mound, which is about 6 feet wide and 3 feet to 4 feet high. The Bailey itself is 99 feet long to the north-east and 90 feet along the south. There seem to be old road-tracks up the hill to the east and north-east. The mote, the rath, and another ring-fort farther away to the S.S.E. are in line.¹

THE RATH is a fine earthwork,² standing on the slightly higher southern ridge of the plateau, and affords the fine view of the Castle, here reproduced. Its platform is about 125 feet over all and 110 feet inside; slight, low ramparts surround it, and two remarkable cross-mounds³ (with a pit in the centre), which I can only suppose to have been the base of some timber structure or tower. The platform is 18 feet to 20 feet high, the sides rising 1 in $1\frac{1}{2}$ or 2. The fosse is 8 feet to 9 feet deep and 10 feet to 12 feet wide below. The next ring is about 10 feet high and 7 feet wide on the summit, and 15 feet to 17 feet thick at the base. The outer fosse is 21 feet wide above, 12 feet below, and 5 feet to 6 feet deep, with a slight outer ring 5 feet wide on the top. There are no houses, or hut-sites, or any ancient mounds on the plateau

¹ Can they be "the high mounds" of "Shanagolden in Connello" (Sengualan Cladhaird Ua Connaill) in *Cathreim Ceallachain Caisil* (ed. Bugge, pp. 30 and 87), the scene of one of Cellachan's fifteen battles with the Danes? For a good description of Shanid, see A. Curry's account in *Ordnance Survey Letters, Co. Limerick, vol. ii* (ms. 14 E 8 R. I. Acad.), pp. 30-33. Gough in his *additions* does not name the mote.

² Plate III, fig. 2. Plan and section, Plate IV.

³ Described in Hall's "Ireland," vol. i, p. 375, as "a rather deep cut"—a curious mistake even for that most inaccurate work.

between it and the Mote.¹ The usual view from the hills of Luachair, magnificent in its spaciousness, lies to the east, out to the circuit of distant hills and Knockfierna; but few outstanding features are visible. Shanagolden church and village, Rathkeale, Kilbradran, the Shannon, a rich and diversified country (more English than Irish in character), lie below it. In the estuary farther away, the tall, narrow beliry of Canons Island Abbey rises within its great ring-fort, with the Clare mountains beyond.

Local tradition has little to say of Shanid, save that it belonged to the Desmonds. Romantic visitors transfer to it all the picturesque story of that powerful house and its tragic ending. To say that Shanid is nearly without history brings angry contradiction from such persons; but none have yet answered the counter-challenge and given any account but a few dry, isolated facts. The origin, history, and destruction seem equally buried in silence or forgetfulness.²

¹ Peyton's Survey, p. 99, mentions a chapel—"capellam nuper edificatam cujus mura tantummodo nunc remanent." Senode was granted by Thomas fitz Thomas to the see of Limerick about 1230 (Black Book of Limerick, p. 106). No ruin or tradition is traceable.

² My thanks are due to the late Col. Morgan of Old Abbey, Mrs. Wardell, his sister, and Professor John Wardell, who in various ways helped my work in Western Co. Limerick; and to Mr. M. J. M'Enery, Deputy Keeper of the Records of Ireland.



Fig. 1.—Shanid Castle and Mote from the Rath.



Fig. 2.—Shanid Rath from the Mote.

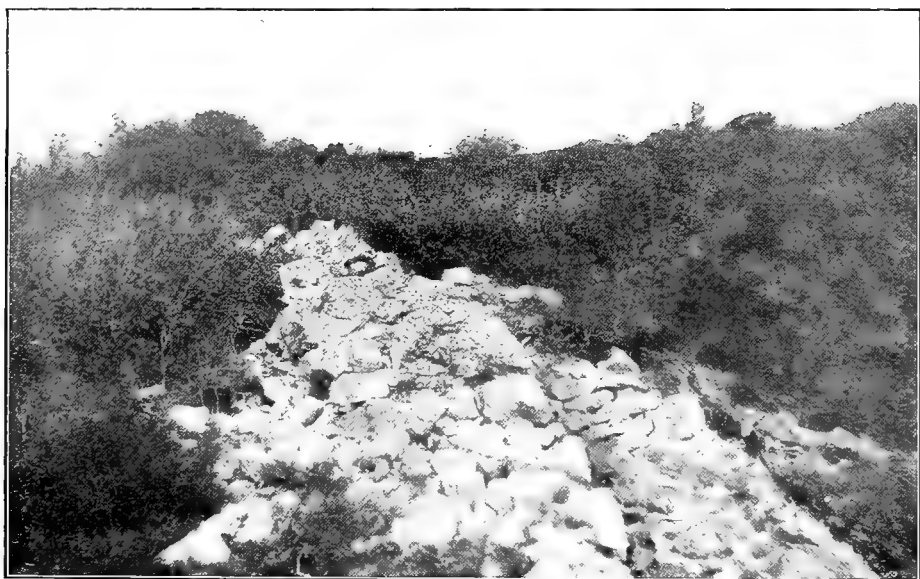
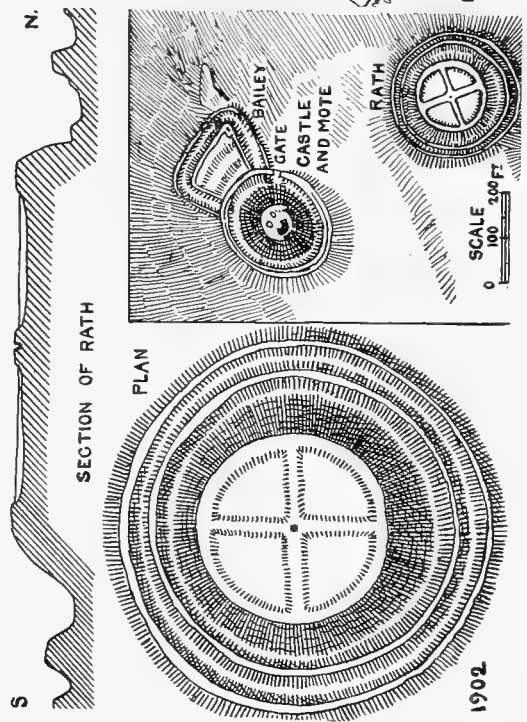
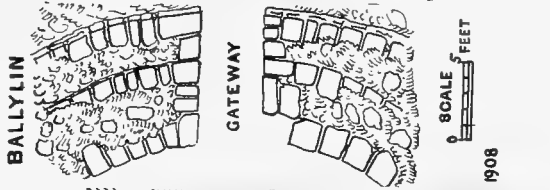
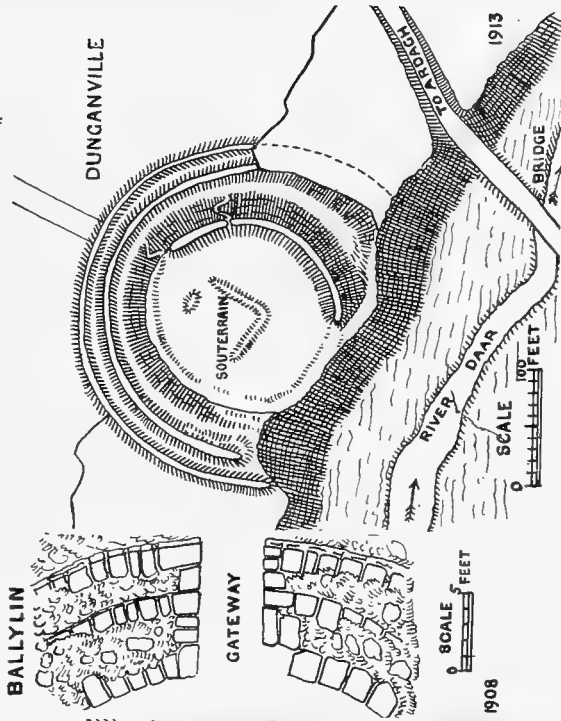
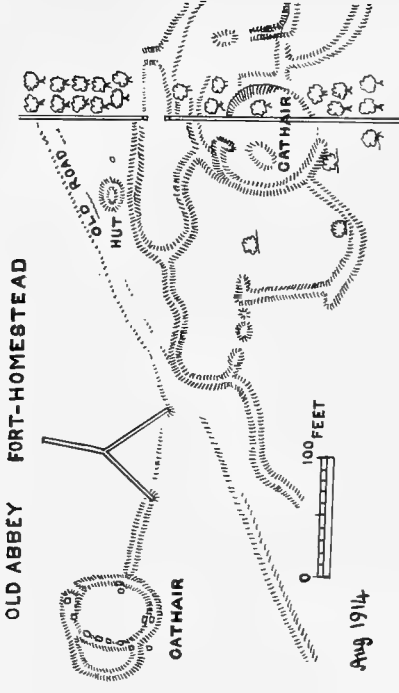
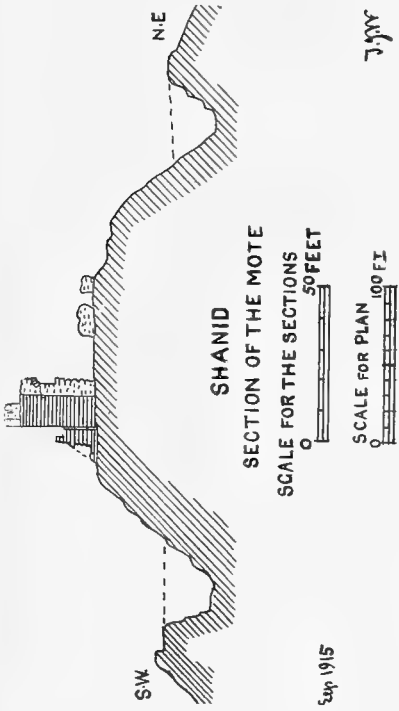


Fig. 3.—Double-sectioned Rampart, Ballylin Cathair.



Typical Earthworks and Ring-walls, Co. Limerick.

III.

NOTES ON IRISH MONEY WEIGHTS AND FOREIGN COIN
CURRENT IN IRELAND.

BY M. S. DUDLEY WESTROPP.

PLATE V.

Read JANUARY 10. Published MARCH 16, 1916.

As at a comparatively early period coins were thin, irregular in shape, and liable to be broken and clipped, the necessity for ascertaining their true weight arose; hence the employment of money weights.

Later on, the introduction of foreign coins as legal currency made their use still more necessary. In England various proclamations relating to money weights occur from early in the thirteenth century. A proclamation of the year 1421 directed that Bartholomew Goldbeter, John Paddeslie, and John Brenner, of London, goldsmiths, and John Derlyngton, campsor and assayer of the Mint in the Tower of London, and Gilbriht Vanbranburgh, engraver in the same, should be authorized to make weights for the noble, half-noble, and farthing of gold sufficient for the several cities and boroughs, and to form ten puncheons for each weight, five of them with an impression of a crown, and the other five with a fleur-de-lis. And in the year 1422-3 John Bernes, of London, goldsmith, was appointed by the King to make the money weights for the noble, half-noble, and quarter-noble, and to stamp them according to the statute of the year 1421.

Similar proclamations were issued during the sixteenth and seventeenth centuries. One of October 12th, 1587, ordered that no counterfeit pieces of current gold coin be received, or any piece lacking the just weight. And in order to enable all persons to ascertain the lawful weight, the Warden of the Mint was ordered to prepare upright balances and true weights of every piece of gold lawfully current in the realm, to be struck with an 'E' crowned.

With regard to Ireland, references to weights for weighing the coin do

not carry us back beyond the seventeenth century, though it is very probable, from earlier proclamations and Acts of Parliament relating to coin and to foreign coin current in Ireland, that money weights were used as early as the fifteenth century. During the fifteenth and sixteenth centuries there are several Irish Statutes relating to the clipping of coin and to the currency of foreign coins in Ireland; but I have not been able to trace any definite reference to the use of money weights at this period.

The following Irish Acts refer to the currency of foreign coin in Ireland, that of 1460 being apparently the earliest on that subject:—

38 Henry VI, c. 40 (1460). That, whereas in this land foreign coins had not been usually received, to the great hurt of the said land: It is ordained by authority of the said Parliament that the Rider of lawful weight be received at and of the value of four shillings; the Ducat of full weight at and of the value of four shillings and twopence; the Lion of lawful weight at and of the value of four shillings and twopence; the Burgundy Noble at and of the value of six shillings and eightpence; the Crown at and of the value of three shillings and fourpence; and the Salute of lawful weight at and of the value of four shillings and twopence. And if any of the said gold coins or the English noble, half-noble, and quadrant of gold be not of the full weight, to be abated accordingly to the rate, and so to be received.

16 Edward IV, clause 43 (1476). Whereas divers gold coins of divers lands have come into this land with divers foreign merchants, which gold is not valued or set at any suitable value in this land, to the great impoverishment of the merchants and inhabitants of the same. It is ordained by authority of said Parliament that the Rider fine and good be received and passed as current in this land of Ireland of and for the value of five shillings of the money of Ireland; the Ducat fine and good of and for the value of five shillings; the Lion fine and good of and for the value of five shillings; the Crown fine and good of and at the value of five shillings; the Crusado fine and good of and at the value of five shillings; the Burgundy Noble of and at the value of ten shillings; and the demi-Noble and quarter of the same according to the same rate; the Salute fine and good according to the rate of five shillings. And if any of the said gold coins want any part of the weight of the right standard of the same, it shall abate so much as is wanting in the payment.

28 Elizabeth, c. vi (1586). An Act against counterfeiting or forging such kind of gold or silver of other realms as is not the proper coin of this realm, nor current in payment within this realm.

In the year 1618 a proclamation was issued authorizing, in the case of England and Wales, the Master of the Mint, and in the case of Scotland,

Charles Dickinson, sinker of the irons in the Mint at Edinburgh, to make weights for the coins then current. No mention was made of any maker of weights for Ireland. The earliest reference to the making of money weights for use in Ireland I have been able to find belongs to the year 1632. On December 20th of that year a proclamation was issued appointing Sir Thomas Aylesbury maker of money weights for England, Ireland, and Wales. Aylesbury's patent bears date October 20th, 1632; and by it he was appointed maker of money weights for life at a yearly rent of twenty shillings. The weights were to be ready by January 26th following, and no other kinds were to be issued after that date. (Rymer's Foedera.)

Money weights occur bearing on the obverse the number of pennyweights and grains, and on the reverse the Spanish arms. One I possess bears the name of Philip IV of Spain (1621-1665). These were probably used in Ireland at this period, the weights agreeing with those of the silver dollar or piece of eight and its subdivisions. (See Plate V, No. 1.)

The following Acts of Parliament, proclamations, notices, etc., referring to money weights and to foreign coin current in Ireland, are set out chronologically:—

July 10th, 1641. The Lords Justices and Council to Secretary Vane. In order to remedy the absence of coin in the Kingdom, we have, after consultation with foreign merchants here and with goldsmiths, thought of issuing the enclosed proclamation enhancing the value of foreign coins. We desire the King's advice on the matter. A valuation of foreign coins, gold and silver, to pass for current in the Kingdom of Ireland at the following rates and weights:—

The golden Rider or Horseman of the Netherlands, weighing	
6 dwt. 12 grs. with 3 grs. allowance,	£1 2 0
Half ditto with 2 grs. allowance.	
The golden Rider or Horseman of Scotland, weighing	
3 dwt. 6 grs. with 2 grs. allowance,	£0 11 0
The half ditto with 1 gr. allowance.	

The golden Albertus of Brabant, weighing 3 dwt. 14 grs. with allowance of 2 grs., 11s. 0d. The half ditto with allowance of 1 gr. The golden Pistolet of Spain, weighing 4 dwt. 10 grs., 15s. 0d., with allowance of 6 grs. for double Pistolet and 2 grs. for half ditto. The silver Cardescu or quarter-Crown of France, weighing 6 dwt., 1s. 8d. The half ditto accordingly. The Testoon of Portugal, weighing 6 dwt., 1s. 4d. The half ditto accordingly. None of the above shall pass in Ireland unless they weigh as above mentioned.

The true value and present value of the foregoing coins :—

	True Value.			Present Value.		
	£	s.	d.	£	s.	d.
Rider,	1	1	8	1	2	0
Horseman,	0	10	10	0	11	0
Albertus,	0	10	7 $\frac{3}{4}$	0	11	0
Pistolet,	0	14	9	0	15	0
Cardescu,	0	1	6	0	1	8
Testoon,	0	1	3	0	1	4

(Calendar of State Papers, Ireland.)

August 16th, 1642. Ordered that a committee of this House shall repair to the Lords Justices and make known to their Lordships the great loss received by all sorts of His Majesty's subjects in this kingdom by the making of Spanish Ryals of eight, current here for fourteen groats, whereas the same are of much less value in England, and in many places not current there : and, therefore, to move their Lordships to make these Ryals current only for thirteen groats, if they have the power to do so, otherwise they will think of some way of making the same known to His Majesty, to the end that the same may be current for thirteen groats only after Michaelmas next. (Irish House of Lords Journals.)

November 5th, 1652. Kilkenny. Whereas there has been a custom of late years in this country of passing current clipped English money, and likewise all Spanish money called Ryals or pieces of eight, with many other sorts of foreign coin, at a far higher rate than true; ordered and declared that it may be lawful for all persons to refuse clipped English money unless tendered according to the true value by weight. That no sort of Spanish money called Ryals or pieces of eight, nor Rix, Flemish or crosse dollars, nor any other of that kind that have usually passed at the rate of five shillings, be henceforth enforced in payment for any more than at the rate of four shillings and sixpence, and the half- and quarter-pieces proportionately. Likewise, that no Philip's money called Ducatoons, usually received for six shillings, be enforced in payment for more than five shillings and sixpence and the half Ducatoons proportionately. That no French money called Quardeques shall be enforced in payment for or above the value of four shillings and sixpence, and no other foreign coin to be enforced in payment. (Public Record Office, Dublin.)

In the year 1652 the Irish Council made several representations to England with reference to the great quantities of counterfeit and clipped English money and base Peru pieces which were brought into Ireland.

The Peru pieces which were current for four shillings and sixpence were upon assay found to be not worth more than two shillings and fourpence.

January 29th, 1660-1. A proclamation by the Lords Justices and Council. By the King's authorization, and for removing the evils which ensue to the country by reason of the scarcity of coin in the kingdom, we declare that the following gold and silver coins now in or to be brought into the Kingdom shall be allowed and shall pass in all payments to and from His Majesty as current money, and as if they were sterling money, at the following rates:—

GOLD.

	Dwt. grs.	£	s.	d.
The Golden Rider,	6 12	1	2	6
The half Golden Rider,	3 6	0	11	3
The Spanish or French quadruple Pistole,	17 8	3	4	0
The Spanish or French double Pistole,	8 16	1	12	0
The Spanish or French single Pistole,	4 8	0	16	0
The Spanish or French half Pistole,	2 4	0	8	0
The Double Ducat,	4 12	0	18	0
The Single Ducat,	2 6	0	9	0
The Spanish Suffrain,	7 2	1	8	6
The half Spanish Suffrain,	3 13	0	14	3

SILVER.

The Mexico or Seville Piece of Eight, }	17 0	0	4	9
The Six Dollar or Cross Dollar, }				
The half do. do.	8 12	0	2	4½
The quarter do. do.	4 6	0	1	2¼
The half quarter do. do.	2 3	0	0	7¾
The Portugal Royal,	14 0	0	3	8
The half-Royal,	7 0	0	1	10
The quarter-Royal,	3 12	0	0	11
The Ducatoon,	20 16	0	5	9
The half-Ducatoon,	10 8	0	2	10½
The quarter-Ducatoon,	5 4	0	1	5½
The old Peru Piece and French Lewis,	17 0	0	4	6
The half do. do.	8 12	0	2	3
The quarter do. do.	4 8	0	1	1½

The piece commonly called the Cardescu to pass as it now does.

In case any of the pieces of gold or silver made current, as above, shall want the weight therein laid down, there shall be allowance given of two

pence for each grain in the gold coin, and three pence for each dwt. in the silver coin. When the defects are so made up, they shall pass as if they were sterling and current in England. Unless the above coins are of the above weight, or unless such defects be made good, nobody shall be compelled to accept them in payment. Mayors, Sheriffs, Portreeves, Bailiffs, Officers of Corporations, and Justices of the Peace shall decide any difference arising according to the foregoing rule. (Calendar of State Papers, Ireland.)

A proclamation, September 19th, 1662. Recites the proclamation of January 29th, 1660, and states that although the Mexico plate-pieces, commonly known by the name of Pillar pieces, be of equal fineness and greater weight than the rest of the Mexico or Civil pieces, yet many of the inhabitants of this kingdom do refuse to accept the same in payment of money according to their respective values, we do, therefore, hereby publish and declare that the said pieces, commonly known by the name of Pillar pieces, and the half-pieces, quarter-pieces, and half-quarter-pieces thereof were included within the intent of the late proclamation, and were thereby made current at several rates answerable and proportionable to any other of the said Mexico or Civil pieces, Rix dollars or cross dollars, mentioned in the said proclamation, according to the respective quantities thereof. The proclamation further states that all the several kinds of the Mexico pieces shall pass as current money in Ireland at such weights and rates, respectively, as the said Mexico or Civil pieces, Rix dollars or cross dollars, are by the late proclamation respectively to pass. Also that no persons shall be enforced to receive any of the Mexico pieces in payment unless the whole pieces shall weigh seventeen pennyweights, and the lesser pieces in proportion.

Among the manuscript letters of the Earl of Essex, Lord Lieutenant of Ireland, is one to Mr. Secretary Coventry, dated February 20, 1674, enclosing a proclamation for the King's approval, to raise the value of the Portugal Crusados, weighing fourteen pennyweights, from three shillings and eight pence, to three shillings and ten pence; and the half Portugal Crusado, weighing seven pennyweights, to one shilling and eleven pence. (Simon, Essay on Irish Coins.)

A proclamation. April 9th, 1677. Whereas we are informed that divers merchants, strangers, and others have lately brought into this kingdom several pieces of Dutch coin commonly known by the name of New Lyon dollars, stamped with a lyon rampant on the one side, and a man with an escutcheon covering his lower parts, and a lyon charged in it on the other side, and coined in the years 1674, 1675, or 1676, with the motto, "Confidens Domino non movetur;" and that they have dispersed and uttered the same in payments at the rate of four shillings and ninepence. And whereas we have

caused some of the said pieces to be tried and assayed by the assay master of this city, and do find that the said pieces are worse than His Majesty's standard of England by two ounces five pennyweights in the pound weight, and that these new dollars are intrinsically worth no more than three shillings and fourpence farthing and (in proportion to the Spanish money commonly current here) worth three shillings and nine pence; and whereas none of the said pieces have been allowed to pass as current money in this kingdom, we the Lord Lieutenant and Council declare that no person or persons shall be required to take or receive any of the said pieces in any payment or payments whatsoever.

1680. A proclamation by the Lord Mayor of the City of Dublin. Whereas by Act of State made and set forth here in the Kingdom of Ireland bearing the date January 29th, 1660, the piece of eight of Mexico or Sevil, the Rix dollar and the cross dollar weighing seventeen pennyweights is to pass current payment for four shillings and nine pence, the half piece weighing eight pennyweights twelve grains to pass at two shillings and four pence half-penny, and the quarter piece weighing four pennyweights six grains to pass at one shilling and two pence farthing; and whereas by like Act of State bearing date February 3^o, 1667,¹ the piece of eight commonly called the French Lewis weighing seventeen pennyweights is likewise to pass at four shillings and nine pence the half and quarter piece rateably as in the former to pass in like manner as in the aforementioned as by the said Act of State, relation being thereunto had, doth and may more at large appear. And whereas yet, notwithstanding the plain and positive proclamation or Act of State, through diversity of weights used by many persons for the said coins in this city, the franchises and liberties thereof, great disturbance, trouble, and loss doth arise to His Majesty's good people, and for that it is notorious that most weights used for the said coins do exceed the standard by several grains. These are therefore to give notice to all persons within this city, the franchises and liberties thereof, that do keep and use any weights for the fore-said occasions, that I have authorized and appointed Richard Lord of Copper Alley, in the city of Dublin aforesaid, goldsmith and sworn assaymaster, to make and have in readiness for all such persons as will try the same, exact weights for the several coins according to the said Acts of State; hereby requiring the said Richard Lord that he suffer none of the said weights to pass out of his hands without first bringing them and every of them to the exact standard according to the said Acts of State, and do seal and impress them with the arms of the city of Dublin and mottoes like unto those he has already

¹ This proclamation has not been found.

left with me,¹ which shall remain in the New Hall of the said city, to compare all others his weights by; hereby requiring the said Richard Lord to demand for each set of weights he shall expose to sale but one shilling sterling and no more. And I do hereby in His Majesty's name strictly charge and require all manner of persons whatsoever within this city, the franchise and liberties thereof, that have or shall have occasion to use or employ weights for the aforesaid coins, that they and every one of them use no weights in paying or receiving of the said moneys but what shall be tried and examined by the standard and sealed and impressed as aforesaid, as they will answer the same at their peril.

And I do hereby also further authorize and require all and every of the aldermen, deputy aldermen, grand juries, and constables of this city within their wards or franchises of this city to make due inspection from time to time in the said affair; and the rather because many complaints have been made of the deceit and fraud used by weighing of money otherwise than by the said Act of State, and the weights (with the arms and above mottoes are required); and that if they or any of them shall find any or other weights in the hands of any person for receiving or paying of such or the like money within their respective wards or liberties of this city not marked and mottoed as aforesaid, to take up and secure the said weights which are to be brought before me to be tried and examined by the said standard: as also to bring before me the person or persons using the same, to the end there may not contrary weights be used in this city, and for so doing this shall be to them and every of them a sufficient warrant. LUKE LOWTHER. (Calendar of Ancient Records of Dublin. Vol V.)

The National Museum and the Royal Irish Academy possess a few weights bearing the name of Richard Lord, but most of them are dated 1670. From this it is apparent that Lord was making the money weights before the Lord Mayor's proclamation of 1680.

Money weights dated 1679 made in Cork, and bearing the Cork city arms, the number of pennyweights and grains and the name of Richard Smart of Cork, goldsmith, are also in the collection of the Royal Irish Academy. I have not been able to find any proclamation with reference to these. See Plate V, No. 10.

A proclamation, June 6th, 1683. Whereas many and great inconveniences have happened to His Majesty's subjects of this kingdom by the difference of weights that have been of late made use of for weighing of such foreign coin as hath been current here by proclamation, as also by the bringing over into

¹ The motto on one of 1670 is *NE ADDIS NEC DEMAS*. See Plate V, No. 3.

this kingdom great quantities of Peru pieces of eight which for some time did commonly pass without any regard to their weights, for four shillings and sixpence a-piece, which was more than their real value, and of late many of them have been refused to be taken for more than three shillings or three shillings and sixpence a-piece, which is less than their real value, whereby many of His Majesty's subjects have been at great loss; and we, being desirous to remedy a mischief that may prove so prejudicial to the trade and traffic of this kingdom by such uncertainty in the coin now current here; have thought fit by this our proclamation to declare at what rates all sorts of foreign coin, by the several proclamations now in force, are to pass amongst His Majesty's subjects in this kingdom, which are as followeth:—

GOLD.

	Dwt. grs.	£	s.	d.
The Golden Rider,	6 12	1	2	6
The half Golden Rider,	3 6	0	11	3
The Spanish or French quadruple Pistole,	17 4	3	10	0
The Spanish or French double Pistole,	8 14	1	15	0
The Spanish or French single Pistole,	4 7	0	17	6
The Spanish or French half Pistole,	2 3½	0	8	9
The double Ducat,	4 12	0	18	0
The single Ducat,	2 6	0	9	0
The Spanish Suffrance,	7 2	1	8	6
The half Spanish Suffrance,	3 13	0	14	3

SILVER.

The Ducatoon,	20 16	0	6	0
The half-Ducatoon,	10 8	0	3	0
The quarter-Ducatoon,	5 4	0	1	6
The Mexico, Sevil, or Pillar piece of Eight, the Rix Dollar, Cross Dollar, or French Lewis, }	17 0	0	4	9
The halves do. do. do.	8 12	0	2	4½
The quarters do. do. do.	4 6	0	1	2¼
The half-quarters do. do.	2 3	0	0	7½
The ½ part of the French Lewis,	1 12	0	0	4¾
The old Peru Piece of Eight,	17 0	0	4	6
The half old Peru Piece of Eight,	8 12	0	2	3
The quarter old Peru Piece of Eight,	4 6	0	1	1½
The half-quarter old Peru Piece of Eight,	2 3	0	0	6¾
The Portugal Royal,	14 0	0	3	8
The half Portugal Royal,	7 0	0	1	10
The quarter Portugal Royal,	3 12	0	0	11

And in case any of the aforesaid pieces of gold or silver shall want of the weight herein laid down on the said pieces respectively, then allowance is to be given of two pence per each grain so wanting in any piece of the kinds of gold coin, and three pence for each pennyweight so wanting in any piece of the kinds of silver coin, and so proportionately for greater or lesser wants of weight in the said pieces. And we do hereby declare that all the aforesaid sorts of foreign coin being standing weight are to pass and are to be paid and received at the rates above mentioned, and any such coins not weighing down the scales in the weighing thereof, is not to be any cause for the refusal thereof at the rates herein above mentioned. As also that every person receiving any money shall receive by what side of the scales he pleases, if he uses those of the payer, and if he uses his own, then he is to receive by which side the payer shall think proper to direct. And to the end that there may be no uncertainty in the weights of money, we do hereby further declare that we have directed all the weights that are necessary for the said silver coin to be exactly made by Henry Paris and John Cuthbeard of the city of Dublin, the stamps to be flat and the circle to be smooth and polished, that no dust may gather in, and each weight to be stamped with the number of pennyweights it bears on one side and the crown and harp on the other side, where the same may be had at reasonable rates, not exceeding twelve pence for all the weights being eight in number, viz. : for the ducatoon, half ducatoon for the whole plate and Peru pieces and half and quarter pieces thereof, a two-penny weight, a penny weight and a halfpenny weight, which are all that will be necessary for weighing the several sorts of silver coin that do now commonly pass in this kingdom. And we have ordered a standard of all sorts of the said weights for silver coin to be left in the hands of the respective sheriffs of the several counties of this kingdom, and also in the hands of the respective mayors and other chief magistrates of the several cities and corporations of this kingdom, by whom the same are to be left in succession with the next succeeding sheriffs, mayors, and other magistrates to the end that all differences that shall happen about any weights for money may thereby be either determined or prevented. And in case any person or persons shall either pay or receive any money by any other weight than such as shall be agreeable to the weights so to be left in the said sheriffs, mayors, and other chief magistrates' hands, they are to be proceeded against and punished according to the law as keepers and users of false and unlawful weights.

The eight weights mentioned in this proclamation and also in that of 1698, viz. —

Dwt.	Grs.	
20	16	for the ducatoon.
10	8	„ „ half ducatoon.
17	0	„ „ Peru piece.
8	12	„ „ half do.
4	6	„ „ quarter do.

and the 2 dwt., 1 dwt., and $\frac{1}{2}$ dwt. were stated to be for the silver coins, no special weights being provided for the gold. How these and the other silver coins mentioned were to be accurately weighed is not quite clear, no separate grains being included in the set.

A proclamation was issued on January 16th, 1687, reciting that published in 1683, and declaring that all the foreign gold and silver coins therein mentioned should pass within this kingdom according to the weights and rates therein specified.

A proclamation by the king, March 25th, 1689. Whereas we have thought fit, by the advice of our privy council, to raise the coin of this our kingdom to a higher value; we do hereby publish and declare, by the advice aforesaid, that all sorts of coin now current in this our kingdom, whether foreign or sterling, shall pass amongst all our subjects, within this our realm, and in all payments to be made either to us or from us, according to the rates following, that is to say:—

GOLD.

	Dwt. grs.	£ s. d.
The Golden Rider,	6 12	1 4 0
The half Golden Rider,	3 6	0 12 0
The Spanish or French quadruple Pistole,	17 4	3 16 0
The Spanish or French double Pistole,	8 14	1 18 0
The Spanish or French single Pistole,	4 7	0 19 0
The Spanish or French half Pistole,	2 3½	0 9 6
The double Ducat,	4 12	1 0 0
The single Ducat,	2 6	0 10 0
The Spanish Suffrance,	7 2	1 11 0
The half Spanish Suffrance,	3 13	0 15 6
The Guinea,		1 4 0
The half-Guinea,		0 12 0

				SILVER.			
				Dwt. grs.	£	s.	d.
The Ducatoon,	.	.	.	20 16	0	6	3
The half-Ducatoon,	.	.	.	10 8	0	3	1½
The quarter-Ducatoon,	.	.	.	5 4	0	1	7
The Mexico, Sevil, or Pillar Piece of Eight, the				} 17 0	0	5	0
Rix Dollar, Cross Dollar, or French Lewis.							
The halves	do.	do.	do.	8 12	0	2	6
The quarters	do.	do.	do.	4 6	0	1	3
The half-quarters	do.	do.	do.	2 3	0	0	7½
The ¼ part of the French Lewis,	.	.	.	1 12	0	0	5
The old Peru Piece of Eight,	.	.	.	17 4	0	4	9
The half old Peru Piece of Eight,	.	.	.	8 12	0	2	4½
The quarter old Peru Piece of Eight,	.	.	.	4 6	0	1	2¼
The half-quarter old Peru Piece of Eight,	.	.	.	2 3	0	0	7
The Portugal Royal,	.	.	.	14 0	0	3	10
The half Portugal Royal,	.	.	.	7 0	0	1	11
The quarter Portugal Royal,	.	.	.	3 12	0	1	0
The English Crown,	.	.	.		0	5	5
The English Half-crown,	.	.	.		0	2	8½
The English Shilling,	.	.	.		0	1	1
The English Sixpence,	.	.	.		0	0	6½

The proclamation then states that the allowance of two pence for every grain wanting in the gold coin, and three pence for every pennyweight wanting in the silver coin, is to be given, and that the same methods be observed in the said weights as is directed by the proclamation of June 5th, 1683.

A proclamation by the king, dated May 4th, 1689, states that there is in this kingdom small pieces of silver called the French three pence halfpenny or the three and a half sous, which was omitted from the last proclamation, and declares that every such piece of silver is to pass current for three pence halfpenny.

A proclamation by the Lord Deputy and Council, May 29th, 1695.

Whereas the coins current in this kingdom both of gold and silver have of late, by reason of the great rise of the value thereof in other parts, been carried away in so very great quantities that it is manifest unless some speedy remedy be provided, this kingdom will be soon drained of them. And whereas the raising the value of the foreign coin of the gold and silver current in this kingdom will be the most effectual means to prevent the aforesaid mischief; we do publish and declare by this our proclamation that the several sorts of foreign coins hereafter mentioned, now current in this

kingdom, shall from hereafter pass and be accepted, in all payments and receipts, as current money within this kingdom at and after the respective rates hereafter mentioned, viz. :—

GOLD.			
	Dwt. grs.	£	s. d.
The Spanish or French Pistole,	4 8	1	1 0
The Spanish or French half Pistole,	2 4	0	10 6
SILVER.			
The Ducatoon,	20 16	0	6 8
The half-Ducatoon,	10 8	0	3 4
The quarter-Ducatoon, ^{mark}	5 4	0	1 8
The Mexico, Sevil, or Pillar Piece of Eight, the Rix Dollar, Cross Dollar, and all other Dollars, and the French Lewis, }	17 0	0	5 4
The halves do. do. do.	8 12	0	2 8
The quarters do. do. do.	4 6	0	1 4
The old Peru Piece of Eight,	17 0	0	4 10
The half old Peru Piece of Eight,	8 12	0	2 5
The quarter old Peru Piece of Eight,	4 6	0	1 2½
The Crusado of Portugal,	10 20	0	3 6
The half Crusado of Portugal,	5 10	0	1 9

The proclamation then goes on to state that the allowances and the weights to be used, are to be those authorized by the proclamation of June 6th, 1683.

A proclamation by the Lords Justices and Council, February 21st, 1697. Whereas many and great inconveniences have happened to His Majesty's subjects of this kingdom by the differences of weights that have been of late made use of for the weighing of such foreign coin as is current here, and that several weights for the weighing of such coin as aforesaid have been unskilfully made, sold, and uttered by John Cuthbert of the city of Dublin (who was formerly appointed one of the persons to make them), to the great prejudice of His Majesty's good subjects; and we being desirous to remedy a mischief so prejudicial to the trade and traffic of this kingdom, have thought fit by this our proclamation; and we do hereby declare that we have removed and discharged the said John Cuthbert and Henry Paris from making, adjusting, or selling any money weights, and have directed all the money weights that are necessary for the said coin to be exactly made by Vincent Kidder of Dublin, goldsmith, according to the standard lately made in His Majesty's Mint in the Tower of London, each weight to be stamped with the

number of pennyweights it bears, on one side, and the King's arms on the other side, where the same are to be had at reasonable rates, not exceeding fifteen pence for all the weights, being eight in number, viz. :—for the ducatoon, half-ducatoon, for the whole plate and Peru pieces, the half and quarter thereof, a twopenny weight, a penny weight, and a halfpenny weight, which are all that will be necessary for weighing the several sorts of the said coin that do now commonly pass in this kingdom. A set of the said weights to be lodged with the clerk of the council, another with the Chief Baron of His Majesty's Court of Exchequer, and a third with the Receiver-General of His Majesty's revenue in this kingdom. Any persons using any other weights are to be proceeded against and punished as keepers and users of false and unlawful weights. No person except the said Vincent Kidder is to presume to make, adjust, or sell any of the money weights to be used in this kingdom for the future, upon pain of being proceeded against with the utmost severity. All the aforesaid coins being standing weight are to pass, and that any such coin not weighing down the scale in the weighing thereof is not to be any cause for refusal thereof.

The Royal arms mentioned above varied somewhat on the different sets of money weights issued from time to time, as will be seen on reference to the plate.

The following entries are to be found in the Irish House of Commons Journal under the specified dates:—

August 17th, 1697.—Sir Francis Brewster reported from the committee for trade that they had resolved that it is the opinion of this committee, that upon a trial had before them of the several money weights made and sold by Mr. Henry Paris and Mr. John Cuthbert, there was a great neglect and miscarriage in them by making the weights unequal, and differing one from the other, contrary to the trust reposed in them by the Government. Ordered that John Cuthbert and Henry Paris be taken into the custody of the serjeant-at-arms for their great deceit in making, selling, and uttering false money weights.

Ordered that Mr. Attorney-General do prosecute the said John Cuthbert and Henry Paris for the said misdemeanour, and that the Lords Justices be acquainted that it is the desire of this House that the said John Cuthbert and Henry Paris be discharged from making any more money weights.

September 15th, 1697.—Ordered that the Lords Justices be acquainted that it is the desire of this House that their Lordships will give order that Mr. John Cuthbert be prohibited from casting, selling, or uttering any more money weights. A complaint being made that John Cuthbert had since the resolutions of this House uttered and sold false and deceitful money weights,

in breach and violation of the orders of this House and great fraud of His Majesty's subjects. Ordered *nemine contradicente* that the said John Cuthbert be taken into the custody of the serjeant-at-arms for his said notorious violation and contempt of the orders of this House.

September 16th, 1697.—Mr. Chancellor of the Exchequer reported that Their Excellencies the Lords Justices had been acquainted with the desire of this House with reference to John Cuthbert and Henry Paris, and that their Lordships were pleased to say they would give order that the same should be done accordingly.

September 20th, 1697. John Cuthbert petitioned, setting forth that through the weakness and ignorance of his wife she was prevailed upon in his absence to sell weights, and begging that he may not be punished for the mistakes of another. Ordered that the said John Cuthbert be discharged from the custody of the serjeant-at-arms, paying his fees.

Proclamation by the Lords Justices and Council, June 2nd, 1701. We, the Lords Justices and Council, in obedience to His Majesty's commands to reduce the several species of foreign coin hereinafter mentioned to the rates hereinafter set forth, do publish and declare by this our proclamation that the several sorts of foreign coins hereafter mentioned now current in this kingdom, shall from and after Friday, the sixth day of the present month of June, pass and be accepted in all payments and receipts, as current money within this kingdom, at and under the respective rates hereafter mentioned, and none other, that is to say:—

GOLD.				Dwt.	grs.	£	s.	d.
The French or Spanish Pistole,	.	.	.	4	8	0	18	6
The French or Spanish half Pistole,	.	.	.	2	4	0	9	3
SILVER.								
The Ducatoon,	.	.	.	20	16	0	6	0
The half-Ducatoon,	.	.	.	10	8	0	3	0
The quarter-Ducatoon,	.	.	.	5	4	0	1	6
The Mexico, Sevil, or Pillar Piece of Eight,			}	17	0	0	4	9
Cross Dollar and other Dollars, and the								
French Lewis,								
The halves	do.	do.	do.	8	12	0	2	4½
The quarters	do.	do.	do.	4	6	0	1	2¼
The old Peru Piece of Eight,	.	.	.	17	0	0	4	6
The half old Peru Piece of Eight,	.	.	.	8	12	0	2	3
The quarter old Peru Piece of Eight,	.	.	.	4	6	0	1	1½
The Crusado of Portugal,	.	.	.	10	20	0	3	3
The half-Crusado of Portugal,	.	.	.	5	10	0	1	7

An allowance of two pence for each grain wanting in any piece of the kinds of the gold coin, and three halfpence for each halfpenny weight wanting in any piece of the silver coin aforesaid.

A proclamation by the Lords Justices and Council was issued on August 19th, 1708, for the more effectual enforcing the several proclamations formerly issued in this kingdom, and to regulate the weight and currency of foreign coins now current therein. They, therefore, declare that the allowance of two pence for each grain in gold coins and three halfpence for each halfpenny weight in silver coins is to be given; that all foreign coins of gold or silver now current by proclamations now in force in this kingdom, being standing weight, are to pass, and are to be received and paid at the rates laid down in such proclamations; and that any such coins not weighing down the scales is not to be any cause for the refusal thereof.

An Irish Act of Parliament (8 Anne, chap. vi) was issued in 1709 for the better preventing the counterfeiting the current coin of this kingdom. Among the provisoes is one that the foreign coin that is current or may be current in this kingdom is not to be counterfeited.

A proclamation by the Lords Justices and Council, July 30th, 1712. We, the Lords Justices and Council, in obedience to Her Majesty's Order, do publish and declare by this our proclamation, that the several sorts and species of foreign gold and silver coins hereinafter mentioned, shall from and after the twelfth day of August next, pass and be accepted in all receipts and payments as current money within this kingdom at the several rates herein respectively specified and none other, that is to say:—

GOLD.

	Dwt. grs.	£	s.	d.
The Spanish quadruple Pistole or double Doubloon,	17 8	3	14	0
The Spanish or French double Pistole, Doub- loon, and double Lewis d'or,	8 16	1	17	0
The Spanish or French Pistole,	4 8	0	18	6
The Spanish or French half-Pistole,	2 4	0	9	3
The Spanish or French quarter-Pistole,	1 2	0	4	7½
The Moidore of Portugal,	6 22	1	10	0
The half-Moidore of Portugal,	3 11	0	15	0
The quarter-Moidore of Portugal,	1 17½	0	7	6

SILVER.				Dwt. grs.	£	s.	d.
The Ducatoon,	.	.	.	20 16	0	6	0
The half-Ducatoon,	.	.	.	10 8	0	3	0
The quarter-Ducatoon,	.	.	.	5 4	0	1	6
The Piece of Eight of Mexico or Seville, the Mexico Pillar Dollar, and French Lewis d'or, the Rix, Cross, and other Dollars,				17 0	0	4	9
The halves	do.	do.	do.	8 12	0	2	4½
The quarters	do.	do.	do.	4 6	0	1	2¼
The old Peru Piece of Eight,	.	.	.	17 0	0	4	6
The half old Peru Piece of Eight,	.	.	.	8 12	0	2	3
The quarter old Peru Piece of Eight,	.	.	.	4 6	0	1	1½
The Crusado of Portugal,	.	.	.	10 20	0	3	0
The half Crusado of Portugal.	.	.	.	5 10	0	1	6

The usual allowances were to be given.

A proclamation by the Lords Justices and Council, July 24th, 1714. We, the Lords Justices and Council, in obedience to Her Majesty's commands, do publish and declare by this our proclamation that the several new species of French coins hereinafter mentioned be from henceforth current in this kingdom, and that the same shall for the future pass and be accepted in all payments and receipts as current money within this kingdom, at and under the respective rates hereafter mentioned, and none other, that is to say:—

GOLD.				Dwt. grs.	£	s.	d.
The French Lewis d'or of the new species,	.	.	.	5 5	1	2	0
The half French Lewis d'or of the new species,	.	.	.	2 14½	0	11	0
The quarter French Lewis d'or of the new species,	.	.	.	1 7¼	0	5	6

SILVER.				Dwt. grs.	£	s.	d.
The French silver Lewis of the new species,	.	.	.	19 15	0	5	6
The half French silver Lewis of the new species,	.	.	.	9 18½	0	2	9
The quarter French silver Lewis of the new species,	.	.	.	4 21¼	0	1	4½

The usual allowances for any deficiency in weight to be given.

A proclamation by the Lords Justices and Council, May 5th, 1718. Recites the proclamations of July 30th, 1712, and July 24th, 1714, with the lists of foreign coins to be current, and gives the usual allowance for any deficiency in weight; also orders that Vincent Kidder and no other to make money weights which were to be for gold and silver coins as in the proclamations of 1712 and 1714, the weights not to exceed fifteen pence in price for

all gold and silver coins made current by the proclamation of July 30th, 1712, and fifteen pence for all gold and silver coins made current by the proclamation of July 24th, 1714. The weights to be made up in different sets. (Public Record Office, Dublin.)

A proclamation by the Lord Lieutenant and Council, January 22nd, 1725. We, the Lord Lieutenant and Council, in obedience to His Majesty's commands, do publish and declare by this our proclamation that the several new pieces of gold coin of Portugal hereinafter mentioned be from henceforth current in this kingdom, and that the same shall for the future pass and be accepted in all payments and receipts as current money within this kingdom, at and under the respective rates hereafter mentioned, that is to say:—

	Dwt. grs.	£	s.	d.
The new gold coin of Portugal,	18 9	4	0	0
The half new gold coin of Portugal,	9 5	2	0	0
The quarter new gold coin of Portugal,	4 15	1	0	0
The half-quarter new gold coin of Portugal,	2 8	0	10	0
The sixteenth new gold coin of Portugal,	1 3	0	5	0

The usual allowances for any deficiency in weight to be given. (Public Record Office, Dublin.)

In Watson's Dublin Almanac for 1732 a list of the following coins, with their values, is given:—

	£	s.	d.
The Guinea,	1	3	0
The Pistole,	0	18	6
The Crown,	0	5	5
The Ducatoon,	0	6	0
The forty penny Piece,	0	3	4

—together with the weights and values of the quadruple pistole, moidore, and Portugal piece, and their subdivisions as set out in the proclamations of 1718 and 1725.

A proclamation by the Lords Justices and Council, September 13th, 1736. Whereas several proclamations have issued from this Board for regulating and adjusting the several weights for weighing all foreign gold coin current in this kingdom, and we being well satisfied in the ability of William Archdall, of the city of Dublin, goldsmith and assay master, have thought fit to constitute, nominate, and appoint him, the said William Archdall, to make, adjust, and sell the several and respective money weights for weighing the several and respective coins made current by and according unto the said several proclamations according to the standard of weights formerly lodged

with the Chief Baron of His Majesty's Court of Exchequer, during our will and pleasure, hereby strictly commanding that no other person whatsoever do presume to make, adjust, or sell any of the said money weights to be used in this kingdom, upon pain of being proceeded against as makers and publishers of false weights. Of which all persons are required to take due notice. ("Dublin Gazette," September 18th to 21st, 1736.)

This proclamation was issued on account of the death of Vincent Kidder, the following notice appearing in the "Dublin Gazette" of August 17 to 21, 1736:—"Vincent Kidder, goldsmith and regulator of our money weights and grains, was yesterday interred in St. Werburgh's Church."

A proclamation by the Lords Justices and Council for regulating the value of gold coins current in this kingdom, dated August 29, 1737. Whereas His Majesty has been pleased to signify his royal pleasure that a proclamation should issue for regulating the gold coins current in this kingdom, and for that purpose His Majesty's order in Council, bearing date at his Court at Hampton Court the 21st day of July, 1737, has been transmitted to us, setting forth that whereas the Lord Lieutenant and Council of this kingdom have represented to His Majesty that there is at present a great scarcity of silver coin in this kingdom, occasioned by persons being tempted to carry it out of this kingdom to make an advantage thereof, and that the greatest part of the gold coins current here is in the two larger pieces of Portugal gold, one of which passing for four pounds and the other for forty shillings, great inconveniences and difficulties daily arise in the obtaining change for the same; and there being a disproportion between the value of the said pieces and the lesser pieces of foreign gold coin, to the advantage of the larger, the same has occasioned likewise a scarcity of the lesser pieces of gold coin, by means whereof great distress has been brought upon the trade, and particularly the linen manufacture of this kingdom; and also upon His Majesty's forces here; and therefore humbly prayed that the gold coin, both English and foreign, current here might be rated at the quantity of English silver they usually pass for in England, with an allowance of some small advantage to the lesser pieces. And whereas the Lords Commissioners of His Majesty's Treasury (to whom His Majesty thought fit to refer the consideration of the said representation) have reported to His Majesty in Council that they had taken the opinion of the late master-worker and the rest of the principal officers of His Majesty's mint thereon, who proposed that a reduction should be made in the value of the gold coins current in this kingdom, at least as low as they are in Great Britain; and that the disproportion between the larger and lesser pieces should be rectified, which said proposal being agreed to by the Lords Commissioners of the Treasury and approved of by His Majesty in Council, His

Majesty has been graciously pleased by his said order in Council to order that the following pieces of gold coin current in this kingdom do pass in payment within this kingdom at the rates hereafter respectively specified, and that a proclamation should be issued to that effect. We therefore, the Lords Justices and Council, in obedience to His Majesty's said order, do by this our proclamation publish and declare that the several pieces of gold coin hereinafter mentioned shall, from and after the 10th day September next, pass and be accepted in all receipts and payments as current money within this kingdom at the several rates hereinafter specified, and none other, that is to say:—

	Dwt. grs.	£	s.	d.
The Guinea at		1	2	9
and all other pieces of the same species in proportion.				
The Moidore,	6 22	1	9	3
The half-Moidore,	3 11	0	14	8
The quarter-Moidore,	1 17½	0	7	4
The quadruple Pistole or double Doubloon,	17 8	3	13	0
The Spanish or French double Pistole or Doubloon, or double Louis d'or,	8 16	1	16	6
The Spanish or French Pistole,	4 8	0	18	3
The half Spanish or French Pistole,	2 4	0	9	2
The quarter Spanish or French Pistole,	1 2	0	4	7
The French Louis d'or of the new species,	5 5	1	2	0
The half French Louis d'or of the new species,	2 14½	0	11	0
The quarter French Louis d'or of the new species,	1 7¼	0	5	6
The piece of new gold of Portugal,	18 10½	3	17	8
The half piece of new gold of Portugal,	9 5¼	1	18	10
The quarter piece of new gold of Portugal,	4 14½	0	19	6
The half-quarter piece of new gold of Portugal,	2 7¼	0	9	10
The sixteenth piece of new gold of Portugal,	1 3½	0	4	11

An allowance of two pence for each grain, one penny for half a grain, and one halfpenny for quarter of a grain deficient in any of the aforesaid coins to be given. And it is declared that the weights now in use in this kingdom, and which are agreeable to the standard remaining with the Clerk of the Council, the Chief Baron of His Majesty's Court of Exchequer and the Receiver-General of this kingdom, and no other, except as hereinafter is mentioned, shall continue to be used for weighing the several sorts of coin above mentioned, as formerly.

And for the better ascertaining the weight of the said coins, we have directed one weight of half a grain and one weight of a quarter of a grain to be exactly made by William Archdall, of the city of Dublin, assaymaster, and

that the standards of such weights, where the standards of the other weights now in use are kept, there to remain to the end, that all differences that shall happen about the said weights may be either determined or prevented. And in case any person or persons shall either pay or receive any of the said coins by any other weights than such as shall be agreeable to the said standard, they are to be proceeded against, according to law, as keepers and users of false and unlawful weights.

And we do hereby strictly charge and command that no person except the said William Archdall do presume to make, adjust, or sell any of the said money weights to be used in this kingdom for the future, upon pain of being proceeded against with the utmost severity. (“*Dublin Gazette.*”)

In the “*Dublin Gazette*” of October 20 to 23, 1750, a list of foreign gold coins current in Ireland is given. This list agrees with that given in the proclamation of 1737, with the exception of the values of the Spanish quadruple pistole and its subdivisions, which are as follows:—

	Dwt. grs.	£	s.	d.
The Spanish quadruple Pistole,	17 8	3	11	4
The Spanish double Pistole,	8 16	1	15	8
The Spanish Pistole,	4 8	0	17	10
The half-Pistole,	2 4	0	8	11
The quarter-Pistole,	1 2	0	4	5½

The Barbary chiquin to pass in Dublin at the same rate as the Spanish half-pistole.

A proclamation by the Lords Justices and Council, July 8, 1751. Whereas, by a proclamation bearing date July 13, 1712, the Lords Justices and Council did publish and declare that the several sorts and species of foreign gold and silver coins therein mentioned should pass and be accepted in all receipts and payments as current money within this kingdom at the several rates therein specified, and none other, and amongst others that the Spanish quadruple pistole of gold or double doubloon weighing 17dwt. 8grs. should pass at £3 14s.; the Spanish double pistole of gold or doubloon weighing 8dwt. 16grs. at £1 17s.; the Spanish pistole of gold weighing 4dwt. 8grs. at 18s. 6d.; the Spanish half-pistole weighing 2dwt. 4grs. at 9s. 3d.; and the Spanish quarter-pistole weighing 1dwt. 2grs. at 4s. 7½d., which values were after reduced by subsequent proclamations.

And whereas it is found necessary for His Majesty’s service and the good of his subjects of this kingdom, to put an immediate stop to the currency of the said Spanish quadruple pistole, or double doubloon, and the several sub-denominations, we the Lords Justices and Council do therefore,

pursuant to authority from His Majesty signified to us by His Grace the Lord Lieutenant of this kingdom, recall and revoke the said several proclamations so far forth as the same give currency to the said Spanish quadruple pistoles or doubloons of gold and the several sub-denominations thereof, and do by this our proclamation publish and declare that no collector or officer of His Majesty's revenue or other person or persons whatsoever shall from and after the date hereof be obliged to receive in any payment or payments the said species of coins called the Spanish quadruple pistole of gold or double doubloon, the Spanish double pistole of gold or doubloon, the Spanish pistole of gold, and the half and quarter pistole, or any of them, anything in any former proclamation or proclamations contained to the contrary therein notwithstanding.

William Archdall, maker of the money weights, died September 6th, 1751, and in the "Dublin Gazette" of September 21st to 24th the following notice appears:—

"Yesterday His Grace the Lord Lieutenant and Council of Ireland were pleased to appoint Mr. Henry Archdall to be maker of the money-weights in the room of his father William Archdall, deceased."

The following advertisements appear in Dublin newspapers:—

"By authority. Weights for the several species of gold coin current in this kingdom are sold only by Henry Archdall in Darby Square, Werburgh Street, who sells the best kind of money-scales and gives the highest price for all manner of gold." ("Pue's Occurrences," September 24th to 28th, 1751.)

"Henry Archdall, Darby Square, will give £3 9s. 4d. per quadruple for any quantity of gold coin over £10; £4 2s. 0d. per oz. for light guineas. He sells the best kind of money-scales, and is the only person authorized to make or sell any weights for weighing the gold coin now current in this kingdom." ("Pue's Occurrences," December 7th to 10th, 1751.)

Henry Archdall appears to have been discharged from the position of maker of the money-weights, for in 1760 the following notice appears in the "Dublin Gazette," of July 22nd to 26th, 1760:—"Dublin Castle, July 25th, 1760. Their Excellencies the Lords Justices and Council have been pleased to appoint Mr. James Warren, goldsmith, to make, adjust, and sell the several and respective weights for coins made current in this kingdom, in the room of Mr. Henry Archdall."

In the "Dublin Gazette" of September 9th to 16th, 1760, this advertisement is to be found:—

"Whereas the Lords Justices and Privy Council have been pleased to appoint James Warren, goldsmith, of Skinner Row, to make, adjust, and sell

all money-weights for weighing gold coin current in this kingdom, in the room of Henry Archdall. James Warren has now a quantity of these weights ready for sale at his shop at the sign of St. Dunstan in Skinner Row, Dublin, and to prevent any person or persons counterfeiting the same, I have put I W¹ on one side thereof, affixed the date of the present year 1760 thereon, and marked my grains in like manner. The said weights and grains are sold nowhere else in this kingdom.”

Also in “Sleater’s Public Gazetteer” of September 24th to 27th, 1768, another advertisement appears:—

“James Warren, goldsmith and jeweller and maker of the money-weights for weighing all gold coin current in this kingdom, by authority of the Government, takes the liberty to inform his friends and the public that he has removed from Skinner Row to the sign of St. Dunstan, on Cork Hill, within two doors of Copper Alley, where the public may be supplied with money-weights and all sorts of the best money-scales. He also sells goldsmith and apothecary weights.”

James Warren’s name appears in Dublin Directories as maker of the money-weights until 1782. The year 1760 appears to have been the last in which a dated set of Irish money-weights was issued. The other years which have come under my notice, in which sets were issued are 1670, 1680, 1683, 1697, 1698, 1709, 1714, 1718, 1737, 1738, and 1751. The weights were invariably made of brass.

A proclamation by the King, June 24th, 1774, ordered that all gold coins as set out by the Commissioners of the Treasury, July 21st, 1773, were to be broken and cut if more deficient in weight than the following:—

	Dwt. grs.
Guineas coined since December 31st, 1771,	5 8
Half-Guineas coined since December 31st, 1771,	2 16
Guineas coined during reign of George III and before Jan. 1st, 1772,	5 6
Half-guineas coined during reign of George III and before Jan. 1st, 1772,	2 14
Quarter-guineas coined during the reign of George III and before Jan. 1st, 1772,	1 7
Guineas coined before the reign of George III,	5 3
Half-guineas coined before the reign of George III,	2 13

All gold coin more deficient in weight than aforesaid shall not pass current in Great Britain. (“London Gazette,” June 21 to 25, 1774.)

¹ The I and the W appear on either side of the shield of arms on the reverse of the weights.

An Act of Parliament (14 George III, chap. 92) ordered that one guinea weight and one shilling weight and also other weights, being parts and multiples of the said guinea and shilling weights, were to be made. Duplicates of the same were also to be made, and all weights were to be regulated by the duplicates, and after having been compared and found to be just and true should be marked with a stamp or mark to be approved by the Master of the Mint.

Notice was given in the "London Gazette" of December 13th, 17th, and 24th, 1774, that John Whitehurst was appointed to stamp or mark all weights for weighing gold or silver coin. The mark or stamp to be an imperial crown.

Money weights dating from after 1774 occur struck with various stamps, such as a coffee-pot, a lion passant, an anchor, &c., but I have not been able to find any reference to the use of these marks.

Joseph Sage was appointed stamper of weights in 1788, and perhaps a change of marks took place then.

From this time onward it seems that any person could make the money weights, provided that, on being found true, they were struck with the official stamp. The names of two Dublin goldsmiths appear on guinea weights—"John Locker, 1775," and "William Moore, 1 Capel Street." Moore worked in No. 1 Capel Street, from 1774 to 1781. Also in the "Limerick Chronicle" of July 13th, 1786, an advertisement appears of Charles Harrison, watch-maker, who states he makes gold scales and weights.

The following is a list of the makers of money weights for use in Ireland, as far as can at present be ascertained:—

Sir Thomas Aylesbury,	1632	James Warren, Dublin,	1760-1782
Richard Lord, Dublin,	1670-1683	John Locker, Dublin,	1775
John Cuthbert and Henry Paris,		William Moore, Dublin,	1775
Dublin,	1683-1698	Samuel Gatchell, Dublin,	c. 1800
Vincent Kidder, Dublin,	1698 1736	Richard Smart, Cork,	1679
William Archdall, Dublin,	1736-1751	Charles Harrison, Limerick,	1786
Henry Archdall, Dublin,	1751-1760		

The following notices appear in Faulkner's "Dublin Journal," April 6 to 8, 1775:—"Tower money weights, under patent of the Great Seal of England, landed this day, and to be had at Craig's in Parliament Street, on which the public may rely with the utmost safety. Scales and beams constructed on an entirely new construction."

April 27 to 29, 1775:—"Micheal Cormick, goldsmith, sells tower stamped weights. By royal authority."

It was stated that large quantities of coins in imitation of those of Portugal were made in Birmingham, and an order was issued to stop all such coins, dated Dublin, March 8th, 1775. (Faulkner's "Dublin Journal," March 16 to 18, 1775.)

A proclamation by the Lord Lieutenant and Council of Ireland, dated March 18th, 1775, for stopping the currency of all foreign coin in this kingdom. Recites the proclamations of 1712, 1714, and 1751. "And whereas His Majesty has been graciously pleased to signify his royal pleasure by his order in Council, bearing date at his Court at St. James, the 10th day of March instant, transmitting to us and for that purpose that a proclamation do issue to recall and revoke all proclamations heretofore published in this kingdom so far forth as they do give currency to any foreign coin whatsoever, and to direct that no coin be accepted after a day to be named in such proclamation, in any payment whatsoever, save only His Majesty's coin current in Great Britain.

"Now we the Lord Lieutenant and Council, in obedience to His Majesty's said order, do by this our proclamation recall and revoke the said several in part recited proclamations of the 30th day of July, 1712, and of the 14th day of July, 1714, and every part thereof not revoked by the said in part recited proclamation of the 8th day of July, 1751. And we do hereby publish and declare that no collector or officer of His Majesty's revenue or other person or persons whatsoever shall from and after the date hereof be obliged to take in any payment or payments any coin save only His Majesty's coin current in Great Britain; anything in any former proclamation to the contrary thereof in any wise notwithstanding." ("Dublin Gazette.")

Proclamation by the Lord Lieutenant and Council of Ireland dated May 8th, 1775. "Harcourt. Now we the Lord Lieutenant and Council in pursuance of His Majesty's order do hereby publish and declare that from and after the 24th of June next all weights to be made use of in this kingdom for weighing the gold coin current therein shall be ascertained by the duplicates of His Majesty's weights of Great Britain lodged in the custody of His Majesty's proper officer appointed by His Majesty for that purpose, and shall be stamped and marked with the stamp or mark provided by the said officer, and that no collector or officer of His Majesty's revenue or other person or persons whatsoever in this kingdom shall after the 24th day of June refuse to take in payment or payments any gold coin current in this kingdom at the rates mentioned and declared by His Majesty's proclamation bearing date the 24th day of June, 1774, to be ascertained by the said weights and no others; and that any person receiving money shall choose which side

of the scale he pleases if he uses those of the payer, and if he uses his own, then he is to receive by what side the payer think fit to direct." ("Dublin Gazette.")

A proclamation by the King given at the Court of St. James, dated April 12th, 1776, was issued from Dublin Castle, April 17th, 1776. The proclamation declares that "from May 8th no guineas, half and quarter guineas more deficient in weight than the following rates, viz. :—

	Dwt. grs.
Guineas coined before January 1st, 1772, . . .	5 8
Half-guineas coined before January 1st, 1772, . . .	2 16
Quarter-guineas coined before January 1st, 1772, . . .	1 8

be allowed to pass as current within the kingdom of Ireland except in payments to be made at the receipt of our exchequer or to collectors or receivers of our revenue there, or to such person or persons appointed by His Excellency the Lord Lieutenant of Ireland; and we do require and command our Vice-Treasurer and Receiver-General and Paymaster-General of our revenues within our kingdom of Ireland from the 8th of May to the 26th of August to take and receive in payment of our revenue and taxes such of the said deficient gold coin of our realm, so as the deficiency do not exceed the following rates :—

	Dwt. grs.
Guineas coined before January 1st, 1772, . . .	5 6
Half-guineas coined before January 1st, 1772, . . .	2 14
Quarter-guineas coined before January 1st, 1772, . . .	1 7

"After August 26th guineas, half-guineas and quarter-guineas as in the first table are not to pass current unless we see fit to allow fourteen days to the collector of our revenue in Ireland for the purpose of remitting and paying such of the said deficient coin. And we do require and enjoin our Vice-Treasurer and Receiver-General in Ireland during such fourteen days and no longer, to receive said deficient coin not below the weights in the second table." ("Dublin Gazette," April 16 to 18, 1776.)

By the proclamation of March 18, 1775, the currency of foreign coin in Ireland was stopped; but in the year 1797 Spanish dollars were made current coin, and appear to have been in use in different forms until 1819.

A proclamation by the Lord Lieutenant and Council of Ireland dated September 7, 1797. "Whereas silver Spanish dollars stamped at His Majesty's

mint of Great Britain have been issued at the Bank of England and made current therein at the rate of four shillings and ninepence British per dollar ; and whereas it is expedient that such dollars so stamped should receive a like currency in this kingdom ; and whereas His Majesty's authority for the purpose has been signified, we the Lord Lieutenant and Council of Ireland do hereby publish and declare that the said Spanish dollars so stamped at His Majesty's mint in Great Britain do pass as current money in this kingdom at the rate of 5s. 1 $\frac{3}{4}$ d. each dollar, and be taken in all payments to and from His Majesty in this kingdom.

“Counterfeiters of said dollars to suffer the penalties of the Act of the 8th year of Queen Anne (Ireland), an Act to prevent the counterfeiting the current coin in this kingdom.” (“Dublin Gazette.”)

A proclamation by the Lord Lieutenant and Council dated October 19th, 1798. “Ordered that the Spanish dollars as current by the proclamation of September 7th, 1797, be called in and not pass as current money in Ireland. All dollars to be brought to the Bank of Ireland at the rate of 5s. 1 $\frac{3}{4}$ d. during twenty-one days from the date of the proclamation, and such dollars as are not brought in said time, will after expiration thereof pass current and be received in payment at the rate of 4s. 10d. per each dollar.”

This first issue of Spanish dollars of Charles III and IV was stamped with the bust of George III. The stamp was oval, similar to that struck on sterling silver, and was stamped on the neck of the bust of the Spanish King on the coins.

In 1804, as it was found that these dollars were largely counterfeited, the counterstamp was enlarged, and the bust of George III was placed in an octagonal stamp,

An Act of Parliament (44 George III, chap. 71) was passed to prevent the counterfeiting of the Bank of England dollar tokens. These, together with the counterstruck dollars, were largely counterfeited in various ways. Some were forged by taking two genuine dollars, filing them down to about the thickness of brown paper, then soldering the obverse and reverse to a copper disc and plating the edge ; others were made of a disc of Sheffield plate stamped out in a disc, while others again were base metal plated and stamped. The counterfeiting appears to have been done chiefly in Birmingham. See “Numismatic Circular” (Spink), September-October, 1915.

As the Spanish dollars were still largely counterfeited, they were restruck in 1804, and were slightly larger than the original dollars. Dies were prepared by Mathew Bolton of Birmingham, the obverse with the head of

George III, and the reverse with "five shillings dollar" in an oval enclosing Britannia seated.

The following notice appears in Faulkner's "Dublin Journal" of July 17th, 1804:—"Bank of Ireland. Notice is hereby given that the dollars stamped into silver tokens at Mr. Boulton's manufactory which the Bank of Ireland is now issuing for six shillings each will be received in payment again at the Bank at the same rate, provided they shall not be defaced or mutilated or any way rendered lighter except from the operation of common wear.

"By order,

"THOMAS WILLIAMS, *Secretary.*

"N.B.—The Bank reserves the power to call them in at any time upon giving three months' notice."

These dollar tokens had on the obverse the bust of George III similar to that on the English ones, and on the reverse Hibernia seated and "Bank of Ireland Token, six shillings, 1804."

Dollar tokens appear to have been in use until April 5th, 1819 (58 George III, chap. 14), the first five-shilling pieces of George III being issued in 1818. With the withdrawal of the Spanish dollars the currency of foreign coin in Ireland ceased.

A proclamation was issued on July 1st, 1817, for regulating the weights for the gold coin. Those more deficient in weight than the following were not to pass as current:—

	Dwt. grs.		Dwt. grs.
Guineas, . . .	5 8	Seven-shilling pieces,	1 18
Half-guineas, . . .	2 16	Sovereigns, . . .	5 2 $\frac{3}{4}$
Quarter-guineas, . . .	1 8		

The half-sovereign, made current by proclamation, October 10th, 1817, was to weigh 2 dwt. 13 $\frac{1}{2}$ grs.

Money weights for guineas, half-guineas, sovereigns, and half-sovereigns continued to be used, some being made in Dublin during the first half of the nineteenth century by Samuel Gatchell. The latest weights that have come under my notice are sovereign and half-sovereign weights of the Royal mint of 1843.

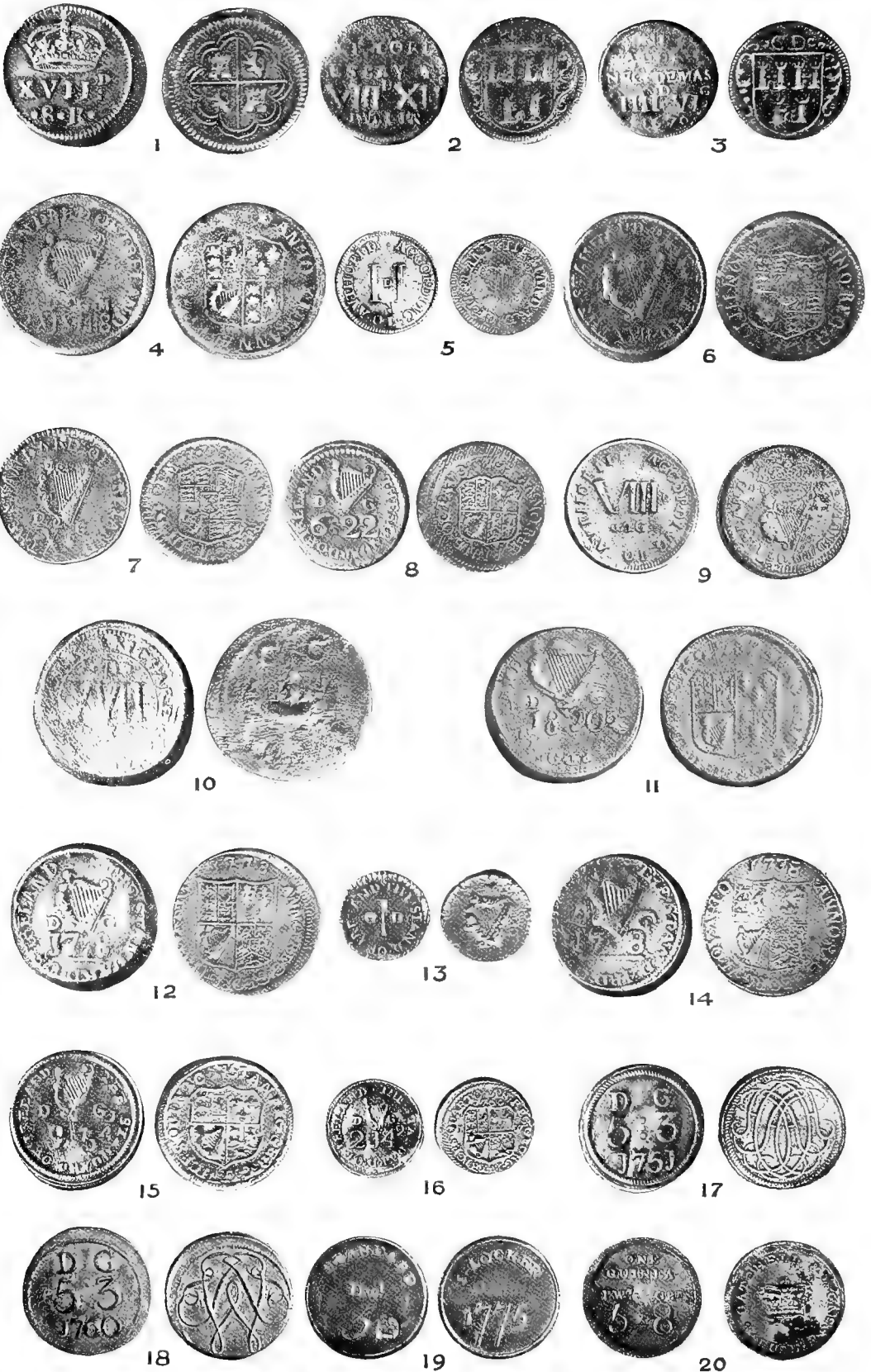
[EXPLANATION OF PLATE.

EXPLANATION OF PLATE V.

Obverse and Reverse of each Weight, slightly reduced.

1. 17 dwt., c. 1660, for the Mexico or Seville Piece of Eight, the Rix and Cross Dollars.
2. 8 dwt. 12 grs., 1670–80, for the Half Peru Piece of Eight. By Richard Lord.
3. 4 dwt. 6 grs., 1670, for the Quarter Peru Piece of Eight. By Richard Lord.
4. 19 dwt. 14 grs. 8 m., 1714, for the French Silver Louis. By Vincent Kidder.
5. 2 dwt., 1683. One of the three extra weights issued.
6. 17 dwt., 1697, for the Peru Piece of Eight. By John Cuthbert and Henry Paris.
7. 10 dwt. 8 grs., 1698, for the Half Ducatoon. By Vincent Kidder.
8. 6 dwt. 22 grs., 1709, for the Moidore of Portugal. By Vincent Kidder.
9. 8 dwt. 12 grs., 1683, for the Half Peru Piece of Eight. By John Cuthbert and Henry Paris.
10. 17 dwt., 1679, Cork. For the Mexico or Seville Piece of Eight, the Rix and Cross Dollars. By Richard Smart.
11. 18 dwt. 10½ grs., 1737, for the piece of New Gold of Portugal. By William Archdall.
12. 17 dwt. 8 grs., 1718, for the Spanish Quadruple Pistole or Double Doubloon. By Vincent Kidder.
13. 1 dwt., 1697 or 1698. One of the three extra weights issued. By Vincent Kidder.
14. 17 dwt. 8 grs., 1738, for the Spanish Quadruple Pistole or Double Doubloon. By William Archdall.

15. 9 dwt. $5\frac{1}{4}$ grs., 1751, for the Half piece of the New Gold of Portugal. By Henry Archdall.
16. 2 dwt. $14\frac{1}{2}$ grs., 1760, for the Half French Louis d'Or. By James Warren.
17. 5 dwt. 3 grs., 1751. Henry Archdall's initials. For guineas before the reign of George III.
18. 5 dwt. 3 grs., 1760. James Warren's initials. For guineas before the reign of George III.
19. 5 dwt., 1775. By John Locker, Dublin.
20. 5 dwt. 8 grs., c. 1800. By Samuel Gatchell, Dublin. For the guinea.



IV.

LIST OF BOOKS AND TRACTS PRINTED IN BELFAST IN THE
SEVENTEENTH CENTURY.

By E. R. M'CLINTOCK DIX.

[Read JANUARY 24. Published MARCH 18, 1916.]

HAVING dealt with the seventeenth-century printing of the cities of Cork, Kilkenny, and Waterford, I propose now to deal with that of the city of Belfast, the only other provincial town in Ireland of which there survive specimens of its printing press in that century. There is evidence of printing in Limerick and Drogheda in the seventeenth century, but no specimen is extant or at present identified. There may also have been a press printing in Londonderry for a brief period, but this is uncertain.

Printing in Belfast was very well recorded by the late Mr. John Anderson, Hon. Secretary to the Linen Hall Library, who expended years of research and much money in dealing splendidly with the subject, about which he was an enthusiast, and he was the first Irish bibliographer who published an exclusively bibliographical work, i.e., "A Catalogue of Early Belfast Printed Books," 1890, and two supplements. From him I drew my own inspiration, and took my first model; but in his well-known work full collations are not given of any work save of one edition of the Bible. Also, since his lamented decease, some years ago, additional items of the earliest Belfast printing have been traced, and can now be fully collated. This, then, is all that I propose to do in this list, but it is desirable, I think, to have the earliest Belfast printing properly collated, and the places where items are to be found again denoted. The total items in this list are eighteen in number.

Details of the finding of the leaves of the New Testament (No. 17 in the following list) appear in the "Irish Book Lover," vol. vi, pp. 159-60, and Dr. J. S. Crone, the editor and discoverer, deserves great credit for his

discernment and bibliographical skill and knowledge in connexion with this very interesting find. Through his courtesy I am enabled to reproduce a facsimile of one of the fragments so discovered by him.

Mr. R. M. Young is another Belfast bibliographer who has contributed materially to our knowledge of the first Belfast presses. I am indebted to him for permission to reproduce the facsimile of a title-page of a book in his possession.

The splendid collection of books made by the late Mr. Lavens M. Ewart, and now resting for a while in the Linen Hall Library, Belfast, contains very rare and early items of Belfast printing. It would be a decided advantage if its catalogue were published. In the Linen Hall Library itself are many items of Belfast printing, and I am indebted to its Librarian, Mr. F. J. P. Burgoyne, for much aid in completing this list.

It may be mentioned that Archdeacon Cotton gives 1696 as the date of Neill's printing press being set up in Belfast; but this is, I think, a printer's error for 1694, as his further statement, at p. 19, of his *Typographical Gazetteer*, 2nd series, shows.

Mr. Anderson has also very correctly pointed out in the preface to his first supplement, that William III had an ambulatory press with his army in Ireland, and it may have been used to print proclamations in Belfast at that earlier date.

All the items in this list are of a religious character, and appear to be chiefly reprints of Puritan theological works. Several have advertisements of "books printed and sold" by Neill, and copies of these are given in Mr. J. Anderson's Catalogue and supplements.

The library of the late Rev. T. W. Carson was sold after his decease about twenty years ago, and it is not known what became of the rare items of early Belfast printing which (as shown in this list) he at one time owned.

1. 1694. The Scottish Catechism, with the Solemn League and Covenant. Stated by Archbishop King to have been printed in Belfast in this year *and in 1700*.

[*Vide* Cotton's *Typographical Gazetteer*, 1866, 2nd Series, p. 19.

John Anderson's *Catalogue of Early Belfast Printed Books, &c.*

R. M. Young in "The Library," vol. vii (1895), p. 135.]

2. 1697. An Answer to the Bishop of Derry's [William King] Second Admonition to the Dissenting Inhabitants in his Diocess. Especially as to

Matters of Fact, Relating to the publick Worship of God Wherein his Misrepresentations are again Discovered.

Robert Craghead. 4to. $7\frac{1}{8} \times 5\frac{3}{4}$. 7 leaves + 1—166 pp.

[Linen Hall Library, Belfast: Magee College, Derry, 3. H. 12.]

N.B.—No place or printer given.

3. 1697. Animadversions on The Defence of the Answer To a Paper, Intituled “*The Case of the Dissenting Protestants of Ireland In Reference to a Bill of Indulgence, from the Exceptions made against it.*” Together With An Answer to A Peaceable and Friendly Address To the Non-Conformists Written upon their desiring an *Act of Toleration* without the *Sacramental Test*.

[John McBride]. 4to. 118 pp. $7\frac{5}{8} \times 5\frac{3}{4}$. Sigs. A—Z. Aa—Ff.

[Assembly College, Belfast. (Imperfect. pp. 17—91.)

National Library (Joly Collection—Books), cut down.

Advocates' Library, Edinburgh—perfect copy.

Magee College, Derry. (Imperfect—lacks all after p. 92, blank ; much cut down.)]

N.B.—No place or printer.]

4. 1697. An Answer to a Peaceable and Friendly Address, &c. John McBride. 4to.

[Assembly College, Belfast. (Imperfect. pp. 95—118).]

N.B.—See No. 3. Query: Is above not part of it ?

5. 1698. A / Sermon / before the / Provincial Synod / at / Antrim. / Preached June 1, 1698. / By / John MacBride, / Minister of Belfast, / Published at the Desire of some Persons / then Present / Printed in the Year MDCXCVIII. / 4to. Title leaf + 20 pp. $7\frac{5}{8} \times 5\frac{1}{2}$. Sigs. A—E.

[Brit. Mus. / 4476. d. 84.

Assembly College, Belfast. (Imperfect, lacks title leaf.)

Marsh's Library (Cashel Collection). Shelf VII. Vol. xix.

Advocates' Library, Edinburgh.

University Library, Cambridge. / Hib. 5. 698. 3.]

N.B.—No place or printer given.

6. 1699. The Psalms of David in Meeter. Newly Translated, and diligently Compared with the Original Text, and former Translations: More plain, smooth, and agreeable to the Text, than heretofore. Allowed by the Authority of the General Assembly of the Kirk of Scotland, and appointed to be sung in Congregations and families.

(*Patrick Neill & Company*). 12mo. $5 \times 2\frac{7}{8}$. pp. 1—130 + 1 leaf. (Advertisements.)

[In the “Lavens M. Ewart” Collection in the Linen Hall Library, Belfast.]

7. 1699. The Christians Great Interest, or, a Short Treatise, Divided into two Parts: The First whereof containeth, The Trial of a Saving Interest in Christ. The Second pointeth forth plainly The Way [How] to attain it: Wherein somewhat is likewise spoken to the Manner of express Covenanting with God. William Guthrie. (*Patrick Neill and Company*). 12mo. $4\frac{3}{4} \times 2\frac{3}{4}$ (much cut down). 192 pp.

[In the "Lavens M. Ewart" Collection in the Linen Hall Library, Belfast.]

8. 1699. [The Bible the Best New Year's Gift] (in Verse) "Dedicated to King William."

(*Patrick Neill & Company*). $3\frac{1}{6} \times 1\frac{3}{4}$. 34 leaves (incomplete), including woodcuts.

[The John Rylands Library, Manchester.]

NOTE.—The Dedication to the New Testament is signed "*J. Taylor*."

O.T. B3, &c. Imperfect.

N.T. Sig. D3 to E6 (Acts). Imperfect. 9 woodcuts inserted.

The text consists of a rhyming setting of some of the incidents, &c., of the different books. See *Ulster Journal*, vol. xii (1900), p. 41.

The title of the New Testament runs: THE / NEW / TESTAMENT. / Dedicated to / King WILLIAM. / Belfast, / Printed by *Patrick Neill* and / Company and sold at his / shop. 1699./

9. 1700. The Psalms of David in Meeter. Newly Translated and diligently Compared with the Original Text, and former Translations. More plain, smooth, and agreeable to the Text, than any heretofore. Allowed by the Authority of the General Assembly of the Kirk of *Scotland*, and appointed to be sung in Congregations and Families. [Sir Francis Rous.] (*Patrick Neill and Company*.) 32mo. $4\frac{1}{8} \times 2\frac{1}{4}$. Title leaf (verso blank) + pp. 3 (Sig. A2) to 287 (verso = advertisement).

[First Presbyterian Church, Belfast.]

N.B.—Bound in Tortoise Shell with Silver Mounts.

10. 1700. The Almost Christian / discovered : / or, / the False Professor / Tried and Cast. / Being the substance of seven / Sermons, / First preached at Sepulchres, London, / 1661, and now at the Importunity of / Friends made publick. / By Matthew Mead./

(*Patrick Neill & Company*.) 12mo. Title leaf + (iii)—(xvi) + pp. 17–224. $4\frac{7}{8} \times 3$ (cut down).

[The late Rev. T. W. Carson, Dublin.]

The "Lavens M. Ewart" Collection in Linen Hall Library, Belfast.

Brit. Mus. / 4474. a. 89.]

11. 1700. The Life, Death, and Burial of John Flavell, and two Sermons, The Character Of a Compleat Evangelical Pastor: Drawn by Christ, Mat. 24, 25, &c., and a Coronation Sermon. John Galpine. (*Patrick Neill & Company.*) 12mo. 3 × 4 $\frac{7}{8}$.

[First title leaf, wanting, pp. iii-xviii (Mr. John Flavell. The Epistle to the Reader, giving a brief account of this Excellent Author, h(is) Character, Life, Death, and Burial a couple of learned . . . Sermons, &c., &c.) + pp. 19-56. (A Coronation Sermon preached at Dartmouth, &c.)—last p. blank + Title leaf (The Character of a Compleat Evangelical Pastor, &c.)—Verso blank + pp. 59-105].

[R. M. Young, Belfast.]

THE
CHARACTER
Of a Compleat
Evangelical Pastor ;

Drawn by CHRIST,

MAT. 24. 45, 46, 47.

Opened and applied in a SERMON
intended to be preached at *Taunton*, in
the County of *Somerset*; at the Desire,
and by the Appointment of several

United Brethren,

Of *Gloucester*, *Dorset*, *Somerset*, and *De-
vonshire*, at their Meeting there, *Sep-
tember*, 1691.

By JOHN FLAVELL, late Preacher
of the Gospel at *Dartmouth* in *Devon*.

B E L F A S T,
Printed by *Patrick Neill* and Company, and fold
at his Shop. 1700.

FIG. 1.—Facsimile of 2nd Title-page of No. 11.

12. 1700. Sighs from Hell; / or the / Groans of a damned Soul. / Discovering from the 16th of Luke, the / Lamentable State of the Damned. / And may fitly serve / As a Warning-word to Sinners, both Old / and Young, by Faith in Jesus Christ, / to avoid the same Place of Torment. / With a Discovery of the Usefulness of the Scriptures, / as our safe-Conduct for avoiding the Torments of / Hell. John Bunyan. (*Patrick Neill & Co.*) 12mo. Title leaf, + iii-vii, pp. 8-192. 4 $\frac{5}{8}$ × 3.

[Brit. Mus., C. 58. aa. 4.]

13. 1700. The Great Concern: or a Serious Warning To a Timely and Thorough Preparation for Death; With helps and Directions in Order thereunto. Edward Pearce.

(*Patrick Neill & Company.*) 12mo. 5 × 3 $\frac{1}{2}$ (cut down).

[The late Rev. T. W. Carson, Dublin; The "Lavens M. Ewart" Collection in Linen Hall Library, Belfast.]

14. 1700. Time and The End of Time, in two Discourses: The First about Redemption of Time; The second about Consideration of our latter End. John Fox. (*Patrick Neill and Company.*) 12mo. 5 × 3 $\frac{1}{2}$. 238 pp. (advertisement on last page).

[Linen Hall Library, Belfast.]

15. 1700. War with the Devil: or, The Young Man's Conflict, with the Powers of Darkness; in a Dialogue, Discussing the Corruption and Vanity of Youth, the horrible Nature of Sin and deplorable Condition of fallen Man. Also a Definition, Power, and Rule of Conscience, and the Nature of true Conversion to which is added, An Appendix, containing a Dialogue between an old Apostate, and a young Professor, Worthy the Perusal of Δ ll, but chiefly intended for the Instruction of the Younger Sort. B(enjamin) Keach.

(*Patrick Neill & Company.*) 12mo. 5 × 3. 180 pp. + 1 leaf (advertisement).

[The "Lavens M. Ewart" Collection in the Linen Hall Library, Belfast.]

16. 1700. A Most / Familiar Explanation / of the / Assemblies / Shorter Catechism /. Wherein their Larger Answers are bro / ken into lesser Parcels, thereby to let / in the Light by degrees into the Minds / of the Learners. / To which is added, in the close, a most brief / Help for the necessary, but much neglected Du / ty of Self-examination, to be daily perused. / And to

this is subjoined a Letter of Christian Counsel to a destitute Flock. By Jos. Allaine.

(Patrick Neill & Company.) 8vo. Title leaf + (iii)-(vi) + pp. 7-144. 4 $\frac{5}{8}$ × 9 $\frac{7}{8}$.

[Brit. Mus. /3505. aa. 103: cut down.]

17. [1700 ?.] The New Testament. (St. Mark.) Fragments. 2 cols to a page. (Neill.) 8vo. 6 × 4.

[Linen Hall Library, Belfast. (Presented by Dr. J. S. Crone.)]

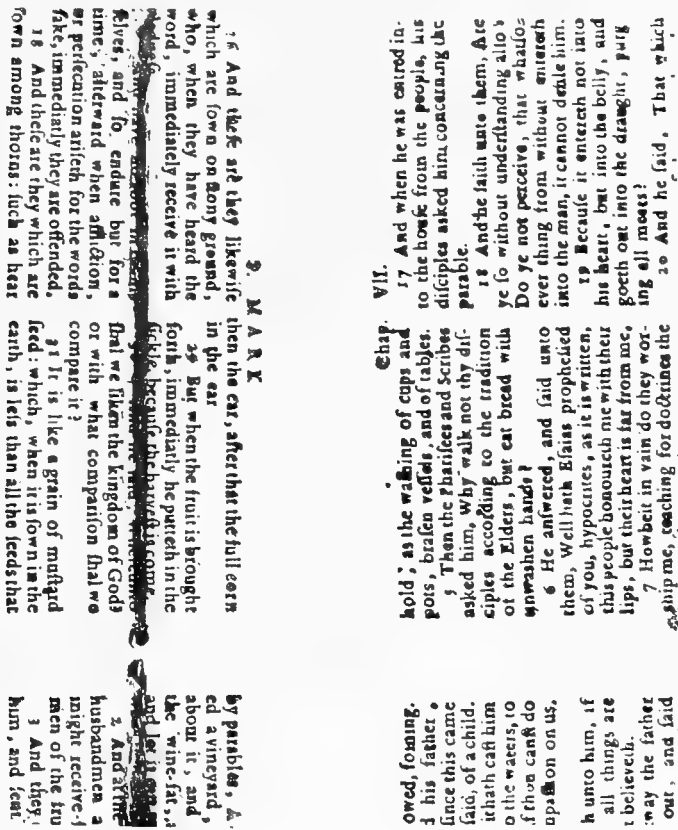


FIG. 2.—Facsimile of part of No. 17.

18. The Scottish Catechism, with the Solemn League and Covenant.

[See No. 1 in this list.]

In the above notes I did not dwell sufficiently on the value of Patrick Neill's advertisements, appearing at the end of some of the extant works he printed, as evidence of his activity as a printer and the extent of the output of his press. In the third edition of his Catalogue, the late Mr. J. Anderson, at page 6, gave, in very brief form, two of Neill's advertisements, containing about fifteen titles, not one of which was then (1890) known to be extant. About nine of these advertised titles have now been found and noted, some indeed imperfect or in a fragmentary state, but still there is thus confirmed the accuracy of Neill's advertisements, and much encouragement is given to further search for those still untraced, and for perfect copies of those only at present evidenced by incomplete copies.

I might add that a facsimile of the title-page of No. 9 (the Psalms) in this list will be found at page 14 of "Historical Memorials of the First Presbyterian Church of Belfast" (Belfast, 1887), and also of its silver-bound cover and clasps. Similarly, a reproduction of the title-page of the "New Testament in Verse," No. 8 in this list, will be found in Vol. XII of the "Ulster Journal of Archaeology" (1900), at page 41.

V.

NOTES ON CERTAIN IRISH INSCRIPTIONS.

BY PROFESSOR R. A. S. MACALISTER, LITT.D.

PLATE VI.

Read 24 JANUARY. Published 10 APRIL, 1916.

During the summer of last year I had opportunity of examining a number of inscriptions, and made certain observations which I desire to bring before the Academy. As it happened, most of the inscriptions that came under my notice are extremely difficult to deal with.

1. KNOCKSHANWEE, CO. CORK.

I have carefully re-examined this series of inscriptions, now making a brave show in the corridor of University College, Cork. I am glad to be able to say that I have found nothing to modify in the readings contained in my paper on this important series of monuments.¹ I need only note that I am now certain that the name on the stone numbered 4 is CULRIGAI, and not the alternative there given, CUBBRIGAI. Moreover, I now doubt whether the inscription is imperfect after all. It seems at first sight to read, as I gave it in my previous paper, CULRIGAI MAQI MENU MAQI . . . , which implies that a name has been lost from the top of the stone; and while this reading is still possible, it may be that the last two words are really one, and that we are to read MENU MAQI as a name.

2. KILMARTRANN, CO. CORK. PLATE VI.

About nine years ago I discovered an Ogham stone in a rath-cave on a townland called, on the O. S. map (6-inch, sheet 50), "Kilmartin Lower." The real name of the place is, however, Kilmartrann, if we may trust local pronunciation. In the position of the stone it was impossible to read more than the first few letters, but these were such as to excite a lively desire to know how the inscription finished. I am now able to complete the inscription, having uncovered it with the invaluable co-operation of the Rev. Professor Power, of University College, Cork. The stone is a clay-

¹ Proc. R. I. A., vol. xxxii, section C, no. 8.

slate, though more closely grained than many of the blocks of this unsatisfactory material, which is so frequently used in Co. Cork for Ogham writing. It measures 5 feet 7 inches by 1 foot 8 inches by 10 inches. The inscription runs up the left angle, over the top, and a little way down the right angle. It is in excellent order; well and carefully cut in the first instance, every score is clear and fresh, except the Δ at the end of the first word, which has been broken off—probably by the rath-builders, when they adapted the stone as a lintel for the roof of their cave.

The reading is as follows, beyond all possibility of doubt and dispute—

UDDMENZA CELI NETTASLOGI.

The last word is the easiest, so we begin by noticing that it evidently is the familiar name *Nad-sluaigh*, common in the genealogies and elsewhere in the MS. literature, though not hitherto found in any form in Ogham.

The second word marks the owner of the monument as a “follower” or “tenant,” or in some such way a subordinate of this Nadsluaigh. In a previous paper¹ I have enumerated the stones bearing this formula, and, as some may recollect, I have endeavoured to find it also hidden in the enigmatical inscription at Killeen Cormac.

But the crux of the inscription lies in the first word, the name of this follower of Nadsluaigh. This name is absolutely unique in Irish literature, so far as I, or the scholars that I have consulted, are able to say. The only ray of illumination, a feeble one at best, comes from the name UDDAMI, on one of the Whitefield stones; this does not help us much, as UDDAMI is itself highly problematical.

Professor Mac Neill kindly allows me to quote the following ingenious note on the name, which he has sent me:—

“Taking UDDMENZA to be genitive singular, to what declension is it to be referred? So far the only Ogham genitives ending in *a* that have been identified belong to the consonant declension, *a* representing earlier *us<os*.

“UDDMENZA should be a syncopated form, since unsyncopated *ns* must be as old as *nt, n*, which already in the earliest known Ogham spelling have become *d, g*. However, the conversion of *ns* to *s* still took place after the introduction of Latin among the insular Celts; *mnsa>més>mias*, *census>cís*, *sponsa>pós*; later *sensus>siáns*. The probability is that some vowel has disappeared between *n* and *s*, as in *sinser<*senisser^{os}<*senister^{os}*. So far, *mí*, genitive *mís*, is the sole authenticated instance of a consonantal stem ending in *s(<ns)*.

“For the prefix UD see Thurneysen, *Handbuch*, § 387. The *d* coalesces

¹ Proc. R.I.A., vol. xxxii, section C, p. 230.

with a following consonant, producing gemination. Moreover, the prefix rarely stands first, being usually preceded by another preposition; but among the exceptions we might perhaps expect proper names. It means 'out, from, away,' and is cognate with English 'out.'

"We might take the name to be foreign, and so indeclinable (like *Patraic*, *Brennain* = *Brēnhin*, *Conaing*, etc.), and this would relieve us of all necessity to look for an Irish explanation or a ms. equivalent. But *Uddmēnsa* was a *céle* of *Nat-Sluaigh*, and it seems to me that we must take *céle* in the sense of the law-tracts, i.e. a vassal or tenant; and one does not expect to find a foreigner in that status. He would more probably be a *magus* (*maug*, *mug*) or slave. Otherwise I should suggest that the name might represent something like *Oswin*.

"If we admit a very late date for the inscription, then possibly *Uddmēnsa* is an *-o* stem (or even an *-io* stem), with the final *i* of the genitive dropped as is *muco(i)*. Cf. *Vequoanai*. However, we find *Fiachnai*, *Rétai*, *Riatai*, etc., through the O. I. period, so that *muco(i)*, if authentic, may have to be explained, like O. I. *mocu*, as having become an indeclinable proclitic. This explanation clearly could not hold for a name like *Uddmēnsa*.

"A possible or probable connexion with *UDDAMI* obviously arises. *UDDAMI* is an eponym (i.e. is preceded by *mucoi*), but has not been identified or equated with any name otherwise known. Nor is there any known analogue for the derivative ending *-ēnsa*. We might imagine as possible the use of the Latin ending *-ēnsis*. The gens named *Conchubuirne* or *Dál Conchubuir* were also called by the Latinists *Conchuburnenses*; *Ultanus episcopus Conchuburnensium* = *Ultán moccu Conchubuir*. Conceivably, then, a man surnamed *magi mucoi Uddami* would be called 'the Uddamensis' in Latin, just as *Oenu mocu Lóigse* could have been called 'in Lóigsech' in Irish. In a strange district this *Uddamensis* might easily become a proper name. In *Tir Conaill* at present, every bearer of the surname *Ó Duinn Šléibhe* is called *Uttach*, because the family originally belonged to the *Ulaidh* of East Ulster. The difficulty lies in the substitution of a Latin for an Irish ending (*Uddam-)*ach<*ácos*. Such substitution would imply that *Uddmēnsa* belonged to a Latinist, i.e. Christian, community. In that case *Nat-Sluaigh* would probably have been the superior of the community, and *Uddmēnsa* one of his *manach* tenants; for it is fairly clear from *Riagail Pátraic* that the relation of the *manach* to the *airchinnech* was similar to the relation of the *céle* to the *flaith* in a civil community. It is no wild suggestion that in a Christian ecclesiastical community, a man of the gens *mucoi Uddami*, coming from some distance, should have entered as a sort of lay-brother (= *céle* = *manach*), and should have become known as 'Uddamensis.'

“Why, then, should the genitive end in *a*? The inscription, like all other Oghams, except the latest, belongs to a period of rapidly weakening Auslaut. If the ecclesiastics who spoke some Latin called this man *Uddamensis* (*-i, -em*), the people around who spoke no Latin would have called him *Udd[a]mens*, just as *sensus* became *sians*, *pacnitentia* *pendait*, etc. For the inscription it became necessary to provide *Uddmens* with a genitive. Either arbitrarily, or because the Latin genitive in *is* was known to correspond with the Irish genitive in *as* (*<os*)—cf. *míl*, gen. *míled*<**militas*, from Latin *miles*, *militis*), the genitive ending of the consonant declension was chosen. The omission of the Auslaut is elsewhere exemplified, e.g. *Lugudeca*, *neta*. In fact, if the name, as a strange one in form, remained uninflected in the Irish usage, the Ogham would naturally refer it to the consonant declension, since its popular genitive already ended in a consonant, being identical with the nominative.”

3. CASTLETIMON, CO. WICKLOW.

With Professor Mac Neill I have re-examined this inscription for the purpose of determining whether the last letters are CAGI or, as read by some, CAGNI. We have definitely settled that the inscription is to be read

NETACARI NETACAGI,

though there still remains a doubt as to the division into words. It might be read as two names, on the analogy of an inscription in Wales that reads TEGERNACI DOBAGNI; this, I understand, is the rendering preferred by Professor Mac Neill. But it might also be divided into three words, NETACARI NETA CAGI, “of N. nephew of C.” The word for “nephew” should be NIOTTA, as is found on some stones; but there is precedent for the confusion with NETA, as on the third stone from Monataggart, Co. Cork.

4. DUNGIMMEN, CO. CAVAN.

This inscription was discovered so long ago as 1889 by Mr Charles Elcock, and published by him, but with no attempt at a reading, in the *Journal of the Royal Historical and Archaeological Association of Ireland*, ser. IV, vol. viii, p. 503. The sketch which he gives of the stone, and his description of it, are good; but he is so indefinite in his description of its situation that I lost a good deal of time in searching for it, and had nearly abandoned the quest, supposing the stone to have been destroyed, when I fell in with a woman who knew of a stone in a field which she herself had noticed for the first time only a few days before. This proved to be the monument sought for. To find it, take the road from Oldcastle to Kilnaleck; but when you

come to the cross-roads beyond Castlecor, instead of going straight on take the road to the right, towards Mount Prospect. At the next cross-roads turn again to the right, and the stone will be seen in the field to the left, a few yards from the road.

The stone is a sandstone, standing 5 feet 3 inches above ground, measuring in cross-dimensions at the bottom 1 foot 7 inches by 1 foot 2 inches, tapering almost to a point at the top. There are two plain crosses cut on the south face, another on the west face, and yet another, of small size, on the north face; the east face is uninscribed. These crosses are simply two lines, one vertical, the other horizontal.

There are scores on all the angles, but these are of no purport except on that to the north-west. Here there is a short inscription, so carelessly and rudely cut in the first instance, and so polished with the rubbing of cattle ever since, that it is difficult to make anything out of it. My reading is

OVOMANI,

but with considerable doubt as to the last two letters. The *m* is reversed, and the initial *ov* damaged by a hole weathered in the stone. At a distance of 4 inches, in front of the first score of the initial *o*, is a faint scratch like another *m*; there would be room for five more scores between this and the *o*. But, on the whole, I was inclined to reject this, and to confine the letters to those above given. I cannot with any certainty offer a parallel to the name.

5. MULLAGH, CO. CAVAN.

This inscription was described in 1875 by Sir Samuel Ferguson in a short paper published in the *Proceedings* of this Academy.¹ Since then I cannot find that anyone has seen the stone. In fact, I heard that it was lost. It was, however, re-discovered by Mr Alphonsus O'Farrelly, of the Royal College of Science, who told me of it; and, being at Oldcastle in August, I made a pilgrimage to Mullagh in search of it. After spending two hours in a hunt through the luxuriant growth of nettles in the neglected old graveyard, I found it at last. The monument is of limestone, 2 feet 1 inch above ground, and in cross-dimensions $10\frac{1}{2}$ inches by $4\frac{1}{2}$ inches. It is in perfect order; the scores are neatly made, and read without the smallest doubt, in a downward direction —

OSBBAR

which is Sir Samuel Ferguson's reading. He added a faint second *r*, however, which is nothing but some casual scratches low down on the stone, and

¹ Ser. II, vol. i, p. 303.

speculated on the possibility of their being an N, to complete the name OSBBARRN. This is, however, inadmissible. There is a long distance below the first R, bearing no trace of writing, and no reason why it should resume at the point where this theory requires. I have myself a similar palinode to publish. Reading from Sir Samuel Ferguson's paper squeeze, which I have, I thought I had made out *Osbbarigomna*: the squeeze had suffered injury, and the apparent extra scores were mere creases in the paper. It is a warning that *nothing* can be substituted for an inspection of the original monument.

The inscription is probably very late. I can offer no satisfactory explanation of the name OSBBAR.

6. AGHABULLOGE, CO. CORK.

This stone is of sandstone, standing 5 feet 2 inches above ground; the inscription is on the north-eastern angle. I had seen it before, but thought it advisable to examine it afresh, for it seemed to bear a name beginning UDD—, and I hoped that it might help to elucidate the name UDDMENZA, discussed above. At the bottom the inscription is in perfect order, and the well-cut long scores recall the technique of the Kilmarrann inscription. The last few letters, also, are quite clear. The middle of the inscription is, however, desperate. The stone bears a plain cross of two lines on the H surface.

Of the beginning of the inscription, ANMCORR X MAQ, there can be no doubt. The X is really two V's, lying on their sides, with a distinct space between the angles, thus, > <: the X letter at the end of the inscription, on the other hand, is formed of crossing lines, like an x. After the Q there follows immediately v . . DD . . . M X TT. The v might be an s—it is treated as s in Bishop Graves' reading of the inscription—but the apparent last score is too indefinite to be taken as an intentional mark; it contrasts notably with the other three. After the v is a series of vowel-points, that look more like UU than anything else, and as such Brash has read them. There is room for a vowel-point before, and another after, the first of these apparent U's, but I could not feel sure that they were actually there. If they were there, the combination of vowels would become IU. Then come the two D's, certain, though the scores of the first of these letters are damaged by a chip broken from the angle. After these come faint traces which formerly I read RA; I am now inclined to make them GLO. The B-surface is here quite worn and broken away, and covered with a thick growth of lichen; the tops of the scores of the apparent G are visible, and possibly it is not mere imagination that sees traces of the L under the lichen. If this growth could be removed, we might attain a more certain reading of this important inscription.

As to the verbaton of the inscription, the beginning must be ANM CORRE, or ANM CORRK, according to the value to be assigned to the X character. But we are then confronted with an ambiguity. Are we to read MAQ V_u¹UDDGLOMETT or MAQV_u¹ UDDGLOMETT? I incline to the latter. The combination of vowels IU in an Ogham word is rare, and UU unheard-of; though we must, on the other hand, postulate an unprecedented spelling for *magi*, namely, MAQVU or MAQVI. If this be right, we have another name beginning with UDD-, but it is not any more intelligible than UDDAMI or UDDMENZA. Can these names be pre-Celtic?

Professor MacNeill, in the note printed above, has commented on the unusual collocation NS in the latter name. The other stone from Aghabulloge, now in the museum of University College, Cork, shows this combination twice over. By most deplorable ill-luck this stone was used by masons as building material in the church of Aghabulloge, and they chipped away nearly all the H-surface, carrying off the H consonants and the vowel-points. By measurements of the tips of the B letters and of the spaces between them some approximation to a reading can be obtained; there is just room for

. . . NSAMA Netta ANSILI AVI DETTAS,

the capital letters denoting those characters which still exist in part, the minuscules those which can be inferred from the spaces. The L might be a G, but otherwise there is no doubt as to the reading of the surviving letters, and the restoration suggested is at least the most probable.

7. KNOCKORAN, CO. CORK.

A couple of years ago I examined this stone with the scholar whose recent death we all deplore, the late Sir John Rhys. We agreed in reading the latter part of the inscription as Brash had taken it, MAQI AILLUATTAN; but Sir John Rhys noticed an M before the opening word that had never been observed before, with a space after it that probably held five vowel-points. The inscription, therefore, begins MINNACCANNI, not ANNACCANNI. At my recent visit to Cork I confirmed this reading. The whole inscription is thus MINNACCANNI MAQI AILLUATTAN. No one looking at this stone with an unprejudiced eye can possibly doubt that the cross has been added to it at a date later than the inscription.

8. GLENNAWILLEN, CO. CORK.

At the same time I corrected my previous copy of the two inscriptions on the Glennawillen stone, also in the College Museum. It is a very interesting case of the later appropriation of an Ogham stone for another inscription, unconnected with the first. The inscription on the left-hand edge is cut in

very fine lines, and is difficult to read, especially towards the end, where the stone is much flaked. I now read this inscription COLOMAGNI AVI DUCURI. The other inscription, on the right-hand angle, is punched in broad and bold lines; it reads BRUSCO MAQI DOVAL^oSCI.

9. BARNAFEADOG, CO. LOUTH.

I found this inscription about eighteen or twenty months ago, but deferred publication till I should have an opportunity of re-examining it. I visited it first in the company of Mr Dolan, of Ardee; and it was while examining it as a gallán, or standing stone, of unusual size that the faint Ogham scores caught my eye. I returned to it again with Mr Dolan and Mr Tempest, of Dundalk, on the 10th September last, and confirmed my former reading. The stone is a sandstone, standing in a field close to the road; it is marked "standing stone" on the O. S. map, sheet 17. The scores were punched on the eastern angle; they are so widely spaced that, though the inscription contains only one word and the stone is 8 ft. 6 ins. high, the writing completely fills the inscribed edge. The name on the stone is

BRANOGENI,

which is new to Ogham nomenclature. A neuter of an ethnic derivative seems to survive in *Brannogenion*, the name of a town of the Ordovices of North Wales. Other compounds of *Bran* ("raven") found on inscriptions are *Branittos*, *Rialobrani*, etc.

This is the first Ogham to come to light in Co. Louth. A photograph will be found in the current number of the Louth Archaeological Society's Journal.

10. DROGHEDA, CO. LOUTH (FIG. 1).

A slab of grit-stone, at present lying in the porch of St. Peter's Church, Drogheda. It is said to have been brought thither from Rokeby Hall, whither it had been taken from an old graveyard called Marlay.¹ It is roughly circular, measuring 2 ft. 7½ ins. by 2 ft. 8½ ins. in diameter, and 8 ins. thick. The devices are punched, rather roughly, on the face. They consist of two crosses, one of them quite plain, the other ornamentally treated (see the illustration); an inscription in two lines, above and below the crosses; and a circular border-line surrounding the whole.

The inscription is not easy to understand, and the fantastic forms which the artist has given to the letters, with exaggerated serifs, do not make it any clearer. It is evident that the bottom line is to be taken first, and that the

¹ R.S.A.I. *Journal*, vol. xliii, p. 327.

legend contains two names connected with the letter F, doubtless an abbreviation for FILIUS. As the scribe seems to have thought he was writing Latin, he has not ventured to provide the father's name with a genitive inflexion.

The first name looks more like COCMAN than anything else. A flaw running across the stone interferes with the third letter. It might possibly, though less probably, be a T; but neither COCMAN nor COTMAN is a name which is to be found elsewhere. On the other hand, COLMAN is one of the commonest names in Early Christian literature, and it is not impossible



FIG. 1.—Inscription at Drogheda.

that the damaged letter is really an eccentric form of L, the top of the apparent c being only one side of the bifid serif at the top of the letter, and the other half being lost in the flaw. The curvature of the letter, which is carefully reproduced in the drawing, weighs heavily against this easy escape from the difficulty. Nor is there any trace of the cross-stroke which would give us an equally well-known name, COEMAN. The father's name is TNUDACH: this name is found in *Four Masters*, A.D. 709.

11. DELGANY, CO. WICKLOW.

In the old churchyard of Delgany there stands the stump of a cross. It is 6 feet high by 1 foot 6½ inches by 11 inches. The northern face of the stone is quite plain. On each of the two sides there is a sunk panel, containing no design. The south face has at the top a panel containing a key-

pattern. mutilated by the fracture of the stone, and much worn and scaled. Under this is an inscription in six lines. The stone is a very loose-grained granite, and it has disintegrated to such an extent that the inscription, though at first sight it looks plain enough, is in reality all but illegible. I have twice examined it during the summer of last year; the second time I had the advantage of Prof. MacNeill's company. We made it out to read as follows :—

OR DO
 ANLUA
 OCUS
 DU CON
 BRAN
 SAIR.

Oroit do Anlua(n) ocus du Conbran sair—"A prayer for Anluan and for C'ubran the wright." It is, however, impossible to be absolutely sure about this or any other reading. The illustration and reading in Petrie's "Christian Inscriptions" (vol. ii, p. 61) are certainly wrong. I have been unable to trace any persons of these names that might have been commemorated by the cross.

12. DUNLEER, CO. LOUTH (FIG. 2).

I am indebted to Mr Dolan and Mr Tempest for calling my attention to this monument, which, so far as I know, has not hitherto been published. It is lying, with a number of other stones, bearing crosses (but no inscriptions)

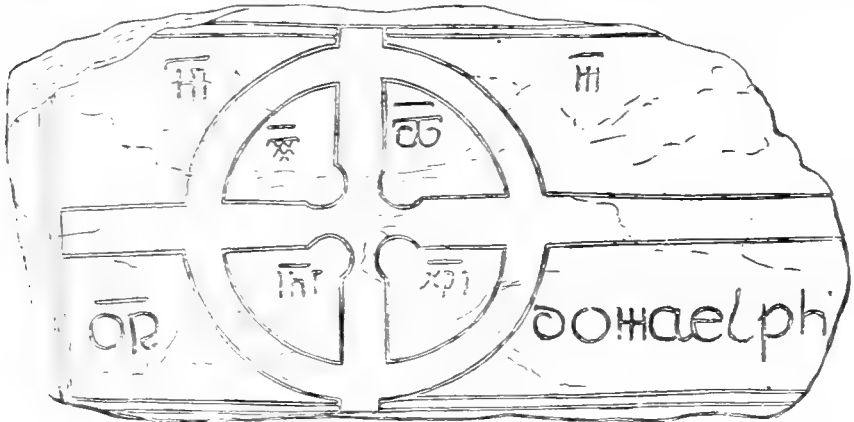


FIG. 2.—Inscription at Dunleer.

in a hall attached to the Protestant parish church. It is a slab of sandstone, 3 feet 3½ inches by 1 foot 8 inches by 2¼ inches. The end of the stone is broken off, but otherwise the condition is good. This fracture, however, takes

off the most important part of the owner's name, which was probably *Mael-Phatraic*; the inscription is in the usual formula, OR(oit) DO MAELPH . . . "a prayer for Mael-Ph . . . In the cross-head the stone bears the Alpha and Omega, as well as the letters IHC XPC, found on a few of these slabs, such as those at Glendaloch and Tullylease. In the other cantons are groups of three strokes. Are these for an M, standing for MARIA? I can think of no other explanation. If it be correct, the stone is symbolically unique among early Christian slabs in Ireland. Compare the M in the initial of the name on the stone.

13. TOOREENBANE, CO. CORK (FIG. 3).

The markings on this stone were first noticed by Sir Bertram Windle, in whose company I visited it. It will be found on O.S. Sheet 48, marked

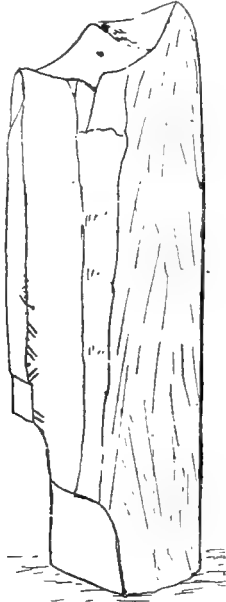


FIG. 3.

"Gallaun"; near it are a stone circle and other megalithic remains. It is a sandstone, 6 feet above ground, and 2 feet by 1 foot 2 inches in cross-

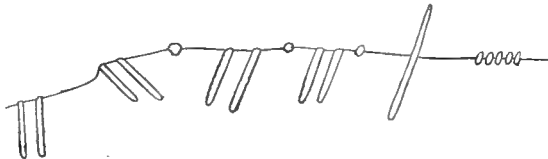


FIG. 4.—Inscription at Tooreenbane.

dimensions. The inscription is on the eastern angle; it is in very minute scores, and much cattle-worn, but can all be made out with care. From the

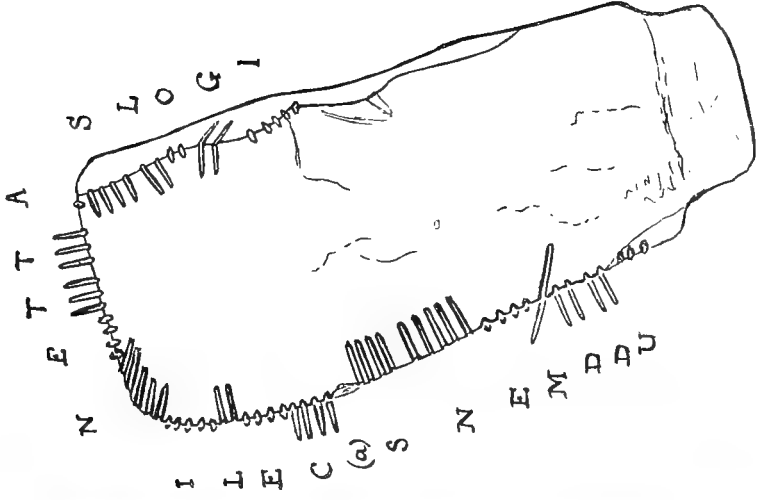
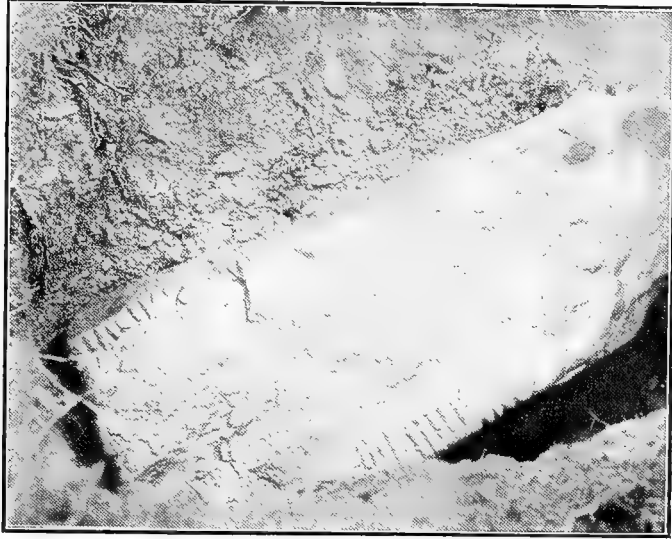
facsimile here given, reduced from a rubbing, it will be clear that we have not to deal with a formal inscription. The symmetrical arrangement of the scores, sloping in contrary directions, and for the greater part consisting of groups of two strokes alternating with a single vowel-point, shows that we have to do with an imitation ogham. By this is not meant a forgery, but an ancient attempt to secure for the dead, or for his representatives, the advantages of having an inscribed tombstone, without a real knowledge of the ogham character and its construction. We have several examples of this type of monument, commonly called by the name (first given them by Sir S. Ferguson, I believe) *pseudo-Oghams*. The stone before us is the best imitation ogham that I have seen.

14. RUSHENS, CO. MAYO.

I may take this opportunity of recording an ogham that has so far escaped publication, though its existence has been known for several years. It is one of those of which the discovery lies to the credit of Sergeant Lyons, of Athenry. I have not yet seen it, but give the following reading from a rubbing and photograph that Sergeant Lyons has kindly put at my disposal:—

ALATTOS MAQI R

The upper end is fractured. There are some scores marked as “very doubtful” before the initial A by Sergeant Lyons, and as they are irregular and make no sense, it would seem safe to reject them. The name ALATTOS, though not found before with its sibilant genitive, is quite well established. At Whitefield we have the monument of ALATTO CELI BATTIGNI; at Corkaboy we have another reading CATTUVVIRR MAQI RITTAVVECAS MUCOI ALLATO; and on the splendid monument at Droumatouk, LUGUNI LOCID MAQI ALLOTO. All these stones are in Co. Kerry.



Ogham Inscription at Kilmotranny, near Donoughmore, Co. Cork.

MACALISTER.—NOTES ON CERTAIN IRISH INSCRIPTIONS.

VI.

THE HISTORY AND ANTIQUITIES OF INIS CEALTRA.

BY R. A. S. MACALISTER, D.LITT., F.S.A.

PLATES VII-XXVIII.

Read APRIL 26, 1915. Published JUNE 30, 1916.

THE island known as Inis Cealtra, though in modern times often spoken of as "Holy Island," lies in Scariff Bay, an inlet of Loch Derg. It is about eight miles, as the crow flies, north of Killaloe, and about seventeen chains from the nearest point of the mainland. The site is close to the boundary of counties Galway and Clare; originally in the latter county, it was transferred to Galway in 1849, for reasons set forth in correspondence printed below, and it is to be found on sheet 136 of the six-inch Ordnance map of that county. By an Order in Council, dated 31st August 1899, referring to an adjustment of boundaries, the island and lands adjoining were restored to Co. Clare. The area of the island, according to the latest edition of the Ordnance map, is 49 acres, 2 roods, and 10 poles.

My first visit to Inis Cealtra was paid in May 1906, in the company of the late Dr. Cochrane, on one of his periodical official visits of inspection, the remains on the island being vested in the care of the Board of Public Works. In 1909 I revisited the island, in the company of Mrs. J. R. Green, Mr. F. J. Bigger, and Mr. P. Colum, all of whom gave me valuable help in making rubbings of the many sepulchral slabs. I have further to thank Mr. Bigger for the loan of a copy of the Board of Works Report, 1879-80, which contains an account of the restoration work done on the island. I have thrice examined the remains since then, the last time being in September 1915. On these latter occasions I enjoyed the hospitality of Mr. and Mrs. Hibbert, owner of the island, to whom I have to tender my very special thanks for the practical interest which they took in my work. Besides those above mentioned, I have to thank Mr. H. S. Crawford for the loan of photographs and rubbings taken by himself, and Mr. T. J. Westropp and Dr. Henry for valuable information, duly acknowledged below.

I divide this paper into three parts. In the first are set forth the details

that I have been able to glean regarding the history of the island. In the second I describe the ruins and monuments as they are to be seen at the present time. In the third some miscellaneous legends and traditions connected with the island are noticed.

PART I.—THE HISTORY OF THE ISLAND.

In a letter addressed to the Rev. M. J. Kenny, P.P. of Scariff, by the late Professor Brian O'Looney, and by its recipient communicated to the "Freeman's Journal" for 26th May 1876, the writer says that he takes a great interest in the island "on account of its historic remains, its ancient history, and the number and variety of the legends and traditions concerning the pagan and Christian history of the place that have come down to us in our ancient manuscripts." He further says: "The history of the place, even in the dark ages of paganism, was most interesting, and is in great part preserved in prose and verse in our native literature. It was then known under a pagan name as the retreat of kings, druids, and warriors, and the scene of many an adventure and enterprise." This letter is quoted extensively in O'Hanlon's "Lives of the Irish Saints," vol. iii, p. 942. On consulting the original newspaper we find that for not one of these bold statements does O'Looney give any authority, not does he enlighten us as to what was the "pagan name" to which he makes so tantalizing an allusion. I have found it impossible to get on the track of what was in his mind when he penned the lines above quoted, and much more to similar purport in the same letter. Though, as we shall see presently, there are not wanting hints that the sanctity of the island was inherited by the Christians from their pagan predecessors, I suspect that Professor O'Looney had no more basis for his statements than this: the island possesses a round tower, which possibly he imagined to be a pagan monument; and he probably interpreted the name of the island as "the Island of Celtchair"—a translation favoured by Dr. Joyce in the third volume of his book on Place-names, and by him probably borrowed from O'Donovan. The name, however, can have nothing to do with "Celtchair." It simply means "Church Island": *celtair* means, *inter alia*, a "church, fane, temple" (see Meyer's "Contributions to Irish Lexicography," s. v.). There are no remains of pagan date extant on the island, unless the large rough stones in the Anchorite's Cell be the *disjecta membra* of some megalithic structure.

According to the common account, the monastic settlement of Inis Cealtra owes its origin to Caimin, half-brother of Guaire Aidhne, pentarch of Connacht. But when we refer to the records, we find that Caimin was

by no means the first to seek a retreat on this island. Colgan, who had access to several lives of Caimin, says that he began to be distinguished by his virtues and his miracles about the year 640. Now, a certain Stellan of Inis Cealtra was already in existence at this time, and he predeceased Caimin by three years. But Colum of Inis Cealtra was earlier still, for he died in the pestilence known as the Crom-Chonail in the year 551 (548, Four Masters; 542, Annals of Innisfallen). Even he was not the first, for, as we shall see presently, he dispossessed a yet earlier occupant.

Moreover, we cannot evade the difficulty by supposing Caimin's predecessors to have been solitary hermits, thus preserving the truth of the story that Caimin first founded the *community*. For Colum was accompanied by a large number of followers: and a later abbot is described by the Four Masters (A.D. 1009) as *comharba* or successor of Colum, not of Caimin.

The first historical document to which we shall allude in connexion with these obscure personalities is the *Acta Sancti Columbae de Tyre da Glass* in the *Codex Salmaticensis*. The Latin original of the paragraphs which specially interest us will be found at col. 453 of the Marquis of Bute's sumptuous edition of the Codex. We give here a translation:—

“15. After this, Colum went out into the territory of Connacht, and there founded a place named Tir Snama, in the lands of Ui Maine; and the number of his followers was 740. He also held other places about the lake called Loch Deredere [Loch Derg], namely ‘Aurraith Tophiloc,’ and he dwelt in ‘Toim Bonden.’ An angel of the Lord appeared to him, saying to him, ‘Arise, and go to Inis Cealtra.’ He found there a certain old man by name Maccriche. To him the angel said, ‘Leave this island to holy Colum, and go to another place, and there be a monk.’ And so he did.

“16. Now in the day of the arrival of holy Colum at Inis Cealtra, the Lord made for him a supper. For there was in that island a tree by name *tilia*,¹ whose juice distilling filled a vessel; and that liquor had the flavour of honey and the headiness of wine. And with that best of liquors were holy Colum and his followers filled (*saturati*).

“17. Now Colum lived in Inis Cealtra for a long time, and the birds of heaven were wont to have friendly intercourse with him, and to sport, fluttering about his face. Then Nadcuimius [Nadchaoimhe], his pupil, said to him: ‘Master, wherefore do the birds not flee from thee, whereas us they avoid?’ To him Colum answered, ‘Wherefore should birds flee from a bird? For as a bird fieth, my mind never ceaseth to fly up to heaven.’

¹ A glossator has inserted the words “scilicet leman.”

"18. On a certain day, when one of the brethren was working outside the island, to the south, he suddenly fell dead. When this was told to Colum, he said to the brethren, 'Go ye to him and say to him, In the name of Jesus Christ, Colum saith unto thee, Arise!' When the brethren had said this, he rose immediately from death as from sleep, and came in perfect health with the brethren to the island.

"19. But on another day, when holy Colum was voyaging from Inis Cealtra on Loch Derg with his pupils, Nadchaoimhe and Fintan maccu Echdach, he saw that place where now is Tír dá Glas [Terryglass]. Then Colum arose in the boat and sighing he said, 'Oh that in yonder place were my resurrection!' Which was fulfilled, for afterwards he was buried in that place by Nadchaoimhe his pupil.

"20. After this, holy Colum, not enduring the vexations of men visiting him, and shunning earthly pomps, left Inis Cealtra for an island of that sea which is called Luimnech, and there held Inis Eire . . ." In this new retreat, which was less accessible from the shore, and where he was less likely to be troubled by the *molestiae hominum frequentantium*, we may leave him, as Inis Cealtra does not again appear in his life.

After his death, however, we read that he revisited the island; for the faithful Nadchaoimhe, desirous of fulfilling the wish his master has expressed regarding his burial-place, and fearing lest the Ui Néill, in whose territory he had died, would not allow the body of the holy man to be removed, smuggled it out concealed in a waggon of corn, and after some adventures bore it to Inis Cealtra, where it lay buried for seven years, after which it was borne to Tír dá Glas for final sepulture. At each translation of the holy relics, we are told, the surface of Loch Derg was miraculously illuminated for three days and three nights. This story of the burial of Colum is referred to in the glosses to the Féilire Oengusso (R.I.A. edition, p. 182), and in the Martyrology of Donegal. Here is what the latter compilation says of Colum: "Colum of Tír dá Glas, son of Ninnidh, of the sept of Cathaoir Mór, king of Ireland, who is of the sept of Labhraidh Lore, son of Ugoine Mór, etc., and Mincloth, sister of Caemell, daughter of Ceannfhionnán, son of Ceis, son of Lughar, his mother. Oenghus calls him Colum, son of Criomthann, and other authors call him maccu Cremhthannáin. It was he gave the sacrifice to Findian of Cluain Iráird, and he was a disciple of Findian. Mochaoimhe of Tír dá Glas and Odhrán took his relics to Inis Cealtra, as Ciarán of Saighir prophesied in his own Life, chap. 6; and as Mochaoimhóg prophesied when he was baptizing Odhrán.¹

¹ Mart. Don., Dec. 13, ed. Todd and Reeves, p. 335.

I do not see the reference to the prophecy of Ciarán, at least not in the Life published in O'Grady's "Silva Gadelica."

Passing over details which, for our present purpose, are trivialities, we may concentrate our attention for a few moments on two points of considerable importance in the foregoing narrative: the personality of Mac Creiche, the old man dispossessed by Colum at an angel's bidding; and the incident of the lime-tree.

Mr. T. J. Westropp has most kindly put at my disposal the following notes on the extensive modern folk-lore concerning Mac Creiche:—

"The chief church, and where his name is best remembered, is Kilmacreechy at Liscannor. It lies near the shore of the bay, opposite a heap of rocks far out on the strand, and covered at high-water, called 'Maccreehy's Bed.' The north-west angle of the nave and its adjoining walls are early, and of massive masonry below; the upper parts, the south nave walls, and the chancel being late; some parts perhaps of the fourteenth century, but the bulk and most of the features of the late fifteenth century. The monument of 'St. Maccreehy,' in the north wall of the chancel, is curious, late, rather debased Gothic (two cinquefoil arches and a large quatrefoil between), the hood having a bold carving of a mitred head. The south wall of the chancel had a similar 'monument,' called after the saint's disciple and colleague, St. Mainchín. It has fallen, but enough remains to restore it. I give drawings of both monuments (the second restored), and a plan and photographs of the church in vol. iii of the 'Limerick Field Club,' pp. 193, 205. The pattern of the saint was held on Garland Sunday, and eventually slipped into local races. The usual documentary forms before 1700 are, Kilmaccrih, 1302; Kyllneicheiche na traga, 1420, an interesting and appropriate form; Kilmicrihy, 1571; Kilmacreechy, 1584; Kilmakrie, 1615; Killincrihy, 1617; Killmacrihy, 1675.

"St. Mainchín's church, of Kilmanaheen, has left no trace but the small graveyard of that name, on the north bank of the little river between Lehinch and Ennistymon, in marshy fields. I think a chief is said to have given his *dún* to the church there.

"I should have said that there are dragon heads, with large eyes and ears, on the monument of 'Maccreehy,' and a similar but far older (twelfth-century) head on the carved sill built into the south wall of Rath church.

The oblong foundation behind Colonel Tottenham's house, on Mount Callan, is said to have been a church of St. 'Maccreehy.' How far this was a conclusion derived from 'Maccreehy's' connexion with the church of Inagh (the 'Templeduff') I do not know. The Inagh churches (two) are entirely demolished, but *Teampull Dubh* is remembered. I found the head of the east window and some other fragments in the graveyard. They are of the late fifteenth century, a time of great building output in Co. Clare.

"The latest version of the legend of Mac Creiche I got locally was: There are *Loch na Bruckee*, *Awen na Bruckee*, and *Poul na Bruckee* (i.e., *loch*, *abhainn*, *poll*, *na brúic-shídhe*, the lake, river, and pool, of the fairy badger). The last is where the river goes underground. A fairy badger lived at the lake and did awful harm eating cows, till 'they' sent for some saints (or clergy), who made it worse. Then 'they' sent to Liscannor, for one who got bells and croziers, and drove it into the lake, where he chained it. I gathered (without leading questions) that the people 'prayed' to the big fairy badger to pacify it. I did not find Mac Creiche's name when I got the legend at Rath before 1894; he was, as now, 'the saint from Liscannor'; but this anonymity is usual, for Enda was in 1878 'the saint from Aran,' and Breacan 'the saint from Toomullin,' and in 1894 Mo-Chulla was 'the saint at Tulla.'

"Brian O'Looney told Dr. MacNamara (and myself later on) that Mac Creiche was

named in the 'Bruckee' legend at Rath. All the versions agree as to the six 'saints' failing to overcome the monster. I heard that it was 'a badger as large as a cow,' before 1894. It was chained by Mac Creiche and thrown into the lake. When the other saints prayed, it only ran out and ate and killed more cattle and people.

"I have never heard what became of the *bachall* and bell of Mac Creiche. There is same faint traditional idea of their former preservation. For Rath see Journal R.S.A.I., 1894; see also my Clare legends in 'Folk-lore,' xxi, p. 478, and note. I think the notes in the republication of Archdall's 'Monasticon' under Co. Clare are from O'Looney."

Thus far Mr. Westropp. There is a Life of this Mac Creiche in the well-known O'Clery Hagiological MS. at Brussels. It has, however, no reference to Inis Cealtra; but the fight with the monstrous badger is related in detail, agreeing to a remarkable extent with the living legend recovered by Mr. Westropp. It also contains the extraordinary story already printed in O'Curry's "Manuscript Materials," p. 630, in which Mac Creiche contends with the pestilence Crom-Chonail, personified as a monster; and it opens with a passage which is of importance for the explanation of one of the most remarkable buildings on Inis Cealtra, and which, therefore, is printed below, in connexion with the description of that building (the Anchorite's Cell), *infra*, p. 135.

This Life, it may be confessed, gives little support to a theory that suggests itself on reading the extracts above quoted from the Codex Salmaticensis: namely, that in the original story Mac Creiche was the last pagan "incumbent," if we may use this intentionally indefinite term, of the sacred island. For the incident of the tree, still to be discussed, is very strong evidence that the first Christian hermits inherited an island that was already sacred under the old order. It is, of course, only what we might expect, if in the process of converting Mac Creiche from a pagan to a Christian saint the pagan elements of his story should have become expurgated away; and it is suggestive that in the Life there is no mention whatever of Inis Cealtra, the connexion of Mac Creiche with which spot would have been entirely forgotten had it not been for the casual mention in the Codex Salmaticensis. But may not his success with the "fairy badger," on which all the Christian saints failed to make any impression, have its primary roots in an anti-Christian story, told during the struggle of the rival religions for supremacy? It would by no means be the only case of the kind in Irish literature.

The sacred tree, of which on this hypothesis Mac Creiche was the last pagan minister, makes no appearance in the O'Clery Life. In discussing this incident, we must keep before us the instructive parallel afforded us by the story of the tree of Lorrha. According to the Latin Life of St. Ruadhan,¹ there was at Lorrha a *tília*, the juice of which sufficed both for food

¹ Plummer, "Vitae Sanctorum Hiberniae," I, p. cliii: II p. 244.

and drink to Ruadhan and his fifty monks, so that they were able to spend their whole time in genuflexions and prayer, without the necessity of labour to satisfy their bodily wants. Naturally Lorrha grew in favour with those who sought the monastic life, and the other saints began to find their houses deserted. Indignant, they went on a deputation to St. Findian, the master of Ruadhan, and begged him to command his pupil to cease from this idle life. Findian accordingly came to Lorrha, and signed the tree with the cross, whereupon the flow of juice dried up. The story goes on to tell us how the loss was made up to Ruadhan; but this part of the tale does not at present concern us. The important point is the destruction of the virtues of the tree by the sign of the cross, clearly showing that it was an ancient sacred tree that Ruadhan had inherited from some pagan predecessor.

In the Irish Life of St. Findian, edited by Stokes,¹ the Lorrha story is told again. Here the tree is called *crann leimh*, and described as a tree "from which distilled a tasty fluid wherein everyone found the taste he liked best." In the Tripartite Life of St. Patrick² there is a confused story of a great *lem* tree at Clonmacnois. Now a *lem* or *leimh* is an elm; but an elm obviously does not possess the desirable qualities which distinguished the trees of Inis Cealtra and Lorrha. Even a lime-tree does not naturally possess these virtues; and a lemon (which might yield such a juice) is not indigenous to Ireland.

In this difficulty I applied to Dr. Henry, than whom there can be no better authority, and it is to his kindness I owe the following facts and attempt at a solution of the problem.

In the first place, the lime-tree is not indigenous to Ireland, and therefore, whatever the tree may have been, it was not a *tilia*. The lime is, however, native to Germany and Switzerland, and often lives to a great age and size. There are several well-known specimens of great lime-trees in those countries at the present day, some at least of which, there is every reason to believe, are ancient sacred trees.

Moreover, there is no tree which during the flowering season yields such a rich store of honey as the lime; and Dr. Henry's suggestion is that the juice in question was simply honey in large quantities.

The elm-tree has a sufficiently close superficial resemblance to the lime to make it possible for a careless observer to mistake one for the other. Dr. Henry, therefore, suggests that the tree on Inis Cealtra was an elm, and that it was still in existence when some returned ecclesiastic from

¹ Lives of the Saints from the Book of Lismore, p. 80.

² Rolls Series edition, vol. i, p. 84.

Switzerland or elsewhere, who had seen a great sacred lime-tree in that country, erroneously identified it as belonging to the same species, which he would be the more likely to do if the story of its rich juice was already being told. The glossator of the Codex Salmaticensis seems to have been aware that the Inis Cealtra tree was really an elm, as he wrote *scilicet leman*, "that is, an elm," on the margin of the ms.

There is a note in the Yellow Book of Lecan (facs. p. 420, col. 2, line 29), and in a modern ms. (R.I.A. 23 G 5, p. 96), to the effect that Cormac mac Cuillenáin brought an alder-tree to Inis Cealtra, and that it propagated as an apple; that God wrought a miracle upon it, so that apples grew out of it like every other apple, which *adhuc multi uident*. The same note occurs in Harl. 5280, fo. 42, whence Professor Meyer has published it in "Folk-lore," vol. v, p. 309, in illustration of a similar story told in the Norse *Speculum Regale* about St. Caoimhghen at Glendaloch.¹ When we remember that Nadchaoimhe, the pupil of Colum, was a brother of Caoimhghen, we see that this tale is only another version of the same story, Cormac and Colum having become confused together. There is no other evidence of any connexion of Cormac with the island.² Dr. Henry reminds me that it is not an uncommon experience of amateur gardeners to *think* they are planting one thing, and to find when it grows up that it has been something quite different. The phenomenon is no longer explained as a miracle, however.

Stellan is referred to by name in a letter concerning the celebration of Easter, written to the Irish clergy from Rome. This, and the fact of his death three years before that of Caimin, are all that is known of him: Colgan is our authority. The Bollandists merely mention him, with a reference to Colgan, among the pretermitted saints (May, vol. v, p. 270).

Caimin was a descendant of Enna Cennselach, pentarch of Leinster. The steps in the pedigree are given thus in the Book of Lecan³—Caimine Inse Celtra mac Dimmae meic Fergusa meic Ailella meic Nathi meic Crimthainn meic Enna Cendselaigh. His mother was Cumman, daughter of Dallbronach, who was also mother of Guaire Aidhne, pentarch of Connacht; a quatrain quoted in the Annals of the Four Masters, A.D. 662, credits her with seventy-seven children! In the poem edited by Kuno Meyer, under the title "King and Hermit," and again in the Rabelaisian extravaganza called *Imtheacht na Tromdhaímhe*, another brother of Guaire, by name Marbhán,

¹ The "Folk-lore" article is reprinted in "Eriu," vol. iv, p. 1.

² Possibly the original writer of this note had a confused recollection of Cormac's poem on the Yew of the Sons of Angciss (LL 26 a) in his head.

³ P. 101, lower marginal pagination.

is introduced to us; he is a holy man, and at the same time acts as swineherd to the pentarch.

Colgan exercised a critical judgment in compiling his *Life of Caimin* from the sources open to him. He would have none of a *Life* attributed to St. Dalbach, of which, or of a similar document, O'Clery also speaks in terms of unmeasured contempt.¹ The only facts which Colgan will admit with regard to the saint are—his parentage; the date at which he began his life of holiness; his retirement to Inis Cealtra in order to secure solitude; his mortification of the flesh with fast and vigils, and his many fights with demons while there; the spread of his fame, which attracted innumerable disciples to his island retreat; and his organization of his followers into a monastery. This is all not a little puzzling. We may reasonably infer that when Colum left the island his followers departed with him; but where does Stellan, who predeceased Caimin by three years, come in?²

Colgan further tells us the well-known tale of the three wishes, of which more anon, and in a foot-note refers to Caimin's literary labours, which have been strangely exaggerated by Colgan's many followers. His death is ascribed by the hagiologists to 652 A.D., but it is not recorded by the annalists³; this is the more curious, as they all carefully notice the obit of the more obscure Colum.

Keating adds to this picture of Caimin, which we obtain from hagiologists, the picturesque tale of Guaire and the nun's cow. A nun came to Diarmait, king of Ireland, to complain that Guaire had taken from her her only cow. Diarmait assembled a host to avenge this wrong; and though he had but a small army, and Guaire a numerous following, the Connacht hosts were defeated, because Caimin took sides against his brother, and "fasted on" Guaire that he should not be successful in battle. The interesting sequel of the story, which is of some importance as a record of manners and customs, may be read in Keating (ed. Dinneen, vol. iii, pp. 58 *et seqq.*).

Caimin was present at the Synod of Drumceat; but, apart from this, the anecdote most frequently related of him is his colloquy with his brother Guaire and Cuimmine Fota.⁴ The *Lebor na hUidhri* version of the tale is a pendant to the story of the battle with Diarmait. In the other MSS. it appears as an independent incident. Briefly, it is to the effect that the three persons named were in the church of Inis Cealtra, and discussed what they

¹ See Plummer, "*Vitae*," I, p. lv, note 3.

² Here insert the note on p. 174.

³ Except the *Annals of Innisfallen*, which date the obit 644.

⁴ LU., p. 116; Lis. fol. 44; Rawl. B. 512, fol. 141. Printed in Todd's "*Liber Hymnorum*," I, 87, and in Stokes, "*Lismore Lives*," p. 304. See also Z.C.P. III, p. 203 *et seqq.*

would like the building to be filled with. Guaire wished it to be filled with gold and silver, that he might have the wherewith to exercise his generosity to the poor. Cuimmine wished it to be filled with books, that students might learn therein, and lead men from the way of the devil. Caimin wished it to be filled with diseased persons, afflicted with all kinds of maladies, that on his own body all these afflictions might be concentrated—that he might bear the sufferings of mankind on himself. So Colgan puts it; the MSS. quoted express the wish slightly differently, that the church should be filled *with diseases*, not with diseased persons; this, on the whole, is a better attested version, and is psychologically consistent with the conception of disease that we have already seen in the Life of Mac Creiche, where the *epidemic* of the Crom-Chonaill was struck by lightning, and reduced to dust and ashes at the prayer of the saint. In any case, the tale affords an interesting illustration of the notion of the transference of disease, familiar to all folklorists; and it adds point to the tradition that I learned on the island, that to the ancient church of St. Michael—which may well have been the actual scene of this strange conversation—persons suffering from mortal disease used to be carried. The story goes on to tell how the three wishes were fulfilled: Guaire got wealth and Cuimmine learning, while Caimin fell into a grievous state of body, so that, among other gruesome details, “his bones hardly held together.”

Of the literary labours of Caimin, Colgan mentions a commentary on the Psalms, of which he had himself seen a fragment in the Monastery of Donegal, relating to the 119th Psalm. This fragment is now preserved in the library of the Franciscan Monastery, Merchants' Quay, Dublin, and has recently been made the subject of a study by Mr. Esposito.¹ It hardly needed Mr. Esposito's trenchant criticisms to show that this MS. could not possibly be so old as St. Caimin's time, or anything near thereto. It is dated by Bruun, with whom Mr. Esposito agrees, about 1100 A.D. There is, however, nothing against the possibility that the psalter—for it is a psalter, with interlined glosses, not a commentary—was actually written on Inis Cealtra, possibly copied from earlier MSS. there preserved, which earlier MSS. were traditionally, though not necessarily truthfully, ascribed to St. Caimin.² The colophon of the Durrow Gospels affords a well-known analogy. In O'Looney's letter, quoted at the beginning of this paper, he thus refers to the MS.: “Who has not heard of the learned psalter [*sic*] of St. Caimin, and the celebrated book of

¹ Proceedings R.I.A., xxxii, sect. C, p. 78.

² The note written by O'Clery on the MS. (see Mr. Esposito's paper, *loc. cit.*, p. 79) is definite and apparently satisfactory evidence that the book, or the fragment, was obtained from members of the Clann Bruaidedha, residents on or near the island, at the beginning of the seventeenth century.

Caimin, both written by himself in that old church now represented by the ruins of St. Caimin? This book, with his beautiful hymn to the Blessed Virgin, would be enough to recommend the seat of such piety and learning to the attention of every good and enlightened Christian." There is no evidence that this letter was intended for publication at all, so I do not intend to criticize it further than to note that the church mentioned had no existence till about 300 years after St. Caimin's time, and that the "book of Caimin," hymn and all, is mythical. Inis Cealtra has quite enough real recommendations, and can afford to dispense with imaginary ones. I would not drag this letter from its obscurity, were it not that it is such an excellent example of the way in which statements become copied from book to book, without verification, and become transformed in the process into something that would have greatly astonished the original author. But no doubt the myth of the Hebrew scholarship of St. Caimin will survive its refutation, and will continue to reappear (along with the monument of St. Patrick's nephew on Incha-goill, and other hoary fictions) in the popular books of the future, as of the past.

A certain Coelan of Inis Cealtra, of whom we know practically nothing, is mentioned in connexion with a Life of St. Brigid, in Latin hexameters, printed by Colgan as his "Sexta Vita." In one MS. this is ascribed to a certain "Chilienus"; but the attribution to Coelan has been questioned. This poem contains a reference to Inis Cealtra, which occurs in the course of an account of how St. Brigid miraculously crossed the Shannon—

Altera ualde mihi uirtus miranda uidetur
Quae fuit in magna Sinauni fluminis unda :
Intra quam Kelltra est conuentus rite uirorum
Prudentum sacro Benedicti dogmate florens—

which if genuine would imply that the rule of Inis Cealtra followed that of St. Benedict. It is not inconceivable that the two lines in question are an interpolation, from which form of modification the rest of the poem (so-called) is not, it would appear, altogether free; indeed the Bollandists¹ seem to have doubts as to the authenticity of the whole document. The general consensus of opinion seems to be that Coelan flourished in or about the eighth century, though there does not seem to be any very solid ground on which to build even this indefinite hypothesis. In any case, his is the only voice that we hear from Inis Cealtra for nearly 200 years after the death of Caimin.²

After Coelan, we hear a few names of members of the community.

¹ Vita Brigittae, Feb. 1, commentarius praeuius, sect. 2.

² If there be any other reference to Inis Cealtra in the *Trias Thaumaturga*, it is successfully concealed by a misprint in the Index.

Diarmait, abbot, died in 749 A.D. (Annals of Inisfallen). Mochtighern mac Ceallaigh, sage, and abbot of Inis Cealtra, died 780 (Four Masters), 784 (Annals of Ulster). The true date of the later obit seems to be 785 A.D.

In 836 A.D. the island had its baptism of fire, being burned, with many others, by the redoubtable Turgeis and his marauding Vikings (Cogadh Gaedhel re Gallaibh, pp. 12, 226; Annals; Chronicon Scotorum; Keating).

In 898 died Coscrach, surnamed *truaghán* "the miserable" or "the starveling," anchorite of Inis Cealtra (Four Masters). O'Connor's unfortunate mistake, associating this person with the Round Tower, has had a lease of life quite as long and quite as undeserved as those errors to which reference was made a moment ago. Even yet we occasionally see a belated reference to Coscrach, "who took up his abode in the Round Tower of Inis Cealtra," in spite of the complete exposure of the mistake in Petrie's "Round Towers," p. 50. We shall later have occasion to refer again to this Coscrach.

Thus there is hardly anything recorded of the monastery during the seventh, eighth, and ninth centuries; and in accordance with this, there are hardly any remains to be seen on the island dating from those centuries. It must have been at the time quite insignificant. During the tenth century we hear of nothing but the death of the bishop Diarmait son of Caicher, in 951 (Four Masters), and of the abbot Mael-gorm son of Mael-Chellaigh, in 967 (*ibid.*). At the beginning of the eleventh century a brother of Brian Bórama, by name Marcan, was abbot of Inis Cealtra, Terryglas, and Killaloe. He died in 1009. This is the last entry relating to the island in the Annals of Ulster and of the Four Masters.¹ A certain Conn ua Sinnaigh, "*annmchara* of Ireland," died here, according to the Annals of Inisfallen, in 1016.

The next name of importance in the roll of Inis Cealtra is that of Annmhad, well known for the story of his exile as told by Marianus Scotus and after him by Florence of Worcester.² This Annmhad died in 1053 at Fulda, where he had been an *inclusus*. He had previously been an inmate of Inis Cealtra, under a Superior whom Marianus calls Corcram, and Florence of Worcester calls Cortram or Kortram. Certain "brethren" having come on a visit to the island, Annmhad, with the consent of his Superior, gave them hospitality. After they had eaten, some of them went forth, others remained

¹ The entry in the Four Masters is clumsily expressed, and reads as though Marcan and the "Comharba of Colum" were two different persons. The Annals of Ulster are unambiguous.

² The passage in Marianus will be found in MacCarthy's *Codex Palatino-Vaticanus*, p. 31; Florence of Worcester, anno 1043.

warming themselves at the fire, and asked Anmchad to give them to drink. This he was unwilling to do without permission, but they urged him, and at last he yielded, though he was careful to send the wine to his Superior for his benediction before offering it to his guests. On the following day, "Cortram" asked Anmchad wherefore he had sent the wine to him, and Anmchad confessed what had happened. His action was accounted a breach of discipline so heinous that the abbot pronounced upon him a sentence of banishment from Ireland. He came to Fulda, where he passed the remainder of his days as an *inclusus*. Marianus tells us that he had heard the story from his own Superior, Tighernach, at Merville, as a warning when he had himself committed some trifling offence in his (Tighernach's) presence; and, whether by coincidence or not,¹ Marianus himself became an *inclusus* in the same monastery that had witnessed the austerities of Anmchad, and for ten years celebrated mass over his tomb. A certain holy monk of Fulda, by name William, prayed Anmchad (already in his grave) that he would bless him; and he related to Marianus himself that in the following night he had a vision of the saint, standing on his tomb and shining with a great light, extending his hand over him in benediction; while Marianus himself, shut up in Anmchad's cell, had for the whole of that night enjoyed a sweet odour.

An interesting account of the life of an *inclusus* will be found in the preface to MacCarthy's edition of the Codex Palatino-Vaticanus, in the Todd Lectures Series of this Academy: the fact there noticed, that the discipline of inclusion is especially a feature of the Benedictine rule, adds some point to the passage quoted above from the metrical Life of St. Brigid.

The name, whether "Coreram," or "Cortram," is clearly impossible, and must be a corruption. Colgan made the obvious guess that it should be read "Coreran," and identified the severe abbot of the story with a distinguished ecclesiastic of that name, author of a letter to the monks of Ard Oileán on the subject of the virtues and relics of St Gormgall of that monastery. This Coreran, who is described by the Annals of Ulster in terms no less magnificent than "head of all Europe in faith and in wisdom", died as an anchorite at Lismore, according to the annalists, in 1040. There is not the slightest evidence to connect this Coreran with Inis Cealtra;² and the

¹ Marianus says: "Ita Tigernach . . . mihi culpabili in aliqua levi culpa pronuntiavit," which does not necessarily imply more than that Tighernach held up the case of Anmchad as an awful example. Florence of Worcester takes it in the same sense. MacCarthy understands that Tighernach banished Marianus for the "levis culpa," as the abbot of Inis Cealtra had banished Anmchad.

² Archdall makes Coreran abbot of Inis Cealtra, but in this he is merely accepting Colgan's guess.

instances that Colgan quotes, to prove that ecclesiastics often became anchorites even after they had attained to abbatical rank, are, therefore, quite beside the point. I do not question that the abbot of the story may perhaps have been called "Corcran"; but unless further facts be discovered, it is useless to speculate as to his real name. Clonmacnois affords us a most instructive indication of the possibilities of corruption of personal names, and the impossibility, in many cases, of detecting and correcting the corruption. All the Annals agree in telling us that in or about the year 874 two abbots of that monastery died, by name *Eogan* and *Mael-Tuile*. By good luck they were buried in one grave and commemorated by one stone, which happily survives to give us contemporary evidence that their names were really *Eudus* and *Mael-Oinae*!¹ Who would have suspected this, had the stone been lost?

In the foregoing account of the early history of Inis Cealtra I have omitted one enigmatical reference. This is the celebration on the 24th May of the Seven Daughters of Fergus. Gorman thus alludes to them:—

Bancland Ferguis ale, na cáde cen cléirim

—"the women-children of Fergus I beseech, the chaste ones without an evil course." To this there is a gloss, *secht ninghena Ferguis ó Tigh inghen Ferghasa*, "the seven daughters of Fergus from Tech Inghen Ferghusa." This gloss forms the entry under the date named in the Martyrology of Donegal. Oengus is silent regarding these holy women; but the Martyrology of Tallaght names them, and is remarkable in definitely assigning them to Inis Cealtra. In the absence of any real knowledge as to who Fergus and his daughters may have been, it is injudicious to be dogmatic; but, on the whole, it is most probable that the Martyrology of Tallaght has made a mistake. There is no trace of any other indication of the admission of females to the island.

We have already seen that Turgeis ravaged the island in 836. About a hundred years later—in 922, to be precise—Tomar son of Elge landed with an immense fleet and proceeded up the Shannon, plundering and burning on the way. Inis Cealtra and the other island monasteries of Loch Derg were visited by this marauder, and at our monastery, we read that he and his followers "plundered Inis Cealtra and drowned its shrines and its relics and its books."

¹ Compare the confusion of "Cormac" and "Colum" in the tree story given above. The tale of Anmchad seems to have escaped the notice of Prof. Zimmer in his study of the Gaulish wine-trade. No doubt Inis Cealtra would profit by a traffic that (even earlier than Anmchad's time by several centuries) penetrated up the Shannon as far as Clonmacnois.

² *Ugadh G. re G.*, p. 38.

Inis Cealtra, with Killaloe and the steeple of Tomgraney, were "built," it is said,¹ by Brian Bórama. The latter was only a repair, for the Round Tower of Tomgraney was built in the previous century by Cormac ua Cillin. This must therefore have been a shoddy piece of work, if it already needed repair in Brian's time; and it is not to be wondered at that not a stone of it now remains, nor even a tradition as to the spot on which it stood. This is unfortunate, for we are thus deprived of a criterion of the nature of Brian's masonry, and hence are unable to determine whether any of the structures now to be seen on the island is to be assigned to that over-rated usurper. I do not think that any of the Romanesque work on the island is as old as the reign of Brian. To assign to him the beautiful late Romanesque archway in Killaloe Cathedral is surely ridiculous.

According to the Annals of Inisfallen, Gormfhlaith, daughter of Ua Fogartaigh, Queen of Munster, and wife of Toirdhelbhach ua Briain, died at Killaloe, and was buried at Inis Cealtra in 1059; and the same document records that in 1094 "Cathasach, chief of religion of Ireland" (*ceud crabuid Érend*), rested in Christ in Inis Cealtra. The monument of Cathasach still remains on the island.

The curtain now falls for over two hundred years; at least I have failed to find any document referring to the island belonging to this interval of time.

In 1302-6 we find it as a parish, St. Caimin's being then the parish church, valued for taxation at three marks.²

In 1315 the place became the refuge of Brian O Briain, the claimant to the chieftainship of Thomond. To make clear the circumstances under which this event took place, it would be necessary to give an abstract of the whole complicated history of the internecine wars of the various branches of the Ui Briain, which would lead us quite too far away from our subject. We may content ourselves with a bare record of the fact, referring those who desire to follow it out to the *Caithréim Thoirdhealbháigh* and other authorities on the period.

In the following century we hear echoes of a local dispute, which, however, does not relate to the church of Inis Cealtra itself, but to a chapel on the mainland situate within the boundaries of the parish. Our information regarding this trouble is derived from two papal mandates addressed to the prior of Mona Incha.³ They refer to a certain Cornelius Omlampayll (*sic*) or Ymulaapayll (*sic*), who continued to hold the parish church of "Baleincayssleayn" and Ara for a year and more without having himself ordained

¹ *Idem*, p. 140.

² *Eccl. Taxation of Ireland*, Sweetman, 1302-7, p. 300.

³ *Calendar of Papal Letters*, vol. vi, p. 33.

priest and without dispensation. whereupon the Pope ordered that the parish be assigned to Donald Ogradi, clerk, of the said diocese. Cornelius protested that he had never held nor did then hold, and that neither within the memory of man nor at that present time was there or had there been any parish church so called; and that he merely held a certain chapel without cure within the bounds of the parish of Inis Cealtra, from which apparently he derived a certain profit from burial fees, &c. This chapel, we learn from the second letter, was situate on the side of the lake, and within the bounds of the parish church situate on the island called "Ynikealtri" on the said lake. He feared lest he should be disturbed by Ogradi on account of the mandate to deprive him of the alleged but non-existent parish. It is not difficult to detect the cloven hoof of the self-seeking informer in these two letters, but we are pleased to find that the matter seems to have been settled to the satisfaction of Cornelius of the impossible name [Ua Maoil-Mhichil??], and that he was ordered to be left in peace in the enjoyment of his chapel.

In 1422 we find a letter¹ addressed to the priory of St John, Nenagh, in the diocese of Killaloe, the Chancellor of Killaloe, and Edmund de Burgo, Canon of Tuam, regarding one Thomas Ohurryle. This person had the misfortune to be the son of a priest named Donatus Ohurryle and an unmarried woman; but he had received papal dispensation to be promoted to Holy Orders, and to hold a benefice with cure. A mandate is accordingly sent to the officials named "to collate and assign the said Thomas Ohurryle to the perpetual vicarage of Iniskealltra. in the said diocese, to which a number of chapels are subject, and whose value does not exceed eight marks, void by the death of Eneas Ofaferthaych [*sic*], the said Donatus Ohurryle, who unlawfully retains possession, being removed: whether it became void as stated, or because Donald Macnesbuchb [*sic*] held it for more than a year without having himself advanced priest and without dispensation." All this is a little complicated, but the course of events seems to have been that Aonghus ua Flaithbheartaigh died in or about the year 1420; that Domhnall mac Giolla an Easpuig then held the vicarage, but, being in deacon's orders only, became disqualified from continuing in office; that Domhnall ua Muirthuile then obtained the cure, but, on account of his scandalous life, is hereby ejected in favour of his son Tomás. That is the best I can make of it, but I daresay some historian, better accustomed to ecclesiastical documents of this nature than I can claim to be, would be able to improve on my attempt at an exegesis.

The dilapidated state of the churches, and especially the smashed-up

¹ Papal Letters, vii, p. 265.

condition of the standing crosses, indicate all too clearly that the island suffered ravages at the Reformation comparable with those that it had suffered six or seven hundred years before at the hands of the Vikings. The churches were probably unroofed at this time, for soon after we find them reported as being in ruin. In the Royal Visitation of the Diocese of Killaloe we find “*Rectoria impropriata, Richardus Boyle miles firmarius, Vicaria de eadem vacat parvi valoris, Ecclesia et Cancellia ruinantur.*” Already, however, it had become a place of refuge for the adherents of the ancient faith. Sir Arthur Chichester, writing to the Privy Council, in a letter dated 4 July 1609,² complains that “the Jesuits and priests from abroad have flocked hither of late in greater numbers than has at any time heretofore been observed. The most eager and stirring of them usually come and go hence with the swallow, making a yearly revenue here of poor and rich with their indulgences, pardons, and other Romish illusions (such as he thinks no other nation in Christendom are abused withal besides this); and keep in life the party of ill subjects with feigned remonstrances of matters of state, intelligence, and news. Herewith they have an excellent faculty, but very dangerous to the state, that they can at any time (without his being able to prevent them, and even to hear of them until it has been done and past) assemble together an incredible number of people to receive absolutions and pardons, specially the idle sort of malefactors. There is not one, from the murderer of his brother to him that steals a goat, but believes in them, and flocks to them, and will make a conscience to cherish and protect them from officers, if any be so honest and dutiful as to offer to attach them. At a place called Minahinche, in the borders of the county of Tipperary, the week before Easter last, and since *at another place called Inishgaltaghe*³ in Connaught, an island near the Shannon side, there were gathered together in each place to the number of at least 15,000 persons, and some say there were many more.”

With this accords the “Loyal Answer” of Bishop John Rider, 1622.⁴ From this document we learn several facts of interest with regard to the position of the island and its churches under the reformed dispensation. The prebend of “Enniskalty”—we once more detect the “Oxford manner” in the good bishop’s orthography—to which the rectory of the island

¹ Printed in Dwyer’s “History of Killaloe,” p. 89. I have however here given the original Latin from the transcript in MS. R. I. A. 23 F 1, p. 208.

² Cal. State Papers, p. 240.

³ Even already the English ear is becoming deaf to the letter *r*!

⁴ Dwyer, *op. cit.*, p. 101. The original document being inaccessible to me, I rely here on Dwyer’s copy. The Record Office possesses a transcript, apparently not quite accurate.

belonged, was valued at £40, and was in the hands of one Thomas Edens, minister and preacher, sometime student at Oxford, a man of good life and conversation. The rectory was impropriated, the patron being the Earl of Cork: its value was £2. The vicarage was vacant, "propter exilitatem." The cure was not served, "being an island and but one house."

Again, among a not inconsiderable number of complaints appended to the same document, the seventh is to our purpose—

"Seventhly I complaine yt there are divers Abbies or Monasteries dissolved in my Dioces, wherein yet ye people do bury theyr dead out of ye ordinary place of christian buriall to ye contempt of religion and maintenance of theyr superstition. And besides that, to these places many ffriars and Priests doe ordinarily resort and sometimes in ye yeare great concourse of people publikely: as in ye abby of Quin in ye county of Clare, and abby of Inshinamech [Mona Incha] in ye county of Tiperary; and in Inishgealtragh or ye Iland of Seven Altars¹ [!] standing in ye midst of ye river of Shanan bordering on ye county of Galway."

The "man of good life and conversation," Thomas Edens, had some complaints of his own to append to those of his bishop. They were to the effect that the mayor and corporation of the city of Limerick do keep from him the profits of the rectory of "Inishkalty" under pretence of their charter granted VII Jacobi; that his glebe land in the parish of Kilrush was kept from him by "Graneer ye Dutchman" and others claiming under the Earl of Thomond; and that the Earl of Thomond had ejected him from certain other vicarages to which he had been instituted, and of which he had enjoyed the benefits for a year. The most conscientious Protestant must feel a thrill of satisfaction as he peruses the tale of the minor afflictions of Messrs Rider and Edens. The picture of the poor folk coming from the country-side to bury their dead by the ancient shrines of their fathers, while those two sanctimonious Oxonians stood on the shore uplifting their hands in holy horror, is one not pleasant to contemplate.²

No change in the state of Inis Cealtra is to be traced in later documents. In the visitation of 1633³ we read:—

"INNISGALTRA: *Rectoria impropriata spectans ad preceptoria de Any in possessione Comitum Corke: val. v. 1 ster. p. an. Vicaria vacat sequestrata.*"

¹ Evidently the bishop analysed the name into *Inis na seacht n-altóir*.

² On the other hand, a practice recently begun, of burying inside the churches, and, above all, in the so-called "Saints' Graveyard," cannot be too strongly deprecated. The Saints' Graveyard must be almost unique in Northern Europe—a burying-ground of the eighth to the twelfth century, with the stones still intact, marking the graves to which they belong. The intrusion on this sacred precinct of ugly modern tombstones, and still uglier porcelain wreaths under glass shades, is most deplorable.

³ Dwyer, *op. cit.*, p. 160.

In a schedule of land, temp. Charles II,¹ the names Iniscaltra and Coogy appear with an estimated content of 25 acres. This is the last mention of the island in any State document that I have found.

We gather from a tablet in St. Caimin's Church, described below, that an attempt was made in the beginning of the eighteenth century to repair the churches and monuments. What the purpose and nature of these repairs may have been, it is now impossible to say: it had no permanent value in staying the decay of the buildings.

The first extant description of the island, so far as I am aware (apart from the casual references in political and ecclesiastical documents, of which we have now given a summary), is found in Dyneley's journal of his visit to Ireland, 1680-1681, printed by the Royal Society of Antiquaries of Ireland. The reference to the island will be found in the Journal of the Society for 1867 (then the Kilkenny Archaeological Society), p. 83. He says: "Ennish Caltra: This is two small miles about in the Shannon River, in which are seen the remaines of Seven Churches called ye Seven Churches of Asia. Here once a year the superstitious Irish go to do penance, and are enjoined to walk round barefooted seven times, and they who fear hurting their feet hire others to do it: here is a great concourse of both sexes. This island by some is called Insula Sanctorum, a name which hath been applicable to all Ireland."

After this we hear nothing till 1838. In that year the island was visited by T. O'Connor for the purposes of the Ordnance Survey. His letter on the island is a model, and one almost wishes, as one reads it, that he, rather than O'Donovan, should have been entrusted with the task of collecting the archaeological information enshrined in the Ordnance Survey Letters. For field archaeology was not that eminent man's *forte*: and when we remove from his letters the somewhat elephantine jokes, and the gratuitous abuse of other people, in which he frequently indulges, the residuum is often sadly disappointing. The publication of these letters, which has often been urged, would be a grave disservice both to Irish archaeology and to the memory of O'Donovan. Wakeman also visited the island, and made beautiful pencil-sketches of the group of ruins by the Round Tower, and of one or two of the slabs. These are to be found in the volume of sketches housed in the Royal Irish Academy's Library: others are to be found reproduced in Hall's "Ireland," and Petrie's "Christian Inscriptions." O'Connor's letter is in vol. ii of the Galway letters; another letter, from O'Donovan, will be found in the Clare volume, p. 252, adding nothing to the description of the ruins: it

¹ State Papers.

merely contains extracts from the *Annals of the Four Masters*,¹ Archdall, and other printed sources.

Further accounts of the buildings will be found in Petrie's "Ecclesiastical Architecture," with some valuable woodcuts, showing the state of St. Caimin's in the first half of the last century. Petrie ignores the other buildings. A few of the inscribed slabs are noted in his "Christian Inscriptions." The ubiquitous S. C. Halls have a brief and popular account, which is not overburdened with accuracy, at p. 429 of the third volume of their gossiping work on Ireland. R. R. Brash contributed an illustrated description, in spite of some blemishes by far the best that has hitherto appeared, to the "*Gentleman's Magazine*" (1866, vol. i. p. 7). In Lord Dunraven's "*Notes on Irish Architecture*" is a good account of St. Caimin's, with two very valuable photographs. We need only mention the short account in Dwyer's "*Killaloe*" In the *Journal of the Royal Society of Antiquaries of Ireland*, vol. xix, p. 162, is a paper on the island which, I understand, was put together hurriedly at short notice, and bears all the marks of that unfortunate circumstance. In the valuable survey of the Clare Churches by the indefatigable Mr. Westropp² is a short but accurate summary of the features of the churches on the island. Mr. Champneys, in his "*Irish Ecclesiastical Architecture*" gives some photographs, accompanied by useful and sensible observations.

The last event in the history of the island to which we need allude is the restoration of the churches under the Board of Public Works. This took place in 1879. It would appear that previously to this, in 1875, the Scariff Board of Guardians had walled in the cemetery beside St. Caimin's, inspired to this action by the letter of Professor O'Looney from which extracts have

¹ This gives O'Donovan a welcome opportunity, of which he avails himself to the full, of flaying Charles O'Connor for his mistake in the matter of Coscrach the Anchorite. Here is a sample of his elegant references to a fellow-worker: "Is it not extraordinary to find a learned doctor come forward in the first quarter of the 19th century to humbug antiquarians [*sic*] with such forgeries [*sic*] as the preceding? But any paltry shift to support a theory by which one makes himself [*sic*] famous or notorious. My only ambition is to be known to posterity as a detester of forgers, fabricators and liars, and more particularly of those who wish to make the world believe that they are possessed of knowledge of which they are entirely ignorant." This savage attack (on O'Connor's personal morals rather than his scholarship) is all because in copying a manuscript he had the misfortune to expand a contraction wrongly, and to be led astray by the result. That self-advertising cheap-jacks should seek an easy reputation at the expense of others by fireworks of this kind is not surprising; but it is melancholy to see a scholar of the calibre of O'Donovan making such a ridiculous exhibition of himself. It provokes the comment that his own work is not infallible, even in the light of the knowledge of his time.

² *Proceedings. R. I. A., ser. III, vol. vi, p. 156.*

been given above. I gather this from a letter of the Rev. M. J. Kenny, P.P., printed in the same issue of the "Freeman's Journal." He says: "The accompanying letter from Mr. O'Looney may be calculated to call the attention of our Archaeological Society to the necessity of preserving from utter decay the two remaining churches of Holy Island. Three of the Dominican Fathers, who are holding a mission here, visited the island yesterday, and were shocked at the appearance of both churches and cemeteries. When I read the enclosed [i.e., O'Looney's letter] to the Scariff Board of Guardians on this day, they unanimously passed a resolution to enclose the two cemeteries of St. Caimin's and St. Mary's, with as little delay as possible. The area to be assessed was decided on, and it was agreed that the enclosure should be both substantial and ornamental." St. Mary's cemetery, however, was not enclosed, and is even yet open. The wall which is built round the cemetery south of St. Caimin's Church does not appear in the old sketches and photographs referred to above, but was already in existence when the Board of Works began its operations. I presume, therefore, that this wall was built by the Board of Guardians. The wall round the Saints' Graveyard was in existence when Brash visited the island in 1865. He describes it as being in ruins, portions remaining from 2 feet to 4 feet high.

Through the good offices of Mr. Hibbert I was fortunate in getting into touch with a most intelligent man, by name Delany, who had been employed as a labourer in the restoration works. Gifted with a good memory, and inspired with a genuine interest in the ruins, he was able to give me information that supplemented usefully the rather meagre official report. He told me that the work lasted for six months, with ten workmen. The following statement of the work done was drawn up from information supplied by him on the spot, checked by comparison with the official report:—

ST. MICHAEL'S CHURCH : Floor cleared out.

ST. BRIGID'S CHURCH : West gable entirely rebuilt, including the Romanesque doorway, which had been ruined to its foundations. Building cleaned and pointed.

ST. CAIMIN'S CHURCH : Floor cleared out to a depth of about 2 feet. Chancel arch partly taken down and rebuilt, being in danger of destruction from ivy. West doorway almost entirely rebuilt, all having fallen except part of the north jamb. East end of chancel entirely rebuilt from foundations. Side walls of chancel repaired, including windows in south wall. Altar entirely rebuilt from foundations. The whole building pointed, and walls repaired.

ST. MARY'S CHURCH : Cleared and pointed.

ANCHORITE'S CELL : Cleared, walls repaired here and there, and one of the large stones which had been broken repaired with a metal clamp.

TEAMPULL NA BHFEAR NGONTA ; Cleared ; a large whitethorn in the middle cut down and rooted out. Wall round the Saints' Graveyard coped.

ROUND TOWER : Pointed. The clay filling, which formed a floor at the level of the door, entirely dug out.

COTTAGE : Cleared out.

MONUMENTS : A number were found and clamped to the wall of St. Caimin's. Some of these were found in St. Mary's, and ought to have been left there. On the other hand, excellent work was done in finding and fitting together some of the broken crosses.

I am glad to be able to omit from the above list the erection of an extraordinary makeshift reredos behind the structure that now does duty as an altar in St. Mary's Church. The true history of this work of art is given below. On the other hand, some mistakes in detail were committed, as it seems to me, without necessity. If I call attention to these, as in the case of mistakes on the Ordnance Map,¹ I hope it will be clearly understood that I am making no attack on anyone, living or dead, or on any public body. But the mistakes are there, to show that there is something wrong somewhere; and it is not difficult to see that the fault lies in a tacit assumption, not infrequent in Government services, that a specialist enjoys a day more than twenty-four hours long. A body with the enormously complicated and varied duties of the Board of Public Works, to whose hands are committed almost the whole machinery of modern civilization, is saddled with the incongruous task of caring for ancient monuments. A surveyor of the highest qualifications, whose maps are marvels of accuracy, is expected *ipso facto* to possess the training in archaeology necessary to enable him to record antiquities properly, and the skill in phonology requisite for writing down place-names in an unknown tongue. A busy Dublin architect is expected to superintend restoration works on a remote island in the heart of Ireland. The repair and preservation of the monuments of Inis Cealtra was a great work, a necessary work, and one with which every reasonable person must be in entire sympathy. But the officer charged with the duty should have been enabled, and required, to encamp on the island for the whole time of its continuance. He should have personally watched and recorded the turning over of every stone.² In fact, the work should have been an archaeological exploration as much as a work of repair; and the final report, instead of being contained in sixty-one lines of print (not free from careless mistakes), accompanied by seven sketchy and not over-accurate plates, and bound up with all sorts of matter, important but irrelevant, about police barracks,

¹ The errors of the Ordnance Map referred to in this paper are, I understand, now (December 1915) being corrected.

² For example, we can find no record of *where* the various fragments of the broken crosses that were pieced together were found—a point not without some historical importance.

arterial drainage, and the like, ought to have been an exhaustive monograph that would have had a permanent value as a contribution to the early ecclesiastical history of Ireland. Such an ideal could be attained only by the establishment of a special bureau for archaeology, to co-operate with the Ordnance Survey in the special matters alluded to above, with the Board of Works in the care of ancient monuments, and with the Royal Irish Academy and the National Museum in developing and extending the collection of national antiquities.

I will be told that I am advocating a counsel of perfection, which, by a freak of language, seems to be looked on as an *objection* to any scheme to which the criticism is applied! My answer to such a criticism is the obvious one that I am quite aware of this, and that is the very reason why I advocate it. For the antiquities of Ireland are of an exceptional importance, of far more than merely national interest; and they are exposed to so many dangers that the machinery for their recording, study, and protection should be as perfect as possible. I testify with pleasure and sincerity that the work done in recent years under the auspices of the Board of Works in caring for ancient monuments stands on a totally different plane from their early experiments, such as were carried out at Inis Cealtra, the Aran Islands, and elsewhere; nevertheless, a system that subordinates the ancient monuments of Ireland to other interests is radically imperfect, no matter how good the work done may be. I repeat once more, emphatically, that I am making no attack on anyone; but owing to the paramount importance of Irish monuments, I am frankly and consciously advocating a counsel of perfection in dealing with them, because I feel we should not rest satisfied with anything less.

For copies of the following letters relating to the transfer of the island from Clare to Galway, as mentioned at the beginning of this paper, I am indebted to Mr. Crawford:—

(I)

Springvale, Tynagh, 6th March 1849.

Sir,—By the proclamation dated 9th February 1842, the townlands of Cappaduff and Knockafirth, in the parish of Iniscaltra, were proclaimed from the county of Clare into the barony of Leitrim and county of Galway. Another townland, Inniscaltra or Holy Island, which has been surveyed and valued into the county of Galway, has not been proclaimed by the Lord Lieutenant and Council. The consequence is, the proprietor, Mr. Philip Reade, refuses to pay the public cess to the county of Galway, as he says he is placed in an illegal position, and could not recover his own rights. Under these circumstances I take the liberty of referring to you as to the course I should adopt.

I remain, Sir, your obedient servant,

FRANCIS W. LYNCH,
High Constable of the Barony of Leitrim, Co. Galway.

RICHARD GRIFFITH, Esq.

(II)

Office of General Survey of Valuation of Ireland,
2 Fitzwilliam Place, Dublin,

June 18th 1849.

Sir,—I have the honour to enclose a letter received from the High Constable for the barony of Leitrim, county of Galway, stating that at the period of the transfer of certain detached portions of the county of Clare which were insulated in the barony of Leitrim, county of Galway, by proclamation of the Privy Council dated the 9th day of February, 1842, viz. the townlands of Cappadhu and Knockafirth situate on the parish of Inniscaltra and county of Galway, an omission took place in regard to the island of Inniscaltra or Holy Island, situate in Lough Derg, of the river Shannon, and which has from time immemorial, along with Cappadhu and Knockafirth, formed a detached portion of the county of Clare. Having ascertained the above statement to be correct, I am of opinion that it will be desirable to issue a new proclamation, transferring the island of Inniscaltra or Holy Island, being a detached portion of the county of Clare, from the county of Clare to the barony of Leitrim, county of Galway.

I have the honour to be, Sir, your obedient servant,

RICHARD GRIFFITH.

MARMION W. SAVAGE, ESQ.,
Council Office,
Castle.

On 31st July 1849, a proclamation was accordingly issued, incorporating the island with the barony of Leitrim and county of Galway.

PART II.—THE ANTIQUITIES REMAINING ON THE ISLAND.

The following is a list of the antiquities now to be seen on the island, described in the pages below in the order indicated:—

- I. St. Michael's Church.
- II. St. Brigid's Church.
- III. St. Caimin's Church.
- IV. St. Mary's Church.
- V. The Anchorite's Cell.
- VI. Teampull na bhFear ngonta.
- VII. The Round Tower.
- VIII. The Landing Stage.
- IX. The Cottage.
- X. The Holy Well.
- XI. The Enclosures.
- XII. The Bullán Stones.
- XIII. The Cross-bases and Standing Crosses.
- XIV. The Recumbent Slabs of the Celtic Period.
- XV. The Mediaeval and Early Modern Monuments.
- XVI. The Sun-dials.

The places of the structures, Nos. I–XI in the foregoing list, are indicated in the map, Plate VII. The Anchorite's Cell is marked "Confessional," that being the name by which it is known locally. No. VI is marked "Cella" for brevity.

It will be noticed that there is not the slightest trace remaining of the domestic buildings of the monastery. These were, no doubt, of wood, or of wattles and mud, and, being thus of temporary materials, they have vanished without leaving a trace behind.

I. *St. Michael's Church* (plan, fig. 1; view, Plate VIII, fig. 1).

This is a small building, ruined almost to its foundations, standing inside a space enclosed by a mound of earth and stones. It is quite inconspicuous; indeed, a man herding cattle on the island told me that he had never noticed it at all before he saw me engaged in measuring it!

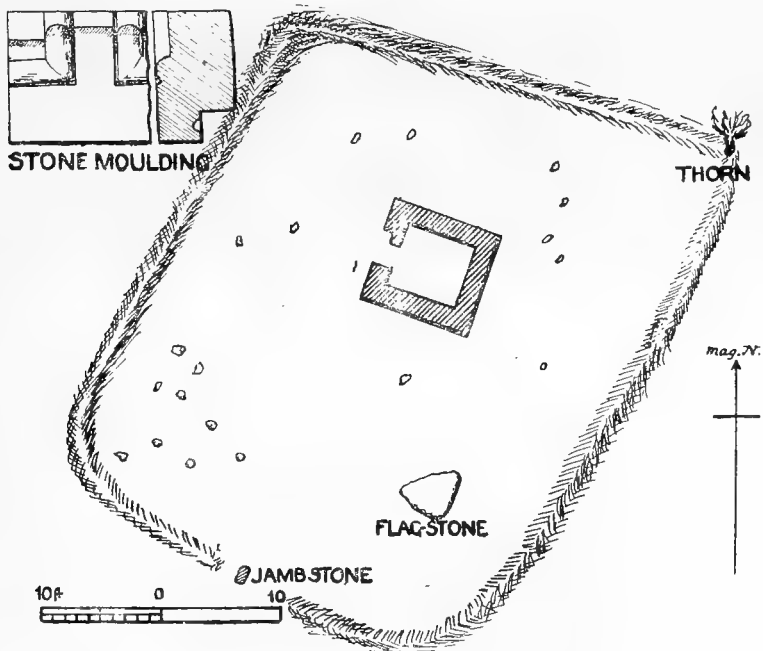


FIG. 1.—St Michael's Church and Enclosure.

The external dimensions of this building are 9 feet 5 inches by 8 feet 10½ inches. The magnetic bearing of the long axis is 109°. The doorway faces west, and measures 1 foot 7 inches across. A stone is lost from the outer angle of the northern jamb, giving a fictitious appearance of a rebate. There are no other architectural features in the ruin. It is built of dry

stone, but in clearing out the weeds that choked the building a fragment of cement was found on the floor. The stones of which it is built are comparatively small, flat, and roughly coursed. A small fragment of moulded stone was found lying inside the building, which cannot be correlated with anything else on the island. A drawing of it is added to fig. 1.

The enclosure around the *cella* is bounded by very roughly built walls of earth and stone. The external dimensions are 42 feet 9 inches east to west, by 42 feet north to south. The entrance is in the middle of the south side, and is 2 feet 8 inches wide. There are two jamb-stones on the eastern side of this gap, and one slab stands to mark its western side, 3 feet 4 inches high and 2 feet 6 inches broad at the bottom, narrowing suddenly to 1 foot 8½ inches. It is 4 inches thick. West of this jamb-stone the mound has been broken down by cattle. A rough pavement of flat stones runs through the entrance, partly buried in the earth; this is perhaps the end of a paved way said to run westward from the door of St. Caimin's Church, but now concealed under the earth. There is an old thorn-tree at the north-east corner of the enclosure. The Ordnance map (which has transferred the name of this building to St. Brigid's) marks the enclosure "Graveyard." It has, perhaps, been used as a burial-ground, but there are no formal monuments within it, though there are many fragments of stone lying about which may possibly have been taken from the *cella* to mark graves. In the south-east corner of the enclosure is a sandstone flag, roughly triangular, measuring 4 feet 2 inches by 3 feet 4 inches, not dressed or inscribed in any way, lying prostrate. This may be a mark of importance—possibly even the founder's tomb-slab—as in the "rounds" described in Part III of this paper special reverence appears to have been paid to this stone. I suspect that St. Michael's and the enclosure round it are, in fact, the remains of the nucleus of St. Caimin's monastery.

This structure is thus described in the Ordnance Survey Letters¹: "Directly to the West of the round tower, is the site of a very small Chapel, which is called St Michael's, 6 feet long, 4½ or 5 (?) feet broad. The door way on the West end is 22 inches broad. The vestiges of the foundation afford the means of ascertaining the extent as given here. The precincts within which this foundation is seen is called *Garaidh Mhicheail*, i.e., St. Michael's Garden." This note is of importance, as it gives us the proper name of the building, derived, as the writer is careful to assure us (p. 568), from local information. The measurements given must be the *internal* dimensions. Brash's account adds nothing of importance.

¹ Galway, vol. ii, p. 558.

Delany told me that the structure is now called "The Black Church." He had a confused tale about it being a place whither people suffering from cholera or other deadly sickness were brought; I understood that it was supposed to possess healing virtues, but he was not clear about this. This tradition has already been noticed in connexion with the "tale of the three wishes." The church was not touched during the Board of Works operations, except for a little clearance of the site. Mr. Hibbert had some of the brambles cut for me, when the moulded stone above-mentioned was found.

II. *St. Brigid's Church* (view, Plate VIII, fig. 2; plan and details, Plate IX).

This is a small rectangular building, measuring internally 19 feet 7 inches by 11 feet 10 inches; the long axis bears 97°. It stands within an enclosure, roughly rectangular, measuring internally 67 feet east to west by 57 feet north to south. The southern wall of this enclosure, which contains the entrance doorway, is built of dry-stone masonry; the doorway is of smaller stones and of rather better construction. The other walls of the enclosure are rough structures of earth and stones, resembling the walls round St. Michael's. The doorway in the enclosing wall is a plain round-headed arch, 5 feet 8 inches high, 2 feet 5 inches across, and 2 feet 6 inches long through the thickness of the wall. Except a very slight moulding, consisting simply of two grooves running parallel with the jambs and arch, on the inner face, this archway is perfectly plain. Slight though it be, however, the moulding is sufficient to enable us to identify one stone of this arch, which has been built into the doorway leading into the Saints' Graveyard, as described later on.

The doorway that gives access to the church itself is at the west end of the building. It is round-headed and recessed in three orders. The elaborate ornament of the arch is carried down the jambs, interrupted at the spring of the arch by an impost. The innermost order bears a diaper of zigzags, enclosing a row of lozenges on the soffit. Two of these lozenges on the north side appear to be blank; the others bear rosettes with four leaves (two or three have eight leaves). The middle order has a decoration of chevrons, set at right angles to the plane of the face of the arch. The asymmetry of the springing-stones of this order will be noticed. The outer order is plain, but is bounded by a hood-mould having billets on its intrados. These billets are partly worked on the voussoirs, partly on independent stones, as the elevation on Plate IX shows; at the spring of the arch the billets are notably farther from one another than in the upper part of the arch.

There are two small deeply splayed windows in the church. The one is on the south side of the altar, the light being $5\frac{3}{8}$ inches wide, the splay 3 feet $1\frac{1}{2}$ inch wide. The other is in the middle of the east wall; the splay is 2 feet 4 inches wide, but it is impossible to give the width of the light, as the jambs are lost. The splay of the first of these windows is very unsymmetrical.

The above is a description of the church as it exists at present. We now proceed to give an account of the church as it was before the restorations, and to note the nature of those operations.

O'Connor's account is as follows¹:—"At some distance from Saint Mary's Church to the North, stand the remains of a small Chapel, which is called 'baptism house.' It was originally 20 feet long. The East gable, 18 feet of the North side wall, and about 7 feet of the South side wall attached to East gable remain.

"On the East gable is a window, which on the inside commences within $2\frac{1}{2}$ feet of the ground, is near 3 feet broad in the lower part, and $3\frac{1}{2}$ feet high. It is broken down at top on this side. On the outside it is 2 feet 2 inches high and 6 inches broad, and is of a quadrangular form." Here follows a rough outline sketch, a copy of which, as it is apparently the only record of this window when complete, is reproduced on Plate IX. O'Donovan adds to this description the words: "This gable was prostrated by the memorable storm of the 6th of January 1839. How soon a piece of writing becomes an antiquity!"² O'Connor resumes: "Close to the East gable there is a window on the South side wall, which on the inside, is 2 feet from the ground; 3 feet broad in the lower part. The upper part was totally destroyed on both the inside and outside. This was 6 inches broad, and about $2\frac{1}{2}$ feet high on this latter side. It was, as well as the East gable window, constructed with chiseled stones."

From this extract we learn that in 1838 the west wall (including the Romanesque doorway) was wholly prostrate; the east wall, with part of the side walls, was standing, with the two windows, of which that in the east wall was square-headed, but that in south side had lost its top. Moreover, the east wall was partly blown down early in 1839.

Some time later the building was adapted as a habitation for a herd. Brash, in his "Gentleman's Magazine" article, describes the building as in the last state of decay: "About fifty yards to the north of St. Mary's are the foundations of St. Michael's Church [*sic*]. A portion of the east end has

¹ O.S. Letters, *loc. cit.*, p. 556.

² O'Connor's letter, into which O'Donovan has inserted these words, is dated 19th Nov., 1838, about seven weeks before the storm.

been raised in wretched masonry, roofed in, and thatched as a sheeling. The remains of the original walls, which show in some places a few feet over ground, were of excellent character, the stones dressed, and the jamb of a door ope showing well chiselled work." Lord Dunraven also found it used as a cottage, divided by a party wall into two rooms.¹ These domestic intrusions have now been altogether cleared away.

With these indications, the Board of Works Report, as well as Delany's reminiscences, coincide. O'Connor strangely omits all mention of the wall enclosing the churchyard. Of this the Report says: "Surrounding St. Camin's [*sic*] Church is the ancient enclosing wall or cashel, built of squared masonry [?], the entrance with circular arched head, all the stones of which have been found and re-set in their places." As we have seen, *one* of the stones has been built into the entrance to the Saints' Graveyard, a plain stone being put into its proper place in the St. Brigid's doorway, so that this last statement of the Report is not quite accurate. The enclosing wall is wrongly described as being round St. Caimin's, which is not surrounded by any wall, and it is referred to in connexion with that church—a mistake which, in dealing with work of such importance as the restoration of national monuments, is quite unpardonable. Further, the Report says: "To the south-west of the Tower is St. Michael's [*sic*] Church, a small building surrounded with a cashel of the same early date as that of St. Camin's." There is no "cashel" round St. Caimin's. We read further: "The interior was filled with rubbish which on being examined was found to contain the whole of the beautifully carved stones of the western entrance, these have been re-set in their places." This accords with what I learned on the spot, that the west wall was prostrate to its foundations, and was entirely rebuilt, the doorway being a complete reconstruction. It is not the fact, however, that all the stones were recovered, or even that all the recovered stones were worked into their places. There are a number of new stones (left unshaded in the elevation on Plate IX) filling gaps in both arch and jambs. The outer order of the jambs, as it now appears, is an obvious and impossible patchwork; and there are one or two stones lying about loose in the enclosure that have all the appearance of belonging to the doorway.

With regard to the name of the church, it will be noticed that O'Connor, our oldest authority, calls it "Baptism House." It is still sometimes called "the Baptistery," though a more frequent name for it seems to be "the Piggery"—a reminiscence of a time when it was treated with less reverence

¹ Notes on Irish Architecture, vol. ii, p. 58.

² It is perhaps hypercriticism to note that a "cashel," properly speaking, is not so much a wall as the space enclosed within a wall.

than is its due. Delany gave me the name St. Brigid's, which I have adopted. The Ordnance Survey name, St. Michael's, is unknown to everyone whose traditions have remained uncontaminated by literary influences.

There is a platform, 5 feet 4 inches square, rising 6 inches above the present level of the ground, to the north of the church. It is built of loose stones. Possibly it is the base of a cross. As will be seen from the plan, Plate IX, where it is marked "foundation," it is not laid out parallel to the church.

III. *St. Caimin's Church* (plan, fig. 2; views, Plates XI, XII; details, Plate X; figs. 3-5).

As before, we first describe this church as it appears at present. It is an early rectangular building, with corner *antae*, to which a Romanesque chancel has been added.

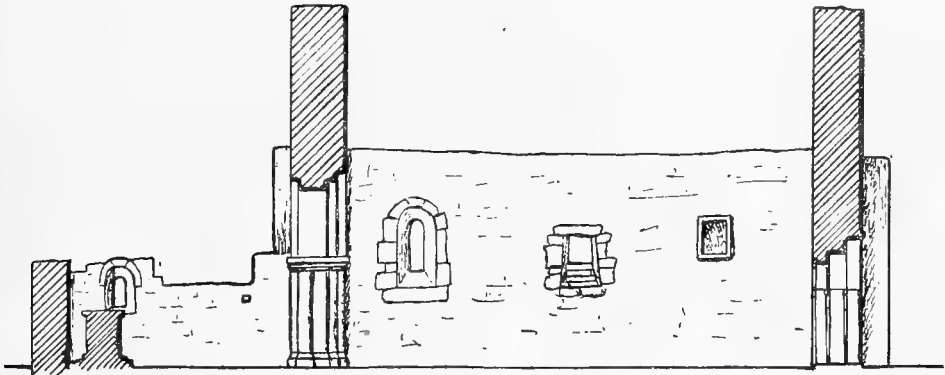
The Nave, the original Church, measures 30 feet 3 inches by 20 feet 3 inches internally. The orientation of the long axis is 110 degrees magnetic. The masonry is rough, of large, long stones, though at the two ends of the side walls the stones are rather smaller, as though there had been a rebuilding. There are *antae* at the corners on both east and west faces. The walls inside are plastered, but the plaster is much broken. There are high gables, with copings kneed at intervals into the wall.

A Romanesque doorway is inserted into the western face, which obviously cannot have been an original feature of the church (see Plate X). It resembles the doorway of St. Brigid's, but is less elaborate. It is in three orders. There is here no impost at the spring of the arch,¹ and the ornamentation of the voussoirs is not carried down the jambs, as in the case of the doorway of St. Brigid's. The inner order of St. Caimin's doorway, like the middle order of that of St. Brigid's, is decorated with chevrons at right angles to the face of the arch. The central order, of which only a few of the voussoirs survive, has a simple moulding of incised lines; whereas the outer order has an elaborate pattern of zigzags upon it.² The zigzags on the face of the order alternate ingeniously with those on the soffit; the apices of the latter fall into the spaces between the apices of the former. In the inner order of the St. Brigid's doorway, which is otherwise similar, the apices of the two sets of

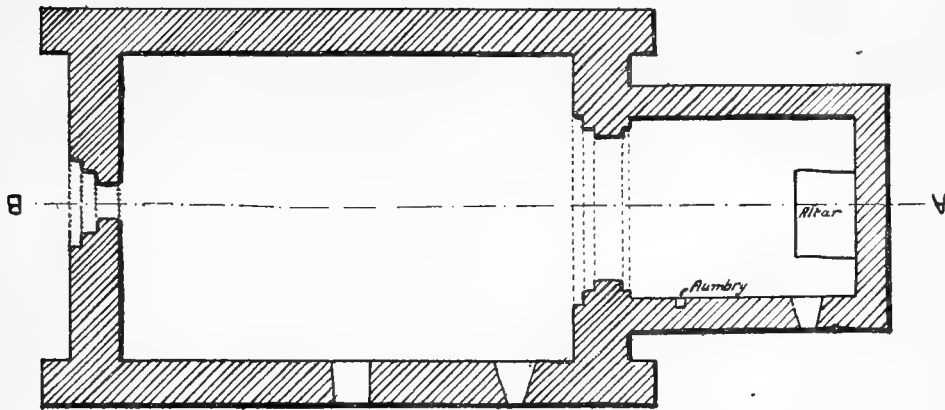
¹ But there ought to be; Petrie's drawing (Eccl. Arch., p. 282) shows that there was an impost on the original north jamb, which was still standing in his time. The arch as "restored" can only be described as a clumsy patchwork.

² Petrie's drawing (*loc. cit.*) almost seems to suggest that what the restorers have made the outer order, padded out with new voussoirs, was really the second order in the original arch.

chevrons meet. On each of the keystones of the three orders is sculptured a human head in relief, surmounted by a square block like an abacus. The insertion of the doorway into the wall has been very clumsily effected; the change of masonry is so obvious as to be an eyesore (see the photograph, Plate XI, fig. 1; for this photograph I am indebted to Mr. Crawford). A bowtell moulding runs up the angles of the jambs in each of the orders, termi-



SECTION AB



PLAN



FIG. 2.—St Caimin's Church.

nating upwards in a small human head. There is a similar moulding running up the inner angles, terminating upwards in a snake's head recurved on itself (see the drawing, Plate X, which also shows the very peculiar terminal of the moulding behind the bowtell of the inner order). As in the doorway of St. Brigid's, many plain modern voussoirs have had to be inserted to supply the place of lost stones.

In the angle of the gable above this doorway there is a small triangular aperture.

On the south side of the nave are two windows which, unlike the doorway, are probably original features. The western window is about the middle of the wall; it is a flat-headed opening with sloping jambs. The outer face of this window is revealed around the opening for a wooden shutter rotating as usual on projecting horns. The socket for the upper horn can be seen, but not the lower socket, as the bottom stones on each side are new insertions. There are three lintels spanning this window-opening, the sill of which internally is built up in steps (see fig. 3, where the dimensions are marked). The second window is near the east end of the wall, and no doubt was the illuminant of the original altar. It is round-headed, and built up with voussoirs inside, but capped with a single stone outside. A rude

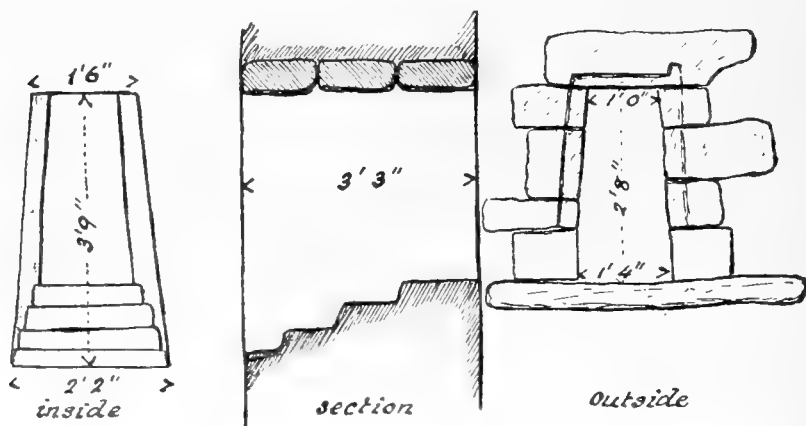


FIG. 3.—Window in St. Caimin's Church.

moulding surrounds the opening of the outer face; it consists of a band parallel with the edge of the opening, bearing two grooves upon it (Plate XII, fig. 1).

The photograph, Plate XI, fig. 1, shows a triangular projection attached to the southern slope of the eastern gable of the nave. This is the base of a bell-cote which once occupied this unusual position. It has, however, fallen, and the debris of the masonry is still to be seen on the ground below where it fell.

The chancel arch, which certainly belongs to the period of the added chancel, is circular, well-turned, in three orders towards the nave and two towards the chancel. It will be seen in Plate XI, fig. 2. Except for a grotesque head on the keystone of the outer order towards the nave, this arch is entirely without ornament, or even the simplest moulding. It is

supported by clustered jamb-shafts, with carved capitals and bases. The peculiar ornamentation of these can hardly be described intelligibly; a glance at the drawings, Plate X, will give a good idea of the designs. There are two small holes in the intrados of the arch, just above the abacus on each side as though to receive the ends of curtain-rods. The supporting jambs are not quite perpendicular; just below the capitals they are 9 feet 11 inches apart, and just above the bases they are 10 feet 2 inches.

The chancel is butted against the nave, without any attempt being made to bond them together. There is not the least mark or break in the east gable of the nave to indicate where the upper part of the walls or the roof of the chancel came in contact with it. This is well shown in the photograph, Plate XI, fig. 2, which also shows the contrast between the masonry of the two parts of the church, and the row of billets that decorates each side wall of the chancel.

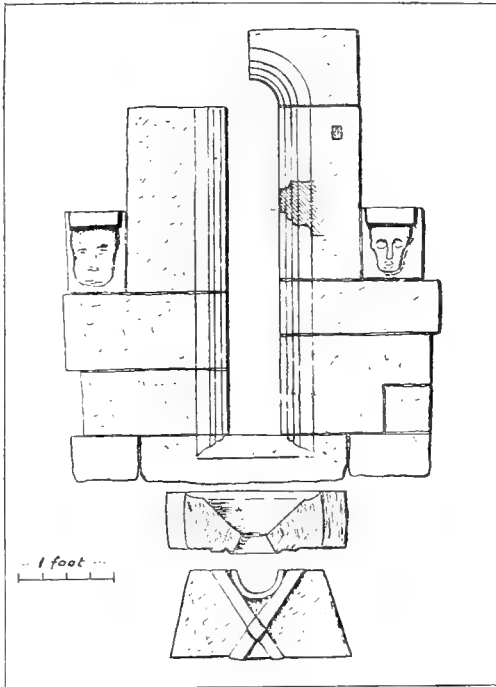


FIG. 4. Window in St Caimin's Church.

The chancel is carefully built, with well-squared stones; its masonry much resembles that of the chancel of St. Finghin's Church at Clonmacnois. It measures internally 14 feet 7 inches by twelve feet six inches. There is a window on the south side of the altar, with rounded head. There was probably also an east window, which has entirely disappeared. Its stones

are, perhaps, to be seen in a window reconstructed by the restorers, and placed standing against the south wall of St. Caimin's nave (CNS 9).¹ This window is represented in fig. 4; it is round-headed, with flat and late mouldings. If it be really the east window of the church, it was certainly a very late insertion. The light is 3 feet $8\frac{1}{2}$ inches high and $6\frac{3}{4}$ inches across. The two heads built into the sides of this window have obviously no business there. There is a small rectangular sinking, the purpose of which is not clear, in one of the stones on the sinister side of this window; one of the arched stones of the window-head is missing. The head of another window, for which no place can now be found in any building on the island, is lying close by (CNS 14). It was round-headed, the light being $5\frac{1}{2}$ inches across; the window-head was decorated with a saltire in relief, having a raised lozenge at the intersection, on the face of the stone on the outer side. A drawing of it also will be found in fig. 4. There is a small square aumbry in the chancel wall, on the south side, close to the chancel arch. As has just been mentioned, there is a string-course, from which depends a row of billets, running along the north and south sides of the chancel, just under the place where the eaves of the roof came.

Among the odds and ends preserved in the nave of the church are the fragments of two gable-finials of the characteristic Irish type, with wings. One of these, clamped to the west wall south of the doorway, bears a cross potent in the middle, and had a triskelion in each apex of the wings. The other (CNN 13), which is reduced to the merest fragment, also shows a triskelion, and has the raised margin decorated with a Wall-of-Troy pattern. These finials, which are sketched on Plate X, probably once surmounted the gables of the nave. The coping of both gables, and the summit of the eastern gable, had to be renewed in the Board of Works restoration.

To determine the aspect of this building before its restoration, we have the Ordnance Survey Letters and Sketches; some woodcuts in Petrie's book; Brash's article in the "Gentleman's Magazine"; the account in Dunraven's "Notes," with two excellent photographs; the Board of Works Report; and some oral information that I obtained on the spot.

Petrie's drawing² shows the chancel arch intact, but a great growth of ivy hides the upper voussoirs. Behind and through the arch there is an uninterrupted view of the lake scenery; accordingly, the altar now standing in the east end of the church, the east wall of the chancel, and the wall of the Saints' Graveyard behind, all of which would now prevent such a view being

¹ For an explanation of these symbols, which indicate the position where an object thus denoted is to be found on the island, see the beginning of section xiii, below.

² *Ecclesiastical Architecture*, p. 282.

obtained, did not exist. In the foreground is the west wall of the nave, in which only the jambs and springing-stones of the north side of the Romanesque doorway are to be seen; there is a great gash in the wall, occupying the place where now we see the doorway. A small drawing by Wakeman,¹ which shows the aspect of the church from a point to the east of it, accords with this; the whole of the chancel arch is visible, as though there had been no remains of the chancel at all; and through it we see the breach in the west wall, which seems to be of about the same extent as the clumsy insertion to which reference has already been made. One of Lord Dunraven's photographs also shows the uninterrupted view through the church to the waters of the loch.

But even after Petrie's time the west end suffered further injury. Petrie found one jamb and the spring of the arch complete. Brash² says: "The masonry of the nave walls is of large-sized spalled rubble, the material a light brown grit, or freestone, found plentifully on the island, with a few limestone blocks intermixed. The entrance was at the west end; where the doorway stood is now an unsightly breach; at my first visit in 1852 there were about 2½ feet of one jamb standing, and about 1 foot of the other; these are now gone, having been torn away by the ignorant peasantry to put as headstones to graves." In his "Ecclesiastical Architecture" the same writer says (p. 17): "The doorway was in the west end, about 3 feet of one jamb alone remaining. Dr. Petrie's sketch shows one entire jamb and a voussoir of the arch."

The following is the testimony of the Ordnance Letters³: "Saint Caimin's Church stands in ruins next the round tower to the North East of it. Attached to the East end of it, are two portions of the side walls of an edifice locally called St. Columb Kille's chapel, still remaining, which were, it appears, 8 feet in length originally The East gable of this little chapel, was entirely destroyed. Within it are shown the foundation stones of an altar." After a description of the chancel arch and nave windows, which adds nothing to what has been set forth above, O'Connor proceeds: "The door which was in the West gable of this Church, was built with ornamentally chiseled stones, six feet of which in height remain still visible on the North side; which part alone can be regarded as in any degree of [*sic*] a state of preservation, for all the rest of it is battered. Its breadth and form are not well ascertainable." To this O'Donovan adds: "This doorway was certainly semicircular and exactly like that of Teampull na Naomh in Inchagoill in Lough Corrib." In the above account the dimensions of the chancel as given are very far wrong; and even

¹ In Petrie's "Christian Inscriptions," vol. ii, p. 41.

² *loc. cit.*, p. 12.

³ *loc. cit.*, p. 545.

the correction which O'Donovan has made on the MS.—turning “8” to “18”—does not make it right. We see from this that the total destruction of the east end of the chancel, and the accumulation of debris, made accurate observation impossible. On p. 167 below, will be found further evidence for the dedication of the chancel to St. Colum: but doubtless the real dedication was to the hermit Colum, not to the apostle of Iona. It is quite possible that the chancel was built on the site of the *cella* of Colum, and that this alleged dedication is the last trace of a tradition to that effect. If so, the sacred elm-tree probably stood close by.

Lord Dunraven notes that the doorway was nearly destroyed, only about three feet of the jamb remaining. He thus saw it in its most extreme state of ruin, as did Brash.

The Board of Works Report says: “The chancel arch was in such a state that it had partly to be rebuilt, all stones disturbed being carefully replaced in their positions; the western doorway had fallen, and the chancel walls had nearly disappeared. The interior was a mass of rubbish, which being removed and carefully examined, gave nearly all the arch stones of the western entrance; these have been put in their places; the stones of the altar were also found and re-erected, as well as portions of the chancel walls and windows of same.”

This very fairly records what was done; but it omits to mention that the wrong spring-stone was put into the inner order of the doorway on the south side, completely spoiling the effect of the arch. The rebuilding of the chancel arch, which was confirmed by Delany, was necessary on account of the growth of ivy, which was forcing the stones apart. The top of the window on the south side of the chancel was replaced.

I confess that I have grave doubts of the propriety of inserting the three heads as keystones on the orders of the doorway. To me these look like corbels; and I suspect that this is what they actually were, and that the two heads now incongruously inserted into the reconstructed east(?) window, described and illustrated above, belong to the same series, as well as a head that forms part of the extraordinary structure above the altar in St. Mary's, and another that has somehow found its way to the topmost course of the south side of the same building. Where this row of corbels may originally have been there is nothing to show; they may have supported the trusses of the roof of St. Caimin's. Whether the grotesque head that now decorates the chancel arch properly belongs there, is a doubtful question. The top of the arch cannot be seen in Petrie's sketch, as he shows it concealed by the ivy. In Hall's “Ireland,” vol. iii, p. 429, is a sketch similar to Petrie's, but without the ivy. It does not show the head; but the whole sketch is too summary to

offer conclusive evidence. Brash, however, gives a careful drawing of the arch,¹ without the ivy, with every stone clearly indicated, and with no suggestion whatever of the head. There is no reference to the ivy in his letterpress; but it is of course possible that the drawing is a fancy sketch, attempting to show what the arch would have been like if there had not been any ivy upon it. If the head in question were concealed by the ivy, naturally Brash would not have suspected its existence. Brash shows twenty-eight voussoirs in the outer order of the arch; the plate in the Board of Works Report shows thirty-five, including the stone bearing the head, which is correct. It errs, however, in showing seventeen voussoirs on each side of the stone with the head: there are actually eighteen voussoirs on the north side of the arch, sixteen on the south.

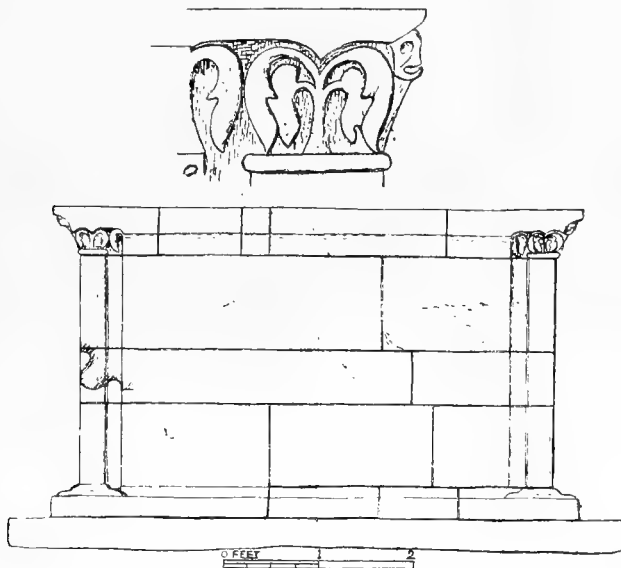


FIG. 5. Altar in St Caimin's Church.

The altar as restored (fig. 5) is a block of masonry, with bowtell mouldings at the angles capped with floral capitals. The flat altar-stone was not found; but there is no reason to doubt that the restoration, so far as it goes, is accurate. Two courses of the structure of the altar were remaining when Brash wrote.

The aumbry-like opening to the west of the south window of the chancel is shown by Brash as running through the wall to the outside, but not straight. He draws it running obliquely, trending westward from the inner face of the wall to about the middle, and then bending so as to

¹ *Gent. Mag.*, *loc. cit.*, p. 14.

run out at right angles to the outer face of the wall. This does not represent the present appearance of the aumbry. It is splayed on the eastern edge. There is an irregular break in the heart of the wall, running westward from the back of the recess; but it does not reach the outside, nor does the masonry show any indication that it ever did so.

About two feet of rubbish had accumulated on the floor of the church, which was cleared in the restorations.

IV. *St. Mary's Church* (view, Plate XII, fig. 3 : plan and details, fig. 6).

This building is rectangular, 54 feet 5 inches long, by 22 feet 5 inches broad, widening slightly towards the east end. The orientation is 101 degrees magnetic. The gables of the roof are not so high-pitched in proportion to their width as are those of *St. Caimin's* (see the photograph, Plate XII, fig. 3).

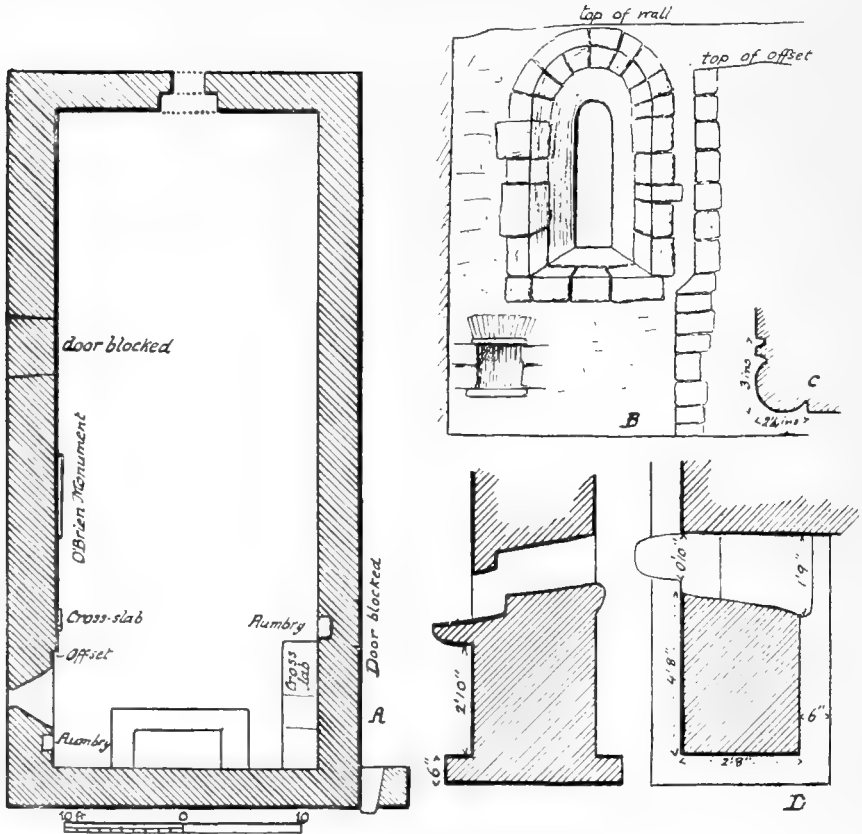


FIG. 6. *St. Mary's Church.*

The entrance doorway is the only pointed arch on the island; it is pointed

outside but spanned with a flat arch inside. There is a simple moulding on the outside arris (fig. 6, C). There were two other doorways in the church, now blocked up. One of these was on the south side, apparently Jacobean; it was spanned with a low segmental arch. The other was on the north side, and cannot now be traced except on the outside face of the wall. It was 3 feet 8 inches across, and was covered with a thin lintel slab, having no relieving arch above it.

When roofed, this church must have been very dark. There were only two windows—a tall single lancet in the east end, now completely destroyed, and another single lancet with round head on the south side of the altar. The sill of the east window is leaning against the north wall on the outside, and the cut stones now mark graves in the adjoining cemetery. There are two aumbries, one in the south wall near the east corner, the other in the north wall about 10 feet from the east end.

One of the most peculiar features of the church is an offset in the south side, beginning a few feet from the east corner, and running along the whole length of the church; but not reaching up to the top of the wall (see the sketch, fig. 6, B). It seems as though, for some reason difficult to understand, the wall had been at some time thickened by adding a new face to the inside of it.

There is a buttress against the north wall of the church, in line with the east end, not bonded to the main building, and therefore probably an addition. A curious water-channel is pierced through this buttress, which was probably once connected with a drain from the eaves-gutter (see fig. 6, D).

The corbel with a head, now built into the top of the south wall on the outside, has already been mentioned. The seventeenth-century O'Brien altar-tomb, which has suffered many vicissitudes, is described below, pp. 164–6. A rude seat, to serve as sedilia, has been constructed in recent years on the north side of the church. A cross-slab (No. 35 below) has been utilized in the construction.

St. Mary's is the least interesting, and certainly the latest, of the buildings on the island, with the exception of the Cottage (sect. ix). It is probably of thirteenth-century date, but much altered, if not partly rebuilt, about the sixteenth century. O'Donovan is not improbably correct in supposing that the remaining window has been taken out of an earlier church.¹ The west doorway looks like thirteenth-century work, but the two blocked doorways are quite late, and were probably not much, if at all, earlier than 1600. Nothing but clearing of rubbish was done by the Board of Works. Delany

¹ O.S. Letters, *loc. cit.*, p. 552. Brash, *loc. cit.*, p. 20, makes the same suggestion.

told me that he had found practically all the stones of the east end and laid them out in order, but mischief-makers very soon scattered them again, and they are now appropriated as headstones. It is however to be noted that O'Connor¹ says "the East gable is destroyed with the exception of a small portion of it, attached to the North side wall."

There is a small cross marking a grave close to the west door. I thought it might have been a gable-finial, which it much resembles, but Delany assured me it was quite modern, and made specially for the grave that it marks.

V. *Anchorite's Cell* (plan, fig. 7; views, Plates XIII, XIV).

I give this name to a very remarkable structure that lies north-east of the principal cemetery on the island—the Saints' Graveyard, east of St. Caimin's. It is, indeed, one of the most extraordinary ecclesiastical buildings in Ireland.

It is a small cell, 10 feet 1 inch long by 8 feet 5 inches broad. The walls are standing to a height of between 3 feet and 4 feet, but nearly 5 feet at the doorway. There is a plinth or footing on the east and north sides, 7 inches wide, just above the ground-line. The doorway is at the *east* end, and is revealed for a door on the inside. The orientation of the structure is 283° magnetic. The masonry is good, and larger stones are used in the construction than in any of the other buildings on the island, except the landing-stage. One stone, in the north side of the building, measures 4 feet 7 inches in length.

Internally the structure is divided into two parts by a couple of rude standing stones. These are flat slabs, each about 4 feet high; that to the north was broken, and has been repaired with iron clamps. They are so placed as to approximate to one another at the top, making a triangular opening between them through which it might be barely possible to creep on hands and knees. Behind these two stones the cell is contracted in dimensions. Not only are the walls thicker, making the space between them narrower, but there are two other rude stones occupying the corners at the west end of the building. These are square blocks, not slabs like the first two; and they take up so much room that it is scarcely possible to turn in the space left vacant between them. Like the first two, they are so set as to slope toward one another at their upper ends. There is a thin, flat slab on edge between these stones and the masonry of the western wall, and another slab forms the floor of the inner part of the cell. This floor is raised 7 inches above the floor of the outer part of the building.

¹ O.S. Letters, *loc. cit.*, p. 552.

On the south side of the outer part there is a seat or shelf, $4\frac{1}{2}$ inches to 6 inches broad, and raised 1 foot 9 inches above the present level of the floor.

This *cella* stands on a small circular plateau, surrounded by a much-ruined enclosing wall, in the grove of trees just east of St. Caimin's. The entrance to the enclosure was to the west, where there are remains of jambs. Within this space, and east of the building, are the recumbent slab, No. 28 in the list below, and the cross-base, No. 9.

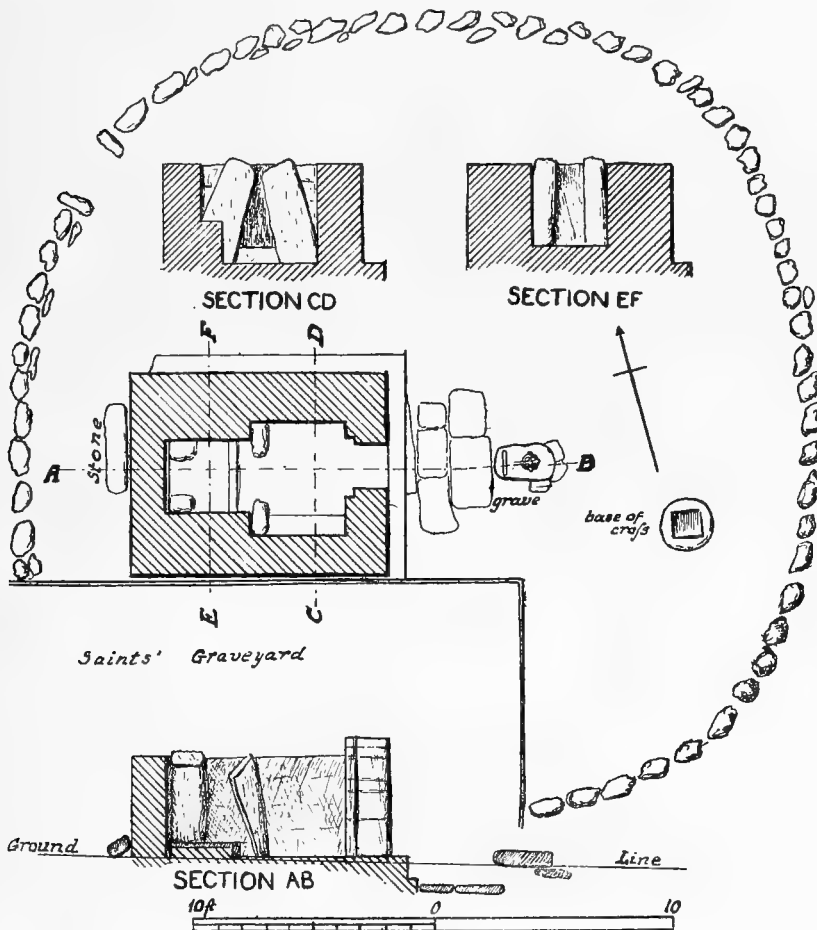


FIG. 7. Anchorite's Cell and Enclosure.

It is the custom to call this building, locally, the "Confessional"; and the name is adopted on the Ordnance map and by the Board of Works. The Ordnance Letters merely allude to the structure, and no more, under the name of "a Confession Church." Brash, whose description is scanty, and does not

sufficiently emphasize the remarkable group of four rude pillar-stones occupying so much floor-space in such a small building, seems to have no doubt that it was a Confessional. Lord Dunraven took it for a tomb; in this he is followed by the Board of Works Report, which gives two very good perspective drawings of the building, and a plan, which is not so good. There is this much to be said for the "tomb" theory; that the four standing stones look like nothing so much as the supporting stones of a small dolmen. Indeed, I would feel almost certain that is what they originally were, had it not been for the slab inserted beneath them, which would not be found in a dolmen, and could not have been inserted if the stones had been in position. There is, however, no objection against supposing that a rude stone structure of some sort—a dolmen or a stone circle—once stood on the little plateau where the *cella* now stands, and that it was despoiled to afford material for the building. The large stones in the structure, and one extra stone lying unused against the outside of the west wall (measuring 3 feet 6 inches long and 1 foot 1 inch across) might have come from such a source. The sanctity of the Holy Island, as we have already seen, probably stretches back into the days of paganism, and it would not be surprising if it once had borne megalithic structures. The desire to capture the shrine for Christianity might have been a leading motive with those who first chose the site for the monastery.

That the building was intended for the sacrament of Confession seems to me perfectly inadmissible: and I see that Mr. Champneys expresses the same opinion, and for the same obvious reason¹—that a structure would not be made for so solemn a rite that could not be entered by priest or penitent without a fatal sacrifice of dignity. Mr. Champneys gives the explanation that occurred to myself independently the moment I first set eyes on the building; that it is the abode of an *inclusus*, who submitted himself to a peculiarly rigid self-mortification. The outer part of the *cella* was meant for those who came to consult or to minister to the holy man, who was built in between the four standing stones. The comparative spaciousness of the well-known anchorites' cells at St. Duilech's, near Dublin, and at Fore, Co. Westmeath, or even the mediaeval dungeon called Little-ease, were as palaces compared with the restraint of this living sepulchre. A person confined thus might well be spoken of as "the miserable one": and when we find in the *Annals of the Four Masters* the obit, A.D. 898, of one Coscrach, anchorite of Inis Cealtra, who was known by this appellation, we are, as I venture to think, justified in regarding this building, with a fair measure of

¹ Irish Ecclesiastical Architecture, p. 110.

confidence, as the scene of his austerities. The story of Anmchad, which we have already related, further associates the discipline of inclusion with the monastery of Inis Cealtra; but an even more remarkable link is afforded us by the Life of Mac Creiche, to which allusion was made near the beginning of our study of the history of this island.

Whoever Mac Creiche may have been originally, we have seen that there was a tradition that he was the first hermit of the island of Inis Cealtra. Now the very first words of the Brussels Life of Mac Creiche are as follows:—

“Incipiunt pauca de mirabilibus Mheic Creche .i. Mac Creche mac Pesslain¹ meic Erce o Chorcumruadh Ninois a chenél; naoi fichit bliadhan a aés o laithe a ghene co laithe a écca. Ba he tosach a ratha *condeachaidh* in ditreibh fil *eter* Formáoil 7 an Eidhneach; Clúain hÍ ainm in bhaile irabesiumh acc tathuighi a *ernaigh*te. Is í métt in indelbh ceiteora cloch, .i. cloch rena dhruim, cloch *cechtar* a dha taobh, 7 cloch ar a *aghaidh*. Is annsin do thionnsceain Mac Creiche in *corgus* do dhenam ar uamhan 7 *ar* eccla ifrinn; 7 ní ruce leis isin ditreibh do bhiadh *acht* madh aen bhairghen na má, 7 ceithre gassa bioruir, 7 ní thoimhleadh nach ní diobh *acht* Día Domhnaigh na ma, 7 *ar* *ttairccsin* an charguis leis nir chaith do biadh acht arán 7 anghlas Domhnach Casce.”

“Incipiunt pauca de mirabilibus of Mac Creiche, that is Mac Creiche son of Pesslan (?) son of Erca of Corcomruadh Ninois was his lineage; nine score years his life from the day of his birth to the day of his death. It was the beginning of his grace that he came into a wilderness that is between Formael and the (river) Eidhneach; Cluain I is the name of the place where he was practising his devotion. This was the extent of the erection,² four stones, viz., a stone at his back, a stone at each of his sides, and a stone at his face. There Mac Creiche began to keep Lent, for fear and terror of hell. And he brought no food with him into the wilderness save one loaf and four stalks of watercress, and he ate naught of them save on Sunday only; and after Lent was passed he ate no food save bread and milk-and-water on Easter Sunday.”³

We may, I think, infer that Coscrach, if he were really the occupant of this cell, set himself to emulate the austerities thus ascribed to Mac Creiche, the reputed founder of the monastic life of Inis Cealtra; for traditions like

¹ That is the best I can make of this name from the small photograph of the ms. at my disposal: it does not look right. However, in the present context, the matter is not of much importance.

² Indelb, according to Cormac, means a [heathen] altar.

³ Compare the penance of St Patrick (Tripartite Life, ed. Stokes, p. 474).

this, which to us are all but lost, were no doubt living, real, and vivid in the ninth century. The four stones are arranged as Mac Creiche arranged his, as nearly as possible; and no doubt the saint's abstinence from food was also emulated. The slab lying in front of the door of the *cella* is most probably the gravestone of the *inclusus*; it resembles in style the slabs at Clonmacnois which are contemporary with the Coscrach of the Annals. Excavation showed that between the slab and the cell, at a depth of $7\frac{1}{2}$ inches, there was a pavement of flagstones (laid down to scale in the plan, fig. 7). There is also an irregular footing-step, 5 inches in the maximum breadth, beneath the plinth surrounding the cell. The slabs were raised, and then carefully replaced and covered up again. Nothing was to be seen beneath them save some tiny fragments of bone. At the head of the gravestone were some smaller slabs, more irregularly disposed, and not so deep in the ground; among the latter was a block of quartz, about twice the size of a man's fist.

VI. *Teampull na bhFear ngonta* (plan, fig. 8; view, Plate XXV, fig. 2).

The "Church of the Wounded Men" stands in the Saints' Graveyard. The name recorded by O'Connor and (in a corrupt spelling) by Brash, seems

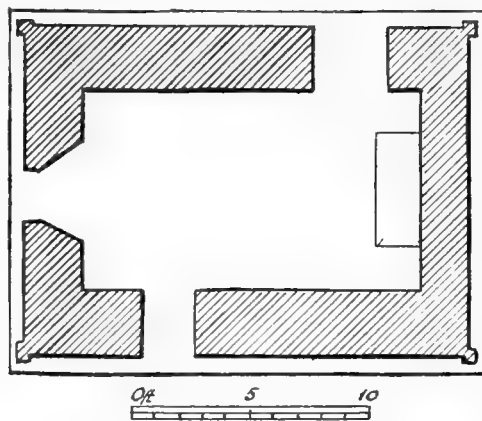


FIG. 8. Plan of *Teampull na bhFear ngonta*.

now to be forgotten. The Ordnance map has confused it with St. Brigid's, and calls it "Baptism Church." Who the "wounded men" may have been it is impossible to say. The word properly means "wounded to death," as in a battle; and the name may preserve the last echo of the memory of a raid that the island monastery suffered. They may possibly be the same as the mysterious "ten men" to whom cross No. 11 is dedicated.

The building itself may be described in few words. It is rectangular, measuring externally 14 feet $1\frac{1}{2}$ inch north to south by 19 feet east to

west. The walls stand on a footing or plinth 6 inches broad. At each of the corners is a pilaster, projecting 2 inches from the outer face of the wall, and having a breadth of 5 to 6 inches. There are no traces of windows in the walls as they now stand; but there are no fewer than three doorways, which is very remarkable considering the small size of the building. In the north wall is a doorway, 3 feet 2 inches wide, and 3 feet 9 inches from the north-east external angle. In the south wall is another doorway 2 feet 1½ inches wide, and 5 feet 2 inches from the south-west external angle. The third doorway is in the middle of the west wall, and measures 1 foot 11½ inches outside and 3 feet 11 inches inside; this is the only one of the three doorways with splayed jambs. The orientation of the building is 93 degrees. At the east end there is a built-up altar of stone 5 feet long and 2 feet broad. The east wall is prolonged northward to meet the wall of the cemetery. This is an original feature, difficult to explain. Indeed, this little building is full of difficult problems. There is nothing of importance about it in the O. S. Letters, nor does the Board of Works Report allude to it. Brash mentions it, but no more, except that he records a tradition (not otherwise attested) that “any woman entering within its walls will lie under the curse of barrenness.” The only work done to the structure in the restoration works was the clearance of the floor, and the uprooting of a great whitethorn that had grown up in the middle.

VII. *The Round Tower* (Views, Plates XII, XIV).¹

The Round Tower stands south-west of St. Caimin's Church; its doorway is turned towards the east, thus facing towards the doorway of the church in accordance with the usual rule.

The cap and belfry-stage of the tower have disappeared, if they ever existed at all. There is a local tradition that the tower was unfinished. By a calculation from the length of the shadow of the tower I estimated its present height to be 79 feet, which accords very closely with previous estimates. The other dimensions are as follows:—external circumference, 47 feet; height of doorway above ground outside, 11 feet; height of doorway above floor inside, 8 feet; height of doorway, 5 feet 3 inches; its breadth, 2 feet; its length through thickness of wall, 3 feet 3 inches. The Ordnance Letters give 7 feet 11 inches as the internal diameter.

The openings in the wall of the tower are as follows:—(1) the doorway, for which see Plate XII, fig. 2; a well-built structure with arched head, the voussoirs of the arch and most of the jamb-stones being of sufficient length

¹ From photographs by Mr. Crawford.

to run through the entire thickness of the wall. The sill, likewise, is a single slab, running through the wall. There is a socket-stone for the lower horn of the door, and a projecting sill inside ; and there are traces of the stone which received the upper horn of the door, but this is broken away. There are two holes like putlog holes, one at each end of the sill, roughly broken in the masonry on the outer face of the wall ; they are possibly meant for receiving the supports of a platform. (2) On the north side, above the level of the doorway, a window with a triangular head on the outside, square inside, made of two slabs of stone meeting at an apex, with a tympanum recessed within. This is shown in Plate XIV, fig. 2. (3) About half-way up the tower, above the doorway, a square-headed opening. (4) On the south side, still higher up, another square-headed opening. (5) Another square-headed opening, near the present top, on the west side.

The following traces of floors are to be seen inside the tower : (1) At the level of the door inside, an offset. (2) Sixteen courses above this, a row of large undressed blocks projects into the interior of the tower, evidently corbels to support a second floor. This floor was probably of stone, needing therefore a stronger support than the others. (3, 4, 5) Three other offsets at more or less equal distances between the corbels and the top of the tower.

The tower is built of fairly large stones, which are well dressed to the curve of the wall.

I add the following from the Ordnance Letters¹ :—“ On this island, stands a round tower, which is locally called *clógás*,² and is a splendid construction of large stones, bearing strong resemblance in this respect to the round tower of Roscrea.” Then follow measurements, after which the writer proceeds : “ The lower part of the tower inside, is filled up with clay as high as the door. At the depth of 3 feet below the surface of this clay, long stones jut out, *it is said*, from the wall of the tower, so as to form a floor (or a support for a floor ?).

Henry Boucher, the grandfather of Henry Allen, who lives at the lake opposite the island, and who went with me into it, saw an iron door on this tower. The traces where it was fastened, are still visible to the left, as one enters ; and the traces where it was bolted when closed, are visible on the right. There is a bit of iron said to be a part of a holdfast, inserted in a stone on the left as one enters. It is supposed to have been fixed in the stone at the time of the building of the tower. Most of the stones at the door, all of which are chiseled, extend the whole thickness of the wall.

¹ *loc cit.*, p. 539. ² The Ordnance Map (25-inch scale) has improved this word into “clógans” [This word is now (December 1915) deleted].

“Henry Boucher, who lived to the age of ninety six, or nearer to one hundred years, and is dead only four or five years, saw *three* floors perfect in this tower.” Then follows a description of the windows and offsets, as given above, and then the legend of the tower, which we give in the third part of this paper.

On the above details the following remarks have to be made. The tower was filled with clay (not stones), as O’Conor says, till the Board of Works restorations. How did all that clay find its way into it? I can see no answer to this question except that the clay was intentionally placed there, and that the original builders meant the tower to have a clay floor at the level of the door. It should, therefore, never have been dug out at all. The tradition that the clay concealed projecting corbels was shown to be incorrect when the clay was dug out. The masonry below the surface of the clay is much more irregular than the masonry above that level, but there are no corbels. If it be really true that a man born about 1738 (assuming the above data to be correct) saw three floors intact, legend must speak truth in asserting that the tower was never finished; for the fall of the heavy conical top would have annihilated any floors; and, moreover, stones, not clay, would have been found in the bottom of the tower. For naturally most of the stones would have fallen down within the shaft. I saw nothing of O’Conor’s “holdfast.” Boucher’s “iron door” was most likely a wooden door protected with iron plates; but we must remember that Boucher’s evidence is available at second-hand only, as he was already dead when O’Conor visited the island.

VIII. *The Landing Stage.*

This is a boat-pier of large undressed blocks of stone, at the eastern side of the island. It is now some distance from the water’s edge, but the level of the loch is known to have sunk a few feet. The level varies with the season and the weather; when I measured it I found the face of the landing-stage to be 26 feet away from the water. The structure is more or less rectangular on plan, 57 feet long, and presenting a face 49 feet broad to the loch. In vertical section it is triangular; the face towards the water is about 3 feet 3 inches high, and the height slowly diminishes to nothing as the land rises toward the interior of the island.

There is a carn of stones on the landing-stage at its inner end; possibly there was here a cross marking a station for prayer for those landing on the island.

I cannot find that this structure has been noticed in print before. It is entirely omitted on the 25-inch Ordnance map.

IX. *The Cottage* (plan, fig. 9).

This is a structure of dry-stone masonry, very roughly built; the stones used are fairly large, and the walls are 2 feet 6 inches thick. They stand to a height of about 3 feet; but the hearth in the middle is 5 feet high at its highest part. The whole building measures 34 feet by 18 feet, with a few extra inches here and there owing to the irregularity of the walls. It lies to the north of the Anchorite's Cell; the orientation of its long axis is 29 degrees; the entrance is to the north. As will be seen from the plan, it contains two rooms, separated by a H-shaped structure, which is evidently a pair of hearths, back to back.

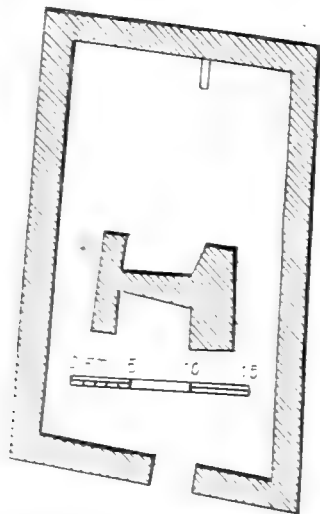


FIG. 9. Plan of the Cottage.

According to Bishop Rider's report, quoted in Part I of this paper, there was one house on the island in the beginning of the seventeenth century. This may be its ruins; but the structure hardly looks so old. There is no tradition of any recent occupation of the island though, as we have seen, a herd was established in St. Brigid's in the middle of the last century).

These foundations were almost hidden by a dense growth of brambles, which Mr. Hibbert caused to be cut away for me. O'Connor says:—"To the North East of this Confession church, lie the vestiges of another edifice, which is supposed by some persons, to have been a dwelling-house; but is generally considered to have been a church. No particular name is now known for it." It is so obviously *not* a church, that we must believe that those who identified

¹ O. S. Letters, *loc. cit.*, p. 551.

it as such were anxious to make up the number of *seven* churches; for the "seven churches" legend was told here as at Glendaloch and at Clonmacnois, and is here as baseless as it always is. Brash (probably owing to some confusion in his notes) calls this "the structure marked on the map as the Baptist's church." He must be referring to the structure before us, as all the other buildings on the island are accounted for elsewhere in his article. He describes it as "a mere heap of rubbish, the form and dimensions of which I could not ascertain."

X. *The Holy Well.*

Called "Lady Well" on the Ordnance Map. It is a cylindrical shaft of masonry built with mortar, 6 feet in diameter. There is a recess for offerings in the south side of the shaft. The water is covered with duckweed and other growths.

Between this and St. Mary's is an old lime-kiln, now filled up and overgrown with brambles and other bushes.

XI *The Enclosures* (Plate VII).

A notable feature of the remains on the island is the network of earth mounds that divide the land surrounding the monastic settlement into a group of irregular fields. That these mounds are an integral part of the remains of the monastery, and not a later group of field-divisions, is shown by the absence of such structures in those parts of the island where there are no buildings. It will also be noticed when the map of these enclosures is examined (see Plate VII), that roadways are formed between neighbouring mounds, which radiate from the principal buildings. The roadway from St. Caimin's to St. Michael's is said to be paved, though the pavement is covered with earth. O'Connor tells us, at p. 565 of his Letter on the island, that "the old walks which were formerly gravelled over, on this island, are now covered with grass, and still traceable"; and that Henry Boucher, the old man on whose recollections he drew, "saw rows of trees planted along the sides" of these roadways. One of the earth-banks running due west from St. Michael's seems intended to divide the island into two parts. There is no pathway along it, nor does it lead to a place conspicuously convenient for landing. A similar division seems to run north-east from the principal group of buildings. At the end of this last mound there is a small standing stone, marked "stone" on the 25-inch map. This was erected in quite recent years by a shooting-party. A road is marked on the Ordnance Survey 25-inch map, running from the north of the island

towards St. Caimin's, which I have marked with dotted lines on my map. I have been unable to identify this road on any of the numerous visits that I have paid to the island.¹

The Saints' Graveyard is enclosed by a wall which was ruined in Brash's time. Wakeman's sketch shows this wall in its dilapidated condition. It was apparently repaired by the Board of Guardians, and copied by the Board of Works. The entrance archway is old, but the round-headed top has been repaired. One of the voussoirs (marked B in fig. 10) has been borrowed from

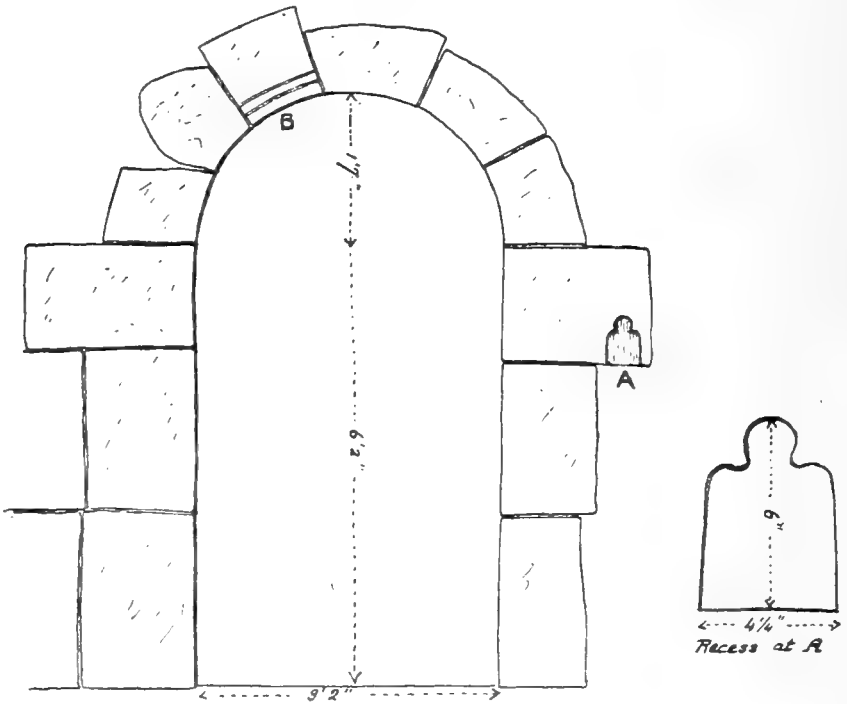


FIG. 10. Elevation of Door of Saints' Graveyard. Western Face.

the doorway into the enclosure round St. Brigid's. The archway at present measures 3 feet 2 inches in breadth, 4 feet 7 inches in height to the spring of the arch, 6 feet 2 inches to the apex of the soffit. One of the jamb-stones on the south side has a curious sinking on the western face (fig. 10); unless we were assured that this stone was in its original position, it would be futile to attempt to invent an explanation of its purpose. It is 6 inches high, $4\frac{1}{4}$ inches broad at bottom, narrowing to $3\frac{3}{4}$ inches just below the cusps. The depth of the sinking is $\frac{3}{4}$ inch.

¹ This road is now (December 1915) deleted.

To the east of the Saints' Graveyard is a dense growth of trees, among which are some wild damsons. These are most likely descendants of the trees in the monastic orchard. Not improbably the position of the orchard is indicated by this grove.

We have now described, as fully as possible, all the structures to be seen on the island. We now turn to the sepulchral and other monuments.

XII. *The Bullán Stones.*

Of these there are five.

1. At the side of the doorway of St. Caimin's, measuring 2 feet by 1 foot 9 inches.

2. About midway between the Round Tower and a point between St. Mary's and St. Brigid's, and about one-third of the way from the Tower. A block of conglomerate 5 feet by 3 feet 6 inches, with a bowl-shaped depression 1 foot 6 inches in diameter, and 11 inches deep.

3. On the eastern shore of the island, about 25 yards north of the landing-stage, a boulder 5 feet 6 inches by 3 feet 5 inches, 2 feet 9 inches high, with a cup-hollow 1 foot 3 inches across, and 6 inches deep.

4. A short distance north of this, a boulder 2 feet 5 inches by 1 foot 5 inches by 1 foot, with a broken hollow, 1 foot 4 inches across and 9 inches deep.

5. Near the shore towards the north of the island, a stone 2 feet 7 inches by 1 foot 9 inches by 1 foot 5 inches, with an oval depression measuring 1 foot 5 inches by 1 foot, and 5 inches deep.

In a letter dated 8th October 1915, Mr. Hibbert tells me of the discovery of another *bullán*, after my latest visit. It was hidden under a bramble bush, which Mr. Hibbert has had cleared away. It lies about fifty-five yards from the shore, in a line between the Round Tower and the islet off the north shore of Inis Cealtra, east of the island called *Illawnaskirtaun* on the Ordnance map. Compass-bearing to the tower, 198 degrees.

Mr. Hibbert says: "The stone is sandstone, with occasional small, rounded, quartz pebbles in it; undoubtedly it has been shaped [to a hexagonal form]. The flat faces and angles are too clean and sharp not to have been worked. There is a lump on one of the angles which is the only portion not cut away. The bottom is shouldered off all round, so far as I could feel." From a sketch with dimensions, in Mr. Hibbert's letter, it appears that the hollow is 18 inches across, and $8\frac{1}{2}$ inches deep; the margin round the hollow is of a maximum breadth of 7 inches. The hollow is of the usual rounded form, not

following the hexagonal outline of the stone itself. Mr. Hibbert adds: "It is set on the edge of an odd little oblong elevation of overgrown stones."

In a later letter (20 Oct.) Mr. Hibbert tells me of a group of two stones about fifteen yards from the edge of the water, in a line drawn across the west end of St. Mary's. One of these is of conglomerate, full of quartz pebbles, &c. It measures 3 feet 6 inches long, and about 3 feet across. A channel about 8 inches wide and 4 inches deep is cut in the upper surface, running parallel with the edge of the stone. On the stone lies a flat flag of gritstone, adhering so closely to the lower stone that it looks as though it had been cemented on. This upper flag is broken, and two pieces that appear to have covered the ends of the channel are missing; the middle part of the channel is covered with the upper stone. The channel is clean-cut where it lies under the stone; where it is exposed it is more worn. The total height of the structure is 2 feet. The covering flag is about 6 inches thick.

XIII. *The Standing Crosses, Cross Bases, and Socket Stones* (Plates XVI–XVIII)

In this and the two following sections are enumerated the monuments, which are to be found in four places on the island—ranged round the wall of St. Caimin's, inside, where a number were placed in the restoration works; in the Saints' Graveyard, east of St. Caimin's; in and about St. Mary's; and at the Anchorite's Cell. The position of each monument is indicated in the following list as it was when I revised my descriptions and drawings at Easter, 1915. Those in St. Caimin's are indicated thus: CNN, CNS, mean respectively the north and south sides of St. Caimin's nave, while CCN, CCE, and CCS, mean the north, east, and south sides of St. Caimin's chancel. The numbers denote the numerical order of each monument, counting inward from the door of the church in each case. The stones in the Saints' Graveyard are indicated by the letter G, with a number referring to the plan of the Graveyard, Plate XV. A view of the Graveyard will be found in Plate XXV, fig. 2. There are eighty ancient recumbent slabs in this enclosure, but only those indicated with a number and here described bear any device or inscription; the rest are blank, and seem always to have been so. The few in St. Mary's and at the Anchorite's Cell have their position described in full, without abbreviation. References to the Plates in the Board of Works Report and to Petrie's "Christian Inscriptions in the Irish Language" are added, these publications being denoted by the abbreviations BW and CIIL respectively.

In the present section the free-standing crosses and bases for such are described. In the next section we take the slabs, nearly all of which have a

cross inscribed upon them. In the section following, the few monuments of later date are described. It will be convenient to number all these monuments consecutively: the reference numbers are added *in brackets* in the accompanying Plates. In describing slabs the heraldic words "dexter" and "sinister" are used, on account of their convenient freedom from ambiguity, to denote the side towards the spectator's *left hand* and *right hand* respectively.

(a) *Bases of Crosses and Sockets.*

It is not easy to say for what purpose many of the stones described in this group were intended. They are too small, and the sockets they bear too shallow, to have supported any stone standing in them. I content myself with enumerating them here, and commit myself to no theory as to their original use.

(1). CNN 4. Socket-stone, $9\frac{1}{2}$ inches high by 8 inches square, tapering to 5 inches square.

(2). CNN 7. Stone measuring 1 foot by 9 inches by 7 inches, with rectangular socket in the top 6 inches by $3\frac{1}{2}$ inches by $3\frac{1}{2}$ inches deep.

(3). CNN 9. Stone, 7 inches high and 1 foot 2 inches by $9\frac{1}{2}$ inches at bottom, tapering to 11 inches, with rectangular socket 8 inches by 4 inches by $2\frac{1}{2}$ inches deep.

(4). CNN 11. Stone, 8 inches high by 11 inches by 5 inches, tapering to 6 inches by 5 inches, with socket 5 inches by 3 inches by 1 inch deep.

(5). CNS 6. Stone, 9 inches high by 1 foot by 7 inches, tapering to 8 inches by 5 inches, with socket $5\frac{1}{2}$ inches by 3 inches by $2\frac{1}{4}$ inches deep.

(6). CNS 7. Stone, shaped something like a chimney-pot, 1 foot 2 inches high, 6 inches by 5 inches across top, with socket in the top end $3\frac{1}{2}$ inches by $2\frac{1}{2}$ inches by 1 inch deep.

(7). CNS 10. Stone, 10 inches high, shaped something like the jamb-stone of a Gothic window, having a shallow sinking in the top end.

(8). CNS 12. Round stone, 1 foot high, 1 foot 2 inches, tapering to 6 inches in diameter, having a socket $3\frac{1}{2}$ inches square and 3 inches deep in the middle of the narrow end.

(9). East of the grave in front of the Anchorite's Cell. Stone, 1 foot 7 inches high, with socket 1 foot 2 inches square by 5 inches deep.

(10). G 3. Stone, 10 inches high by 1 foot by 10 inches, tapering to 8 inches by 7 inches, with socket 4 inches by $3\frac{1}{2}$ inches by $2\frac{1}{2}$ inches deep.

(11). G 18. Plate XVI, fig. 1; CIIL 56; BW "Cross-base in graveyard," on Plate 2. Stone, 9 inches high, with trapezium-shaped upper surface, the sides measuring respectively 2 feet 10 inches, 2 feet 11 inches, 4 feet 2 inches, and 2 feet 10 inches. An oblong socket in the middle, parallel with the longest side, 1 foot $8\frac{1}{2}$ inches long, 4 inches across, 7 inches deep. A groove is cut round the upper surface, parallel with the edges; and between the socket and the longest side is this inscription—

+ 11ΔO 7 Dechenboir

("The Grave of the Ten Men")

Who these "ten men" may have been, it is useless to speculate. For the formula we may compare the memorial "of the two canons" at St. Breacan's, Aran Mór.

The chamfering of the lower sinister angle is curious, but can, I think, be explained. It is clear that the long word *Dechenboir* threw the sculptor out of his calculations. The first few letters of the inscription are crowded in anticipation of the space he would have to leave to contain it; and the later letters are spread out, as he found that he had more room at his disposal than he had expected. The chamfering away of the angle was a rather clumsy device to hide the asymmetry produced by this error of judgment. The stone is broken through the socket, and was so when Wakeman drew it in 1838. His drawing, in the Ordnance Survey sketches, is reproduced in CIIL. According to O'Connor¹ the socket had been "filled up by a stone which was formed so as to adapt itself into it, and was called a 'tongue.'" This, however, had already disappeared when he wrote. I thought at first that a long, flat stone, without any engraving upon it, now lying east of the inscribed stone, might possibly have been the missing "tongue"; but I found that it was a little too thick. Nothing among the fragments now to be seen on the island will fit the socket. O'Donovan scribbled a conjecture on p. 560 of the O.S. Letters that the inscription was incomplete, and that the rest of it had been on the missing cross, of which this "tongue" was probably the last relic. The small initial cross, however, shows that the inscription, unsatisfying though it be, is complete. The "ten men" were no doubt sufficiently notorious when the monument was made to render further definition superfluous, though the tradition of them is now wholly lost. The

¹ O.S. Letters, *loc. cit.*, p. 559.

stone stands on what seems to be a low cairn, covered with earth, and grass-grown. Delany told me that in the process of cleaning out the cemetery a large number of small rounded stones, about the size and shape of a turkey's egg, were here found. These he had collected together, but they were soon dispersed by mischievous people. A similar hoard of rounded stones was found in a grave of about the eleventh century, uncovered during the recent restoration of Iona cathedral.

(12). Immediately west of the round tower. Plate XVI, fig. 2. A cross-base, 3 feet 3 inches high, 1 foot 8 inches by 3 feet 3 inches at base, tapering to 1 foot 10 inches across at top. The sides are curved in outline. Socket, 1 foot 2 inches by 9 inches across by 9 inches deep. None of the crosses or fragments now on the island will fit this base. This is the stone of which a legend is told, set forth in Part III of this paper.

(13). Lying beside G 28. A stone, 4 feet 6 inches long by 1 foot 5½ inches broad, with a worked face containing a socket 3 feet long and 6 inches broad by 5 inches deep.

(b) *Crosses.*

(14). CNN 5. Plate XVI, fig. 3; BW, plate 7, no. 1. A slab 2¾ inches thick, cut into the shape of a cross, hollowed at the angles, but without a surrounding wheel. Total height, 6 feet 1½ inch; the breadth was 3 feet 1½ inch, but the sinister arm is lost. There is no ornamentation except a groove following the line of the edge. At the bottom are two square panels, one at each side of the base, measuring 1 foot 1½ inch high by 1 foot ½ inch across, each containing a saltire in *cavo rilievo*. The other face of the cross appears to be quite plain. In outline this cross resembles no. 15, and is doubtless of the same date, if not from the same hand.

(15). CNN 10. Plates XVII, XXV, fig. 1; CIIL 54; BW, plate 7, no. 2. This very important monument was smashed in pieces, which were collected and cemented together by the Board of Works. Wakeman found only one of the fragments—the sinister arm—and copied the inscription on its edge in the Ordnance sketches thus: OR OO ΔΡΟΣΕΙ. This sketch is reproduced in CIIL, but in the letterpress of that untrustworthy work there is a hopeless confusion between this stone and the *Dechenboir* monument, no. 11, *ante*, and the further erroneous statement is made that the stone has disappeared. It is strange that Wakeman made no reference to the ornamentation on the face of the fragment which he found. In the Board of Works Report, the interlacing work with which the face of the stone is covered

is sketchily indicated, and there is a creditable but not completely successful attempt at reading the inscription on the sinister edge.

As now reconstructed the cross stands 5 feet $1\frac{1}{2}$ inch high, and is 3 feet 1 inch broad across the arms. It is cut out of a slab of sandstone 3 inches thick. In shape it resembles the preceding cross, as we have already noticed; but it differs in being inscribed, and in bearing elaborate ornamentation on one face. The other face is quite plain.

The sculptured face is so badly weathered that at first sight it seems absolutely impossible to make out the ornament. The decipherment offered on the accompanying Plate is the result of a microscopic examination of every square centimetre of the face of the cross—a task that occupied the better part of two days, followed by four days spent over a number of rubbings. Even with every care, I cannot feel sure that I have made out the whole pattern beyond the possibility of cavil; the stone is too far gone to allow anyone that satisfaction. The most doubtful part is the central pattern of spirals. The spirals are there, though they have to be very carefully looked for; the fret in the middle is also fairly distinct. But when it comes to linking the spirals up, one with another, the would-be decipherer is confronted with ambiguities, between which he must be content to choose the most probable.

The panel on the sinister side of the base remains intact, but that on the dexter side is almost entirely lost; and the small portion that remains is not sufficient to tell us what device it bore. The remaining panel bears in rather high *cavo rilievo* the figure of an animal, from whose mouth depends the leg of a man. This device is familiar in Hallstatt art; it appears several times on the famous figured buckets of the early Iron Age. But it is curious to find it in a monument of Celtic Christian art.¹

On each of the edges of the stone there is an inscription, beginning on the under side of the horizontal arm, running round the hollow at the intersection, and down the stem. Above the horizontal arm the edge is quite plain. The end of the sinister arm has a simple quasi-key pattern and a similar design was probably cut on the opposite end, but is now quite worn away.

We have seen that Wakeman and the Board of Works have given partial readings of the inscription on the sinister side. But that on the dexter side has never been noticed before, so far as I can find. It must, of course, have been seen dozens of times, as it is obvious to anyone entering the church; but no one seems to have taken the trouble to try to read it.

¹ In *Journal, Royal Society of Antiquaries of Ireland*, 1908, p. 276, Mr. Crawford has given a good illustration of this panel, with some interesting observations.

The inscription on the sinister side is as follows:—

OR DO DROSENOIR ERENN · 1 · DO CATHASACH
 (“A Prayer for the Chief Elder of Ireland, i.e., for Cathasach”)

The last two letters, which are on the top of the side panel, are so worn as to be almost invisible, but they can be detected if carefully looked for.

Of the numerous Cathasachs recorded in the Annals, the most probable owner of this monument is the “head of religion of Ireland,” who, as the Annals of Inisfallen tell us, rested in Christ on Inis Cealtra in 1094. I cannot trace him with certainty in any of the other Annals; the nearest is the Abbot Cathasach of Mungret, *cinn clerech fer Muman* or “head of the clergy of the Munstermen,” who died in 1070, according to the Four Masters. It is curious to find pure interlacements, free from dragonesque developments, and especially to find spiral devices, at so late a date; and on the evidence of the art alone I would have been inclined to put the cross back to 957, the date of the obit of Cathasach, successor of Patrick and *sui-espuce Gaoidel*, “sage-bishop of the Gaedhil” (Four Masters). But there is nothing to connect this prelate with Inis Cealtra; and the definite association of the Inisfallen Cathasach with the island makes the identification of the owner of the monument with the latter ecclesiastic the more probable.

It is a palaeographical point worth a passing notice that this is the only case known of the use of the familiar abbreviation for *edón*, *id est*, in a lapidary inscription. I think also that this is the only ancient inscription containing the name of Ireland.

The inscription on the dexter side is as follows:—

OR DO THOR[N]OC DO RIN[ON]I T̄ CROIS[S]
 (“A Prayer for Tórnóc, who made the cross”)

It is much less easy to read than the first inscription. The fourth letter of the name is clogged with cement, but there can scarcely be a doubt that it was N. The final S is likewise concealed. The artist's name was therefore a diminutive of the well-known name Tórna. Nothing seems to be recorded of this Tórnóc, who was probably a stonecutter, and at the same time an inmate of this monastery; but it is at least satisfactory to recover from oblivion the name of one more of the sculptors of ancient Ireland, and to know his precise date. This and the preceding monument are lettered on the plate in the Board of Works Report, “Crosses found in vicinity of St. Caiman's [*sic*] Church.”

(16). CNN 14, Plate XVI, fig. 4. A small wheel cross; the openings

between the wheel and the cross are not pierced through. The cross is now 2 feet 10 inches high, but was probably an inch or two higher, as the top is broken. It is 1 foot 2 inches broad at the base, and 7 inches thick at the bottom, tapering to $3\frac{1}{2}$ inches. The complete monument consists, as the drawing shows, of two stones; the lower stone is 1 foot $\frac{1}{2}$ inch high.

(17). CNS 2, Plate XVIII; BW plate 4. A large and very elaborate, but much injured, cross; the outline sketch in the BW report, where it is marked, "Cross found near St. Caiman's Church," gives no real idea of the complexity of its ornamentation. It is a wheel cross, 6 feet 3 inches high, the arms 2 feet $7\frac{1}{2}$ inches broad, thickness 6 inches. It was broken into many pieces, which were not all recovered; and it has been restored with cement, and fastened against the wall of the church. This is a pity, for by slipping the hand between the cross and the wall one can feel that the monument is ornamented on the concealed side as well as on the face that is exposed.

The stem bears a plait. The cross has five bosses, one in each arm and one in the middle. These were decorated with basket work; but the pattern is almost totally defaced, and is wholly undecipherable. The background, confined within the heavy frame that surrounds the edge of the face, is covered with a minute interlacing pattern, resembling much more closely the elaborate specimens found in Scotland than the generality of Irish examples.

On the dexter side there is a plait on the stem, and the arm-end bears a representation of Adam and Eve. On the sinister side is a key-pattern; there was a figured panel on the arm-end on this side also, but it is broken, and only about half remains. The surviving part seems to bear a figure walking, holding a long staff, but the intention of the sculptor can no longer be recovered. These are the only figure sculptures on the island: they have not been noticed previously, so far as I can find.

XIV. *The Recumbent Slabs* (Plates XVI, XIX-XXIV).

In my book on the memorial slabs of Clonmacnois I showed that it was possible to deduce from that series of stones a certain chronological scheme or classification. Inis Cealtra is near enough to Clonmacnois to make this scheme applicable to the monuments it contains; we may accordingly classify the Inis Cealtra slabs on similar lines.

The Clonmacnois classification is as follows:—

Eighth century: small stones, mostly with equilateral (Greek) crosses in squares or circles.

Ninth century: slabs with wheel ("Celtic") crosses.

Tenth century: slabs with Latin crosses, having circular expansions in the middle and semicircular expansions at the ends of the arms. The expansions are sometimes square.

Eleventh century: similar to the last, but with loops at the angles of the terminal expansions.

Twelfth century: long slabs, rectangular in shape, covering the grave and bearing a long Latin cross.

The division by centuries is, perhaps, a little rough and ready, but it is convenient, and cannot be far wrong. The two cemeteries differ considerably in their contents. At Clonmacnois there are very few indeed of the twelfth-century type, to which, on the other hand, the great majority of the Inis Cealtra slabs belong; and whereas most of the Clonmacnois slabs are of the tenth and eleventh centuries, these groups are but poorly represented at Inis Cealtra.

We describe first the slabs still to be seen on the island, and then notice a few that have disappeared.

(a) *Eighth-century Type.*

(18). CCN 1. Plate XVI, fig. 5. A stone, measuring 1 foot $3\frac{1}{2}$ inches by 1 foot $5\frac{1}{2}$ inches by $2\frac{1}{2}$ inches, bearing a Latin cross of one line, *fourchée*. The branches expand in the upper and lower ends, contract at the side ends. The stem is accidentally prolonged at the lower end, so that this terminal appears to be trifid.

(19). CCS 3. Plate XVI, fig. 6. A stone, measuring 1 foot 6 inches by 1 foot $4\frac{1}{2}$ inches by 3 inches, bearing a plain one-line Greek cross within the circle. The whole of the circle is recessed about $\frac{1}{4}$ inch beneath the surface of the stone.

(20). CCS 2. Plate XVI, fig. 7; BW, plate 2, under fig. F. Stone, measuring 2 feet 3 inches by 1 foot 6 inches by $3\frac{1}{2}$ inches, bearing a Greek cross of four lines within a square of two lines; four-line diagonals are stopped by two-line circles in the cantons of the cross. The angles of the cross are hollowed and all joints are mitred.

(21). CCN 3. Plate XVI, fig. 8; BW, plate 2, under fig. G. Stone, measuring 1 foot 7 inches by 1 foot 1 inch by 3 inches. Within a circle of two lines, a cross formed of four arcs of circles, interlacing at the intersection; the ends of the arcs are terminated with a spiral treatment. In the cantons are triskeles of one line.

(22). CCS 1. Plate XVI, fig. 9. Stone, 1 foot 5 inches by 1 foot 7 inches by 2 inches, bearing a cross *pattée* in a circle; ovals at the ends of the arms of the cross, and trefoils in the cantons.

(23). CNN 16. Plate XVI, fig. 10. Fragment, measuring 1 foot 2 inches by $9\frac{1}{2}$ inches by 1 inch, bearing a cross of a similar design to the last; triquetras on the arms of the cross, and dots in the angles of the trefoils.

(24). CCE 2. Plate XVI, fig. 11. Stone, 1 foot 8 inches by 1 foot 2 inches by 6 inches. Cross of similar design to the last, but interlacements in two of the cantons, and a leaf-pattern in the other two, instead of the trefoils.

(25). G 28. Plate XVI, fig. 12. Stone, 1 foot 7 inches by 1 foot 7 inches; the upper surface slightly concave. Cross of similar pattern, but with trefoils on both arms and cantons. The design is very faint and worn, the lines being no broader than pencil-scribings.

(26). G 38. Plate XVI, fig. 13. This stone is probably a door-socket. It measures 1 foot each way. In the middle of the upper surface is a circular hollow, 2 inches deep, surrounded by a circle; the diameters of the circle are marked, to make a plain cross, one of them being cut broad and the other narrow.

(27). CCN 2. Plate XVI, fig. 14; BW, plate 2, under fig. H. Stone, measuring 1 foot 10 inches by 1 foot $3\frac{1}{2}$ inches by 2 inches, bearing a Greek cross in a square. There are small square expansions in the centres and at the ends of the arms. In the cantons are key-patterns of simple type, except in one where there is an interlacement derived from four triquetras.

(b) *Ninth-century Type.*

(28). In front of the door of the Anchorite's Cell. Plate XIX, fig. 10. A stone, measuring 3 feet 9 inches by 2 feet 5 inches by 8 inches, bearing a "Celtic" cross in *cavo rilievo*. At the head of the cross is a socket, extending almost the whole way across the stone, evidently for receiving an upright slab. This has now disappeared, but Delany told me that he remembered a slab standing in the socket, which he described to me as being about 1 foot high. He could not tell me whether it had been inscribed or ornamented in any way.

(c) *Tenth-century Type.*

(29). CNS 13. Plate XVI, fig. 17; BW, plate 5 (a mere outline sketch

marked "carved stone found near altar"). Slab, measuring 3 feet 9 inches by 2 feet 6 inches by 3 inches, bearing a cross much resembling the Clonmacnois type of this period, and very probably the work of a Clonmacnois artist. It is a Latin cross, with circular expansion at the centre, having a spiral pattern of three marginal centre-points and one centre-point in the middle of the circle; an identical pattern appears at Clonmacnois, and is analysed at p. 69 of my book on the Clonmacnois slabs. The terminal expansions are semicircular, and contain key-patterns of common type. It is curious that this elaborate cross should not be accompanied by any inscription.

(30). CNS 1. Plate XXII, fig 10; BW, plate 6, no. 2, where the stone is shown in its proper place, at the south side of the altar of St. Caimin's Church. A slab 3 feet 2 inches by 1 foot 7 inches by 3 inches, with a cross having square expansions at the centre and the terminals. Inscription inverted at the head of the slab, reading $\overline{\text{OR}} \text{ } \overline{\text{OO}} \text{ } \overline{\text{MURCHAD}} \text{ } \overline{\text{O}}$. There is a small semicircular hole in the lower line of the dexter arm of the cross. No Murchad connected with Inis Cealtra is recorded in the Annals.

(31). G 10. Plate XX, fig. 6; BW, plate 1, fig. E. This very interesting slab is 5 feet 3½ inches by 1 foot 10 inches. It bears a Latin cross having a circular expansion at the centre and semicircular expansions at the terminals. The central expansion has a lozenge with four ovals round it, and the lowest terminal expansion has half of the same pattern, with the difference that the lozenge in the centre is hollowed, whereas the lozenge in the terminal is only outlined. There are the outlines of two shod feet cut on the sinister side of the slab; the right foot above the arm of the cross, the left foot below it. These probably indicate that the person commemorated by the slab died on the island when on pilgrimage; and with this accords the inscription, which commemorates him as a stranger— $\overline{\text{COSCRACH}} \text{ } \overline{\text{LAI}} \text{ } \overline{\text{GNECH}}$, "Coscrach the Leinsterman." Of course it is quite impossible that this should be the Anchorite Coscrach, as the slab cannot be so old as the date of the *truaghán*.

The very extraordinary inscription at Llanelltyd, Merionethshire, may be referred to in connexion with this stone. It is figured in Westwood's "Lapidarium Walliae" (Plate lxxiv), and later has been visited and described by Sir J. Rhys (*Archaeologia Cambrensis*, ser. v, vol xiv, p. 138). The inscription according to the latter reads—*Vestigiū(m) Reu hic tenetur in capite lapidis et ipsemet antequam peregre profectus est.* "The footprint of Reu is here preserved on the top of the stone, and he himself (was here?) till he went abroad." This is the translation of Sir J. Rhys, who supplies a conjectural verb after *ipsemet*.

(d). *Eleventh-century type.*

(none)

(e). *Twelfth-century type.*

To this group belong the great majority of the Inis Cealtra slabs. It may be said once for all that none of the persons mentioned in the inscriptions can be identified. We are therefore driven back on the style of the monuments to date them. The Latin cross is used throughout; the slabs fall easily into a number of groups depending on the treatment of the cross. It is quite evident that, as at Clonmacnois and elsewhere, certain slabs were adopted as models and copied in later memorials.

(32). G 31. Plate XX, fig. 9; BW, plate 2, fig. T. Slab, measuring 4 feet 9 inches by 1 foot 6 inches. This is the only inscribed stone on the island that bears no cross. The inscription is the only device. It reads $\overline{\text{OR}} \text{OO} \text{m}\Delta\text{CCU}$. There is a mark after the U which looks like an I; this would turn the name into *Maccui*; but after a minute examination I came to the conclusion that it was a mere flaw. The doubled letter is C, not L, as I had read it on one of my earlier visits.

(33). G 25. Plate XX, fig. 10. Slab, 3 feet 1 inch by 1 foot 2 inches, apparently imperfect at both ends. A plain Latin cross of two lines.

(34). G 37. Plate XXI, fig. 1; BW, plate 2, fig. Y. Slab, measuring 4 feet 6 inches by 1 foot 6 inches, with a plain Latin cross of two lines.

(35). Lying on the modern sedilia of St. Mary's. Plate XXI, fig. 2. Slab, 4 feet 9 inches by 1 foot 8 inches by 4 inches, with a plain Latin cross of two lines, boldly cut.

(36). CNN 3. Plate XXI, fig. 4. Slab, measuring 6 feet by 2 feet 3 inches, tapering to 1 foot 9 inches by 5 inches thick, bearing a plain Latin cross of two lines. There is a square hole cut above the head of the cross, $1\frac{5}{8}$ inch deep. The surface of the cross is very friable, and is much weathered; the cross can only just be traced, and will before long be entirely scaled away.

(37). G 26. Plate XXI, fig. 5. Slab, now 3 feet 5 inches by 1 foot 7 inches, but the bottom is broken away, carrying with it the lower end of the cross. This was similar to the preceding.

(38). G 34. Plate XXII, fig. 7. Slab, 5 feet 5 inches long and 1 foot 10 inches broad; the long edges are rebated, the rebate being $\frac{3}{8}$ inch deep and 2 inches broad. Plain Latin cross, as in the preceding slabs; much worn and flaked.

(39). G 6. Plate XXI, fig. 3. Slab, 5 feet 4 inches by 1 foot 6½ inches. Plain Latin cross, differing from the preceding in being left open at the bottom.

(40). G 9. Plate XXI, fig. 7. Slab, 5 feet 2 inches by 2 feet. Latin cross, the middle flaked away, the bottom left open. The side lines are bent outward at right angles, and prolonged to reach the edges of the slab.

(41). G 35. Plate XXI, fig. 8; BW, plate 2, fig. W. Slab, 6 feet 4 inches by 2 feet 3 inches. Latin cross with rectangular expanding base, open below. On the stem of the cross is the inscription $\overline{\text{OR}} \text{ OO CHELLACH}$ reading upward. This slab has recently been defaced by having been utilized as a table on which to mix mortar, at the erection of a new cross in the graveyard.

(42). CNS 5. Plate XXII, fig. 4. Slab, 5 feet 2 inches by 1 foot 9½ inches by 4½ inches. Plain Latin cross of two lines, with a base formed by oblique lines running downward from the lower corners of the stem. The surface of the slab is deeply scored with straight grooves; apparently it has been used at some time for sharpening tools.

(43). G 1. Plate XX, fig. 2; BW, plate 1, fig. A. Slab, 5 feet 2 inches by 2 feet 5 inches, with a cross resembling that on no. 40 above, but in high relief. It stands 3½ inches above the background.

(44). G 7. Plate XIX, fig. 1; BW, plate 1, fig. C. Slab, 5 feet 1½ inch by 1 foot 9 inches. Plain Latin cross, on a base of trapezium shape, with sides slightly hollowed; a groove on the base runs parallel with its outline. The base is in relief, about ½ inch high at the top, sloping to the level of the background at the bottom of the stone.

(45). G 29. Plate XX, fig. 3; BW, plate 2, fig. R. Slab, 5 feet 1 inch by 1 foot 6 inches, bearing a cross similar in outline to the last, but all in relief ½ inch high. At the head of the cross is a rectangular label, also in relief, bearing the inscription

OR OO CATH ζ
 Δ L

This is difficult to decipher, especially the τh , which is scarcely traceable. The inscription is inverted with respect to the cross, as is usually the case at Inis Cealtra. This stone is laid so that the head of the cross is turned eastward, unlike the great majority, in which the head is turned westward. Delany pointed this out to me, and explained the anomaly by saying that the person commemorated had been a bishop. This explanation, however, will not serve, for close by is a slab in which the owner is definitely called a bishop, but in which the head is turned the other way. If the position of the stone has any meaning, it is far more likely that it commemorates a *layman*.

(46). G 39. Plate XVI, fig. 15; BW, plate 2, fig. Z. Slab, 4 feet 1 inch by 1 foot $4\frac{1}{4}$ inches. It bears three small crosses in a row at the upper end. In the middle is a Greek cross in relief. At the sinister side is a Latin cross *pattée*. At the dexter side is a Latin cross, with a cross-shaped groove running over its surface. These two side crosses are in *cavo rilievo*. A slab at Gallen Priory also shows three crosses in a row. See Mr. Armstrong's description, Journal, R.S.A.I., 1908, p. 64.

(47). CNN 15. Plate XIX, fig. 3. A slab, measuring 3 feet 1 inch by 1 foot 1 inch by $1\frac{3}{4}$ inch, bearing a Latin cross, with the angles hollowed with circular cuttings; the base open below. The background of the top and half the sinister side beneath the arm has been cut away, throwing the corresponding parts of the cross into relief.

(48). G 15. Plate XIX, fig. 4. Slab, measuring 5 feet 4 inches by 2 feet, bearing a cross similar to the last. A rectangular panel is hollowed, throwing the upper part of the cross into relief, or rather into *cavo rilievo*.

(49). G 17. Plate XIX, fig. 2; BW, plate 2, fig. G. Slab, measuring 3 feet 3 inches by 1 foot 10 inches, with a cross similar to the last, in low relief. The head is wedge-shaped.

(50). G 5. Plate XXI, fig. 6. Slab, 5 feet 6 inches by 2 feet 6 inches; the lower dexter corner broken away, and the top cut down to a depth of about $\frac{3}{8}$ inch. A Latin cross with hollowed angles, the side lines carried outward obliquely to form a base.

(51). G 40. Plate XIX, fig. 6. Slab, 5 feet 6 inches by 1 foot 10 inches tapering downwards to 1 foot 5 inches. There is a 2-inch rebate running down the long sides, and the upper surface of the slab is slightly hog-backed. A cross similar to the last is cut upon it.

(52). CNS 11. Plate XIX, fig. 5; CHIL, 59; BW, plate 2, under figs. V, X. Slab, 3 feet 11 inches by 1 foot $4\frac{1}{2}$ inches by $6\frac{1}{4}$ inches. A Latin cross with hollowed angles and expanding base, in shape a trapezium, with hollowed sides, open below. Inscription $\overline{\text{OR}} \text{ DO LAITHBERTACH}$, inverted with respect to the cross. An identical inscription is to be seen on a slab at Inis Clothrann, Loch Ree.

(53). G 22. Plate XIX, fig. 7; BW, plate 2, fig. O. Slab measuring 4 feet 9 inches by 2 feet, with cross similar to the last, but open at the top. Inscription running across the top of the slab, inverted with respect to the cross. It reads $\overline{\text{OR}} \text{ DO m\text{S}ANE}$. The O of *do* is on the cross-top, in

the form of a hollowed circle. The reading of the curious name *Ingane* is certain, though the A is broken.

(54). G 33. Plate XXII, fig. 5; BW, plate 2, fig. V. Slab, 5 feet 5 inches by 1 foot 8 inches, with a Latin cross hollowed at the angles; the bottom of the cross is open, and the lower ends bent outwards at right angles, and prolonged to meet the sides of the slab.

(55). G 36. Plate XXII, fig. 6; BW, plate 2, fig. X. Slab, 4 feet 2 inches by 1 feet 6 inches, bearing a cross similar to the last.

(56). G 20. Plate XXII, fig. 9. Slab, 4 feet 10 inches by 1 foot 5 inches, with a cross similar to the last, but having the ends open, and drawn with double lines throughout.

(57). G 12. Plate XX, fig. 7; BW, plate 2, fig. H. Slab, 4 feet 2 inches by 1 foot 6 inches, bearing a cross similar to the last, but with the base line carried up to make a panel enclosing the whole design. The cross is in slight relief.

(58). G 32. Plate XXII, fig. 1; BW, plate 2, fig. U. Slab, 4 feet 9 inches by 1 foot 4 inches, bearing a Latin cross with hollowed angles and expanding square base, open below. The inscription is at the head of the slab, inverted with respect to the cross; it reads $\overline{\text{OR}} \text{ DO GILLU CRĪ EPISCŌ}$. I can find no trace of a bishop Gilla-Christ.

(59). G 30. Plate XXII, fig. 2; BW, plate 2, fig. S. Slab, 4 feet 6 inches by 1 feet 11 inches, bearing a cross similar to the last, on a rectangular expanding base, closed below. Inscription at the head of the cross, inverted. It is imperfect, as the upper dexter corner of the slab is broken away and lost; what is left is $\overline{\text{OR}} \text{ DO MAEL} \dots$

(60). G 14. Plate XXII, fig. 3; BW, plate 2, fig. K. Slab, 4 feet 2½ inches by 1 foot 8 inches. Cross similar to that on No 56, but with the top line of the base carried across the lower end of the stem. Inscription on stem of cross reading downward. It is carelessly cut, and the letters are injured by flaking; but the reading may be taken as certain— $\overline{\text{OR}}^{\text{DO}} \text{DOMNALL SACART}$, "A prayer for Domnall the Priest". Evidently the engraver was confused by the initial letters of the name being the same as those of the essential preposition *do*, and so omitted the latter; when he discovered his mistake, he was obliged to insert the word awkwardly above the line in small letters. I know of no other ancient Irish inscription commemorating a Priest as such. The cross is cut with broad, bold lines.

(61). G 19. Plate XXII, fig. 8; BW, plate 2, fig. M. Slab, 4 feet 11 inches by 1 foot 4 inches, bearing a cross similar to that on No. 58. The lower sinister corner is broken away.

(62). CNN 2. Plate XX, fig. 5; CIIL 57; BW, plate 2, under figs. R, Y. Slab, 4 feet 10½ inches by 1 foot 11½ inches by 3 inches, having a cross similar to the last, but cut in very broad, bold lines. It seems as though it had been cut at first with double lines, and the space between them then excised. The curves of the angle-hollows are, however, in single lines of normal breadth. There is a pellet in each of these hollows. The inscription is disposed in the way usual in this series—inverted at the head of the slab. It reads $\overline{\text{OR}} \text{OO} \text{O} \text{IARMAIT} \text{MACC} \text{OELBADO}$. Though the filiation is here expressed (the only example at Inis Cealtra), the person cannot be identified; the only Diarmait known to have been associated with the island is the abbot Diarmait mac Caicher. The M of the word *macc* is of a shape not common in inscriptions. A concrete foot has been made for this stone to stand upon in its present position in the church, and this at first sight looks like a projecting frame on the stone itself.

(63). CNS 15. Plate XIX, fig. 8; CIIL 58; BW, plate 6, marked "Tombstone found in [St. Caimin's] church." Slab, 2 feet 11 inches by 1 foot 3 inches by 2¾ inches, bearing a cross of form similar to the preceding (in single lines), but with the sides of the base approximating to one another below. Inscription inverted at the head of the stone, reading $\overline{\text{OR}} \text{OO} \text{MAEL} \text{PATRAIC}$.

(64). G 41. Plate XX, fig. 8; BW, plate 2, fig. *a*. Slab, 4 feet 2 inches by 1 foot 6 inches, bearing a similar cross in double lines, with rectangular expanding base. Under the base is a pattern consisting of an inverted triangle, flanked with series of oblique lines parallel to the sides. It is curious that this pattern is not centred with respect to the cross.

(65). Marking a modern grave outside the west end of St. Mary's. Plate XXIV, fig. 2. A slab, 1 foot 9 inches broad by 3½ inches thick, and standing 1 foot 10 inches above ground, showing the upper part of a cross with hollowed angles.

(66). G 21. Plate XX, fig. 1; BW, plate 2, fig. N. Slab, 5 feet 2 inches by 1 foot 10 inches. Cross with hollowed angles, standing on a triangular base with curved sides. Two horizontal lines run off from the sides of the stem to the edge of the slab a little above the base. Inscription $\overline{\text{OR}} \text{O(O)} \text{DOMMALL}$, worn and faint; but the reading is certain.

(67). G 16. Plate XIX, fig. 11; BW, plate 2, fig. F. Slab, 3 feet 8 inches by 1 foot 5 inches, with cross resembling those in previous slabs in a single-line panel. The panel and head of the cross are open above. Below, the panel has spirals at the corners, and an ornamental sinking, about $\frac{1}{2}$ inch deep, fills the triangular space between the bottom line of the panel and the head of the stone. The inscription is in two lines, inverted at the head of the slab. The second line of the inscription has to be read first, as in two slabs (46, 51, of my list) at Clonmacnois. The reading is [OR] OO maeU sechnaill.

(68). G 4. Plate XIX, fig. 9. A fragment, 2 feet 6 inches by 1 foot 9 inches, bearing the upper part of a cross with hollowed angles; the hollows are cut out. The whole pattern was in a rectangular panel.

(69). G 27. Plate XX, fig. 4; BW, plate 2, fig. L. This is the first of a series of elaborately carved slabs, in which the Latin cross is ornamentally treated. In the present example, which measures 6 feet by 1 foot 5 inches, the cross is in double lines, on a square expanding base. The angles are cut with double squares, which are hollowed. The head is brought to a point, and the lines forming the head are made to cross. The outer line is drawn diagonally across the cantons, as though to suggest the wheel of a "Celtic" cross; there are two ornamental deflections in each quarter, which recall the rolls on the wheel of cross No. 17, *ante*. The whole is contained within a single-line panel.

(70). G 13. Plate XXIII, fig. 4; BW, plate 2, fig. J. Slab, 6 feet by 1 foot 9 inches, with a cross very similar to that on no. 69. The chief differences are the graceful curve of the cresting in the top of the present example, as contrasted with the rather stiff treatment in the other; the addition of small triangles in the cantons, between the wheel and the angles of the cross, which add greatly to the richness of the effect of this part of the design; and the absence of the square base.

(71). CNN 12. Plate XXIII, fig. 2; BW, plate 6, where the stone is shown in what was probably its original place, at the north side of the altar of St. Caimin's. Slab, 4 feet 10 inches by 2 feet $5\frac{1}{2}$ inches, tapering downward to 2 feet, by $2\frac{1}{2}$ inches thick. It bears a simplified form of the same pattern as on the two preceding slabs. The angles are hollowed with circles, not with double squares, which, of course, produces a different shape of cross. The wheel, strange to say, is limited to the two lower angles. The spaces between the stem of the cross and the marginal line of the panel are divided into two by groups of horizontal lines. The BW plate shows the lower

dexter corner of the slab as missing ; it has, however, since been found, and cemented in its place.

(72). G 8. Plate XXIII, fig. 3 ; BW, plate 1, fig. D. Slab, 6 feet 4 inches by 2 feet 8 inches, tapering to 2 feet, bearing a cross of similar pattern to the last ; differing chiefly in the absence of the cresting to the pointed top of the cross-head and in the addition of a base composed of two oblique divergent lines.

(73). Clamped to the south wall of St. Mary's. Plate XXIII, fig. 1. Slab, 5 feet 9½ inches by 1 foot 7 inches by 3 inches. It bears a cross with hollowed arms, the head in *cavo rilievo*, as in no. 48. Below is a rectangular panel containing a lozenge with interlacing diagonals, all drawn in double lines.

(74). G 24. Plate XXIII, fig. 6 ; BW, plate 2, fig. Q. Slab, 5 feet 10 inches by 1 foot 6 inches, bearing a Latin cross with hollowed angles. The upper cantons have a diaper of stepped lozenges. The lower part of the slab is so worn that nothing of the design can be made out. There was an inscription on the stem of the cross, reading downwards. This is likewise defaced, and nothing but the opening \overline{OR} can be made out with any certainty. It is followed by the merest ghosts of letters that look like $\text{OO } \text{S} \dots$ but on these it is quite impossible to speak with any assurance. It is remarkable that this is the only one of the more elaborate slabs that bears an inscription.

(75). G 23. Plate XXIII, fig. 7 ; BW, plate 2, fig. P. Slab, 4 feet by 1 foot 6 inches, bearing a Latin cross with hollowed angles. The central part, on which a circle is cut, is in *cavo rilievo*. A stepped pattern runs down the sides of the stem, below the arms of the cross, and the head is likewise stepped at the top. The dexter side of the pattern is much worn.

(76). G 2. Plate XXIII, fig. 5 ; BW, plate 1, fig. B. Slab, measuring 6 feet 8 inches by 2 feet 3½ inches, tapering to 2 feet 1 inch. The centre of this fine slab is occupied with a cross similar to that in no. 69, but with circular hollows in the angles, and without the cresting at the top. The base of the stone and the whole background are occupied with a diaper of squares. The dexter side of this slab is very badly worn, much of the design being completely effaced.

(77). G 11. Plate XXIV, fig. 6. Slab, 6 feet by 1 foot 2 inches, bearing a much worn pattern. It seems to have resembled no. 76, with the substitution of an interlacement for the diaper on the dexter side. The treatment of

the head of the cross can no longer be ascertained. The interlacing pattern on the dexter side is very badly scaled and broken; the restoration I have suggested, from the fragments that remain, is a plait of broad bands, each flanked by narrow bands. Such a combination of broad and narrow bands, effective though it be, is rare in Ireland; there is a good example at Conchan, Isle of Man.¹ A square piece has been cut out from the surface at the lower end of this interlacing panel, and from the sinister side a slip of the shape of the cuttings that form the diaper has also been removed. This has evidently been done with an intention, for which there seems no obvious reason. It has occurred to me that it might have been the work of a dishonest artist who was pleased with the pattern, and wished to acquire a sample to serve as a model; though I admit that the theory is far-fetched.

The three fragments that follow are too incomplete to allow of their design being described with certainty.

(78). CNN 6. Plate XXIV, fig. 1. A fragment, 1 foot 6 inches by 1 foot 7 inches by 3¼ inches, with what appears to be part of the stem of a three-line cross in a rectangular single-line frame, with simple corner-pieces, one of which remains. The lines of the carving are clogged with cement.

(79). CNN 16. Plate XVI, fig. 16. This curious fragment bears what appears to be the central stem of a cross with hollows at the angles, drilled through the stone; the arms being supported by uprights with a horizontal bar connecting them with the sides of the stem of the cross. The well-known standing cross at Cashel may be compared. At the margin of the stone is a rounded bead-moulding. The horizontal bars between the cross-stem and the upright supports are recessed ¼ inch behind the surface of the stone, and the background of the pattern is recessed ½ inch. The other face of the slab is similar, but it is in low relief, and the horizontal bars are left out.

(80). Lying beside CNS 12. A fragment, measuring 5 inches square by 1½ inches thick, with part of the stem of a two-line cross, 1 inch broad, running over it.

(f). *Lost Slabs.*

(81). CIIL, vol. ii, p. 43; Plate XXIV, fig. 3. This stone is not actually lost, as we know where it is; but it is lost to Inis Cealtra. It was removed by the late Lord Dunraven to Adare many years ago, apparently under the impression that the Conn whom it commemorates was the ancestor of the

¹ See Kermodé, "Manx Crosses," Plate XXI, fig. 59 A.

O'Quins. He was far more probably a monk of the monastery.¹ The stone bears a Latin cross formed of a band doubled along the line of the arms, and interlacing into a knot, founded on the triquetra, at the terminals. The stone of Dainiel (Clonmacnois, No. 168) is similar, but differs in the treatment of the intersection. The whole cross is in a single-line panel, below which is the inscription $\overline{\text{OR}} \text{ DO chunn}$. The top of the stone is lost; its present length is said to be about 2 feet. I have not seen it. Another illustration of it will be found in "Memorials of Adare," p. 164.

(82). CIIL 55. The only record of this slab is a rough sketch of Petrie's reproduced in CIIL, *loc. cit.* It represents a slab with a Greek cross, each arm terminating in two spirals, inscribed in a circle of two lines. An inscription in two lines occupied the two upper cantons. Petrie's copy of this does not inspire confidence; it is

mo^en ; ζαλ
 mac | λοϝζιν [or βοϝζιν]

The slab is no longer on the island, and had apparently disappeared before the visit of the Board of Works, as it has no place in their report; neither is it mentioned by O'Connor or by Brash.

(83). BW, plate 2, underneath fig. *a*. From this drawing Plate XXIV, fig. 4, is adapted. A small slab, measuring about 1 foot 6 inches square, to judge by the scale on the BW plate; it bore a cross, each terminal ending in a circle containing a dot. In the two upper cantons was a key-pattern. The design was unusual, and the prominence given to the key-pattern rather strange in what appears to have been an early slab. No particulars are given in the report as to its position, and unless it be buried somewhere it is certainly no longer on the island.

84. BW, plate 4, from which Plate XXIV, fig. 5, is adapted. We learn from the BW report that this stone was found near St. Mary's church. From the scale we infer that it measured 3 feet 9 inches long, by 1 foot 9 inches, tapering downward to 1 foot 4 inches. It bore a handsome cross of the same type as No. 71, *ante*, but with a pattern of squares and triangles at the centre. It is remarkable that so large a stone should have vanished completely.

(85). In a rough sketch-map that O'Connor adds to his Ordnance Letter,² he marks "the grave of the saints—founders of the place" about midway

¹ Possibly the Conn ua Sinnaich recorded by the Annals of Inisfallen, A.D. 1016, though the design looks as though it might be rather older.

² On page 567 of the volume.

between St. Caimin's church and the *Dechenboir* cross-base. On this he makes the following remarks:—"We return now to St. Columbkille's Chapel [i.e., the chancel of St. Caimin's], a few yards distant to the South East corner of which, the spot, where the twelve Saints are interred, who founded originally the Churches on the island, is pointed out. A stone without an inscription standing here marks the place, in which, is lying horizontally also another, which covers the grave. The latter is nearly overspread with encroaching earth and grass." Unfortunately O'Connor, though a praiseworthy observer, had not the gift of style, and I find it difficult to "visualize" the monument from his rather obscure description. In any case there is nothing like it now on the indicated spot. Was it broken up to provide material for the new wall round the graveyard? Wakeman's sketch (CIIL ii, 41), which seems to be taken from a point about the present south-east corner of the Saints' Graveyard, shows four stones standing upright in the foreground, which are not now to be seen. Brash says very little about the monuments beyond quoting a very absurd reading of the *Dechenboir* inscription; but he tells us, "At my visit in 1852, there were within the walls of [St. Caimin's] church several ancient grave-slabs with crosses: these are all gone except one,¹ as I said above. A short distance from the ruin called Teampuil-ne-Fearguntha [*sic*], there were then a number of incised sepulchral slabs, bearing crosses and inscriptions of the primitive age, traditionally known as the graves of the Gobhans; I could not find one of them on my visit in the present year (1865)."

Mr. Wakeman relates a story² which probably refers to one or other of the above missing slabs. He says—"It so happens that a person with whom I am well acquainted, and upon whose veracity every reliance can be placed, during a visit to the island one fine day in the summer of 1888, witnessed the appropriation of a cross-inscribed stone which lay in the cemetery by a party of tourists who from their dress and style of speaking appeared to have hailed from America, or perhaps from some part of Australia. The stone was then placed in a cot or boat, one of the strangers remarking at the moment 'how pretty it would look in the garden on the other side of the water.'"

XV. *Mediaeval and Early Modern Monuments.*

(86). Plate XXIV, fig. 7. A beautiful slab, probably fourteenth-century, which has been broken into pieces, of which three survive; at least four (probably smaller) fragments are lost. The fragments measure roughly

¹ No. 71 in the foregoing list, of which Brash gives a drawing.

² Journal R.S.A.I., 1890, p. 274.

about 1 foot 6 inches square; the total length of the slab when complete was about 6 feet; its breadth was between 1 foot 7 inches and 1 foot 8 inches. There was no cross, but the surface was divided longitudinally into two panels, each containing a floral pattern. Reference to the drawing will give the best idea of the design. In preparing this, I have derived great help from excellent tracings kindly put at my disposal by Mr. Crawford. One fragment is at CNX 1; the other two are on the floor of the church, marking modern graves.

(87). CNX 8. Plate XXVI; BW, plate 2, under figs. W, Z. Another very fine slab, of about the same date—probably a little later. It is complete, but much worn. It measures 6 feet 3 inches by 2 feet 6 inches, tapering to 1 foot 9 inches; the thickness is $2\frac{1}{2}$ inches. The stone was found in St. Mary's. It bears a cross, with expanding circular centre, having a rosette with the unusual number of nine lobes in the middle; floral patterns fill the angles of the cross, for which reference may be made to the drawing; in the base of the slab is a square panel with a four-leaved flower.

(88). Plates XXVII, XXVIII. Against the south wall of St. Mary's, inside; the fragment of an elaborate monument, consisting of a triangular pediment contained in a moulded border, flanked by pinnacles, of which only part of that on the dexter side remains. What has been beneath the pediment has been removed, leaving a gash in the wall; the apex of the moulding round the pediment is also imperfect, an incongruous stone with a nondescript pattern on it being inserted in its place. This intruder is of sandstone, while the monument is entirely composed of limestone.

At the east end of the church is an altar, with a crude carving of the Crucifixion, flanked with stiff floral panels. Over this has been erected an extraordinary jumble of odds and ends to make a reredos—a considerable portion of the stones of *Teampull na bhFear ngonta*, with the characteristic corner pilaster; two round stones, that have every appearance of being fragments of the pinnacles of the monument that has just been mentioned; a fifteenth-century window-head, upside down; a section of a Romanesque string-course with billets, resembling, but not identical with, the string-course on the chancel of St. Caimin's; a corbel, probably from St. Caimin's, with a head sculptured on it; a late fragment (about 1550–1600), with a rope pattern upon it; and perhaps one or two other fragments, no less incongruous. The story that I heard about this erection was to the effect that this was the old altar of the church; that it had been taken away, about a hundred years ago, to do duty as an altar in a chapel at Whitegate, on the mainland; that in the year after the restoration a local priest had been filled with the desire

to celebrate Mass in the old church, and that he had caused the altar to be brought back to its old place, and had collected this assortment of fragments to make a reredos. I also was informed that, for some reason which I did not ascertain, the celebration did not take place.

There is no reason to doubt that the story is substantially true, and that the altar did sojourn for a while at Whitegate. It was not on the island when O'Connor and Brash visited it, as they would certainly have mentioned it. Mr. Champneys, I think, is the first author to allude to it.¹ When we know this, it becomes obvious that the altar is really the missing lower portion of the tomb, and not the church altar at all. It exactly fits the space indicated by the gash on the wall, allowing for a slight rise in the ground produced by recent interments; the stone of the altar is the same as the stone of the monument; the style of art is the same; the mouldings are identical. There is enough remaining to restore the whole monument—in fact, the only missing portion is one section of the sinister pinnacle.² The apex of the pediment, with its very curious demi-figure, crowned with a strange cylindrical cap having a rope-fillet on top and a screw ornament on the side, is not on the island; it is built into an outbuilding on the demesne of Woodpark. This figure was recessed about four inches behind the apex of the moulding. In its place the fragment of sandstone above mentioned has been inserted, which measures 1 foot 1 inch by $7\frac{1}{2}$ inches. A sketch of it will be found, Plate XXVIII, fig. A. The restoration of the whole monument is drawn on Plate XXVIII.

The inscription that was on the pediment is very seriously injured, as inspection of the photograph on Plate XXVII will show. It has been made a mark for stone-throwing idlers, and some of the letters are entirely effaced. I have, however, been able to make out the entire inscription, except the letters contained in brackets in the following transcript. The bracketed letters in capitals can be restored from the context with certainty; those in italics I have taken from Dwyer's "Killaloe" (p. 481); his copy is not absolutely accurate, but is useful, as it was made when the inscription was less damaged. The name "Elys," which Dwyer omits, I take from O'Connor.

¹ *Ecl. Arch. Ireland*, p. 188.

² There are marks on the wall extending to 3 feet 6 inches above the apex of the pediment, suggesting that there may have been an ornamental slab, with a cornice at the top. Nothing that can be identified with any such details now remain on the island, and, being purely hypothetical, they have been omitted in the restored drawing, Plate XXVIII.

IHS

MA

THIS M(ONVME)NT W(AS ERECTED) BY THE LADY S(laney)
BRIEN¹ (moth)ER TO (SR TER)LAGH (MC I BRIEN)

HERE · LYE · THE · BODIES OF THE NOBLE KNIGHT SR
T(ERL)AGH M^C I BRIEN ARA BARONETT WHO DIED THE 28
OF MARCH ANNO DNI 1626 AND HIS LADY (elys) BYTLER
DAUGHTER TO THE RIGHT HONNORABLE WALTER EARLE
OF ORMOND WHO DIED THE X · OF FEB: 1625 PRAY FOR
THEIR SOVLES MEMENTO MORI

The letters are well and regularly cut, in good block capitals. It is curious that there are word-dividing dots between the first four words of the lower inscription, but not elsewhere. There is a little crowding at the end of the second line of the lower inscription, the cutter having miscalculated his space, and being obliged to resort to monograms to save it. On the other hand, the dates are spaced out widely, as though they had not been filled in from the beginning, but were left to be inserted afterwards. A curious mistake was perpetrated in the sacred monogram at the head of the inscription; instead of IHS the engraver cut SHS, and was obliged to turn the wrong S into an imitation of a script I.

In the middle of the pediment is a circular depression containing the arms: three lions passant, in front a hand issuing from the dexter side of the field holding a dagger.

Total height of the complete monument, 8 feet 6 inches; maximum breadth, 7 feet 4 inches. Projection of the altar from the wall, 2 feet 8½ inches.

An abstract of the will of Sir Terlagh mac ui Brien Ara is given by Dwyer, *op. cit.*, p. 480. O'Connor² notes, "To the left of this monument, a stone is placed in the side of the wall, on which, a human face is rudely expressed." This may be the corbel-stone now appropriated for the reredos.

(89). Plate XXVIII. A slab, measuring 2 feet 6½ inches by 2 feet, high up on the south wall of St. Caimin's. It bears three lions passant surrounded by a mantling in the form of floral scrolls; crest, a griffin's head erased. In the two upper corners is the date, 1703; and below is the inscription—

VULNERATUS NON VICTUS

IA · GRADY · REPAIRED : THOS · CHVRCHES · AND · MOWMENT ·
(sic) TO THE GRACEC (sic) · AND · GLORIE OF GOD

¹ Dwyer gives here Mac IBrien, which can hardly be right, the reference being to a woman.

² O. S. Letters, p. 556.

The will of James Grady is preserved in the Record Office (Killaloe Diocese, 1706). Mr. Westropp kindly called my attention to it, and to the references that it contains to the island. Its opening words are as follows:—

“In the name of God, Amen. I James Grady of Derrimore in the County of Clare, Gent., being infirm of Body but of perfect Sense and Memory, blessed be God, and being desirous to settle y^e Disposal of my worldly Substance in Manner following and not otherwise, doe hereby revoke all other and former Wills and Testaments of what Sort or Nature whatsoever by me made or published and doe make this my sole Will and Testament. I bequeath my Soule to God my Creator through whose infinite Mercy I hope and expect Salvation, and my Will is that my Body shall be decently buried in the Monument I erected in the Church of St. Camine and St. Columbe in the Island of Iniskaltragh and that my Wife and Posterity as far as it may be consistent with their Circumstances respectively may be buried in the same Monument to the end that I and them may arise together through the Mercy of Our Redeemer to enjoy eternal Bliss.”

The monument has disappeared. But it is not improbable that the large slab bearing the letters IHS (no. 90) is a relic of it.

(90). CNS 8. A slab, measuring 2 feet 8 inches by 4 feet 2 inches by 2½ inches. It bears a panel, sunk on the surface, in shape a rectangle with the two upper corners cut off obliquely. In this panel is IHS, surmounted with a cross, in large bold letters. This stone is too late to be the slab of the altar of the church, as it is locally believed to have been. It seems to have been one of the component slabs of an altar-tomb. The date might be anywhere between 1680 and 1750.

(91). In the middle of the floor of St. Caimin's, a slab, broken in pieces, inscribed: “Erected by Philip Geoghegan in Memory of his father Brian Geoghegan who Departed this life September the 27th 1801 aged 54 years may he rest in Peace Amen.”

There are two or three later monuments on the island, which it is unnecessary to mention more particularly.

XVI. *Sun-dials.*

Of these there are two.

(92). CNS 3; Plate XXIV, fig. 8. A slab, 4 feet 9½ inches by 2 feet 8 inches by 2½ inches. It has a hole for the gnomon, pierced through the stone, and a semicircle with five rays below it.

(93). CCE 1; Plate XXIV, fig 9. A slab, 2 feet 1 inch by 1 foot 3 inches by 3 inches; the hole for the gnomon is not drilled through the stone in this case. The complete circle round the hole is divided into graduations, as though the stone had been intended to lie prostrate. The circle is divided into two by a diameter, the ends of which are distinguished by a crosslet; there are twelve graduations in each semicircle, three of which in the lower semicircle are marked with complete radii, the rest with short strokes on the circumference of an imaginary circle.

Much could be said about these dials, comparing them with similar dials at other sites¹; but this would form a theme apart, and would lead us too far away from the main purpose of this paper.

In concluding this Part we may notice a few miscellaneous stones lying here and there among the ruins.

(94). CNS 4. A stone, 8 inches by 10 inches by $5\frac{1}{2}$ inches, with a channel-groove running across it.

(95). Plate XXIV, fig. 11. A block of stone, rounded, with one side flattened and measuring 1 foot 2 inches by 1 foot 3 inches, bearing a rectangular sinking 2 inches deep, smeared inside with cement. Lying on the north wall of the chancel of St. Caimin's.

(96, 97). Two halves of quern stones, one an upper stone, diameter 1 foot 4 inches, the other a lower stone, diameter 1 foot 3 inches. Lying with No. 95.

(98). Plate XXIV, fig. 10. A gable finial, quite plain except for a groove parallel with the side of the stone. I sketched this on the island on one of my early visits, but somehow omitted to take a note of exactly where it was; on my last visit I could not find it. It may be concealed among the wilderness of little stones marking graves in one or other of the cemeteries on the island.

(99). Plate XXIII, fig. 8. A triangular piece of limestone lying in the graveyard south of St. Caimin's. It is evidently the apex of a gable which has had a continuation of the corner-pilasters running up the wall, as in the church on Inis Mhic Dara. The dimensions are, length of base 1 foot $6\frac{3}{4}$ inches, height 1 foot $\frac{1}{2}$ inch, length front to back 11 inches, breadth of frame $2\frac{1}{2}$ inches, tympanum recessed 1 inch.

¹Such as the dial of Clone, Co. Wexford, for which see Journal R.S.A.I., 1883, p. 39.

(100). Fig. 11. Fragment of a circular stone bowl with a disc base 4 inches in diameter. There are four projecting corner-pieces with an arrow-like decoration upon them, joined by a straight margin fluted on the underside, so that the upper outline of the vessel was square. The diameter of the whole vessel was 11 inches, the diameter of the circular part at top $11\frac{1}{2}$ inches, the depth of the bowl $2\frac{1}{4}$ inches. This bowl is lying on the north wall of St. Caimin's chancel, beside Nos. 96, 97.

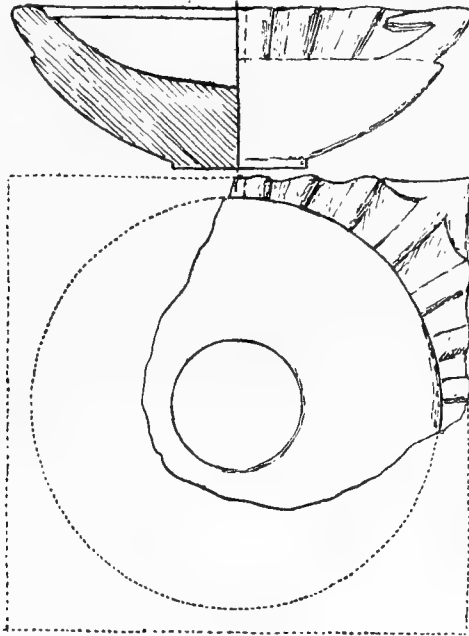


FIG. 11. Fragment of Stone Bowl.

I asked Delany whether anything had been found during the restorations.

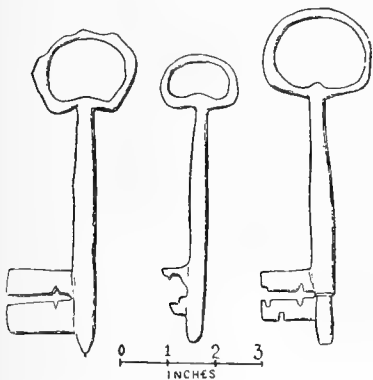


FIG. 12. Keys found at St. Mary's Church.

He told me that nothing had come to light except a plain iron ring. In the course of digging a grave many years ago, at St. Mary's, a number of old keys were discovered. It is said that a former sexton's grave had been disturbed by the digging referred to, and that it was in this grave the keys were unearthed. There are said to have been seven, but four of them were lost. The remaining three remain in Mrs. Hibbert's possession. They are shown in fig. 12. It is not at all unlikely that they are actually what they are believed to be,

the old keys of the churches, or at least of St. Mary's.

PART III.—LEGENDS AND TRADITIONS.

I. *The Building of the Tower.*—O'Connor thus relates a tale that was told him about the reason for the incomplete state of the Round Tower: "The local tradition is that this tower was never raised higher than it is at present, and assigns as the cause of this the craft of a witch, who by her scoffing at the architect, who was busily engaged in working at the building, irritated him so much that he leaped off the top of it, on the ground and struck her on the head with his hammer, by which blow she was metamorphosed. The people now show her 'done in stone' lying close to the tower to the west side, and retaining still the track of the hammer." The allusion is to the cross-base, No. 12 in the foregoing list. The tale is still told, but without the mad leap of the architect from the top of the tower; the witch is not now said to have scoffed, but to have omitted the benediction on the work expected from the passer-by.

O'Connor adds: "The witch said to have been thus transformed, is the *cailleach na síoghbhraighneacht*, fairy hag, who is spoken of in connection with Illaannore in the last letter." This reference is to p. 532 of the same volume of the Ordnance Correspondence, where we read: "In the North East end of the townland of Illaannor (Oileán mór, in Loughdeirg, 2 miles North East of Williamstown Quay, there was, it is said, formerly an abbey occupied by Friars of the Franciscan order. The foundation of an edifice, which was probably a church, is still traceable here." Then follows a description of the ruin, and of slabs with crosses within it, after which the writer says: "Between the houses of Patrick Hickey and Patrick Meara, on the island, close to the shore . . . there is seen standing a rude stone, 8 or 9 feet high, which tradition says, was set up by the Saints who founded the Churches on Inishcaltra, to commemorate their departure from Illaannore to the last-mentioned island. They were first beginning to build the seven churches on this big island, but relinquished their design by reason of a witch who was called *cailleach na síoghbhraighneacht*, i.e., the fairy hag, having, at the very moment they were commencing the work, directed her unlucky eyes towards them. It was said that a road led through the lake from this island to Inishcaltra. Persons can walk out a considerable distance on it into the lake in summer time without any danger. It appears to be a causeway constructed with stones of great size and weight, either by the hands of nature, or by art."

I heard nothing of all this, though possibly search on Oileán Mór, which I have not visited, might bring to light some lingering recollections of this part of the tradition. But it is not unreasonable to see in this story a dim recollection of the early struggle between Christianity and Paganism on this

spot, when the *brechta ban ocus gobann ocus druad* against which St. Patrick's Hymn seeks protection were a very real terror. We are not told in the life of St. Colum, from which we quoted in the first part of this paper, why he suddenly, and as it would appear capriciously, took a dislike to Inis Cealtra; the *molestiae hominum frequentantium* reads like a mere excuse. I for one think that a hint at an explanation of this is to be found in the ancient tradition that O'Conor happily garnered for us. The *cailleach* was a druidess, who cursed the interloper that had stolen the sacred tree. I frankly avow myself one of those who hold the unpopular and often derided view that folk-tales contain a considerable amount of literal historic fact, though I admit that we cannot without external aid deduce from a tale that has passed through an unknown number of generations the course of events on which it is based.

I have no faith in the alleged causeway between the islands, whether as a work of nature or of art.

II. *A Causeway to the Mainland.*—O'Conor further says (p. 565): "The principle [*sic*] road is still observable leading from the lake to the churches in a Southern direction. It is said that there is a road (or causeway) extending opposite or near the Western extremity of this road, a distance of some perches from the island into the lake. A person could safely walk on it in summer time when the weather is dry. It is supposed that this road formerly connected the island with the mainland." I could find no confirmation of this; on the contrary, I was assured that there is deep water all round the island.

III. *The bell of St. Caimin's.*—We have mentioned in describing the church of St. Caimin that there is the foundation of a belfry perched on the slope of the gable. Of this O'Conor says: "Henry Boucher above mentioned saw a bell on the East gable of this church. On Caimin's day [24th March] it used to toll spontaneously. It was brought to Killaloe, where however they could make no use it, for it would not ring. It was shortly afterwards buried in the ground."¹ A writer in the R.S.A.I. Journal for 1889 mentions that there are many legends about St. Mary's Church—by which he means St. Caimin's, as the context shows—and these he says he has written at length; but the samples he gives do not encourage us to expect that the collection would be of great value. He refers to the story of the witch and the tower, with the fanciful addition that it had been intended to carry the tower up, Babel-like, to reach the sky. He also mentions this very pretty

¹ The latter part of this statement (from "On Caimin's day" onward) is roughly scribbled in pencil on the ms., apparently in O'Conor's hand.

legend of the bell, with two mistakes, doubtless the result of quoting from memory; that the bell hung *in the Round Tower*, and that it tolled spontaneously *every day*; this last error completely spoils the story! He then tells us that "among the traditions of the place is one to the effect that the island was desecrated on a certain occasion by one of the sons of Brian Boroinhe, who paid the penalty of his crime." Of this I can find no confirmation. "Some years ago," he adds, "it is stated it was desecrated by some members of the Burke family of Meelick, and that evil befel them in consequence. A long poem in Irish, of which we possess the translation in English, laments the fact in bitter language." I have been unable to trace this alleged poem.

IV. *Teampull na bhFear ngonta*.—O'Connor give a brief description of this building, without mentioning its name. O'Donovan writes after his description the following note:—"This is called *Teampull na bhfear ngonta*, i.e., the church of the wounded men, i.e., in which men slain in battle and who would not be admitted into respectable burial places, were interred." This does not sound like genuine folk-lore; it may have been picked up from someone on the spot, not improbably being reached by means of a leading question. We have already noticed the tradition recorded by Brash.

V. *Cross-slab beside Teampull na bhFear ngonta*.—After noticing a slab (probably No. 37 in the foregoing list—the only one of the slabs in the Saints' Graveyard that the Ordnance Letters mention),¹ O'Connor says:—"There was an attempt made, it is said, to carry away, this stone to Clonrush; but no human power could take it up to place it in the boat, which was in readiness to convey it across the lake." The writer in the R.S.A.I. Journal tells the same story, but again spoils it by making it refer to all the stones in the graveyard.

VI. *The twelve founders*.—We have already mentioned the lost "grave of the twelve saints" (No. 85 in the foregoing list), said to mark the spot where the twelve saints were interred who originally founded the churches. There is no other trace of a tradition or record that the monastery was founded by a community of twelve. The number was no doubt suggested by the number of the apostles. (See on this subject Reeves' "Adamnan," Edinburgh Edition, p. lxxi).

¹ This is not their fault. The slabs seem to have been completely hidden by rubbish till they were uncovered by the Board of Works. Even now most of them are sodded over, and have to be dug out by anyone wishing to examine them. This is an advantage, as it preserves them from the weather and from the boots of careless wayfarers.

VII. *An underground passage.*—Lord Dunraven, in describing the Round Tower,¹ says that it is held by tradition to have been built by St. Senanus, and that there is a passage in a poem by Michael O’Brannan “On the River Shannon,” written in 1791, in which he ascribes the same origin to this tower as to those at Inis Clothrann on Loch Ree, and of Inis Cathaigh or Scatterry Island, near the mouth of the Shannon. I do not know whether this is the basis of a tale that someone told Marcus Keene, that a passage connects the Round Tower of Inis Cealtra with that of Scatterry. Though the distance between the two towers is about fifty miles, the author of “Towers and Temples of Ancient Ireland” does not seem unready to accept the truth of the story. Delany told me a less extravagant version of the tale, that the tower was connected by a passage with a point on the shore of the island. He further told me that the digging out of the earth in the base of the tower (which I cannot but regard as very regrettable) was undertaken in order to test the truth of the story. It is needless to add that no passage was found.

VII. *The annual patron.*—Finally, O’Conor adds to our many obligations to him by preserving the following most interesting and valuable account of the ceremonies that formerly were observed here, but are now forgotten :

“A patron used to be held here annually 4 days—Friday and Saturday before Whitsunday, on which day and on the following Monday, it was continued.” He then tells us that it had been suppressed in recent years, because of serious moral irregularities which had been perpetrated at the assembly. Then follows the description of the rounds, which I transcribe verbatim—

“The station was commenced at Lady Well; and the performers went round the extremity of the island, 1 mile in the circuit, 7 times, equal 7 miles. The short rounds were commenced at a station monument (a little mound of earth and stones) lying 35 yards to the west of the round tower.² They went round this monument 7 times, and proceeded through the door on the West gable of Saint Caimin’s Church, and as far as the altar

¹ Notes on Irish Architecture, vol. ii, p. 4.

² This mound still exists; it is marked “station” on Plate I. Its purpose seems now to be totally forgotten. Indeed, nothing but the tradition of “blackguardism,” as it was expressed to me, seems now to be remembered of the annual patron. Mr. Westropp has given me a legend which he heard in 1878, about one B— and his foster-brother, who knocked holes in all the boats on the island to prevent pursuit, and carried off a country girl from the assembly by force. But St. Caimin raised a terrible storm, which upset their boat. B— and his accomplice were drowned, the girl and the boatman, who was not in the secret, clung to the boat and were saved. The bodies were recovered and “waked”; that of the foster-brother was left for the night in an outhouse, and in the morning was found devoured by rats and beetles.

in St. Columb's Chapel. They went this length seven times from the monument just mentioned, and at the commencement of every seven times of these; they went round the monument itself seven times.¹ They went round St. Caimin's church 14 times; the tower and all the churches around it, being included in the rounds. They went round a station monument at the end of St. Caimin's Church, either the one (a little mound of earth) immediately at the S. W. corner or the one (also a little mound of earth) within a few yards of the N. W. corner of it.² They also went 7 times round *Gáraidh Mhicheáil*, St. Michael's Garden: and 7 times round the bank of earth about St. Michael's Church, and 7 times round a large flag stone lying at it,³ on which stone, they *finally* (i.e. after having gone round it the 7 times) impressed kisses. They went 7 times round Saint Mary's Church and 7 times round the baptism church.⁴ They finished at the well, and drank of its water. This is the most accurate description I could get of the mode in which the station at the island was performed. I could not get a minute description, which would detail the number of prayers repeated during the process of the rounds. Nor am I certain that the description I have given here, affords a correct view of the order of the process. I introduced it here merely to show what station monuments were made use of."

¹ I presume this means, to express it mathematically, $7(7x + y)$, where x denotes the round of the station monument, and y the journey from the station to the altar and back. The punctuation in this and the other extracts from the O. S. Letters follows the original ms.

² These mounds have been trampled down by cattle, and can no longer be traced with certainty.

³ For this flagstone, see *ante*, p. 118.

⁴ St. Brigid's.

NOTE ADDED IN PRESS.

Add the following at the place indicated on p. 101:—

To add to the complication, the Four Masters tell us of a certain St. Colman Stellan, who died 26 May 624. As 26 May happens also to be the day of the Inis Cealtra Stellan, and likewise of the mysterious daughters of Fergus (p. 106), there is clearly a deep-seated confusion here. Probably the solution is that all these pre-Caimin saints are multiples of the one personality.



MACALISTER.—INIS CEALTRA.

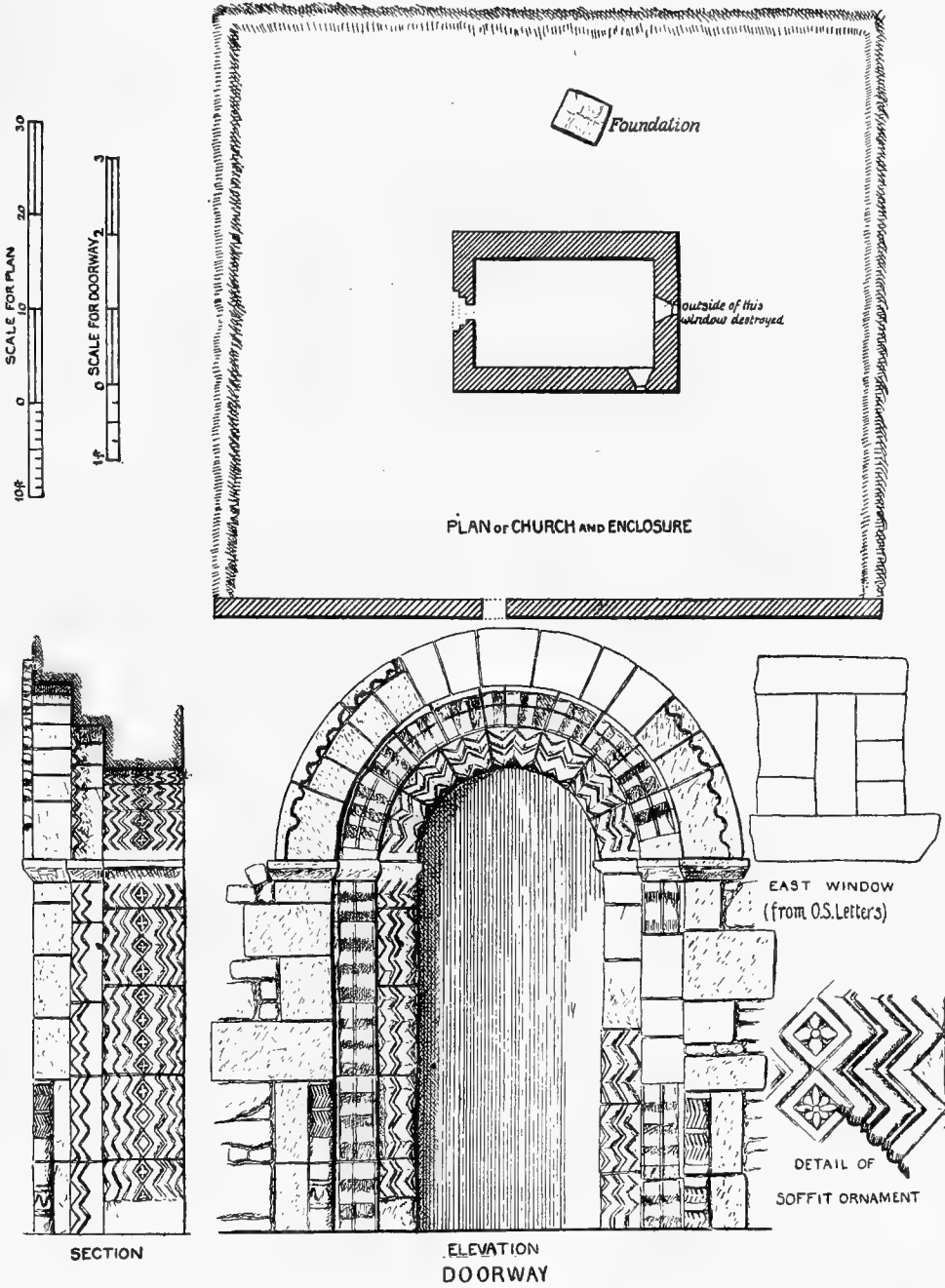


FIG. 1.—St. Michael's Church.



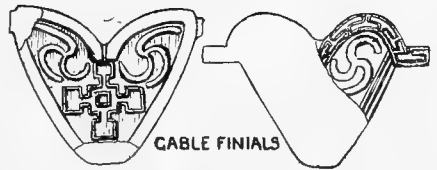
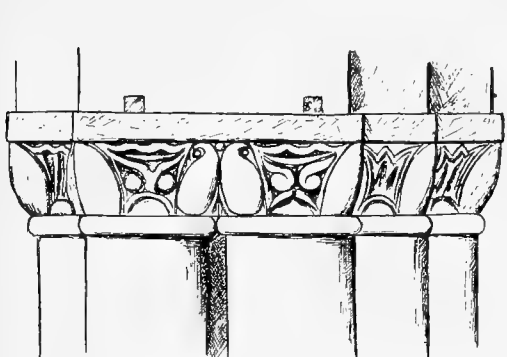
FIG. 2.—St. Brigid's Church.

MACALISTER.—INIS CEALTRA.

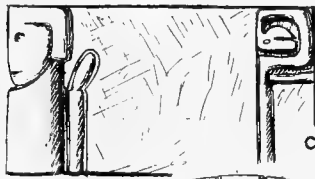
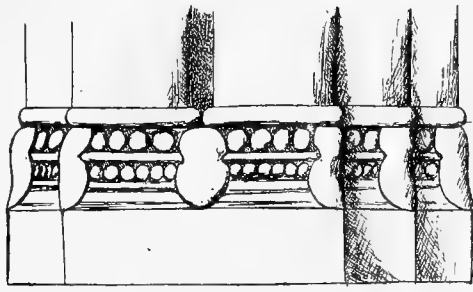


ST BRIGID'S CHURCH

MACALISTER.—INIS CEALTRA.

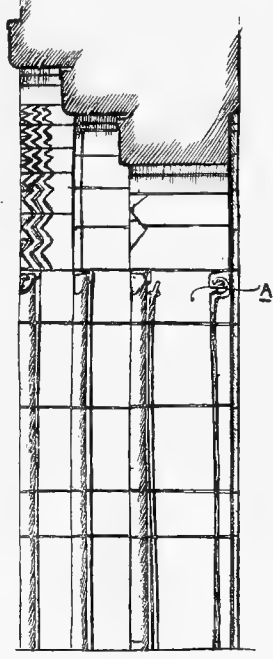
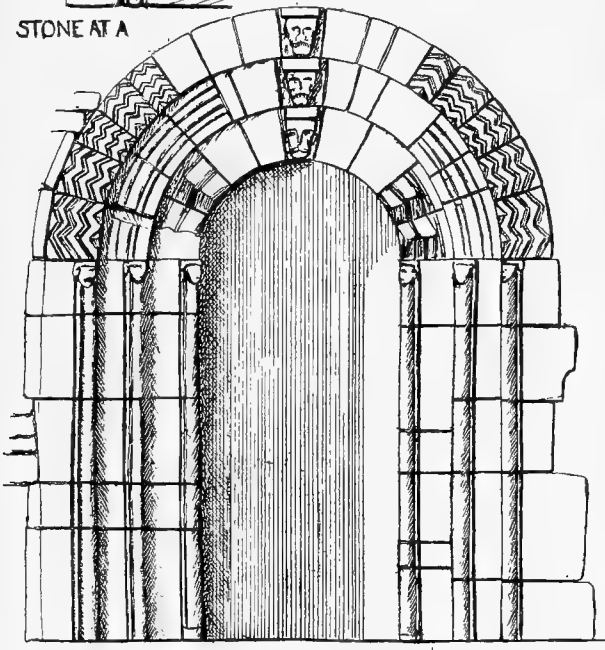


CABLE FINIALS



CHANCEL ARCH CAPITALS & BASES

STONE AT A



W. DOORWAY



FEET

S^T. CAIMIN'S CH.



FIG. 1.—St. Caimin's Church, from the South-west.



FIG. 2.—St. Caimin's Church, from the South-east.

MAGALISTER—INIS CEALTRA.



FIG. 1.—Window in St. Caimin's Church.

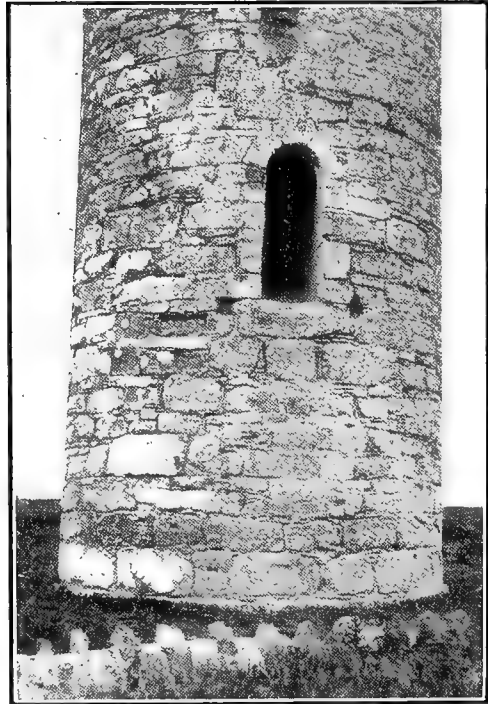


FIG. 2.—Doorway of Round Tower.

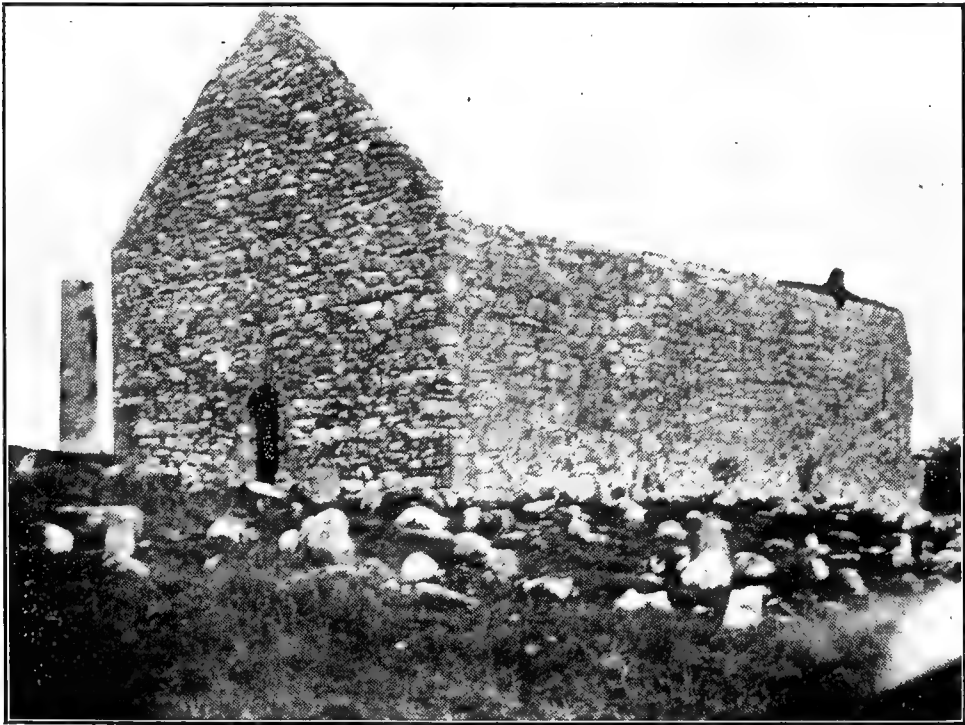


FIG. 3.—St. Mary's Church, from the South-west.

MACALISTER.—INIS CEALTRA.



FIG. 1.—Anchorite's Cell, from the North.



FIG. 2.—Anchorite's Cell, from the North-west.



FIG. 1.—Anchorite's Cell, from the East.

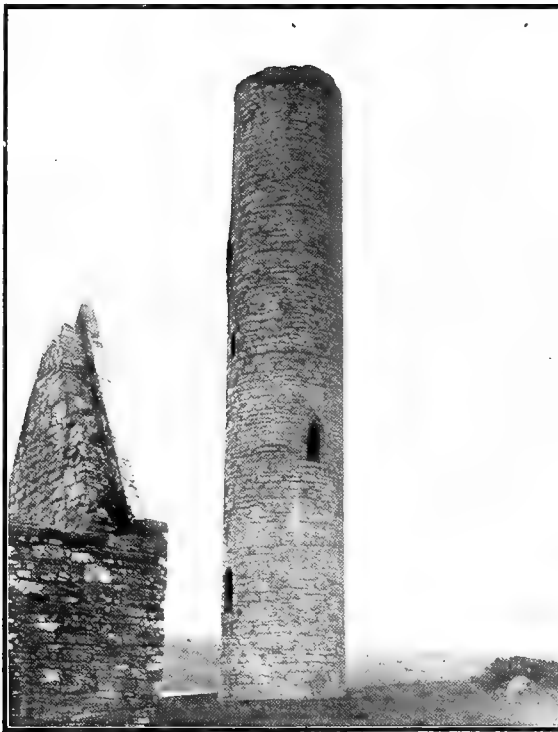
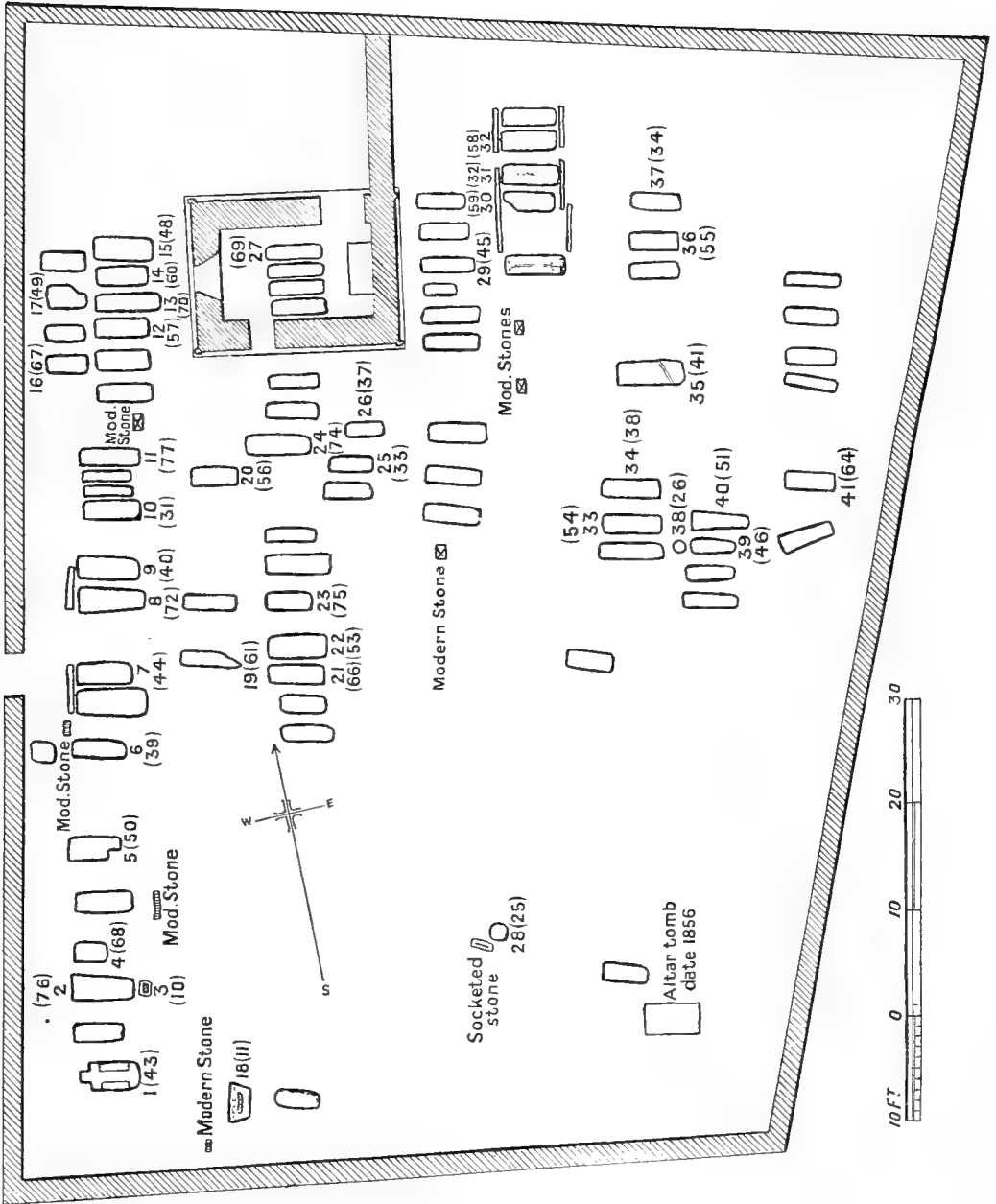
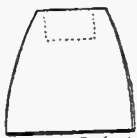
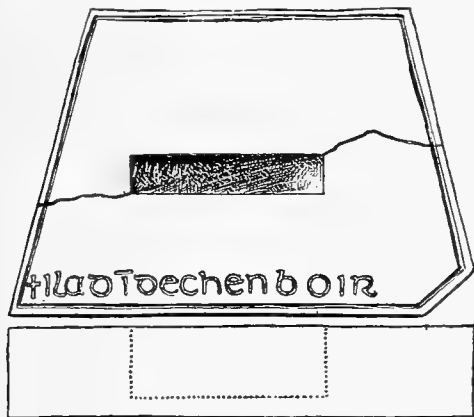


FIG. 2.—The Round Tower.

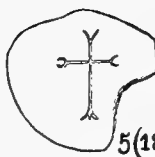
MACALISTER.—INIS CEALTRA.



Plan of the Saints' Graveyard.



2 (12)



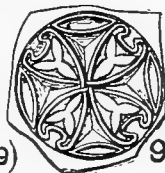
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8 (21)



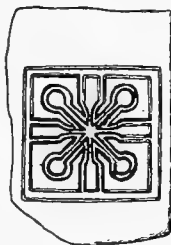
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9 (22)



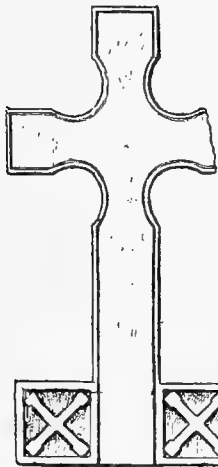
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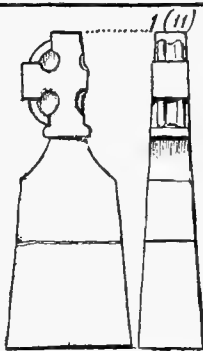
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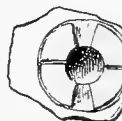
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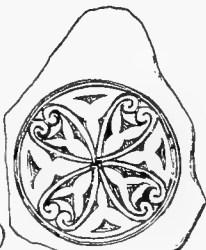
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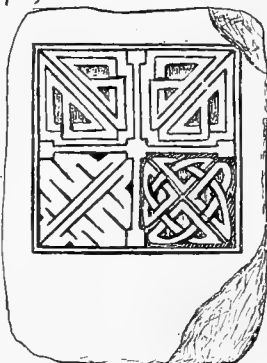
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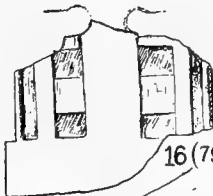
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12 (25)



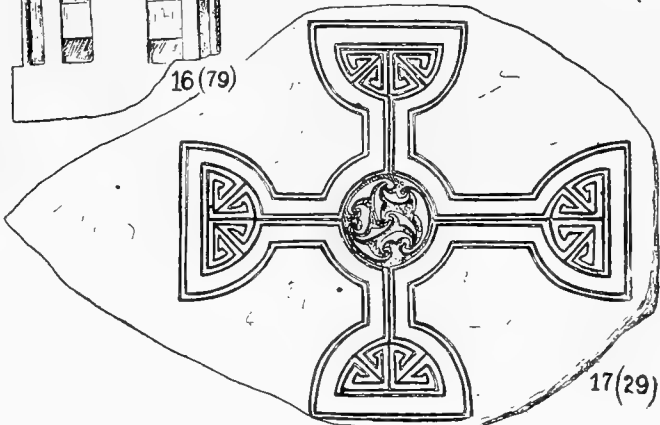
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16 (79)



15 (46)

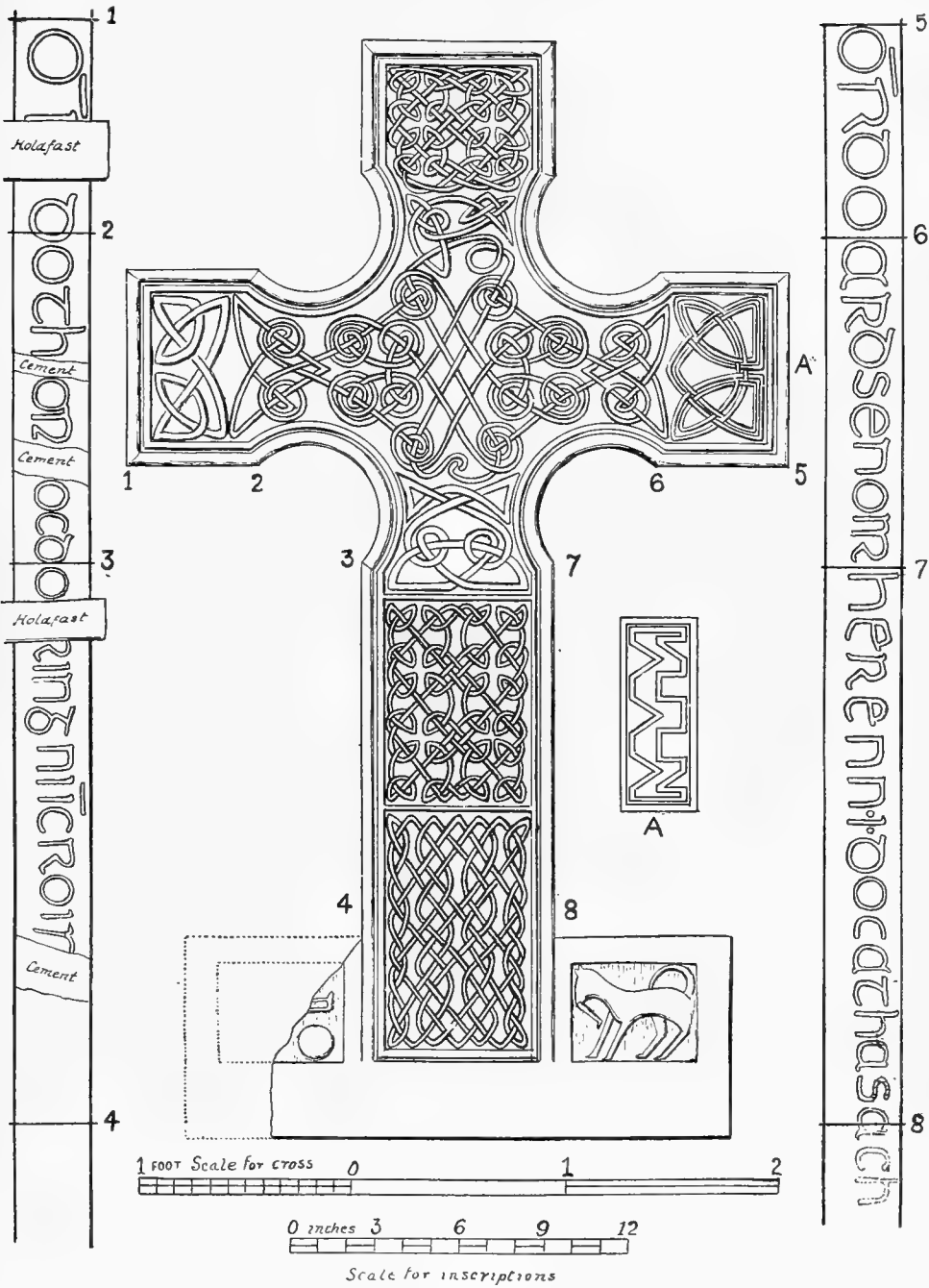


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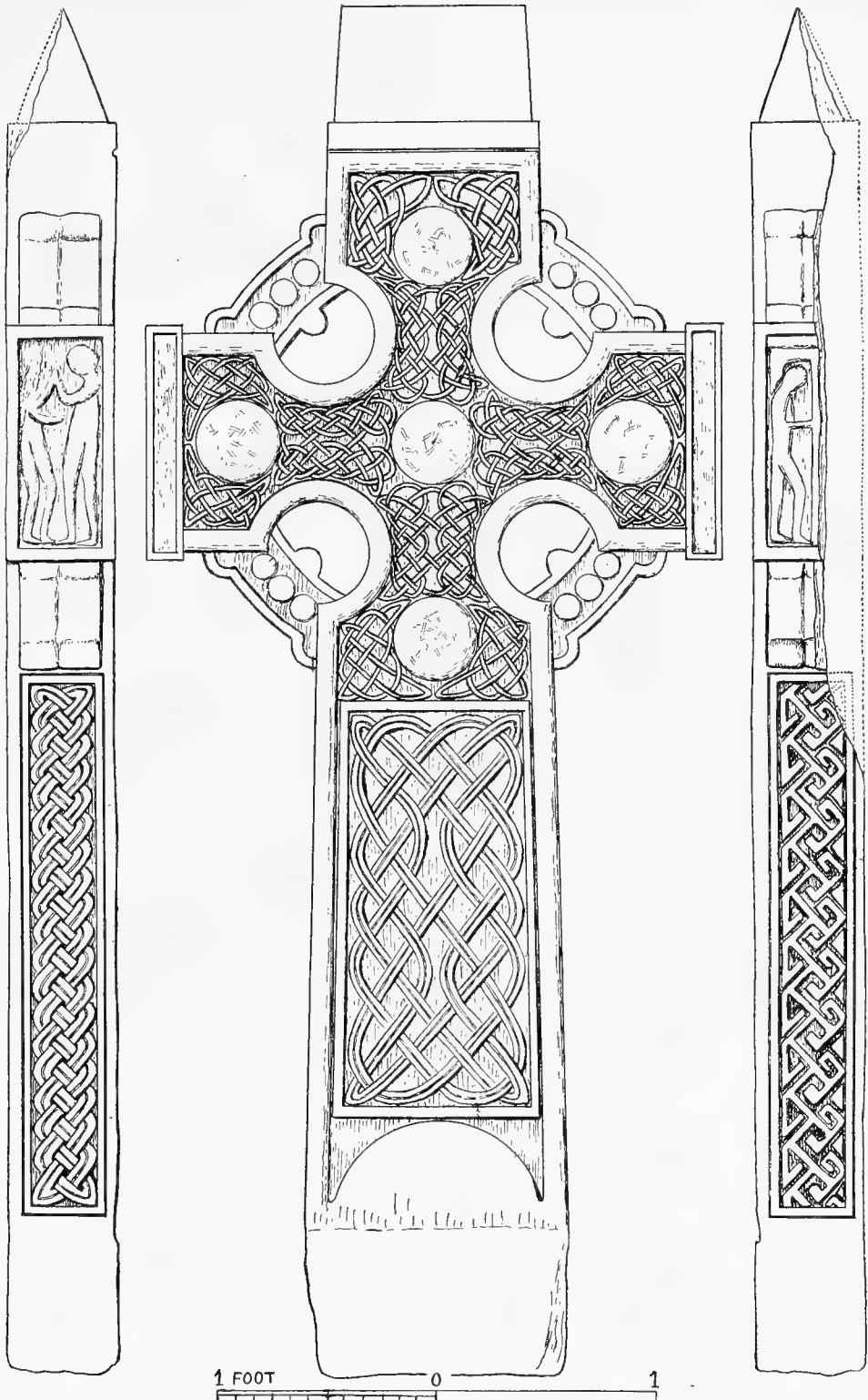
dimensions in text

Monumental Slabs, &c.

MACALISTER.—INIS CEALTRA.



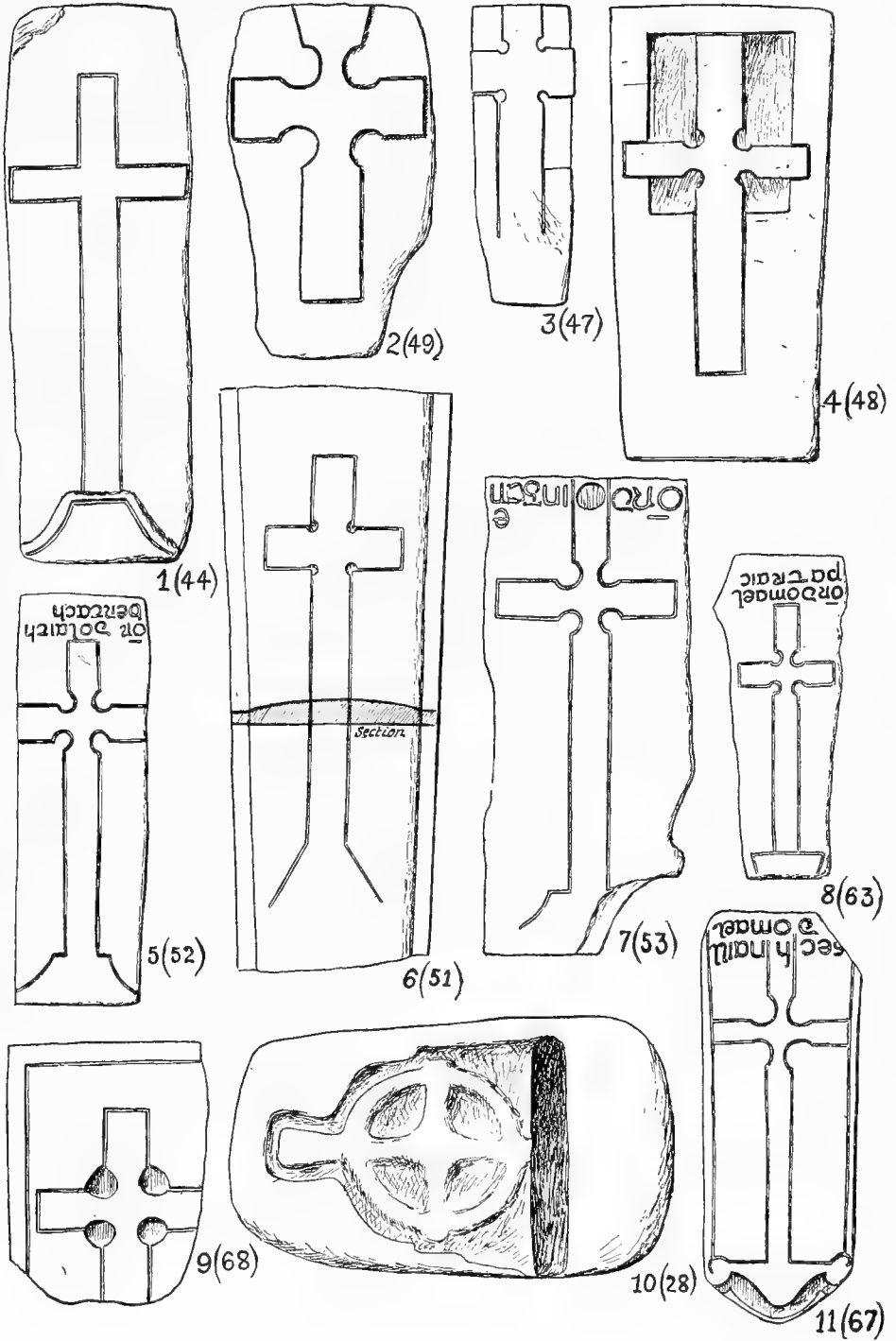
The Cross of Cathasach.



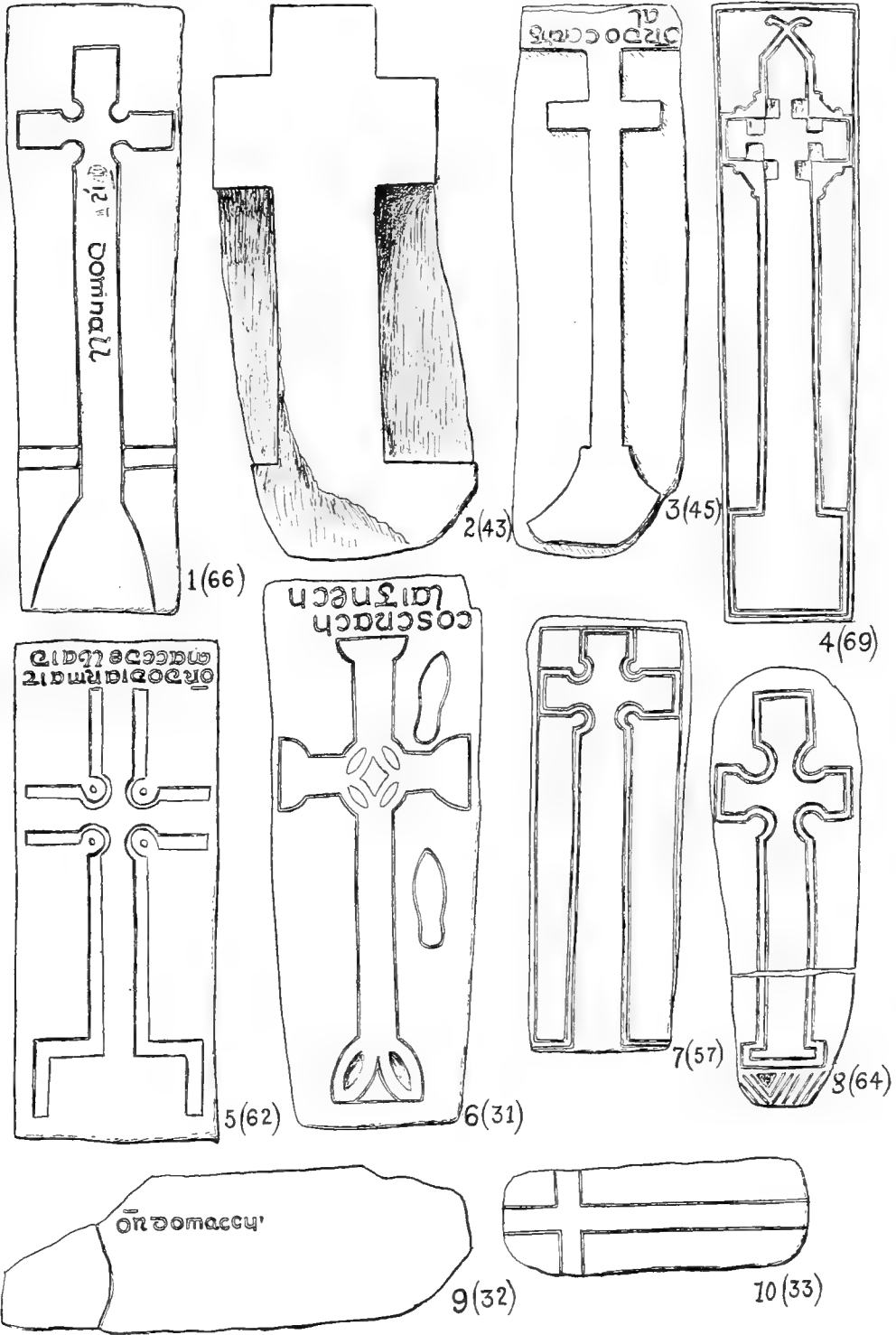
Cross No. 17.

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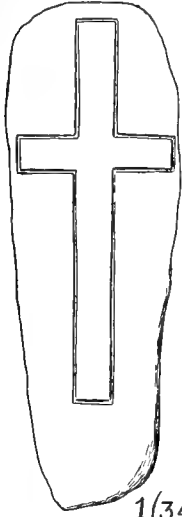




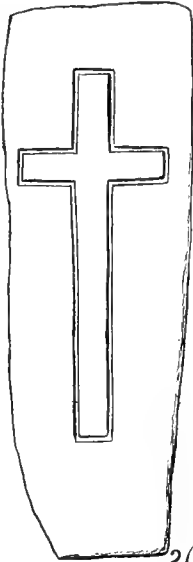
Monumental Slabs.



Monumental Slabs.



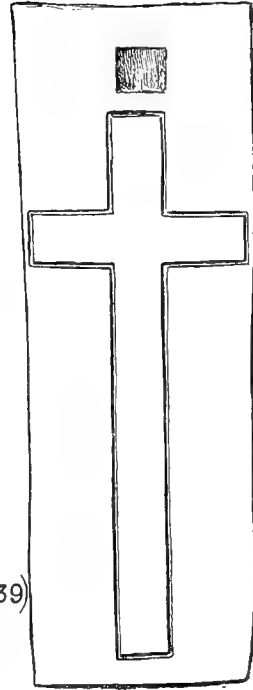
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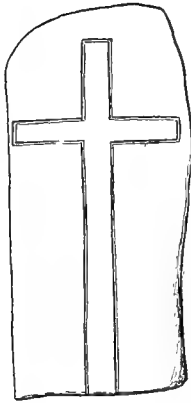
2(35)



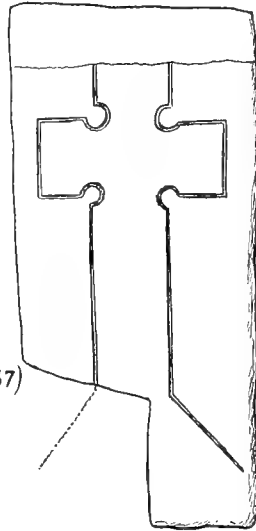
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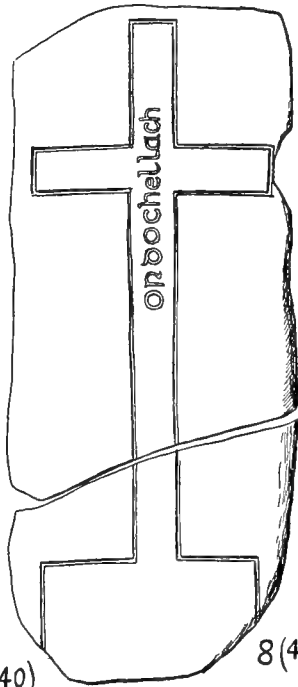
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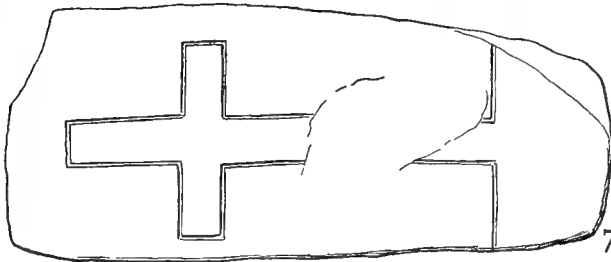
5(37)



6(50)



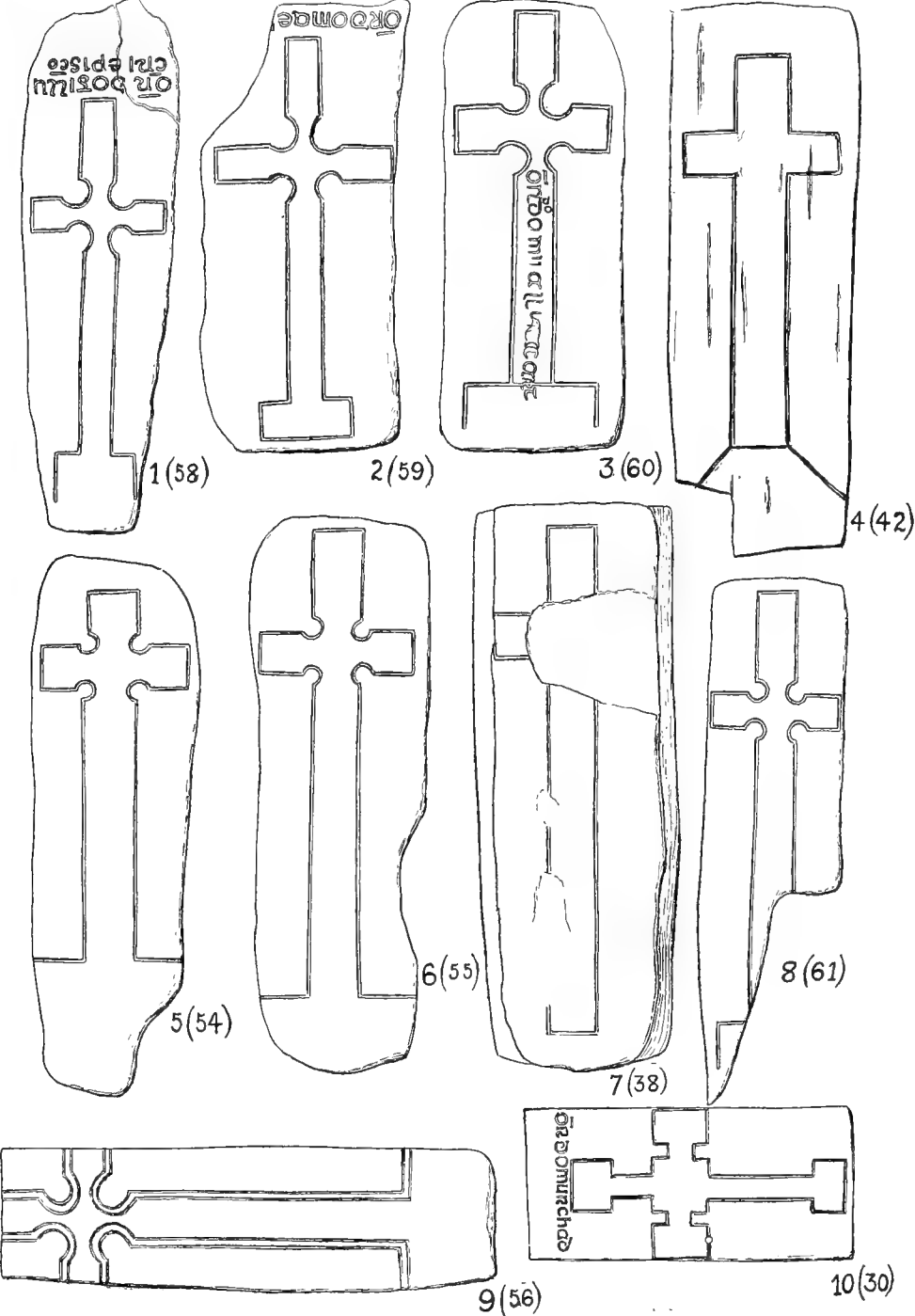
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7(40)

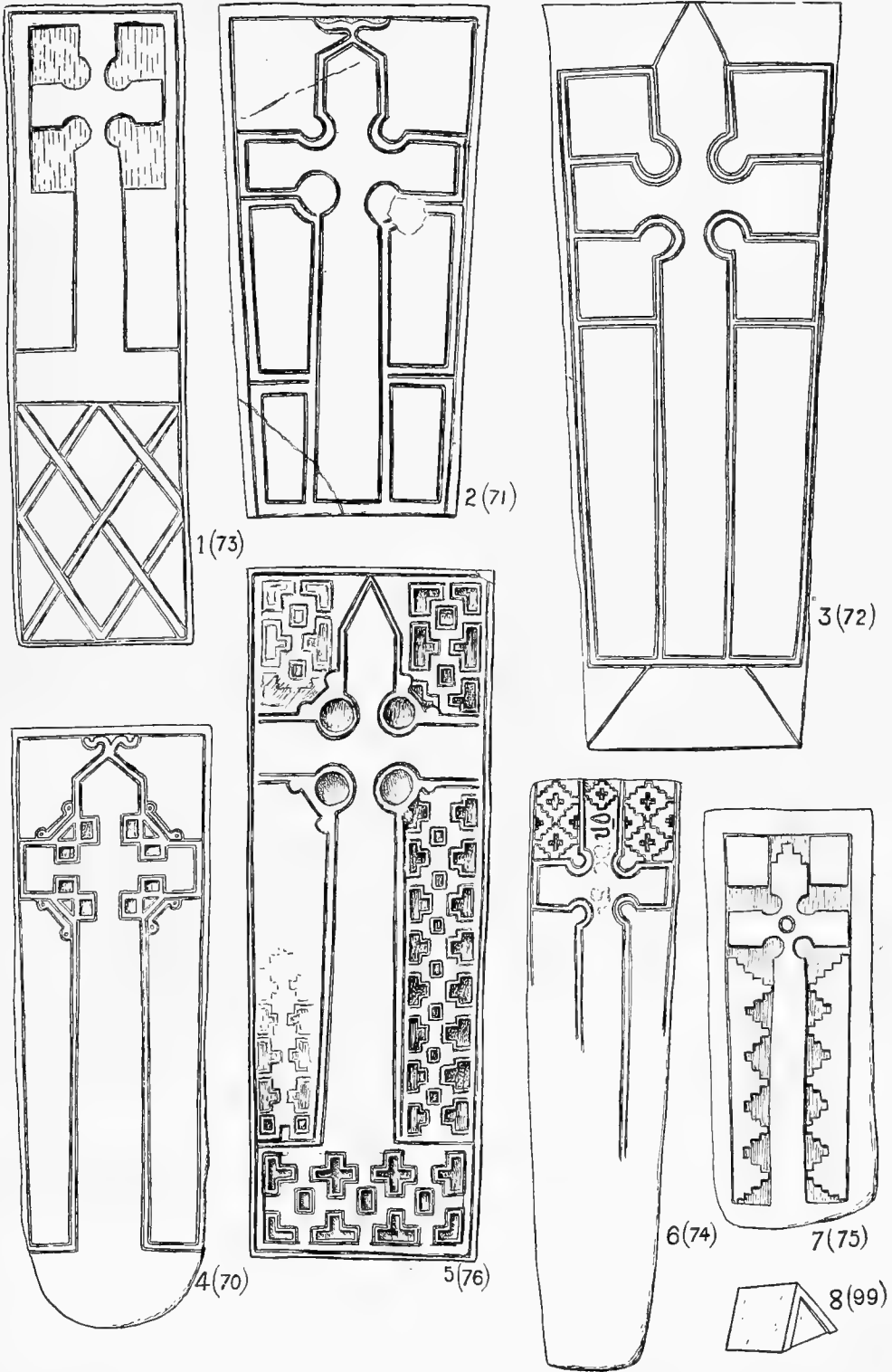
Monumental Slabs.

MACALISTER.—INIS CEALTRA.

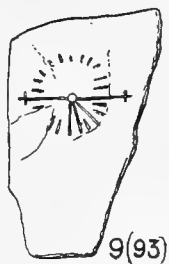
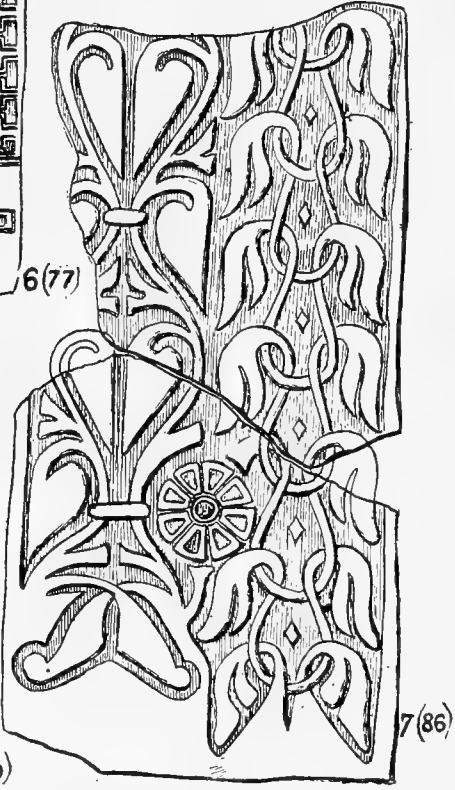
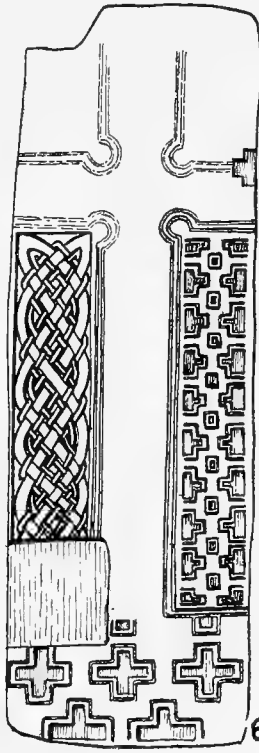
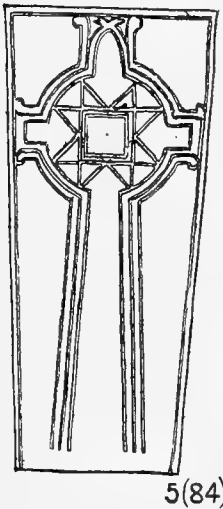
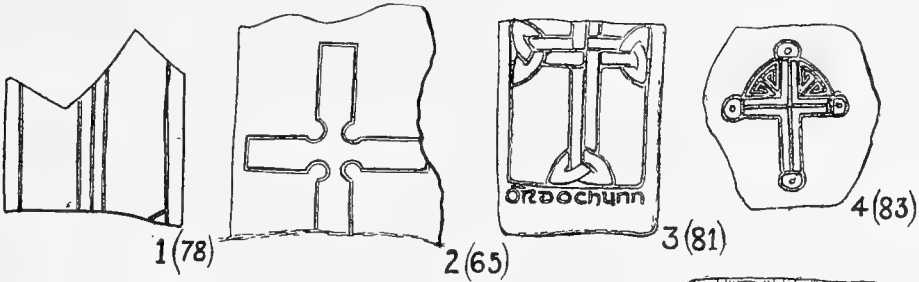


Monumental Slabs.

MACALISTER.—INIS CEALTRA.



Monumental Slabs.



Monumental Slabs.

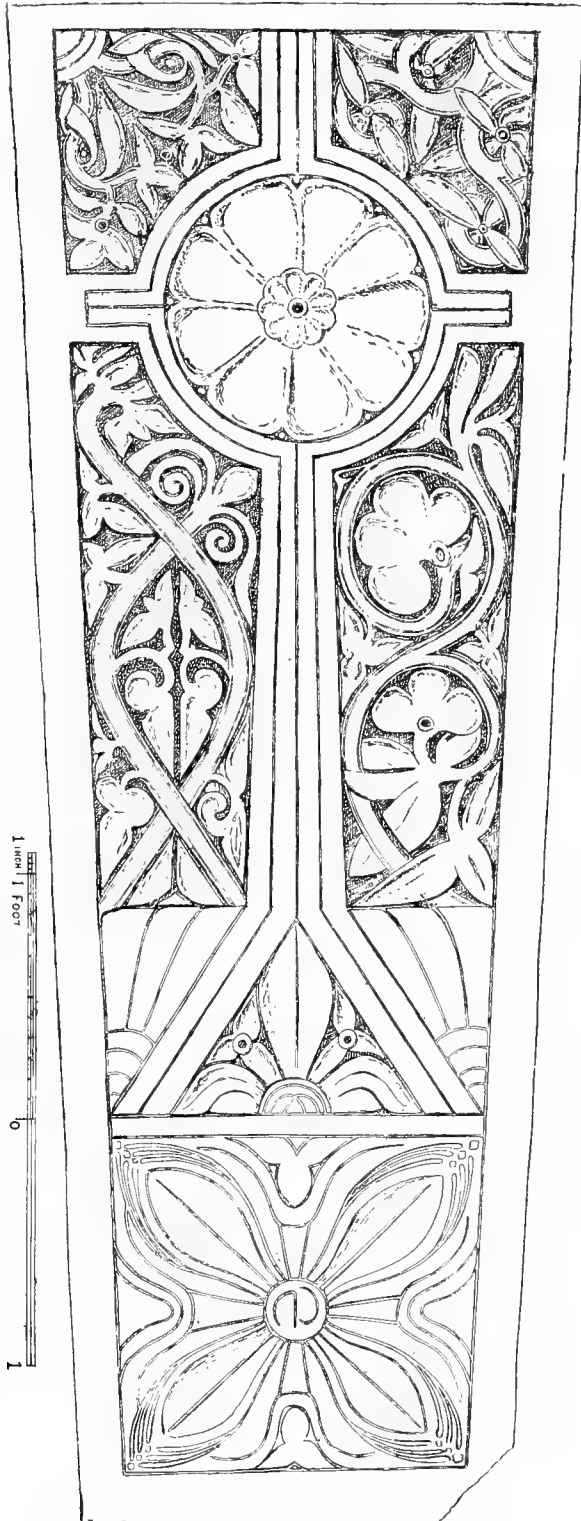


FIG. 1.—The Cross of Cathasach.



FIG. 2.—Saints' Graveyard and Teampull na bhFear ngonta

MACALISTER.—INIS CEALTRA.



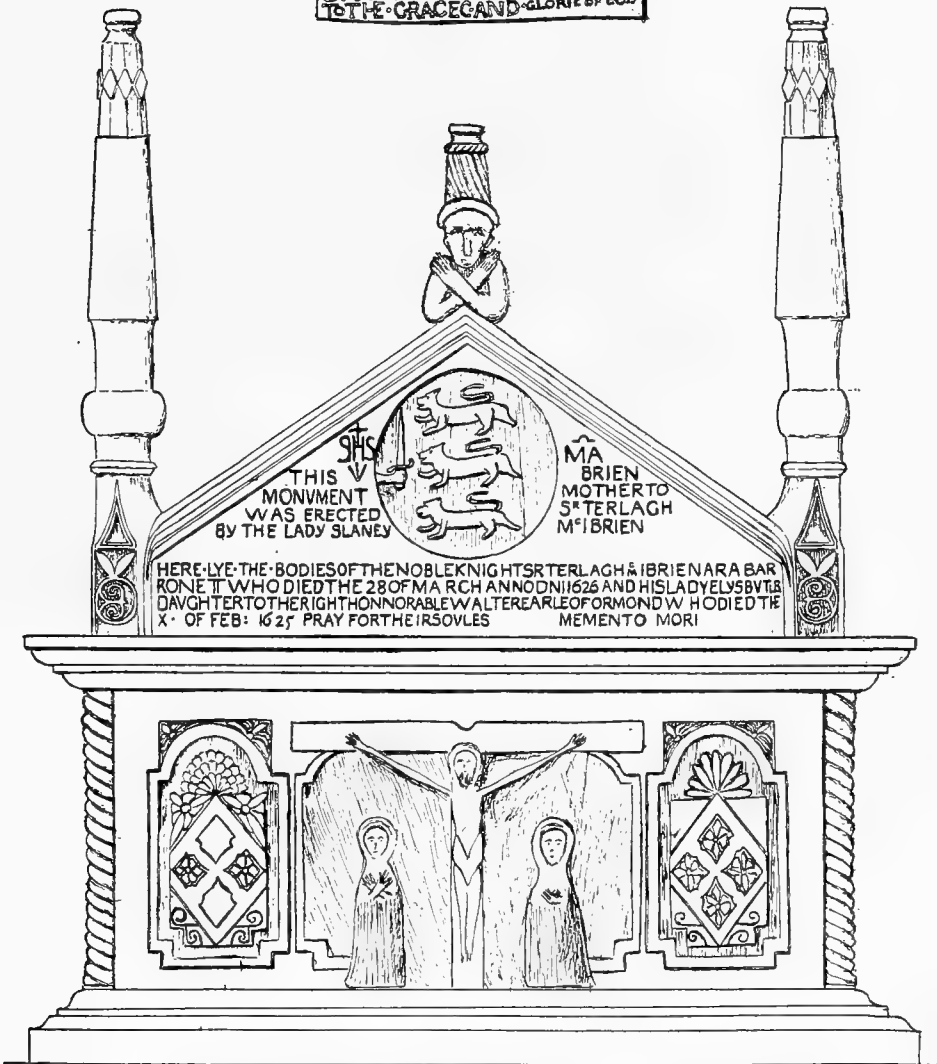
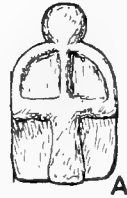
Slab No. 87.

MACALISTER.—INIS CEALTRA.



The O'Brien Monument.

MACALISTER.—INIS CEALTRA.



Dimensions in text

The O'Brien Monument (Restored) and the O'Grady Slab.

VII.

ON THE ANCIENT DEEDS OF THE PARISH OF
ST. JOHN, DUBLIN,

PRESERVED IN THE LIBRARY OF TRINITY COLLEGE.

BY THE REV. JOHN L. ROBINSON, M.A.

(PLATE XXIX.)

Read FEBRUARY 28. Published JULY 13, 1916.

INTRODUCTION.

THE collection of deeds, of which a Calendar is here given, was lodged in the Library of Trinity College, Dublin, in 1852 by the Prebendary and churchwardens of the old city parish of St. John the Evangelist, commonly known as the parish of St. John of Bothe Street. With the deeds was lodged a short abstract of their contents. From the abstract it appears that a full translation of many of the deeds was then in existence, but this translation is not now forthcoming. Attached to this abstract is a copy of the Librarian's receipt, in which the deeds are stated to be held in trust, and returnable on demand. The whole collection is catalogued as no. 1477 in the Manuscript Catalogue of the Library.

The parish to which the deeds belonged has now been united with the parishes of St. Werburgh and St. Bride; but it was itself, from the middle of the sixteenth century, a union of the parishes of St. John and St. Olave. A deed [no. 170 (166)] of 1558 speaks of this union as having lately taken place, and provides for the contingency of the two parishes being again separated and "severed from this unyon." Consequently, some of the deeds refer to lands which were the property of the parish of St. Olave or, as it was commonly called, of "St. Tullock."

The key to the formation of this collection of deeds is found in the will [no. 112 (110)] of John Lytill, citizen of Dublin, who died in 1434. By it he bequeathed to the chapel of the Blessed Virgin Mary, in the parish church of St. John, his holdings in the parishes of St. Michan, St. Olave, and St. John, to endow a perpetual chantry of one priest for the repose of the souls of his first wife and himself, their parents and benefactors; and he appoints that

his title-deeds are to remain and be preserved among the deeds of the said chapel. So far as can be ascertained from the deeds that have been preserved, the chapel possessed, up to that date, no deeds save one. This solitary deed was a Licence in Mortmain from King Edward III to Richard Wright, chaplain, to assign to the parson and parishioners of St. John's Church the plot of ground upon which the chapel was to be built [no. 45 (45)]. With that one exception, all the deeds which are dated prior to the death of John Lytill appear to be the title-deeds of his possessions, or deeds which would be among his family archives. His first wife Alianora, by whose side he desired to be buried, had been a member of the family of Comyn, and some of the deeds refer to possessions of that family. The only deed in the collection which deals with property situated outside the county of Dublin is a grant [no. 35 (35)] to Thomas, son of William Comyn, knight, from Robert Talbot of Kilkenny, of a messuage at Thomastown, near Kilkenny.

The earliest deed in the collection may be dated about 1233, but from the year 1289 there is practically a complete record of the successive owners of those lands and houses with which John Lytill endowed his chantry. They consisted of a large portion of the east side of Fishamble Street, partly in St. John's parish and partly in St. Olave's, and of some houses and gardens near the east end of St. Michan's Church. These properties passed, after some life-interests had been satisfied, into the hands of the parishioners of St. John's parish; and their further history can be traced by the series of leases made to private individuals by the proctors or churchwardens of the parish. The first of these is dated 1467, thirty-three years after John Lytill's death [no. 126 (127)].

The endowments of St. Olave's Church, which came into the possession of St. John's by the union of parishes, consisted of two houses in Castle Street, a house in St. Francis Street, and some gardens in St. Andrew's parish outside the Dames Gate of the city of Dublin. These latter were bounded by a street which, so late as the end of the fourteenth century, still bore the name of Tengmouth Street, from its having led from the city to the Thingmote of the Norse founders of Dublin [no. 56 (55)]. On the south side of this street there stood in 1467 an elder or guelder tree (*sambucus sive viburnum*) which was sufficiently prominent to be mentioned as a boundary of the garden in which it grew [no. 127 (124)].

Besides the union of the parishes of St. Olave and St. John already mentioned, another union seems to have taken place about the same time, *i.e.*, shortly before 1558. By it the parish of St. Mary del Dam, then popularly known as "the parish of the Dames," was united to that of St. Werburgh [no. 171 (167)].

The deeds here calendared naturally provide much material for the history of the parish of St. John. Its church was one of the possessions of the Cathedral Church of the Holy Trinity at least as early as the time of St. Laurence O'Toole [Christ Church Deeds no. 364 (*a*)], and by an order of Archbishop Luke, *circa* 1230, the Augustinian Canons of that Cathedral were bound to serve the church in person, and not to assign it to a vicar [Christ Church Deeds no. 44]. In 1539 the Prior and Convent of the Cathedral were ordered to be regarded in future as secular priests. The Prior and the first three Canons were appointed Dean, Precentor, Chancellor, and Treasurer: and the next four Canons were appointed their Vicars. To the third of these, the Chancellor's Vicar, the living of St. John's Church was assigned. Five years later the living was made prebendal, and the Chancellor's Vicar became the Prebendary of St. John's. With the break-up of the old monastic establishment of the Cathedral, there soon arose the necessity of providing a residence for the Prebendary. In 1633, when John Atherton, afterwards Bishop of Waterford, was Prebendary, the parishioners assigned two houses in Fishamble Street to the Dean and Chapter of the Cathedral in trust for the Prebendary and his successors, who were to pay to the parish an annual rent of £3 6s. 8*d.* The one house was to serve as the residence of the Prebendary; the other was to be let by him in order to provide the rent due to the parish. John Atherton was succeeded by Dudley Boswell, who died in 1650. After his death no Prebendary of St. John's seems to have been appointed until after the Restoration of the Monarchy in 1660; but the parish was served by a "minister" named Patrick Ker or Carr, who let both houses at rents respectively of £8 and £5 [nos. 179 (176), 191 (188), and 192 (189)].

There are other evidences in these deeds of the connexion between the Cathedral and the parish. In 1586 Peter Calf, who was a Vicar Choral of the Cathedral, signs himself "parish clerke of St. John's" [no. 179 (176)] and a deed has found its way into the collection which belongs, not to the parish at all, but to the Cathedral. This is a receipt given by the Dean and Chapter in 1558 to the Mayor and Sheriffs of Dublin for a half-yearly instalment of the annual grant of £20 out of the fee-farm of the city of Dublin, made to the Cathedral in 1443 by King Henry VI. The reason of this grant, as is known from other sources, was that the rents and possessions of the Prior and Convent had been destroyed "as well by our Irish enemies as English rebels" in different parts of the land; and the Irish Parliament of 1463-4 confirmed the grant, "considering the great and important buildings which the Prior and Convent have in hand, as well for the repair of their Cathedral Church as of the Grange of Clonken

and others of their places situated in the Marches of Dublin, to the great resistance of the enemies of the King our sovereign lord." [Statute Rolls, Ireland, 1 to 12 Ed. IV (edited by H. F. Berry), pp. 238-241.]

It is unfortunate that what appears to have been one of the most interesting of the mediaeval deeds in the collection is not now forthcoming, and seems to have disappeared since the deeds were lodged in the Library of Trinity College. It was dated 1507, and is described in the short abstract of contents lodged with the deeds as a Letter of Fraternity from the Prior of the Friars Hermits of the Order of St. Augustine in Dublin, granting to John Stapoll and his wife a participation in the Masses, fasts, and vigils of the brotherhood throughout Ireland [no. 149 (146)]. Very little is known of the history of the Irish branch of this Order, and the missing deed would probably have contributed materially to our knowledge. A deed of 1379 gives the name of a Vicar of this same Order [no. 54 (54)]; and the same deed gives the latest contemporary reference to Stephen Derby, Prior of the Cathedral Church of the Holy Trinity, who seems to have brought about a literary revival in his Cathedral. It has been remarked that in the time of his immediate predecessors no literary work was done by the Cathedral clergy [Account Roll of the Priory of the Holy Trinity, Dublin (edited by James Mills), p. xxiv]. But for Prior Stephen Derby was prepared the beautiful illuminated Psalter, now in the Bodleian Library, which has been described as "the most elaborate extant work of Anglo-Norman art in Ireland"; and his long Priorate covers the period usually assigned to the *Liber Niger*, preserved in the Cathedral, and the *Martyrology* now in the Library of Trinity College, Dublin.

Two references are found in these deeds to a family who afterwards became famous, and who for centuries lived in St. John's parish—the family of Ussher. In 1516 a house in Fishamble Street was leased to Christopher Ussher, who was twice Mayor of Dublin [no. 151 (149)]; and eighty years later another house in the same street was leased to another Christopher Ussher, who is described as "*alias* Ulster King at Armes in Ireland" [no. 200 (197)]. This later Christopher was uncle to the great Archbishop James Ussher; and, in addition to being Ulster King at Arms, he was appointed, though not in Holy Orders, to be Archdeacon of Clogher. It was possibly from one of the two houses here referred to that there was taken the stone, bearing the arms of Ussher, which is now set in the wall of no. 3 Lord Edward Street, a few doors from the corner of Fishamble Street.

The only man of prominent position who appears in these deeds as a churchwarden of St. John's parish is Charles Colthorpe, Queen Elizabeth's Attorney-General in Ireland in 1594, and the lease in which his name

appears as one of the lessors is made to another State official, John Allen, Clerk of Her Majesty's Ordnance in Ireland [nos. 180 (177), 181(178)]. This lease is one of the few which bear a personal touch, for the lessee endorsed on his counterpart ten years later a deed of gift to "my welbeloved friend Maurice Smith, of Dublin," in trust for his daughter Alison Smith, whom John Allen describes as "my god-daughter."

The deeds go down to the year 1704, and among the later deeds will be found some interesting details of the rebuilding of St. John's Church in 1680 [no. 196 (123)], and of rates levied upon the parish for various civic purposes, such as for the repair of the highroad leading from Bloody Bridge to "Twatling Street," and for "turning an arch over the Brook there" [no. 199 (196)]. The last deed is a Dublin clockmaker's agreement for the repair of the Church clock [no. 203 (200)].

An Appendix on the subject of the seals still attached to these deeds has been kindly added to this paper by Mr. E. C. R. Armstrong, Member of the Academy.

CALENDAR.

THE DEEDS ARE ARRANGED AND NUMBERED IN CHRONOLOGICAL ORDER. THE NUMBER ENCLOSED IN BRACKETS SHOWS THE LIBRARY NUMBER CLEARLY MARKED UPON EACH DEED.

1 (1). William Cumin grants to Geoffry de St. Audoen all that land of his in Dublin which lies between the land which belonged to Almeric le Wude & that which belonged to Jordan the Smith, having a frontage of 27 feet, & extending in the same breadth from [] to the hall of the Mill of the Church of the Holy Trinity. Rent one pair of white gloves at Michaelmas or fourpence sterling annually to grantor or his heirs, whichever they prefer, & six shillings half-yearly at Easter & Michaelmas. The said Geoffry is bound to grantor or his heirs, when they come to Dublin, to provide hospitality for them & four horses without hindrance, & to give them at their departure one & a half "gronnoes" of corn & one & a half trusses of hay, at demand. Fine of six shillings for non-performance of contract.

Witnesses, Thomas le Corner, then Mayor, William de Flamstede & Ralph le Hore, then Provosts of Dublin, Robert Pollard, Ralph le Porter, Henry Buys, John de Bristoll, William fitz Roger, Querardus Copping, & many others. (circa 1231-2).

2 (2). Elena Suetman, widow, daughter of William Suetman, grants to Henry le Mareschal, citizen of Dublin, a plot of land in the parish of

St. Olave, city of Dublin, in length 32 feet from the land belonging to the convent of St. Mary near le Hoges to that which belonged to Philip de Ultonia, & in depth 21 feet from the street to the land which belonged to Alexander Burel. Rent, a rose on St. John the Baptist's day, and land-gable to the King, a sum of money having been paid in hand.

Witnesses, William de Bristoll, then Mayor of Dublin, Adam de Herford & Robert de Bre, then bailiffs, Robert de Wyleby, David de Callan, Walter Lumbard, Rabert Flint, Gilbert de Totington, Richard de Ponteys, Henry de Pon delarge, John de St. Brigid, Nicholas the Clerk, and many others.

Dublin, the Eve of St. Thomas the Apostle, 18 Ed. I (20th Dec., 1289).

3 (3). Thomas le Blound of Oxmantown (*villa Hostmannorum*) releases to William le Mercant of Dublin four shops in Oxmantown in the suburbs of Dublin opposite to St. Mighan's Church.

Dublin, St. Mark's Day, 23 Ed. I (25th April, 1295).

4 (4). Richard called "le Vineterer" & Robert de Yoaule (?), executors of the will of Richard formerly Inn-keeper of Henry le Mareschal, convey to the said Henry a tenement in the Street of the Fishers, Parish of St. Olave, Dublin, in breadth, facing the King's Way, 34 feet from the tenement of the Abbess & Convent "del Hoggis" on the east to the land which was Henry Baret's on the west & extending in length from the King's way on the north to the said land of Henry Baret on the south. The seals of the city of Dublin, of the executors & of the officialty of Dublin have been affixed.

Witnesses, John le Seriaunt, Mayor, Nicholas the Clerk, bailiff, William de Bristoll, Robert de Wyleby, Thomas de Covyntre, John le Decer, Roger de Assebourne, Geoffry de Morton, Edward Colet, Richard Laugles, Robert de Ruyton, Gilbert de Totyngton, Roger de Wynghame, Clerk, Robert Kemp & others.

Dublin, Eve of the Nativity of the B.V.M., 27 Ed. I (7th Sept. 1299).

5 (5). Thomas le Blound of Oxmantown grants to Roger de Notyngam, merchant, a piece of land in Oxmantown, bounded by the King's Lane on the east, the land of William le Seriaunt on the west, grantor's land on the south, & another King's Lane on the north, measuring 20 feet each way.

Witnesses, John le Seriaunt, Mayor, Nicholas the Clerk & Richard de St. Olave, bailiffs, Henry le Mareschall, Robert de Wyleby, Thomas de Covyntre, John le Decer, Thomas Colice, Geoffrey de Morton, Robert de Notyngam, Thomas de Slane, Edward Colet, William le Seriaunt, John Sampson, Roger de Lyndeseye, Robert Kemp & others.

Dublin, 1st April 29 Ed. I (1301).

6 (6). Thomas le Blound of Lekno, citizen of Dublin, grants to William de Bardefeld his land, with the buildings thereon both of wood & stone, in Oxmantown, in breadth 24 feet from the land that belonged to Robert de Bre on the south, to the land of Roger de Notyngnam on the north, & in length 33 feet from the King's Way on the east to the land of Reginald de Barndorff on the west.

Witnesses, John le Seriaunt, Mayor, Nicholas the Clerk & Richard de St. Olave, bailiffs, Henry le Mareschall, Robert de Wyleby, Thomas de Covyntre, John le Decer, Thomas Colice, Geoffrey de Morton, Robert de Notyngnam, Henry Fichet, Peter de Celario, Edward Colet, John Sampson, Robert Kemp & others.

Dublin, Friday before St. Mark's Day 29 Ed. I (21st April 1301).

7 (7). Henry le Blound, son & heir of Thomas le Blound of Lekno, grants to William de Berdefeld & Katrine his wife a piece of land with buildings of wood & stone in Oxmantown, in breadth 24 feet, in length 33 feet, granted to them by the said Thomas, as in his deed to them appeareth.

Witnesses, John le Seriaunt, Mayor, Nicholas the Clerk & Richard de St. Olave, bailiffs, Robert Kemp, clerk, & others.

Dublin, Sunday before St. Mark's Day 29 Ed. I (23rd April 1301).

8 (8). John de Capelis called le Boteler & Dyonisea his wife grant to William de Berdyffeld & Katrine his wife a piece of land in Oxmantown, in breadth 18 feet from grantors' land on the south to the land of William le Seriaunt on the north, & in length from the King's Way on the west to the land which belonged to Robert de Bree on the east.

Witnesses, John le Seriaunt, Mayor, Nicholas the Clerk & Richard de St. Olave, bailiffs, Henry le Mareschall, Robert de Wyleby, Thomas de Covyntre, John le Decer, Thomas Colice, Geoffrey de Morton, Henry Fichet, William le Seriaunt, John Sampson, Robert Kemp & others.

Dublin, Friday after St. Barnabas' Day 29 Ed. I (16th June 1301).

9 (9). Fine levied in the King's Court of Dublin on the quindene of St. John the Baptist's Day 29 Ed. I, before Simon de Ludgate, Master Thomas de Cheddeworth & Thomas de Snyterby, Justices of the Bench, wherein John le Boteler & Dionisia his wife release to Willlam de Berdefeld & Katrine his wife the land mentioned in no. 8 (8) above. (9th July 1301.)

10 (14). David Wodeward acknowledges the receipt from Thomas Galbery of £12 8s. 4d. in part payment for corn sold, the property of William Comyn, deceased.

Ballygriffin, Thursday after St. Mark's Day 30 Ed. I (26th Apr. 1302).

11 (11). Roger de Notyngham, merchant, grants to William de Berdefeld & Katrine his wife a plot of land in "Oustmanton," bounded by the King's Lane on the east, the land of William le Seriaunt on the west, grantor's messuage on the south & the King's Lane on the north, grantees having paid a sum of money.

Witnesses, John le Decer, mayor, Richard Laweles & Nicholas the Clerk, bailiffs, Henry le Mareschal, Robert de Willerby, Geoffrey de Morton, John le Seriaunt, Edward Colet, Thomas de Covyntre, William le Seriaunt, Thomas Coliz, Roger de Lindeseye, Henry Fichet, Richard Beanflour, Henry de Barndoff & others. Udated (*circa* 1302-3).

Endorsed, "Carta de Rogeri Coleman de Notyngham."

12 (13). Johanna de Mosthpoulyn, widow of Thomas le Blunt of Kyñsale, releases to William de Berdefeld & Katrine his wife a messuage in "Ostmantown."

Witnesses, Adam de Hohwode, Edward Colet, William Lemer (?), now present, John le Decer, Mayor, Richard Lawless & Nicholas the Clerk [bailiffs] & many others.

Monday after St. Hilary's Day 31 Ed. I (14th Jan. 1303).

13 (12). The above Johanna [see no. 12 (13)] releases to Roger de Notyngham a curtilage in Oxmantown, which came into her possession after her husband's death.

Witnesses, John le Decer, Mayor, Nicholas the Clerk & Richard Lawles, bailiffs, John le Seriaunt, Geoffrey de Morton, Robert de Notyngham, William le Seriaunt, Edward Colet, Robert Kemp, clerk, & others.

Dublin, Friday after the Octave of St. Hilary 31 Ed. I (25th Jan. 1303).

14 (10). Receipt from Richard le Blund of Arclo & David le Wodeward, executors of the will of William Comyn, to Thomas Galbarry, lord of Balygriffin, for £11 sterling, being part of £39 due for the tithes of the corn of Balygriffin.

Balgriffin, Morrow of SS. Simon & Jude's Day 31 Ed. I (29th Oct., 1303).

15 (15). William le Seriaunt, citizen of Dublin, grants to William de Berdefeld & Katrine his wife four shops & a plot of land 60 feet by 80 feet in Oxmantown, bounded on the west by the King's Way opposite St. Michan's Church, on the east and south by grantees' land, & on the north by the land formerly belonging to Robert de Bree.

Witnesses, Geoffrey de Morton, mayor, Edward Colet & John Cadewali, provosts, Henry le Mareschal, Robert de Wileby, Robert de Notyngham, William le Graunt, Henry Fichet, William de Velers, John Sampson, Henry

de Barneduff, Master John the Physician, Nicholas Norman, John de Killegh the Clerk & others. Undated.¹

16 (16). Fine levied in the King's Court at Dublin on the Octave of St. Mark 32 Ed. I, in the presence of Richard de Exeter, William de Deveneys, Thomas de Snyterby & John de Ponte, Justices of the Bench, wherein William le Seriaunt releases to William de Berdefeld & Katrine his wife the land mentioned in no. 15 (15) above. (2nd May, 1304).

17 (17). Another copy of no. 16 (16) above.

18 (18). Elena Bretonn, widow, daughter of Nicholas Page, grants to William de Berdefeld & Katrine his wife two shops & the plot of land called "le Gardyn" in Oxmantown, bounded on the north by the land of the said William, on the south by the land of William le Graunt, on the east by the Lane & on the west by the lands of John le Graunt, Hugh Laweless & the said William de Berdefeld.

Witnesses, John le Decer, Mayor, William le Deveneys & Robert Bagot, knights, John Woket & John de Castlecnok, bailiffs, Robert de Willeby, Geoffrey de Morton, John le Seriaunt, Thomas le Mareschal, Robert de Notingham, Edward Colett, William de Callan, John de Fyntham, William de Villers, Martin Fissacre, Richard Dannflour & many others.

Dublin, 8th Feb. 2 Ed. II (1309).

19 (19). Fine levied in the King's Court at Dublin on the Quindene of Michaelmas 3 Ed. II before Richard de Exeter, Hugh Canoun, William le Deveneys, Robert Bagot & William de Berdefeld, Justices of the Bench, wherein Elena Bretonn releases to William de Berdefeld & Caterine his wife the plot of land, measuring 28 feet by 26 feet, mentioned in no. 18 (18) above. (13th Oct., 1309.)

20 (20). }
 21 (21). } Other copies of no. 19 (19) above.
 22 (22). }

23 (24). Robert de Notyngham, citizen of Dublin, grants to John de Notyngham, his nephew, his land in Oxmantown bounded by the land of Edward Collet, the land of Matilda de Bree, the land of Richard Laweles & the Lane. Rent, twelve pence.

Witnesses, Richard Laweles, Mayor, William le Seriaunt & Hugh Selvester, bailiffs, John le Seriaunt, John le Decer, Thomas Colis & others. 10th Sept., 6 Ed. II (1312).

¹ Recited in no. 99 (97) below, where it is dated 31 Ed. I, i.e. 20th Nov. 1302—19th Nov. 1303. If this is correct, the date of the deed must be between 29th Sept. 1303 & 19th Nov. 1303, as a different Mayor and Provosts appear in office up to the earlier date.

24 (23). Henry le Mareschal, son & heir of Thomas le Mareschal, citizen of Dublin, releases to William de Berdefeld & Caterine his wife all his right in a tenement built in Oxmantown, which he had from John le Boteler, bounded on the east and north by the land of the said William, on the west by the King's Way & on the south by the tenement of Hugh Laweles.

Witnesses, Richard Laweles, Mayor, Nicholas Golding & Thomas Hunt, then [bailiffs], Edward Colet, William Vileres, John le Hore, Nicholas Normaund, Richard Damflur, John the Clerk & others.

Dublin, Saturday, being the vigil of the Annunciation of the B.V.M. 6 Ed. II 24th March, 1313).

25 (25). Henry le Whyte, son & heir of Thomas le Whyte of "Oustmanton," releases to William de Berdefeld and Katerine his wife his right in the land & tenements which he held from the said William & Katerine in Oxmantown.

Witnesses, Richard Laweles, Mayor, Richard de St. Olave & Robert de Menes, bailiffs, Robert de Wileby, John Decer, John Seriaunt, William Vylers, Richard Dannflur, Nicholas Normand & others.

Dublin, Eve of St. Martin 7 Ed. II (10th Nov., 1313).

26 (26). John de Notyngham, citizen of Dublin, grants to Richard Macy a plot of land in Oxmantown bounded on the south by the land of Henry Colet, on the north by the land of Matilda de Bree, on the east by the land of Richard Laweles & on the west by the Lane, grantee having paid a certain sum of money in hand.

Witnesses, Robert de Notyngham, Mayor, John de Castlecnok & Adam the Clerk, bailiffs, John le Seriaunt, Edward Colet, William de Vileres, John le Hore, Martin Fissaere, Richard Damflur, John the Clerk & others.

Dublin, Sunday before the Assumption of the B.V.M. 9 Ed. II (17th Aug., 1315).

27 (27). Richard Macy grants to William de Berdefeld & Caterine his wife the land mentioned in No. 26 (26) above, a certain sum of money having been paid in hand.

Witnesses as in No. 26 (26) above.

Dublin, Tuesday after the Assumption of the B.V.M., 9 Ed. II (19th Aug. 1315).

28 (28). Richard de St. Olave, citizen of Dublin, grants to Robert, his son, and Nicholas de Swerdes a certain hall in the Street of the Fishers, Parish of St. Olave, Dublin, which he had from Thomas le Mareschal.

Witnesses, Richard Laweles, mayor, John Mowat & Robert de Menes,

bailiffs, Thomas le Mareschal, Nicholas Golding, Thomas Bolace, Richard the Goldsmith & many others.

Dublin, Wednesday, being the morrow of St. Hilary's Day, 9 Ed. II (14th Jan., 1316).

29 (29). Robert, son of Richard de St. Olave, & Nicholas Petyt lease to Sir Thomas de Lynham, chaplain, William Fatling & Elena his wife a tenement with its buildings in the Street of the Fishers, Parish of St. Olave, Dublin, bounded on the south by the tenement of William Baret, on the north by the tenement of the convent of Hogges, on the west by the said street & on the east by the path which leads to the garden of the said Nicholas. Term, 15 years from Easter following. Rent, 4 marks sterling. Premises to be kept in repair. Fine of 60 shillings for non-performance of contract.

Witnesses, Robert de Notyngnam, mayor, Robert de Meones & Robert le Woder, bailiffs, John le Decer, William Douce, Robert de Wylby, Thomas le Marshall, Ralph de Wylby & others.

Sunday after St. Matthias' Day, 10 Ed. II (27th Feb., 1317).

30 (30). Susanna, widow of Nicholas de Swerdes, leases to Thomas de Marleberge, for a sum of money paid in hand, a shop which belonged to the said Nicholas, lying in the Street of the Fishers, Parish of St. Olave, Dublin, between the tenement of the convent "del Hogges" & that of John de Grauntsete. Term, 10 years from Easter following. Rent, two shillings silver.

Dublin, morrow of Christmas, 12 Ed. II (26th Dec., 1318).

31 (31). William, son & heir of Richard de St. Olave, releases to Thomas Smothe his holdings in the Street of the Fishers, in the parishes of St. John of Bothestrete & St. Olave, Dublin.

Witnesses. John le Decer, mayor, Stephen de Mora & Giles de Baldeswell, bailiffs, William Douce, Robert Tanner, Philip Cradok, Ralph Same, William Baret & many others.

Dublin, Monday after the Purification of the B.V.M., 15 Ed. II (8th Feb., 1322).

32 (33). Richard Petyt, son of Clarice Petyt, releases to Thomas Smothe a messuage in the Street of the Fishers, Parish of St. Olave, Dublin, formerly belonging to Nicholas Petyt & situate next to the tenement which Walter Curteys holds from the Abbess & Convent "del Hogges" on the north.

Witnesses, Robert le Tanner, mayor, John de Meones & Robert Wodefoul,

bailiffs, William Baret. Nicholas Bysshop, James de Willeby, Thomas Bolaz, Richard the Goldsmith & many others.

Dublin, Martinmas, 20 Ed. II (11th Nov. 1326).

33 (32). (*Only portion remains.*) William de Berdefeld & Katrine his wife grant to Sir William Cumyn & Johanna his wife "all our aforesaid tenements" in Oxmantown.

Witnesses, Nicholas Fastolf, Justice of the Bench of Dublin, Robert Tanner, mayor, Robert Wodeffoul & John de Meones, bailiffs, John le Decer & John le Seriaunt, citizens, & many others.

Undated.¹

34 (34). (*Only portion remains.*) Richard Houth, chaplain, grants to Thomas, son of Thomas Smothe, all those tenements which grantor holds in the Street of the Fishers, Dublin.

Witnesses, John Seriaunt, William Mareshale, John Callan [].
[] the Bishop [] Ed. III.

35 (35). Robert Talbot de Kilkeny grants to Thomas, son of William Comyn, knight, a messuage with its appurtenances in Thomastown, near Kilkenny, lying between the King's Way & the wall that formerly belonged to Nicholas Duntun, & between the messuage of Richard Sorreys & the messuage that formerly belonged to Thomas fitzHue, in exchange for a cellar under grantor's house in which Alan de London lives, & an annual rent of 12 pence.

Kilkeny, 10th Feb., 2 Ed. III (1327).

36 (36). John, son of William le Boteler, formerly citizen of Dublin, grants to Robert Rowe & Alice, his wife, grantor's mother, the third part of his tenements in Dublin & its suburbs, which came to him at his father's death.

Dublin, 24th May, 1329.

37 (37). William, son & heir of Richard de St. Olave, releases to Thomas Smothe a tenement with all its buildings in Fishamble Street, Dublin, bounded on the north by William Baret's land, & on the south by the land formerly belonging to Hugh le Woder, on which Richard the Goldsmith & Johanna his wife now dwell.

Witnesses, Philip Cradok, Mayor, Richard de Swerdes & Robert the Clerk, bailiffs, William Douce, Robert le Tanner, Geoffrey Crompe, Giles de

¹ Recited in No. 99(97) below, where it is dated 20 Ed. II, *i.e.*, 8th July, 1326-20th Jan., 1327. The deed may, therefore, be dated 29th Sept., 1326-20th Jan., 1327, as there were a different mayor and bailiffs up to the earlier date.

Baldeswell, Thomas Bolace, William Baret, James de Willeby & many others.

Dublin, Monday after the Purification of the B.V.M., 4 Ed. III (5th Feb., 1330).

38 (38). William, son of Richard de St. Olave, grants to Thomas Smothe, clerk, & Alice his wife a tenement in Fishamble Street, Dublin, bounded on the north by the land of the Abbess & Convent "del Hogges," on the south by William Baret's land, on the west by the said street & on the east by the land of the said Thomas.

Witnesses, John de Meones, Mayor, William le Waleys & John Callan, bailiffs, William Douce, Philip Cradok, William le Mareschal, Robert le Tanner, Geoffrey Crompt, Giles de Baldeswelle, William Baret & many others.

Dublin, Monday after the Feast of St. Keyvin the Abbot, 6 Ed. III (8th June, 1332).

39 (39). Thomas le Mareschal, son & heir of Henry le Mareschal of "Tavernstrete," releases to grantees in No. 38 (38) above the tenement mentioned therein.

Witnesses as in no. 38 (38) above.

Dublin, Monday after the Translation of St. Thomas the Martyr, 6 Ed. III (13th June, 1332).

40 (40). William, rector of the Church of Rathmor, grants to William Comyn & Margaret his wife all his tenements in Oxmantown.

Witnesses, Philip Cradok, mayor, Robert Hony & Roger Grauncourt, bailiffs, William Douce, John Seriaunt, John de Meones, citizens, & many others.

Clonmor, Friday before the Feast of St. Margaret the Virgin, 11 Ed. III (17th July, 1337).

41 (41). Sir Richard Baas & Sir Richard de Houthe, chaplains, grant to Thomas Smothe, clerk, & Alice his wife a tenement in Fishamble Street, Dublin, bounded on the east, south & north by the tenement of the said Thomas formerly belonging to William de St. Olave, & on the west by the King's Way. A certain part of the said tenement, 20 feet broad, on the south side, is in the parish of St. John of Bothestrete, & the remainder in the parish of St. Olave.

Witnesses, John Seriaunt, mayor, William Walsh & John Callan, bailiffs, William Mareschal, Henry Kemp, Richard Manchester, Robert Wodesoule, John de Kyrketon, John de Pencoyt, William de Allesleye, John Leycastre the clerk and many others.

Dublin, Monday after St. Patrick's Day, 19 Ed. III (21st March, 1345).

42 (42). Agreement whereby Thomas Smothe, clerk, grants to William Wyse & Johanna his wife, formerly wife of William de St. Olave, seven shillings annual rent out of a messuage in Fishamble Street, Parish of St. Olave, Dublin, which formerly belonged to William de St. Olave; while the said William Wyse & Johanna resign all their claims about her dowry & about the lands formerly belonging to William de St. Olave.

Dublin, Friday, being the Feast of St. Columba the Abbot, 20 Ed. III (9th June, 1346).

43 (44). William, son of William Comyn, knight, appoints Henry Russell his attorney to place Theobald Comyn his brother in possession of all the lands which the said William holds in "Oustmanton."

Dublin, 15th March, 23 Ed III (1349).

44 (43). Johanna, daughter of John Stakepoll & formerly wife of William de St. Olave, in her viduity releases to Thomas, son of Thomas Smothe, all the lands held by her in dower within the liberty of the City of Dublin. "And because her seal is unknown to many people, the seal of the provostship of the city of Dublin has been affixed."

Witnesses, Kenewrik Sherman, mayor, John Callan & John de Dert, bailiffs, Geoffrey Crompe, John Seriaunt, Adam Lovestock, John Graumpe, Robert Bornell, William Welles, John Leycastre the clerk & others.

Dublin, Monday after St. Bartholomew's Day, 23 Ed. III (31st Aug., 1349).

45 (45). License in mortmain from King Edward III to Richard Wright, chaplain, who has payed one mark, to assign to the parson & parishioners of the Church of St. John the Evangelist of "Bothestrete," Dublin, for the enlargement of the said church & for a certain chapel to be newly made in honour of the Blessed Virgin Mary, a messuage in St. John's Parish, bounded on the east by "Fishamelstrete," on the west and north by the land of Kenewric Sherman, and on the south by the said church, which messuage the said Richard holds from the Crown in chief in free burgage of the City of Dublin on service of threepence halfpenny annual rent which is called "Langabil," as appears on the inquisition of Roger Darcy, escheator in Ireland, under the seal of the Chancellor of Ireland.

Winchester, 1st Sept. 24 Ed. III (1350).

46 (46a). Simon Coterel, "sadeler," grants to Henry Stacpoll, "taillour," his land in St. Andrew's Parish outside the walls of the City of Dublin, lying between the land of the House of St. Stephen & the Way which leads to the King's Mill, & extending from the former street to the end of the said land of St. Stephen, & from outside the cemetery of St. Andrew's to

the Way which goes towards the old pond. Rent, twelve pence silver half-yearly.

Witnesses, Robert de Moenes, mayor, John Dert & Peter Morville, bailiffs, John Seriaunt, John Taillour, John Lyneger, John Latoner & many others.

Dublin, Thursday in the octave of the Feast of SS. Philip & James, 26 Ed. III (3rd May, 1352).

47 (46*b*). Meyler (?), son of Richard de Burgo, acknowledges the receipt from Sir William Comyn, knight, of twenty pounds of silver []. Tuesday after the Purification of the B.V.M., 28 Ed. III (4th Feb., 1354).

48 (47). Sir William Comyn, knight, & Margaret his wife lease to John Heyward, citizen of Dublin, a plot of land in "Oustmanton," bounded on the north by the King's Way, on the south by grantors' stone house, on the west by the land of Sir Elias de Assebourne & other neighbouring lands & on the east by grantors' land, being seven times 28 feet in length from north to south. & 20 feet in breadth; with another collateral plot bounded on all sides by grantors' land, being 60 feet in length from east to west, & 50 feet in breadth. Term, 50 years from the Feast of SS. Philip & James next following. Rent, six shillings silver.

Witnesses, John Seriaunt, mayor, Peter Barfot & William de Welles, bailiffs, Geoffrey Crump, John de Baath, Robert Burnell, Richard Dodde, John Kendwrek, Richard Colman, clerk, Geoffrey de Leycestre, John de Topsham & others.

Dublin, 15th Feb., 30 Ed. III (1356).

49 (48). Sir William Comyn, knight, leases to Matilda Huse, a dwelling house in "Oxmanton" on the south side of St. Michan's church. Term, 40 years. Rent, ten shillings.

Dublin, Monday, being St. John the Baptist's Day, 38 Ed. III (25th June, 1364).

50 (49). John, son and heir of Heury Stakeboll, formerly citizen of Dublin, grants to Elias Coterell, clerk, citizen of Dublin, a tenement in the street "de Tengmouth" outside the gate of St. Mary del Dam in the Parish of St. Andrew, bounded as in No. 46 (46*a*) above.

Witnesses, Sir Symon Kylmore, chaplain, John Latouner, John de London, Roger Gyffard, Sir Adam fitz Water, chaplain, John Fyshwyke, tailor, John Sexteyn, John Barbour, William Possewyk, Ralph Doyt, tailor, Reginald Sadeler, Thomas Whyte, clerk, & many others.

Dublin, 11th July, 38 Ed. III (1364).

51 (50). Release of No. 50 (49) above. "And because his seal is unknown to many, the seal of the provostship of Dublin has been affixed."

Dublin, 12th July, 38 Ed. III (1364).

52 (52). William Bowyer & Scolastica his wife release to Nicholas Kenyrgan & Christiana his wife a messuage in the Street of the Fishers bounded on the north by the house of John Boke, formerly belonging to Walter Grauncest, on the south by the house of William Bowyer, & by the said street & the garden of Nicholas Meonys.

Dublin, 9th May, 49 Ed. III (1375).

53 (51). Stephen Osbern releases to Nicholas Kenyrgan & Christiana his wife a messuage in the Street of the Fishers, Parish of St. John of "Bovestret," Dublin, bounded as in no. 52 (52) above.

Dublin, 10th May, 49 Ed. III (1375).

54 (54). Brother Stephen Derby, prior of the Cathedral Church of the Holy Trinity, Brother Adam Payne, subprior of the same, Brother [Nicholas Bode]nham, Vicar of the Friars Hermits, Order of St. Augustine in Ireland, & Nicholas Serjeant, executors of the will of Thomas, son of Thomas Smothe, & John Fitz William & Christiana Pembrok his wife, co-executrix of the said will, convey to Roger Bekeford a messuage & seven shops in the Street of the Fishers, parish of St. Olave, Dublin, bounded on the west by the said street, on the east by the land of William Blakeney & the Nuns' land of the city of Dublin, on the south by the house of William Blakeney & on the north by the said Nuns' land.

Dublin, 14th May, 2 Richard II (1379).

55 (53). Richard, son of Adam Clerk, kinsman & heir of Thomas, [son of Thomas Smothe], releases to Roger Bekeford a messuage & seven shops in [the Street of the Fishers], parish of St. Olave, Dublin, which Thomas, son of Thomas [Smothe had received from Richard Howth, chaplain, &] William Wellis, bounded as in no. 54 (54) above.

Dublin, 16th May, 2 Richard II (1379).

56 (55). Elias Coterell, clerk, grants to Henry Bron, citizen of Dublin, his tenement in "Tengmouth" Street, outside the Gate of St. Mary del Dam, in the parish of St. Andrew, bounded on the east by St. Stephen's land, on the west by the highway leading to the King's Mill, & by the cemetery of St. Andrews and the said highway.

Witnesses, John Byrmyngham, mayor of Dublin, Richard Cruys & Robert Piers, bailiffs, Edmund Berle, Richard Chamberleyn, Wolfram Bron, John Wellis & many others.

Dublin, 15th Oct., 11 Richard II (1387).

57 (56). Release of no. 56 (55) above.

Dublin, [] Oct., 11 Richard II (1387).

58 (57). Elias Coterell, clerk, grants to Henry [Bron] twenty [] of all his lands and tenements within the liberty of the city of Dublin, & said Henry agrees that Juliana [] shall grant to [] Stakeboll, wife of the said Elias, two messuages [] outside the Gate of St. Mary del Damme.

Monday after the Feast of St. Scolastica the virgin, 11 Richard II (17th Feb., 1388).

59 (58). *Illegible.*

60 (59). John Blakeney grants to William Hattoun, merchant and citizen of Dublin, a messuage in the Street of the Fishers, parish of St. John of "Boethstret," Dublin, which formerly belonged to William Blakeney.

Dublin, 8th July, 19 Richard II (1395).

61 (60). *Illegible.*

62 (61). Philip Kendyrgan grants to his son John Kendyrgan & Johanna Randolff, wife of the said John, a messuage in the Street of the Fishers, parish of St. John of "Bovestret," Dublin, bounded as in no. 53 (51) above, except that on the south it is bounded by "my house that I now inhabit."

4th Feb. 22 Richard II (1399).

63 (62). Release of no. 62 (61) above. Same date.

64 (64). King Henry IV grants to John Lytill, son of Thomas Lytill, that he may freely enjoy all his lands, possessions & dignities in Ireland.

Witness, Thomas de Lancaster, Seneschal of England, Lieutenant in Ireland.

19th January 4 Hen. IV (1403).

65 (66). Robert Burnell acknowledges, in the name of Marion Burnell, late wife of John Comyn, the receipt of ten pounds of silver from John Lytill, being the rent of Ballygriffin for Easter term 4 Hen. IV.

28th May 4 Hen. IV (1403).

66 (63). Richard Palmer, merchant & citizen of Dublin, grants to Richard Bernard, carpenter, a plot of land in the Castle Lane, Dublin, near the Castle ditch, measuring in front 68 feet, and in rear 26 feet, bounded by the High Street & the land which formerly John Passavaunt held from the county of the city; & also another plot in the said street bounded by the former plot, the land formerly belonging to William Bowyer & the land of the house of All Saints; which plots formerly belonged to John Hynceley.

16th June 4 Hen. IV (1403).

67 (65). William Hattoun, citizen of Dublin, releases to John Herbert, James Fitzwilliam & Walter de Houthe a messuage in the Street of the Fishers, Dublin, which formerly belonged to William Blakeney.

28th Oct. 6 Hen. IV (1404).

68 (69). James Yonge, clerk, notary public, certifies that on the 16th March, 1405, in the hall of the inn of John Gardener, citizen of Dublin, in Cow Lane, Parish of St. Audoen, John Lytill, citizen, stated that he had been arrested at the suit of Robert Burnell & lodged in prison because he refused to sign and seal certain writings & documents at the will of the said Robert, & for no other cause.

Witnesses present, Thomas Dodde & John Gardener, citizens.

69 (67). John Jordan, notary public, certifies that in his presence on the 28th July, 1405, in the consistorial court, St. Patrick's Cathedral, before Master Thomas Waffyr, official of the city of Dublin, Richard Hanyn sued Margaret Toppe, widow, for a debt of four marks and forty pence. Judgment was given for the full amount, and defendant appealed to the Holy See. It was appointed that the appeal should be heard on the 8th August before Master John Fox, Bachelor of Laws, of the diocese of Limerick.

Witnesses present, John Hotham, chaplain, & Thomas Bany of the diocese of Dublin.

70 (68). Fine levied in the King's Court, Dublin, on Michaelmas Day 6 Hen. IV. before John Fitz Adam, John Bateman & Thomas Seys, Justices of the King's Bench, wherein Nicholas Haytale & Alianora his wife grant to Simon Dodenale, merchant, & Nicholas Naungle, chaplain, a messuage and three gardens in "Oxmaneston" in the suburbs of Dublin.

(29th Sept., 1405).

71 (70). Robert Burnell releases to John Lytill all his actions & transgressions against him "from the beginning of the world to the date of this deed."

4th Oct. 7 Hen. IV (1405).

72 (75). John Streche, chaplain, grants to John Walsch & Walter Porter, chaplains, six shops & the reversion of two others in the Street of the Fishers, Dublin, bounded by the house of the Abbess of Hogges & the shops formerly belonging to William Blakeney. The property formerly belonged to Roger Bekeford.

6th April 7 Hen. IV (1406).

73 (76). Release of no. 72 (75) above.

[] April 7 Hen. IV (1406).

74 (74). John Herbert, James Fitz William & Walter de Howthe appoint Robert Burnell their attorney to give John Walsch & Walter Porter, chaplains, possession of two messuages and four shops in the Street of the Fishers, Dublin, bounded by the shops formerly belonging to Roger Bekeford & Patrick Burnell.

6th April 7 Hen. IV (1406).

75 (71). Fine levied in the King's Court, Dublin, on Easter Day 7 Hen. IV, before the Justices mentioned in no. 70 (68) above, wherein William Hatton & Alice his wife grant to John Walsch & Walter Porter, chaplains, the property mentioned in no. 74 (74) above.

(11th April, 1406.)

76 (72). John Herbert, James Fitz William & Walter de H[owthe] confirm no. 75 (71) above.

[] April 7 Hen. IV (1406).

77 (73). Release of no. 74 (74) above.

20th April 7 Hen. IV (1406).

78 (77). John, son & heir of William Blakeney, releases to John Walsch & Walter Porter, chaplains, two messuages & twelve shops in the Street of the Fishers, Dublin, bounded by the house of the Abbess of Hogges & the house of Patrick Burnell. "And because his seal is unknown to many people, the seal of the provostship of Dublin has been affixed."

20th April 7 Hen. IV (1406).

79 (78). Thomas Dunge releases to John Randolff, clerk, a message in the Street of the Fishers.

Tuesday before the Feast of SS. Simon & Jude 9 Hen. IV (25th Oct. 1407).

80 (79). Walter Porter, chaplain, grants to John Yonge, John Stafford & John Ingoll, chaplains, two messuages & ten shops, with reversion of two other shops, which Katherine Bellewe, formerly wife of Roger Bekeford, held in dower, situate in the Street of the Fishers, Dublin, & bounded on the south by the house of Patrick Burnell & on the north by the house of the Abbess of Hogges.

24th Nov. 10 Hen. IV (1408).

81 (80). (*Portion only remains.*) Walter Porter appoints [] his attorney to give possession of the property mentioned in no. 80 (79) above.

[] 10 Hen. IV (1408).

82 (81). Release of no. 80 (79) above.

1st Dec. 10 Hen. IV (1408).

83 (82). Katerine Bellewe, formerly wife of Roger Bekeford, releases no. 80 (79) above, the property being here stated to be in the parish of St. Olave.

6th Jan. 12 Hen. IV (1409).

84 (83). John Yonge, chaplain, releases to John Stafford & John Ingoll, chaplains, two messuages & thirteen shops, situate and bounded as in no. 80 (79) above.

1st Sept. 12 Hen. IV (1409).

85 (84). John Yonge, clerk, notary public, certifies that on the 12th Nov. 1411 in the Lower Refectory of the Friars Preachers, Dublin, Simon Doddenale, merchant, who had agreed to enfeoff John Lytill, citizen, & Alianora Comyn his wife, or any others whom they might choose, with three houses and three gardens in "Oxmaneston," swore that he had not charged or bound the property.

Witnesses present, Stephen Tailor & Stephen Calfe, citizens.

86 (85). James [Yonge], clerk, notary public, certifies that on the 28th Nov. 1411 in the mansion house of Simon Doddenale, merchant, on "the Key" of Dublin, the said Simon having granted to John Stafford & John Ingoll, chaplains, three houses and three gardens in "Oxmaneston," Johanna, wife of the said Simon, swore that she had no claim to dower upon the said property.

Witness present, Richard Bone, formerly bailiff.

87 (92). Simon Doddenale, merchant, grants to John Stafford and John Ingoll, chaplains, three messuages and three gardens in "Oxmaneston." 29th Nov. 13 Hen. IV (1411).

88 (93). Grantor in no. 87 (92) above appoints James Yonge, citizen, his attorney to give possession of the property mentioned therein. Same date.

89 (94). Release of no. 87 (92) above.

1st Dec. 13 Hen. IV (1411).

90 (95). William Haroll of "Rathfernane" & Geoffrey Haroll bind themselves in forty shillings of silver to John Lytill, citizen, to be paid at Easter next following.

24th Jan. 14 Hen. IV (1413).

91 (90). John Ingoll, chaplain, grants to John Yonge, Roger Flemyng & Walter Northampton, chaplains, two houses and twelve shops in the Street of the Fishers, Dublin, bounded as in no. 80 (79) above; also the property mentioned in no. 87 (92) above.

4th Nov. 1 Hen. V (1413).

92 (91). Release of no. 91 (90) above.

6th Nov. 1 Hen. V (1413).

93 (88). Grantees in no. 91 (90) above lease to John Lytill, citizen, all the property mentioned therein, to hold at pleasure. Rent, two shillings *per annum*.

Monday before the feast of St. Nicholas the Bishop 1 Hen. V (29th Nov. 1413).

94 (86). John Seriaunt, John Yngoll, John Oge & John Yonge, chaplains, lease to Philip Hamound a house in St. Francis Street, suburbs of Dublin, bounded on the south by the house of Richard Herbard & and on the north by the house of John Drake, for the lives of John Morvile, Nicholas Hoder, John Cusake, Robert Cusake, Thomas Parker, James Blakeney & Robert Densdale, or for thirty years, whichever is the longer term. Rent, twelve pence *per annum*. Covenant for repair.

Monday next after Christmas 1 Hen. V (27th Dec. 1413).

95 (87). Another copy of no. 94 (86) above.

96 (96). Another copy of no. 94 (86) above.

97 (89). John Yonge, chaplain, releases to the other two lessors in no. 93 (88) above all the property mentioned therein.

10th Feb. 1 Hen. V (1414).

98 (99). Nicholas Nangle, chaplain, releases to Roger Flemyng and Walter Northampton, chaplains, three houses and three gardens in "Oxmantown" "& because my seal is unknown to many, the seal of the provostship of Dublin is affixed."

12th Oct. 3 Hen. V (1415).

99 (97). Inquisition taken before Henry Stanyhurste, deputy of Ralph Standysh, Escheator of the King in Ireland, at Lucan on Monday after the Feast of the Exaltation of the Holy Cross 3 Hen. V (15 Sept. 1415), by John Ashe, Robert Welle, Simon Rowe, Thomas Herte, John Reynolde, jun., William Laweles, John White, John Water, John Devenysch, Henry Carryk, John Reynolde, sen., & William Swayne. Finds that Katerine Bellewe, formerly wife of Roger Bekeford, tenant in chief of the Crown, held in dower on the day she died, rightly & as heir to the said Roger, a tenement in "le fyshamols," Dublin, worth five shillings a year.

The following deeds are recited:—petition of Roger Flemyng & Walter Northampton, chaplains, for an inquisition to be held (*in French*); orders for inquisition to be held: statement of case; the above deeds nos. 6 (6), 8 (8), 9 (9), 15 (15) (here dated 20 Ed I), 16 (16), 18 (18), 19 (19), 24 (23), 32 (33)

(here dated 20 Ed. II), 40 (40) & 49 (48). A further inquisition held by same before same in Dublin on Monday after the feast of the Apostles Simon & Jude 13 Hen. V (3rd Nov. 1415) found that the said Katerine Bellewe held for life the garden of Dromnagh from the said Roger in chief, for military service & as tenant in dower, together with two houses in "le fyshamoles," Dublin; all which she held from the Crown in chief per fee farm of 200 marks per year.

100 (98). William Brayne, citizen, binds himself to John Lytill, citizen, in twenty pounds silver.

6th Nov. 3 Hen. V (1415).

101 (100). John, son & heir of Thomas Seriaunt, Baron of "Castrocnok," grants to Philip Hamound, butcher, a house in St. Francis Street in the suburbs of Dublin, bounded on the east by the said street, on the west by James Passavaunt's land, on the north by John Drake's land & on the south by Richard Herebert's land. Rent, two shillings yearly.

9th Aug. 5 Hen V (1417).

102 (101). Lessor in no. 101 (100) above appoints James Yonge, citizen, his attorney to give possession of the property mentioned therein.

9th Aug. 5 Hen. V (1417).

103 (102). John Ingoll and John Oge, chaplains, recite no. 101 (100) above, and state that they have confirmed and ratified it.

14th Aug. 5 Hen. V (1417).

104 (103). John, son & heir of Philip Hamound, grants to John Gardyner, citizen, the reversion of a house in St. Francis Street, in the suburbs of Dublin, bounded on the east by the said street, on the west by the "pond" formerly belonging to [], on the south by Richard Herbert's land & on the north by William Arthur's land.

10th Sept. [].

105 (104). John *Madock*, Bishop of Kildare, appoints John Lytill, citizen, in the Market of the Fishers, his proctor or attorney to receive the rents of his lands in the parish of St. Michael, Dublin. "Given in our manor of Aginway (?)."

20th July, 1418.

106 (105). John Randolff, rector of the Church of Galtrym, in diocese of Meath, appoints John Spenge, chaplain, his attorney to take seizin of a hall in the Street of the Fishers, parish of St. John of "Bowstret," granted to him by Master John Randolff, rector of Stacallen, in the diocese of Meath.

[] Nov. 7 Hen. V (1419).

107 (106*a*). Release of no. 106 (105) above. States that John Randolff, rector of Stacallen, received the hall from Philip Kendyrgane.

16th Nov. 7 Hen. V (1419).

108 (106*b*). John, son & heir of Robert Burnell, releases to John Lytill all his personal actions [] “from the beginning of the world to the date of this deed.”

20th March 2 Hen. VI (1424).

109 (107). John Drake, sen., citizen, releases to William Arthur, “bowcher,” four shops in St. Francis Street, in the suburbs of Dublin, bounded on the south by Philip Hamound’s land, on the north by lessor’s land, on the east by the said street, and on the west by lessee’s land.

24th April 3 Hen. VI (1425).

110 (108). The Abbot and Convent of the House of St. Thomas the Martyr near Dublin agree with Roger Flemyng and Walter Northampton, chaplains, and John Lytill, citizen, tenant to the said Roger and Walter, to release all action against them for the arrears of an annual rent of three shillings, arising out of five shops in the Street of the Fishers, in the parish of St. Olave, Dublin, bounded on the north by the holding of the said Roger, Walter and John, and on the south by the holding of the said Roger and Walter which said John inhabits, and which is in the parish of St. John of “Bowstret.” They assign their right in said property to said Roger, Walter and John for an annual rent of two shillings, on condition that after the death of the said John the property shall be subject to an annual charge of three shillings, to be paid to said Abbot and Convent for ever.

12th March 4 Hen. VI (1426).

111 (109). (*Fragment only remains.*) John Gardener grants to [] a holding in St. Francis Street, in the suburbs of Dublin, bounded on the west by the [] of [] Passavaunt, [].

[] Feb. 7 Henry VI (1429).

112 (110). “Inventory of the goods of John Lytill, formerly citizen of Dublin, & of Margery his wife, made by said John himself, & of apparatus found on the 30th day of March, 1434.”

The household goods are valued at £3 15*s.* 4*d.*, & include a brass pot, three brass bells, a brass platter, two pieces of silver, a screen, three napkins, four cushions, six shells, four candlesticks, and two dishes. Other property is valued at £3 7*s.* 0*d.*, & the said Margery has property valued at £1 6*s.* 8*d.* There are also outstanding debts of the value of £1 17*s.* 7*d.* Total £10 6*s.* 7*d.*

The debts owed by said John and Margery amount to £2 2s. 6d., & include "head rent owed, 22d.," "to the Church of the Holy Trinity, 4s.," "to the Fraternity of St. John the Baptist, 10s.," "for head rent of a holding in 'Oustmanton,' 2s. 6d.," "to Christopher Preston for his garden, 4s. 6d."

Follows the last Will and Testament of the said John Lytill:—he leaves his soul to God, Blessed Mary and All Saints, and his body to be buried in the Chapel of the Blessed Mary in the Church of St. John the Evangelist, Dublin, near the body of Alianora Comyn, his former wife. He leaves to John, his illegitimate son, his silver-covered girdle, his platter with a tripod, and a bell. To Sir William fitz William, chaplain, he leaves a gown, the bed on which he lies, & his deeds (*cartas*) to remain and be preserved among the deeds of the said chapel. To Thomas Elys he leaves a baketon, a gown, a sword, a bell, a dagger, a bow & arrows, & a brass pot. He leaves his share of the linen to the altars of the said church, & the rest of his goods to his executors to be disposed of for the welfare of his soul. His lands & tenements which Sir Walter Northampton holds in the parishes of St. John the Evangelist, St. Olave, & St. Michan are to be given in fee simple to the said Sir William, & to two other chaplains whom the said Sir William shall choose, to be disposed of as follows:—The lands and tenements in the parish of St. Michan are to be handed over in fee simple to John Eytall, son of the said Alianora, if he be living, on payment by him to the executors of twenty pounds, subject to an annual charge of forty shillings to provide a perpetual chantry of one priest in the said chapel and choir of St. John's Church for the souls of the said John Lytill & Alianora, their parents & benefactors; the said Sir William to be the first holder of the chantry, & to appoint his successor. If the said John Eytall be dead, or shall refuse to pay the twenty pounds, then the forty shillings is to be made a charge upon the estate, and the balance of the income is to be used for the repair of the said tenements. Similar arrangements are made for the lands & tenements in St. John's Parish, & for those in St. Olave's Parish. The said Margery is to have testator's house for her life, & the garden called "Cowe Lane" on the east of the house, & two shops on the north of the house. The house is to revert to John, testator's son. The said Sir William is to have twenty shillings for his trouble as executor, & a like sum is left to James Yonge.

Witnesses, Thomas Laweless, canon of the church of "Lymeric." James Power, William Oswald, clerk, the said Thomas Elys, & many other citizens of Dublin. Day and year aforesaid.

Probate granted in the presence of Robert Dyke, Archdeacon of Dublin, in St. Patrick's Cathedral, Dublin, 5th Nov. 1434.

113 (111). John Sprynche & William fitz William, chaplains, grant to William fitz William, citizen of Dublin, all the houses, lands, & tenements which the said chaplains lately received by the gift of Walter Northampton, chaplain, in the parishes of St. Olave and St. Michan. Term, twenty years. Rent, four marks eight shillings silver yearly, & the head rent due to the chief lord of the fee. Covenant for repair. Premises to be returned in good order at end of term, the mischance of fire excepted.

29th Nov. 13 Hen. VI (1434).

114 (112). Counterpart of No. 113 (111) above.

115 (113). John, son & heir of Richard Bernard, carpenter, appoints David Blake, citizen of Dublin, his attorney to give John Birt, mariner, possession of a house & plot of land, said plot being composed of the two plots mentioned in No. 66 (63) above.

18th March 19 Hen. VI (1441).

116 (114). Release of the grant referred to in No. 115 (113) above.

20th March 19 Hen. VI (1441).

Endorsed in later hand "These three peaces of evidences do concerne the house in the castelstreate wherein Edwarde pepparde do inhabite."

117 (115). John Bossard, citizen, & Marion Chamberleyn, his wife, grant to William Yong, citizen & butcher, a house in St. Francis Street outside the walls of Dublin, bounded on the east by the said street, on the west by the land which James Passavaunt formerly held, on the north by the land which John Tankard formerly held, and on the south by Richard Herbard's land.

Witnesses, Philip Bedelowe & John Tankard, then bailiffs, Ralph Pembrok, citizen & merchant, John Beteroni, Thomas Sangwyn, and many others.

8th Aug. 24 Hen. VI (1446).

118 (116). Richard, son & heir of Henry Bron, grants to William Lawles & John Sprot, chaplains, an empty plot of land or garden in the city of Dublin & outside the gate of the Blessed Mary del Dam, bounded on the east by the land of St. Andrew's Church, on the west by the road to the King's Mill, on the north by the King's Way, and on the south by the stream of water.

20th Oct. 25 Hen. VI (1446).

119 (117). Grantor in no. 118 (116) above appoints Nicholas Bellewe, citizen of Dublin, his attorney to give possession of the property mentioned therein.

20th Oct. 25 Hen. VI (1446).

120 (118). Release of no. 118 (116) above.

26th Oct. 25 Hen. VI (1446).

121 (119). Johanna, daughter & heiress of John Tankard, butcher, grants to James Power, clerk, all her houses & tenements in St. Thomas Street & St. Francis Street in the suburbs of Dublin.

17th June 29 Hen. VI (1451).

122 (120). Release of no. 121 (119) above.

20th June 29 Hen. VI (1451).

123 (121). William Yong, citizen & butcher, grants to John Bertrame, 'bowcher,' & James Power, clerk, a house in St. Francis Street, outside the walls of the city of Dublin.

Witnesses, [], Michael Griffyn, carpenter, Thomas Sangwine, 'bowcher,' & many others.

8th March 30 Hen. IV (1452).

124 (122). Release of no. 123 (121) above.

8th March 30 Hen. VI (1452).

125 (123). James [] of Dublin, 'gentilman,' grants to Walter Ludlow, chaplain, a house & garden in 'Oxmanton,' bounded on the north by the land of the said James which Thomas Archebold holds, on the south by the land of the House of the Religious of 'Holmepatric,' on the west by the King's Way & on the east by the land of the said James. Term, 24 years. Rent, four shillings silver yearly.

13th Nov. 2 Ed. IV (1462).

126 (127). John Bennett & William Purcell, proctors of the parish church of St. John the Evangelist 'in the Bothestrete,' with the parishioners' consent grant to Robert Nevell a garden in 'Oxmanton.' bounded on the east & south by the land formerly called Robert Sallane's land, on the west by the land formerly called 'the lord Comyne's land,' & on the north by the land of the abbot & convent 'of the Blessed Mary beside Dyvelyn.' Term, 40 years. Rent, two shillings & sixpence yearly.

14th Aug. 7 Ed. IV (1467).

(In English).

127 (124). William Bron, chaplain, grants to Thomas Bron, clerk, a garden in St. Andrew's parish in the suburbs of Dublin, bounded on the north by the King's Street & the elder or guelder tree (*sambucus sive viburnum*) growing at the front of the said garden, on the south by the pool (*gurgis*) or water running towards the King's Mill, on the east by the garden with the land of St. Andrew's Church near it, & on the west by the common way which leads to the King's Mill.

4th Sept. 7 Ed. IV (1467).

128 (126). Grantor in no. 127 (124) above appoints Simon Alyer (?), literate, his attorney to give possession of the premises mentioned therein.

4th Sept. 7 Ed. IV (1467).

129 (125). Release of no. 127 (124) above.

10th Sept. 7 Ed. IV (1467).

130 (128). John Bennet, citizen & merchant, & William Yong, citizen & [butcher], proctors of St. John's Church, grant to Robert [Berde]field & Bartholomew [] three gardens in "Ostmanton," bounded on the west by the land of St. Michan's church and the land of the Prior and convent of "Holmpatryc," on the east by the "Cowlane," on the south by the land of St. Mary's Abbey & on the north by the land of St. John's church. Rent, one shilling silver yearly. Term, [].

13th April 1471.

131 (129). Richard Herford, chaplain, & William Yong & Thomas Prikker, proctors of St. John's Church, Dublin, with the consent of the parishioners grant to John Dromyn, helier (*i.e. slater*) & citizen, a shop & a small "baon" (*bawn* or *yard*) bounded on the east & west by grantors' land. Term, 21 years. Rent, four shillings.

13th April, 1471.

132 (130). Grantors in no. 131 (129) above & John fitz Henry, citizen, with the consent of the parishioners grant to David Purcell, citizen, a house in the Street of the Fishers, Dublin, bounded on the west by the said street, on the east by the land called "ye cowlane," on the south by the land of Patrick Burnell & on the north by grantors' land. Term, 12 years. Rent, forty shillings silver.

24th May, 1471.

133 (131). "Rental of the receipts from the land of the Blessed Mary from the first year after the death of James Power." An account of receipts and expenditure for one year, probably in connection with the Chapel of the Blessed Virgin Mary in the parish church of St. John the Evangelist, Dublin. The receipts are annual rents arising out of lands mainly in Oxmantown, & amount to £5 6s. 4d., of which £2 2s. 0d. is noted as having been paid. The tenants are:—in Oxmantown, William Beyl, Thomas Archebold (lease dated 1477), Sir Walter Ludlow (lease dated 1462, see no. 125 (123) above), Thomas Pecoock, Phylipp Ellyott, Sir Thomas Swyer, Ruel Coryfer, William Water; elsewhere, William Howat, Phylpe Fleming, William Cok, John Dromyng, Molyng Barry, John Severn, John Gennet.

The expenditure amounts to £1 3s. 3½d., & consists mainly of payments

[29*]

for work done by carpenters, daubers (*i.e.* plasterers) & other workmen, and for materials for their use. Carpenters received 5*d.* a day, daubers 4*d.*, heliers (*slaters*) 5*d.* & masons 6*d.*, in addition to their meat & drink. Clay cost 2*d.* the cart load, lime 8*d.* the carnock. Two "gemelys" (hinges) for the lattice window cost 4*s.* The lime was used "to wesch (*whitewash*) the chamber," and two "wescheris" were employed for a day. The mason & his man built the chimney in one day. Nails, lathes & slatepins were purchased. Two new locks & keys cost 10*d.* The only expenditure of a different nature is that of 16*d.* for wine for mass.

The writer notes that he received from John Bennet 10*s.* as his wages for the year.

(Undated; *circa* 1477.)

134 (132*a*). John fitzHenry, merchant, & Richard White, pewterer, proctors of the church of St. John the Evangelist of "le Bowstret," Dublin, Richard Herford, chaplain, Thomas Bennet & John Prikker, merchants, & William Yong, yeoman, with the consent of the parishioners grant to Thomas Archebold, clerk & citizen of Dublin, the messuage which he lately held in "Ostmanton," lying near the lane of St. Mary the Virgin, which leads to the monastery of the monks of St. Mary the Virgin, near Dublin.

The said messuage is bounded on the north by the said lane, on the south by the land of the said proctors of St. John's Church, on the west by the land of Robert Dovedall, knight, which Arnald Prendergast the carpenter lately held, & on the south by the land of the said proctors which Thomas Hunt the baker lately held. Term, 37 years, to begin at the feast of Easter or Michaelmas next after the death of Katerine Blake, widow. Rent, four shillings silver a year until the death of the said Katerine Blake, & seven shillings a year afterwards. Covenants for distraint for arrears for rent, repair, &c.

5th May 1477 & 17 Ed. IV.

135 (132*b*). [] of Oxmantown appoints [] his attorney to give [] seisin of lands.

30th Dec. 18 Ed. IV (1478).

136 (133). Richard Bottillere of Dublin, yeoman, & Alicia Newberry his wife grant to Richard Herford, chaplain, a messuage in the street of the Skinners, grantee to pay the rent due to the chief lords of the fee.

23rd June 1483.

137 (134). John Stanton, chaplain, of Dublin, Thomas Kelly & Richard Bottillere, yeoman, grant to Richard Herforde, chaplain, an annual payment of ten shillings out of the rent of a messuage in the street of the Skinners,

bounded on the west by the messuage of Richard Stanyhurste, merchant, on the east by the house in which Richard Fenton, "sherman," now lives, on the south by the said street & on the north by [].

20th Dec. 2 Ric. III (1484).

138 (135). Grantors in No 137 (134) above, having granted to grantee in same an annual payment out of the rent of a house in "the Skynner Strete," "as in a rentcharge until hym therein made more playn doth appere," now grant that all necessary repairs which the said Richard shall do upon the said house shall be charged upon the said rent.

20th Dec., 2 Ric. III (1484).

(In English.)

139 (139). Richard Herforde, chaplain, Thomas Bennet, merchant, James Prendregast, clerk, John Prycker & John fitz Henry, merchants, with the consent of the parishioners of the church of St. John the Evangelist, Dublin, grant to Thomas Pecoke, chaplain, and Isabella Whyte of Oxmantown two houses & gardens in Oxmantown, bounded on the north by the lands of the Friars Preachers of Oxmantown, on the south by the land of the House of St. Patrick of "Holmpatric," on the west by the King's Way of Oxmantown, and on the east by the land of the said church of St. John. Term, 30 years. Rent, eleven shillings silver. Covenants for distraint for arrears of rent, repair of premises, &c.

29th March, 1485.

140 (136). William (Lynton), Prior of the Cathedral Church of the Holy Trinity, Dublin, and the convent thereof having granted.¹ on the 8th March, 10 Ed. IV (1470), to William Power for twenty-two marks a house in the lane called "Seint John's lane de Bothestrete," bounded on the north by the said lane, on the south by the cemetery of the said Cathedral Church, on the east by the land of the said prior & convent, & on the west by the chapel of the Blessed Virgin Mary of the said Cathedral Church, the said William Power now grants the said house to John Prikker, citizen of Dublin, for twenty-two marks; said John to pay to the said prior and convent seven shillings a year.

1st Apr. 2 Ric. III (1485).

141 (138). Symon Duff & Nicholas White, chaplains, grant to Richard Forster & John Dromyn, proctors of St. Olave's Church, a messuage in Oxmantown, bounded on the east, north & south by the land of the Abbot & Monks of the Blessed Virgin Mary, & on the west by the King's way.

20th Jan. 1 Hen. VII (1486).

¹ See Christ Church Deeds, no. 986, in Appendix to 24th Report of the Deputy Keeper of the Records in Ireland.

142 (137). Release of No. 141 (138) above.

24th Jan. 1 Hen. VII (1486).

143 (140). [Richard Herfo]rde, chaplain, Thomas Benet, James Prendregast & John Pryker, feoffors of all the possessions of [the chapel of Saint Mary] the Virgin in the church of St. John the Evangelist "in le Bothstret," Dublin, with the assent of the parishioners of the said church, grant to Richard Whyte¹ [six shops] in the street of the Fishers, extending from the house of Master David Purcell, merchant, to the house of Master Richard Forster, fisher, & in depth from the chamber of the said David at the back to the said street in front. Term, 51 years. Rent, twenty-six shillings, to be paid to the proctors of the said church. One shop, which said Richard now uses as his stable, & another, in which John Durmyn now lives, are to be re-roofed with wooden beams & stone tiles within four years. The third shop, in which Cornelius Higley now lives, to be similarly re-roofed within ten years. The other shops to be kept in repair. Covenant for distraint for three months' arrears of rent.

26th Sept. 1487.

144 (141). David Purcell, citizen of Dublin & Alice his wife bind themselves to John Prikker, citizen, & Agnes his wife in eight pounds of lawful money.

18th Nov. 4 Hen. VII (1488).

(In dorso.) The condition of this bond is that David Purcell & Alice his wife shall pay to John Prikker & Agnes his wife four marks at Easter next following the date of the bond, & four marks at Easter, 1490, and four marks at Easter, 1491; & the bond shall then become null and void.

145 (142). Richard Herford, chaplain, grants to Richard White, merchant, and Isabella Cloudinwey his wife a small house in the street of the Skinners, bounded on the east by the house wherein Henry Bogane, smith, now dwells, on the west by the land of Richard Stanyhurst, on the south by the said street & on the north by the lands of the church of the Holy Trinity, the said house having come to grantor by the gift of Richard Buttillere & Alison Srewsbury his wife. Term, 16 years and two quarters then ensuing. Rent, six shillings and eight pence silver. Covenants for repair, distraint for two months' arrears of rent, &c.

All Saints Day 5 Hen. VII (1st Nov. 1489).

Endorsed in English is a transfer of the lease by the said Isabella to Thomas Suetman, merchant, of Dublin, on payment to Richard White of

¹ Described in margin in later hand as "pewterer."

three & a half pounds, in presence of Thomas Crosse & William Bicton, chaplains, Richard Pill & Robert Herforde; while endorsed notes of payments of rent show that the transfer took place seven and a half years after the beginning of the lease.

146 (143). John Prikker, merchant, of Dublin, releases to David Purcell, merchant, all his personal actions against him from the beginning of the world.

24th Nov. 7 Hen. VII (1491).

147 (144). Thomas Bennet & Richarde Herforde, chaplains, James Collyn & Richard Prikker, feoffors, & Hugh Talbott, Richard White & Nicholas Petite, proctors of the fabric of St. John's Church, grant to Richard Cole, [], a house in St. Michan's parish, bounded on the east by the lane called "Cowlane," on the west & south by the land (of the chapel) of St. Mary in St. John's church, & on the north by the King's way. Length, 142 feet. Breadth, 47 feet. Term, 48 years. Rent, seven shillings & sixpence. Grantee to build a new barn & "kill." Covenants for repair, &c.

Christmas Day, 8 Hen. VII (25th Dec., 1492).

The covenant to build the new barn & "kill" is also endorsed in English.

148 (145). Grantors in no. 147 (144) above grant to William Heyn, butcher, the house in which he now dwells, situate in St. Francis street in the suburbs of Dublin, for the repair of the fabric of the chapel of St. Mary in St. John's Church. Term, 49 years. Rent, eight shillings. Covenants for repair, distraint for three months' arrears of rent, &c.

14th Sept. 11 Hen. VII (1495).

149 (146). (This deed is not now forthcoming. In the short catalogue compiled in 1852 it is described as follows:—

"A.D. 1507. A Letter of Fraternity, by which Patrick Culnyn, 'Prior of the Order of the hermit brothers of St. Augustine in Dublin,' grants to John Stacpoll and his wife a participation in the benefits of the Masses, fasts and vigils of the brotherhood throughout Ireland.")

150 (147). Michael fyz Symon & Denis Griffyn, proctors of St. Olave's church & parish, grant to Walter Fowlyng, merchant, with the consent of the parishioners a house belonging to the said church & situate in Oxmantown, bounded on the west by the King's street of Oxmantown, on the east by the lands of St. Mary's Abbey, on the south by a house in which Thomas Philipist now lives, & on the north by a house belonging to St. Mary's Abbey, in

which John Offaly, alias Kildare, now lives. Term, 41 years. Rent, ten shillings. Covenants for repair, distraint for two months' arrears of rent, &c. Michaelmas 1 Hen. VIII (29th Sept. 1509).

151 (149). John Dirram of Dirramyston, gentleman, grants to Christopher Ussher of Dublin for a sum of money paid in hand a house in the street of the Fishers, St. John's parish, bounded on the east by the land of the Abbot & monks of St. Mary the Virgin, on the west & north by the land of the prior and convent of the Cathedral Church of the Holy Trinity, & on the south by the said street.

26th Sept. 8 Hen. VIII (1516).

Endorsed in later hand "the prestes chamber in the fyshamelstrete."

152 (150). Grantor in no. 151 (149) above appoints John Drimgolle his attorney to give possession of the premises mentioned therein.

26th Oct. 8 Hen. VIII (1516).

Endorsed as on no. 151 (149) above.

153 (148). A deed almost identical with no. 151 (149) above, but differing in a few unimportant words, & in the date, which is 27th Oct. 8 Hen. VIII (1516).

154 (151). Release of no. 151 (149) above.

29th Oct. 8 Hen. VIII (1516).

Endorsed as on no. 151 (149) above.

155 (152). [Michael] fyz Symon, gentleman, & Henry Conwey, merchant, proctors of St. Olave's Church, grant to Bartholomew Blanchewyle, merchant, the house on "le Wodkey," wherein he now dwells. Term, 40 years. Rent, twentysix shillings & eightpence silver. Covenants for repair, distraint for two months' arrears of rent, &c.

5th July 12 Hen. VIII (1520).

156 (153). Thomas Massyngham, clerk, & John Dongan, fisherman, proctors of St. John's Church, grant to Walter Eustace, master of the fraternity or "gilde," of St. Mary the Virgin & St. "Cythe" in St. Michan's Church in "Oustmanton," & to Robert Gangan, merchant, and Peter Whitsyde, fisherman, wardens of the said fraternity or "gilde," a vacant plot of ground with a house newly built upon it by the said master & wardens, measuring 108 feet from the house in which Geoffry Farmer now lives on the west to the lane called "le cowlane alias le kyngslane" on the east, & 69 feet from the land of St. John's church on the north to the land of the monastery of St. Mary the Virgin on the south.

Rent, four shillings. Covenant for distraint for one month's arrears of rent.

28th June 22 Hen. VIII (1530).

157 (154). Richard Birford & James Rochford, merchants, proctors of St. John's Church, grant to Henry Kene, butcher, & Anne Hay his wife the house & garden wherein Thomas Heyn, late of Dublin, butcher, dwelled, situate in St. Francis Street. Term, 21 years. Rent "eight shillings of good & lefful mony of Ireland." Covenants for repair, distraint for two months' arrears of rent, &c.

20th Sept. 28 Hen. VIII (1536). (In English.)

158 (155). John fitz Symon & Bartholomew Blanchewill, merchants, proctors of "seynt Oloke is church," grant to Nicholas Queytrot, merchant, a garden outside the "Damys Gate" of Dublin. bounded on the east by the King's way going by a mill pond to a mill that is down, commonly called the King's mill, on the north by the King's way, on the south by the land of the said Nicholas & on the west by a garden of St. Andrew's Church. Term, 41 years. Rent, five shillings Irish to the said proctors, and twelve pence Irish to the collectors of the langable of the city. Covenant for distraint for two months' arrears of rent. Said garden measures 29 yards by 48½ yards.

28th Oct. 29 Hen. VIII (1537). (In English.)

159 (157). John Goodeman, merchant, & Dermot Lawles, proctors of St. John's Church, grant to Stephen Casse, "offycer," the house in "the Fyshamlys" wherein he now dwells. Term, 51 years. Rent, eighteen shillings Irish. Covenants for repair, distraint for two months' arrears of rent, &c.

Michaelmas 34 Hen. VIII (29th Sept. 1542). (In English.)

160 (156). Patrick Bukley & John Yonge, proctors of St. John's Church, grant to John Lowith, carpenter, three houses "in the end of the fishamblis in seynt Oloke is parish." Term, [41 years]. Rent, forty shillings Irish. Covenants for repair, distraint for arrears of rent, &c.

26th March 34 Hen. VIII (1543). (In English.)

Endorsed "these parcelles were letten to Walter Harrolde by Indenture of the xiiith of Maye a.^o xvii^o Regine Elizabeth."

161 (158). John Yonge, painter, & Thomas Raynroll, pewterer, proctors of St. John's church, grant to Walter Beket, merchant, the house & garden lately inhabited by Harry Kene, butcher, in St. Francis' Street. Term, 60 years. Rent, sixteen shillings and eightpence Irish. Covenants for repair, distraint for two months' arrears of rent, &c.

30th Sept. 37 Hen. VIII (1545). (In English.)

162 (161). William Byrssall, merchant, & Tadey Dungs, fisherman, proctors of St. John's church in the "Boustrett," grant to Murtaghe Marte, smith, a house in Oxmantown bounded on the north by "the Mary lane," on the south by a house belonging to St. John's parish, on the east by a house belonging to St. John's parish in which Robert Hangane dwells, & on the west by the house of William Talbot of Robertyston & other houses at the Gyglot Hill. Term, 51 years. Rent, thirteen shillings and fourpence Irish. Covenants for repair, re-entry, distraint for two months' arrears of rent, &c.

29th Sept. 38 Hen. VIII (1546).

(In English.)

Endorsed "This lease surrendered and a new lease graunted to John Allen for lx yeeres beginninge at Michas 1593," [see No. 180 (177) below].

163 (160). The churchwardens, proctors & parishioners of St. Olave's Church grant to Patricke Colly, yeoman, two houses in Castle street. Term, 41 years. Rent, twentysix shillings & eightpence Irish. Covenants for repair, re-entry, distraint for two months' arrears of rent, &c.

1st Nov. 38 Hen. VIII (1546).

(In English.)

164 (159). Thomas Alen & Geoffrey Marreyse, proctors of St. "Tullok's" Church, grant to Oliver Stephnys, merchant, a house in Oxmantown, bounded on the west by the "Hyghe strete" of Oxmantown, on the east by the land formerly belonging to St. Mary's Abbey "and now to o^r Soveraygn lorde the kyng," on the south by the house in which the said Oliver now dwells, & on the north by a house formerly belonging to St. Mary's Abbey, wherein Thomas Page & Marget of London, his wife, now dwell. Term, 81 years. Rent, ten shillings Irish. Covenants for repair, distraint for two months' arrears of rent, &c.

17th Nov. 38 Hen. VIII (1546).

(In English.)

165 (168). John [] & [], proctors of St. John's Church, grant to [] a house, bounded on the [] by the garden of Walter fitz Symons, on the [] by the King's pavement & on the [].

[Hen.] VIII (circa 1546).

(In English. Fragment only.)

166 (162). Thomas Alen, gentleman, and Geoffrey Marres, proctors of St. "Tolloge's" Church, grant to Richard Barnewall, merchant, a house or chamber & a cellar under it, adjoining to the churchyard of the said church. Term, 61 years. Rent, thirteen shillings & fourpence Irish. Covenants for repair, distraint for two months' arrears of rent, &c. Signed by grantee.

3rd Feb. 1 Ed. VI (1547).

(In English.)

Endorsed "St. Toolock's. The pryst's chamber in fyshestrete"; also, in later hand, "The concernes of Mr. Dermott in Fishamble Street."

167 (163). Grantors in no. 166 (162) above grant to grantee in same a house on "the Wood Key" wherein said grantee now dwells, in as ample & large a manner as Bartholomew Blanchefeld, merchant, lately deceased, held it, for 61 years from Easter 1581. Rent, twentysix shillings & eightpence Irish. Covenants for repair, distraint for two months' arrears of rent, &c. Signed by grantee.

3rd Feb. 1 Ed. VI (1547).

(In English.)

168 (164). John Dongan & John Quatermas, proctors of St. John's Church, grant to Thomas Raynold of Dublin, pewterer, a house in "the Castelstreat," bounded on the east by the lands of St. George. lately in the occupation of Walter fitz Symons, deceased, on the west by a garden now in the occupation of Thomas Bermyngham, on the south by the King's pavement & on the north by the lands of the lord of Gormaneston. Term, 51 years. Rent, 13 shillings Irish. Covenants for repair, re-entry, distraint for six weeks arrears of rent, &c.

8th Oct. 5 Ed. VI (1551).

(In English.)

Endorsed in later hand "In the tenor of Mr. Launslot Alford at xiiis. a year."

169 (165). Thomas Lokwod, Dean of the Cathedral Church of the Holy Trinity, Dublin, & the Chapter thereof recite that King Henry VII granted to them an annual rent charge of £20, to be paid out of the fee-farm of the city of Dublin, & acknowledge the receipt of one half-yearly instalment from John Spensfeld, Mayor, Walter Cusack & John Dimsy, sheriffs of the said city.

10th June 1558.

170 (166). John Dillon & John Cottrell, merchants, "churchwardens or proctors" of St. John's Church, with the consent of the parishioners of the same & the parishioners of the late church of St. Olave, commonly called St. [Tullock's], recite that Patrick Colleye, yeoman, & Johan his wife hold two houses in the Castle St. by virtue of a lease¹ dated 1st Nov. 38 Hen. VIII (1546) from the churchwardens & parishioners of St. Olave's church for a term of 41 years under a rent of 26s. 8d. Now, on payment of a fine of 20 shillings, the houses are granted to the said Patrick & Johan for the term of 41 years from the date of the said deed & a further term of 41 years at an annual rent of 40 shillings, which is payable to the churchwardens of St. John's, but shall be payable to the churchwardens of St. Olave's if that church be restored & "severed from this unyon." Covenants for repair, re-entry, distraint for two months' arrears of rent, &c.

20th Aug., 1558, & 5 & 6 Philip & Mary.

(In English.)

¹ See no. 163 (160) above.

171 (167). [] Barnewall, merchant, & Walter Taylor, proctors of St. John's church, grant to Peter Forde, gentleman, a house & garden in the "Castelstret" in the possession of [] of St. John's aforesaid in the late parish "of the Dames," now in the parish of St. Warbur[gh], bounded on the east by the garden held by Walter fitz Symons, deceased, called Saint George's land, on the west by Thomas Byrmyngham's garden, on the south by the Queen's pavement, & on the north by [the lord] of Gormans-ton's land. The said house & garden [were held from] St. John's Church by Thomas Raynold of Dublin by lease dated 8th Oct. 5 Ed. VI (1551),¹ & are held by the said Peter Forde from the said Thomas Raynold for 51 years by lease dated [] 5 Ed. VI (1551). Said Peter now holds to end of said term & 21 years after. Rent, twenty & [] shillings Irish. Covenants for repair, distraint for arrears of rent, &c.

15th March 1 Eliz. (1559).

(In English. Mutilated.)

172 (166). William Forster & James Queytrot, proctors of St. John's Church, & the masters and wardens of the chapel of St. Mary the Virgin in the said church, grant to John Dillon, merchant, for ever a vacant plot of land in the Street of the Fishery (viz. *Piscaria*) bounded on the west by the said street, on the east by the [] lane called "le Cocklane," on the south by John Bunnell's land, & on the north by the house in which Laurence Casse now dwells. Rent, 20 shillings Irish. Covenants for repair, distraint for arrears of rent, &c. Signed by grantee.

20th Dec. 1659 & 12 Eliz.

Endorsed are the signatures of the witnesses Richard Fyan, Robert Ussher, Patrick White Patrick Dowdall, F. Quatermas, [].

173 (170). William Forster & James Queytrot, merchants, proctors of St. John's Church, grant to John Smythe, fisher, a house & garden in Oxmantown, parish of St. Michan, bounded on the west by the Queen's street, on the east by land of the said St. John's Church, on the south by Thomas Tew's land, & on the north by the land of "the blake frerys." Term, 41 years from the expiration of a lease made to Mortaghe Martyn Smythe, late deceased. Rent 40 shillings Irish. Covenants for repair, distraint or voidance of lease for two months' arrears of rent, re-entry, &c. Signed by grantors.

15th March, 1570.

(In English.)

Endorsed with signatures of witnesses Richard Fyan, Robertt Ussher, Nicholas Begge, James Whyt.

¹ See no. 168 (164) above.

174 (171). Counterpart of no. 173 (170) above. Signed by grantee.

Endorsed is a note that this lease was surrendered, & a new one granted in 1582 "to Anne Smothe or rather to Anne Savadge."

175 (172). Grantors in no. 173 (170) above grant to Walter Haroulde, merchant, two houses & a garden or garden-plot in the "Fyshamelstrete," parish of St. "Tolloke," & now in the possession of the said Walter. Term, 61 years from the expiration of a lease made by John Yonge & Patrick Bukley, deceased, proctors of St. John's Church, to John Louth, carpenter, dated 26th March 34 Hen. VIII (1543).¹ Rent during the remainder of John Louth's lease & for the 61 years now in reversion, four pounds Irish, the old rent being remitted. Covenants for repair, re-entry, distraint for three months' arrears of rent, &c. Signed by grantee.

14th May, 1575 & 17 Eliz.

(In English.)

Endorsed with signatures of witnesses [], John Whyt, Christopher Barnewall, John Walshe [], Edmond Haroulde.

176 (173). Christopher Duffe & Richard Sheathe, merchants, proctors of St. John's Church "a Bowstreat," grant to Anne, daughter of Edward Smothe deceased, a house backside and garden in the parish of St. Michan, Oxmantown, lying against the east end of St. Michan's Church, bounded on the west by the Queen's street, on the east by land belonging to St. John's Church, on the south by Thomas Tue's land, & on the north by a house belonging to St. John's Church. Term, 61 years. Rent, 20 shillings Irish. Covenants for repair, re-entry, distraint for two months' arrears of rent, &c.

Signed by grantors, the second signing his name "Richard Shee."

8th July, 1582.

(In English.)

Endorsed are the signatures of Thomas Barnewall, Robert Stephens and Walter Jaret, and the mark of Morris Ford, witnesses; also the note "This lease was surrendered upp in An. Dni 1638 uppon making a new lease to Catherine Carroll."

177 (174). Counterpart of no. 176 (173) above. Signed by grantee.

178 (175). Grantors in no. 176 (173) above grant to Anne Savadge, daughter of Bartholomew Savadge deceased, a house, backside & garden in the parish of St. Michan, Oxmantown, similarly situated to the property mentioned in no. 176 (173) above, except that the southern boundary is a house belonging to St. John's Church, & the northern boundary a house &

¹ See no. 160 (156) above.

grounds belonging to the Black Friars. Term, rent and covenants as in no. 176 (173) above. Signed with grantee's mark.

8th July, 1582.

(In English.)

Endorsed with signatures of witnesses as in no. 176 (173) above. Attached is a memo. on paper, signed with the signature of Richard MacManis & the marks of Edward Bealing & Tady Doynes, stating that, in accordance with the terms of the lease, Anne Savadge was warned on the 25th Feb., 1601/02 to rebuild the house within a year, but that before the year expired, viz., on March 11th, the proctors made a new lease to James Carroll.¹

(In English.)

179 (176). Richard Duffe & James Bedlowe, merchants, proctors of St. John's Church, grant to Richard Couran, "water-balive," a house in "the Fishambles Streete," formerly demised to Stephen Casse deceased, measuring 58 feet in front, bounded on the west by the Queen's highway, on the east by the Kill Garden, on the south by Richard Flodye's, & on the north by "an olde house where one Thomas Holmes dweled." Term, 61 years. Rent £3 6s. 8d. English. Covenants for repair, re-entry, distraint for eight weeks' arrears of rent, &c.

Signed by grantee "Richard Condran."

25th March, 1586.

(In English.)

Endorsed with signatures of grantors & grantee & of the following witnesses:—James Fanes, N. Kenney, John Morgane, Peter Calf "parish clerke of St. John's," Thomas Flemyng, William Lahissie; also with the following note:—"These houses assigned over to the dean and chapter in trust for the prebend of St. John's. Anno 1633."

180 (177). Charles Colthorpe, esq., her Majesty's Attorney general of Ireland, & John Morgan, smith, proctors of St. John's Church, grant to John Allen, Clerk of her Majesty's Ordnance in Ireland, and Alison Merry, his wife, a house in Oxmantown, bounded on the north by the Mary Lane, on the south by a house belonging to St. John's Church, on the east by a house belonging to St. John's Church "which one Robert Hangane late or sometime dwelled in," & on the west by certain void messuages of William Talbott & others at the Giglott Hill. Term, 61 years. Rent 13s. 4d. English. Covenants for repair, re-entry, distraint for two months' arrears of rent, &c.

Signed on behalf of the grantees "J. Allen."

24th Jan. 1593/4 & 36 Eliz.

(In English.)

Endorsed with signatures of witnesses:—Edmund Warren, Thomas Chapman, Richard Longford.

¹ See no. 184 (181) below.

181 (178). Counterpart of no. 180 (177) above. Signed by grantors. Endorsed with (1) the signature of Edward Warren, witness; (2) John Allen's deed of gift of the said house to "my welbeloved friend Maurice Smith of Dublin" in trust for his daughter Alison Smith "my god-daughter," & to the said Maurice unconditionally in the event of her death. 20th Dec. 1603. Witnesses, Daniel Barnes and Kenwrik Lloyd. (3) the following note "passed to Maurice Smith a^o 1626 and doth joyne with John Anderson's mese: vide peter congan's lease 1594. St. Mary Lane."

182 (179). Richard Longford, gentleman, & Richard Browne, merchant, proctors of St. John's Church, grant to John Goode, butcher, and Ellen Dalton, his wife, a house, backside and garden in St. Francis Street, bounded on the east by the Queen's pavement, on the west by the land of Christchurch, on the north by the land of St. Katherine's, and on the south by a common lane adjoining to the land of Talbott of Templeogue, measuring in length from east to west 52 yards 7 inches & in breadth $7\frac{1}{2}$ yards at the west end & 6 yards 7 inches at the east end.¹ Term, 61 years from the expiration of the lease no. 161 (158) above. Rent £1 13s. 4d. Irish. Covenants for repair, re-entry, distraint for six weeks' arrears of rent, &c.

Signed by grantors.

1st Sept. 1598 & 40 Eliz.

(In English.)

Endorsed with (1) the signatures of Richard Berford, W. Tychell, John Dillon, James Plunket, & the marks of James Beech & William Hukys, master butcher, witnesses; (2) a grant by Andrew Goode, butcher, sole executor of the late John Goode, who had survived his wife Ellen, to Lawrence Duffe, butcher, for a certain sum of money, of his right in the said property for the unexpired term of the lease. 20th Aug. 1627. Witnesses John Malone, Luke Felde, and others; (3) a similar grant by Thomas Rabucke, cooper, only son & executor of the late Nicholas Rabucke, butcher, to John Bradock, cloth-worker. 12th May 1663 & 15 Charles II. Signatures of witnesses illegible.

183 (180). Counterpart of no. 182 (179) above. Signed by grantees.

184 (181). Grantors in no. 182 (179) above grant to James Carroll of St. Michan's parish, wheel-wright, a void piece of land in St. Michan's parish opposite the east end of St. Michan's Church, bounded on the west by the Queen's pavement, on the east by land belonging to St. John's Church, on the south by a house belonging to St. John's Church, & on the north by a house of the Black Friars, and being in the possession of Anne Savage, now

¹ A marginal note in a later hand reads "He is possitive in the Meares and bounds!"

wife to Simon Luttrell of St. Patrick's Street, baker. Term, 61 years. Rent, 20 shillings Irish. Covenants for repair, re-entry, distraint for two months' arrears of rent, &c.

Signed by grantors.

11th March 1601/2.

(In English.)

Endorsed with signatures of witnesses Thomas Almay, James Wycombe, Nicholas Swetman, and with the note "This house leased to Mr. Maurice Smith Anno 1626."

185 (182). Counterpart of no. 184 (181) above. Signed with the mark of grantee.

186 (183). John Bonnys & Richard Browne, proctors & churchwardens of St. John's Church, grant to Patrick Hearynge a house and two gardens in the Mary Lane, Oxmantown, bounded on the north by land belonging to St. John's Church, on the south by the King's pavement, on the east by the land of one Mr. Bathe, and on the west by the Common Lane. Term, 61 years. Rent, 45 shillings. Covenants for repair, re-entry, distraint for two months' arrears of rent, &c.

[] James I & 37 James VI of Scotland (1603).

(In English.)

Endorsed with a note that the property was leased in 1614 to John Anderson, & in 1650 to Thomas Cooper, vintner.

187 (184). Thomas Chetham, Esq., of Hacketstowne, Co. Dublin, grants to Patrick Gough & Edward Jans of Dublin, aldermen, Edward Gough & Robert Arthur, merchants, for £20 English all his interest in the lands of St. John's church which he bought from Kate Taylor, widow, on the 4th May, 1624.

John Bathe & Patrick Gough bind themselves in £40 that the above-named grantees will assign their interest to Mr. Maurice Smith.

23rd Feb. 1624/5.

(In English.)

Witnessed by Job Gilliott.

188 (185). Christopher Grove, gentleman, & Robert Usher, merchant, proctors of St. John's church, grant to Maurice Smith, gentleman, a piece of ground in St. Michan's parish. "whereon the said Maurice hath lately built" & sometime in possession of Katherine Taylor, widow, bounded as in no. 184 (181) above & measuring in breadth 7 yards 2 feet at the west end, & 6 yards 2 feet at the east end, & in length 48 yards 2 feet; also a messuage in the May Lane, parish of St Michan, with a backside & garden, bounded on the north by the King's pavement in the said Lane, on the south by the before-demised piece of ground, on the west by the chamber of John Talbott of

Robertstowne, & and on the east by the said St. John's land, now in the possession of John Anderson & and others, & measuring 38 yards 2 feet from north to south, & 16 yards from east to west. The said garden is bounded on the east by a house of the said John Anderson, on the west by a house wherein one James Patrickks now dwells, & on the north by the King's pavement. Term, 64 years. Rent 33s. 4d. sterling. Covenants for repair, re-entry, distraint for eight weeks' arrears of rent.

Signed by grantee.

20th March 1626/7.

(In English.)

Endorsed with signatures of the witnesses present:—Robert Dawson, Geo. Stanton, Tho. Cane, Fran. Last, Richard Keneady, Joh. Forth.

189 (187). Richard Browne, gentleman, & John Michell, vintner, proctors of St. John's church, grant to Katherine Carroll, widow, a house, backside and garden in St. Michan's parish, Oxmantown, late occupied by Amy Smooth, measuring 105 feet in length & 25 feet in breadth, lately rebuilt by grantee, lying against the east end of St. Michan's church, bounded on the north by land belonging to St. John's church. Term, 41 years. Rent, £4 sterling. Covenant, for repair, re-entry, distraint for two months' arrears of rent, &c.

Signed with the grantee's mark.

20th April, 1638.

(In English.)

Endorsed with signatures of witnesses:—Willm. Smyth, Wm. Plunkett, Jeremy Bowden, Edm. Leadbetter, Robert Clow, Nicholas Osbourne, Jeremy Simpson.

190 (186). Grantors in no. 189 (187) above grant to James Bathe, esq., a piece of ground in the parish of St. Michan, Oxmantown, measuring 92 feet from east to west & 80 feet from north to south, bounded on the east & west by grantee's land. Term, 41 years. Rent, 50 shillings sterling. Covenants for repair, re-entry, distraint for two months' arrears of rent, repair of structures hereafter to be built thereon, &c.

Signed by grantee.

18th June, 1638, & 14 Charles I.

(In English.)

Endorsed with (1) Signatures of witnesses as in no. 189 (187) above, with the addition of Henry Jordan & John Johnson; (2) a note, signed by Theophilus Eaton, that this deed was shown to the plaintiffs' witnesses in the case James Potts & John Alexandir, proctors of St. John's church, plaintiffs, *versus* Edm. Basil, esq., his Highness' Attorney General, defendant.

191 (188). Patrick Carr, minister of St. John's church, Robert Wade & William Martin, churchwardens & proctors thereof, recite that the house in

Fishamble Street wherein the said minister lives & the house next adjoining thereto which is in the possession of Henry Powell were long since given by the parishioners of St. John's to one John Atherton, then minister thereof,¹ & his successors, at a yearly rent of £3 6s. 8d. The said house of Henry Powell is ruinous & ready to fall. The parishioners appointed John Browne, John Shepherd, William Langham, Richard Palfrey, David Murphy, John Ogden & the said proctors to dispose of it to a tenant for the benefit of the minister, "the better to enable him for payment of his said rent to the parish," & to preserve the house from falling down & from further ruin. Therefore the said minister & churchwardens grant the said house in Henry Powell's possession to Edward Dermott & Alice his wife. Term, 31 years. Rent, £5. Grantees are to cause the house to be slated before the middle of May next ensuing & to be put in proper repair within twelve months. Covenants for re-entry, distraint for two months' arrears of rent, &c.

Signed with signature of Edward Dermott & the mark of Alice Dermott.
9th Jan. 1650/51. (In English.)

Endorsed with the signatures of Richard Palfrey, Tho. Browne, & Francis Keane, & the mark of Thomas Cooper, witnesses present.

192 (189). Patrick Ker, minister of St. John's parish, with the consent of the churchwardens and parishioners thereof, grants to John Alexander, shoemaker, the house, shop, and backside in Fishamble Street, wherein grantor lives & which was formerly in the possession of Dudley Boswell, deceased, late minister of the said parish.² Term, 15 years. Rent, £8 sterling. Grantee to repair the front of the house within one year as well as the said Mr. Boswell repaired the back. Covenants for repair, re-entry, distraint for 14 days' arrears of rent, &c.

Signed by grantee.

20th July 1652.

(In English.)

Endorsed with signatures of witnesses present:—Willm. Smyth, Rich Palfrey, Nath. Neville, Wm. Martyn.

193 (190). Certified copy of the petition of John Pryce & of Mary Pryce, alias Johnson, his wife, & of Ralph Hall & of Jane Hall, alias Browne, his wife, to the honourable the Commissioners for the Administration of Justice. Recites that James Johnson, former husband of the petitioner Mary, & Thomas Browne, former husband of the petitioner Jane, were churchwardens of St. John's Parish for the year 1651, and during their year of office spent

¹ John Atherton was Prebendary of St. John's in Christ Church Cathedral from 1630 to 1636, when he became Bishop of Waterford.

² He was Prebendary of St. John's from 18th July, 1638, to his death in July, 1650.

of their own money on parish matters £60 7s. 5d. Of this there was only repaid to them £3 4s. 1d. Petitioners are entitled to sue for the balance due. The truth of these matters is shown in a report made by John Hooker, Mayor of Dublin, & John Preston, alderman, dated 25th Oct. 1654, drawn up at the request of the Lord Deputy & Council. The present churchwardens, John Sanderson, plumber, & George Hullett, vintner, & the parishioners Alderman William Smith, Alderman Daniel Hutchinson, John Shepard, maltster, William Langham, distiller, James Boy, shoemaker, William Martin, brewer, Rice Williams, & George Hollyse refuse to pay the debt when called upon in a friendly manner to do so. Asks that action may be taken in the matter.

Petition drawn by Patrick Tallon, attorney. Copy certified by J. Brant, Registrar.

14th June, 1655.

(In English.)

194 (191). John Quelch, upholsterer, & Christopher Lovett, merchant, churchwardens of St. John's Church, for a sum of £6 paid in hand, grant to John Braddock, clothier, a house, backside and garden in St. Francis Street, measuring 52 yards from east to west, & 7 yards from north to south, bounded on the north by Luke Lowther's house & on the south by Thomas Seabrook's house, commonly called Talbott's Lands. Term, 61 years. Rent, £6 sterling. Grantee undertakes to spend £100 in building up the house within ten years. Covenants for repair, re-entry, distraint for three weeks' arrears of rent, &c. Signed by grantee.

29th May 1663, & 15 Charles II.

(In English.)

Endorsed with signatures of witnesses present:—Tho. Bladen "rectour of St. John's," Dl. Huchinson, James Boy, John Bishopp, John van Persyn, Josh. Llewelin.

195 (192). Order of the Lord Chancellor & Court in the case of Thomas Cooke & Alice his wife, plaintiffs, *versus* Jerome Cooke & William Robinson, defendants, that the churchwardens of St. John's parish should produce the lease by which the plaintiffs claim a title to the premises. Mr. Boate is attorney for the defendants.

Signed by Ja. Grace, Deputy Registrar.

18th April, 1668.

(In English.)

An endorsed note shows that the lease referred to was a lease to Katherine Carroll [probably No. 189 (187) above].

196 (193). Rice¹ Lewis, merchant, agrees with William Middlebrook & Samuel Wiggen, joiners, for £17 to pave "the church now a-building in the

¹ So spelt in the body of the deed, but spelt "Reece" in his signature.

parish of St. John's" in the manner following:—the chancel to be paved to the chancel rails with black stone, the ground within the rails with white French stone, and the altar steps with black stone (the stones to be polished with water, sand & oil, as the chancel of St. Michael's is done); the nave & aisles to be paved with good flag-stones (all except the bottom of the pews), the gravestones being placed in convenient places, & stone steps to be built from Fishamble Street up to the level of the church. The work to be done within two months after the carpenters, joiners & slaters finish their work. The said Rice Lewis to have for his own use the old flag-stones & the old pews.

Signed and sealed by Reece Lewis in the presence of Jo. Stepping, Charles Lowdom, & Jos. Reeve.

31st July, 1680.

(In English.)

Endorsed "Mr. Reece Davis [*sic*] his articles," and, in another hand "conserninge the takinge up the grave stones in the Church, if any of them should be broken to make them good."

Attached to the bond of the said Rice Lewis & of John Lawrence, merchant, to the said William Middlebrook & Samuel Wiggen in £50 for the due performance of the above articles of agreement.

197 (194). Valuation Book of St. John's Parish for 1681. Contains the names and valuations in Wood Key ward, Blind Key, Fishamble Street, Winetavern Street, Fleece Alley, Scarlet Alley, Cook Street, Smock Alley, & Rose Alley. The highest valuations are those of the houses of Sir Francis Brewster (£60) & Lord Lanesborough (£40), both on the Blind Key.

198 (195). Accounts of some rate levied upon St. John's Parish in 1687 averaging a few pence per householder, & amounting in all to £7 3s.

199 (196). Notice from the Lord Mayor to the churchwardens of St. John's parish that the Court of King's Bench has ordered him to applot the sum of £35 sterling upon the inhabitants of the city for repair of the highroad leading from Bloody Bridge to "Twatling Street," and for making a pavement, wall & street, & "turning an arch of stone over the Brook there." Said sum is to be collected by the constables & paid to Richard Orson & William Waters, the overseers appointed by the Court.

The amount to be paid out of St. John's Parish is £2 5s. 6d. The churchwardens are to applot this sum upon the inhabitants & to return the book "fairly written" to the Clerk of the Tholsell, that warrants may be issued.

Signed by Thomas Hackett.

12th July 1688.

(In English.)

200 (197). Henry Smith, merchant, & William Middlebrook, joiner, proctors of St. John's Church, in consideration of £20 paid in hand & of the surrender of a lease made 20th May 1596 by Richard Longford & George Ardglasse, then proctors of the said Church, to Christopher Usher, "*alias* Ulster King at Armes in Ireland," for 99 years at a rent of £1 13s. 4*d.*, grant. to John Bull, shoemaker, the house wherein he now dwells on the east side of Fishamble Street, bounded on the west by the King's pavement, on the north by Mr. Peppard's house, on the east by Mr. Smith's holding, and on the south by Mr. Smith's holding called "the Black Boy." Term, 81 years, Rent, £6 7s. 6*d.* Covenants for repair, re-entry, &c.

Signed by grantors.

25th March 1692.

(In English.)

Endorsed with (1) the signatures of the witnesses present, Ralph Bunbury "curate to ye parish of St. John's," Wm. Martyn, James Fletcher, Thomas Stacey, John Lawrence, Jo. Potter; (2) John Bull's assignment of the remainder of the lease to Simon Anyon, gentleman, for £59 15s. 0*d.*, 1st Oct. 1708, signed and sealed by John Bull in the presence of Edw. Richardson, Edward Haines, & Joseph Walter; (3) a note that a memorial of the above assignment was entered in the Register Office & the execution thereof duly proved.

Signed by Bruen Worthington, Deputy Registrar.

201 (198). Counterpart of no. 200 (197) above.

Signed by grantee. Endorsed with signatures of witnesses as in no. 200 (197) above.

202 (199). Ann Slater's receipt to the Churchwardens of St. John's Church for £1 12s. 8*d.* for tiles, lead & nails.

7th March 1695.

(In English.)

203 (200). Thomas Newman, clockmaker, binds himself in £30 to Richard Adley & John Norris, merchants, churchwardens of St. John's parish, to keep in good order, for the sum of ten shillings a year, "the watch with two Dyalls" which he has set up for them in the east end of St. John's Church, & for which they have paid him £15.

Signed and sealed by Thomas Newman in the presence of Wm. Middlebrook & Dan. Malone.

4th May 1704 & 3 Anne.

(In English.)

APPENDIX.

By E. C. R. ARMSTRONG, M.R.I.A.

As the seals attached to the documents calendared above are of interest, a descriptive list of the more important examples is appended. The deeds range over a long period (i.e., from the early part of the thirteenth to the beginning of the eighteenth century), so that seals of very different dates are represented. The following points may be mentioned:—Firstly, the great superiority of the earlier over the later seals, several of the later deeds being sealed with impressions made by buttons, while the last seal of the series is an impression made from a coin; secondly, the number of individuals who apparently had no seals, and consequently used those of other persons, or seals with impersonal devices and legends. Several of the seals of fifteenth- and sixteenth-century date bear as devices letters, sometimes crowned, the impressions probably being made from signet rings. Numerous signet rings of bronze or base metal of late mediæval date are extant; it has been suggested that when these were engraved with the letter “I,” crowned, they represented the initial of our Lord’s name, the rings being worn as a charm against evil, in accordance with the common belief in the preservative power of holy names. One of the present series of deeds [No. 122 (120) dated 1451] is sealed with a signet engraved with the letter “I,” crowned; as it is used by Johanna, daughter and heiress of John Tankard, butcher, it indicates that the crown was merely ornamental, the letter representing the initial of the owner’s name.

To several of the deeds seals are attached bearing impressions of merchants’ marks. These are a series of devices consisting of a private cypher, of which a cross forms an almost invariable part, combined with the owner’s initials. The cross, which has usually two streamers attached to it, has been considered to have been derived from the symbol of St. John the Baptist, the patron saint of wool merchants: other theories suggest that it was either a distinguishing symbol to differentiate the goods of Christian merchants trading in the Eastern Levant from those of Mahomedan traders, or a magical protection against demons to whose malign influence tempests were thought to be due.¹ It may be noted that Richard Barnewall, doubtless a member of the great Norman-Irish family of that name, seals with a merchant’s mark. See No. 166 (162).

The most attractive armorial seal is that used by John, son and heir of Thomas Seriaunt, Baron of Castleknock. He used his father’s seal, which is a

¹ *British Museum Mediæval Guide*, pp. 199 and 200.

good example of an heraldic device of the period [Plate XXIX, No. 101 (100)]. Castleknock was acquired by the Seriaunt family through marriage with a Tyrrell heiress, descended from Hugh Tyrrell, who was granted Castleknock by Hugh de Lacy. The armorial seal used by John Fitz William is also of interest, as showing the arms borne by this family at that period [Plate, XXIX, No. 54 (54) (g)]: the seal of John Dillon, attached to deed No. 172 (169), which bears the well-known arms of that family, may also be mentioned.

The ecclesiastical seals most worthy of attention are those used by Stephen Derby, Prior of Holy Trinity, and Nicholas Bodenham, Vicar of the Friars Hermits, Order of St. Augustine in Ireland. The latter is illustrated [Plate XXIX, No. 54 (54) (e)].

The seal of the Provostship of Dublin is appended to several deeds, being used in some cases to authenticate documents when the seal of the person concerned was not generally known.

The most interesting of the seals with impersonal devices is that attached to deed no. 13 (12), apparently used by Johanna de Mosthpoulyn. It has for its device a lion, the beast being personified in the inscription: **Je su re de bestis*, "I am the King of Beasts."

The list of seals has been arranged in the order of the deeds: in addition to having a current number, each seal also bears the number of the deed to which it is attached, so that the reader can at once look up the latter and see the particulars of the person sealing. Plate XXIX shows a selection of the seals; in it the same arrangement has been followed, each seal having below it the number of the deed to which it is appended.

The following is a list of the seals:—

1. 3 (3). The seal of Thomas le Blound, 1295 A.D. Brown wax, circular, $\frac{1}{6}$ of an inch in diameter; device, a star of eight points. Inscription: * S' TH'OME LE BLVNT. [Plate XXIX, no. 3 (3).]

2. 8 (8). The seal of John de Capelis, called le Boteler, 1301 A.D. Brown wax, circular, $\frac{1}{8}$ of an inch in diameter; device, a stag's head full face. Inscription: * S' IOH'IS LE BOTLER. [Plate XXIX, no. 8 (8).]

3. 13 (12). Seal used by Johanna de Mosthpoulyn, widow, 1303 A.D. Brown wax, circular, $\frac{3}{4}$ of an inch in diameter; device, a lion. Inscription: * IE SV RE DE BESTIS.

4. 15 (15). The seal of William le Seriaunt, undated. Brown wax, circular, $\frac{1}{6}$ of an inch in diameter; device, a lion sleeping; above it is the

letter W, from which projects a cross formy fitchy. Inscription: S' WILLI: SERIAVNT. [Plate XXIX, no. 15 (15).]

5. 24 (23). The seal of Henry le Mareschal, son and heir of Thomas le Mareschal, 1313 A.D. Brown wax, circular, $\frac{7}{8}$ of an inch in diameter; device, two keys in pale between two busts, facing each other, a lion in base. Inscription: * S' HENRICI. FIL'. THOME. MARESCALL. [Plate XXIX, no. 24 (23).]

6. 28 (28). The seal of Richard de St. Olave, 1316 A.D. Green wax, circular, $\frac{3}{4}$ of an inch in diameter; device, a fish. Inscription: * S' RICARDI D' SC OOLAVI. [Plate XXIX, no. 28 (28).]

7. 31 (31). Seal used by William, son and heir of Richard de St. Olave. 1322 A.D. Green wax, circular, $\frac{1}{6}$ of an inch in diameter; device, the *Agnus Dei*. Inscription: * ECCE AGNVS DEE [*sic*].

8. 39 (39). The seal of Thomas le Mareschal, son and heir of Henry le Mareschal, 1332 A.D. Brown wax, circular, $\frac{3}{4}$ of an inch in diameter; device, two interlaced squares with an uncertain object, possibly a key, in the centre. Inscription: * S' THOME. MARCHAL. [Plate XXIX, no. 39 (39).]

9. 43 (44). The seal of William, son of William Comyn, knight, 1349 A.D. Brown wax, a fragment only, bearing three sheaves for Comyn.

10. 45 (45). License in Mortmain from King Edward III, 1350 A.D. This document has a much-broken impression in green wax of the Great Seal of Edward III appended to it by green and red silk ties.

11. 46 (46a). Seal used by Simon Coterele, "sadelere," 1352 A.D. Brown wax, circular seal, $\frac{5}{8}$ of an inch in diameter; device, a galley. Inscription PRIVE SV.

12. 47 (46b). The seal of Meyler (?), son of Richard de Burgo, 1354 A.D. White wax, circular, about $\frac{7}{8}$ of an inch in diameter; device, a shield charged with the arms of de Burgh, a cross with some charge in the first quarter; there are birds on each side of the shield. Inscription defaced.

13. 54 (54). Eight seals (1379 A.D.).

(a) The first is the seal of the officiality of Dublin. Green wax, pointed oval, about $1\frac{1}{4}$ by $\frac{7}{8}$ inches; device, a figure (our Lord?) holding a cross; below, under an arch, is the effigy of an ecclesiastic adoring the figure. Inscription: S' OFICIALITAT: C . . . IE.

(b) The second is the seal of the Provostship of Dublin, in brown wax. This well-known seal need not be described: see *British Museum Catalogue of Seals*, vol. iv, p. 719, no. 17, 393.

(c) Third seal, used by Brother Stephen Derby, Prior of the Cathedral Church of the Holy Trinity. Brown wax, circular, $1\frac{1}{16}$ inches in diameter; device, a shield contained in tracery work, bearing a ragged cross surrounded by the emblems of the Passion. Inscription: *SCORPIO SC' CLAVI CRVX LACEA FEL & CORONA. This interesting seal is illustrated in the *Book of Obits and Martyrology of the Cathedral Church of the Holy Trinity*, edited by Crosswaite, 1844, p. ciii.

(d) Fourth seal, used by Brother Adam Payne, sub-prior. Brown wax, circular, $\frac{1}{6}$ of an inch in diameter; device, the *Agnus Dei* within branches. No inscription. [Plate XXIX, no. 54 (54) (d).]

(e) Fifth seal, used by Brother Nicholas Bodenham, Vicar of the Friars Hermits of the Order of St. Augustine in Ireland. Brown wax, circular, $\frac{1}{8}$ of an inch in diameter; device, within a tracery border, our Lady and the Child, with a figure adoring them. Inscription: *MATER · DEI · MISERERE · MEI. [Plate XXIX, no. 54 (54) (e).]

(f) Sixth seal, used by Nicholas Serjeant. A fragment only of brown wax remains.

(g) Seventh seal, the seal of John Fitz William. Red wax, circular, $\frac{1}{8}$ of an inch in diameter; device, a shield of arms, suspended from a tree, bearing a bend charged with three pheons, points upwards, and a doubtful charge in the sinister quarter. Inscription: SIGILL: IOHIS: FITZ: WILLIAM. [Plate XXIX, no. 54 (54) (g)].

(h) Eighth seal, used by Christiana Pembroke, wife of John Fitz William. Red wax, circular, $\frac{3}{4}$ of an inch in diameter; device, a shield within a quatrefoil, charged with the letter H. There are letters in the spaces between the leaves of the quatrefoil which the writer has been unable to decipher in any satisfactory manner. [Plate XXIX, no. 54 (54) (h).]

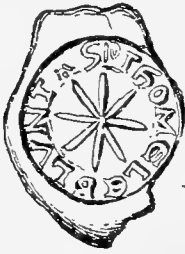
14. 56 (55). The seal of Elias Coterell, 1387 A.D. Green wax, circular, $\frac{1}{8}$ of an inch in diameter; device, within an ornamental triangle, a shield bearing a cross with three roundels in each quarter. Inscription: s' ELIE COTERELL. [Plate XXIX, no. 56 (55).]

15. 101 (100). Seal used by John, son and heir of Thomas Seriaunt, Baron of "Castrocnok" (Castleknock) (his father's seal), 1417 A.D. Red wax, circular, $1\frac{1}{8}$ inches in diameter; device, a shield within Gothic tracery, attached by a guige to a tree, bearing quarterly, first and fourth, a chevron between three (Serjeant's) batons; the second and third quarters are, perhaps, barry, but these are uncertain. Inscription: SIGILLVM: THOME: SERIAVNT. [Plate XXIX, no. 101 (100).]

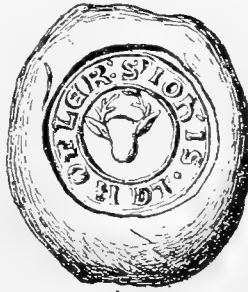
16. 127 (124). Seal used by William Bron, Chaplain, 1467 A.D. Red wax, oval, $\frac{15}{16}$ by $\frac{11}{16}$ of an inch; device, an effigy of St. Katherine crowned, with the wheel and palm branches. Inscription: SAYNT CATHRIN. [Plate XXIX, no. 127 (124).]

17. 166 (162). The seal of Richard Barnewall, 1547 A.D. Red wax, circular, $\frac{1}{2}$ of an inch in diameter; device, a merchant's mark between the letters R B (for Richard Barnewall).

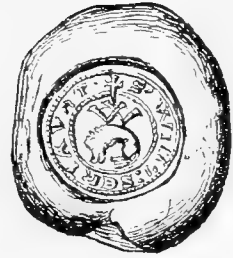
18. 172 (169). The seal of John Dillon, 1569 A.D. Red wax, circular, $\frac{1}{2}$ an inch in diameter; device, a shield bearing a lion rampant and over all a fesse (for Dillon). No inscription.



3 (3)



8 (8)



15 (15)



24 (23)



28 (28)



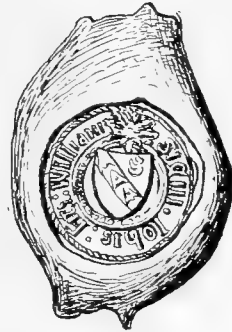
39 (39)



54 (54)d



54 (54)e



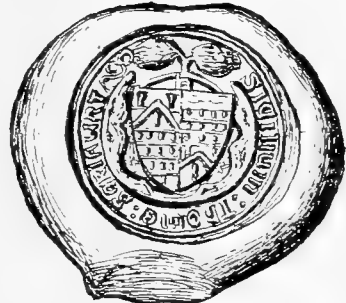
54 (54)g



54 (54)h



56 (55)



101 (100)



127 (124)

VIII.

AN EARLY DUBLIN ALMANACK.

BY E. R. MCCLINTOCK DIX.

PLATES XXX AND XXXI.

Read MAY 22; Published AUGUST 10, 1916.

IN submitting to the Academy the following particulars of a recent bibliographical discovery, I might preface my communication by observing that Bibliography is a subject for which no finality can be claimed. Notwithstanding the very great destruction of much of the early output of our presses, which every bibliographer must regret, still, from time to time, he is encouraged and rewarded by the discovery of a long-lost, and perhaps unrecorded, specimen.

In this instance the piece of printing which has again come to light in the city where it first appeared, after a lapse of 280 years, is a little Almanack, printed for the Company of Stationers, together with which there is a Prognostication, printed on a separate sheet, and having a separate title-page. Whether it originally appeared with any kind of cover I cannot say, but, when first acquired from Mr. Patrick McGrath, a dealer in old books, with whom I have been acquainted for some years, it was enclosed, clumsily stitched, in a temporary cover of a piece of cardboard. Seeing that the stitches were not contemporaneous, I cut them, and removed some inserted sheets, in no way connected with the subject-matter of the Almanack, that had evidently been sewn into the Almanack at a much later date; and thus I have been able to restore it to its original form, which is, roughly, what may be called a 16mo.

The Almanack consists of two sheets, folded in eights, without pagination. On the third page of the first sheet the signature "A 2" appears, and the signature "A 4" on p. 7. Page 17, that is the first page of the second sheet, bears the signature "B"; p. 19, or the third page of the second sheet, "B 2"; p. 21, "B 3"; and p. 23, "B 4"; and the Almanack is complete on the last page of this sheet, which would be p. 16 of it, or p. 32 of the whole.

The little book is very much stained from constant handling, and, unfortunately, the title-page has been scribbled on and altered over erasures.

A woodcut border encloses the title-page, into the design of which the signs of the Zodiac are introduced, with the Royal Arms at the top, and having at the bottom a shield, bearing a coat of arms, which I am assured by Mr. Burchaell is that of the London Society of Stationers. Within the rectangle formed by the border, and which border extends nearly to the margin of the title-page all round, the name "True" appears in Gothic type at the top, and beside it one can see the figures "1636," notwithstanding an attempted alteration, together with the words "A New Almanack and Prognostication for the yeere of Our Lord God." [The date has here been tampered with, and another, i.e., "1811," substituted in ink by some owner of the little Almanack.] The title then proceeds: "And from the creation 5598, *Being Bissactill or Leap yeere*, Composed for the meridian of the ancient and famous City of Dublin and generally for all Ireland. By *Patrick True*." There is a capital "G" after his name, elsewhere in the book more fully given as "Gent," and then the imprint "Dublin: Printed for the Company of Stationers."

I might mention that the Company of Stationers came from London to Dublin about the year 1618, and, in addition to being the State Printers of the day, they also printed for Archbishop Usher.

The title-page is largely rubricated, as is also to some extent the Almanack itself.

Page 2, or the verso of the title-page, has the opening line, "Of the yeere in generall," printed in red, followed by 16 lines in black Gothic letters. Of these the first three read, "The Julian yeere beginneth the first of January; The Gregorian yeere beginneth the 12 of December; The Church of England in Law Cases March 25." Then follow other particulars as to the commencement of years by other countries and races. Explanations are then given of certain astrological terms—the meaning of a "Month," a "Week," and a "Day" are explained, and in doing so the term is used "here in England," which confirms me in the belief that this Almanack is in part, and probably in the main part, a reprint of an Almanack composed in England.

Page 3 commences, "The Common notes and . . ." (the words at the end of the line at the edge being frayed away) "for this present yeere 1636," both for "the old accompt used in England" and "The new Gregorian accompt used beyond the sea." There is also an alphabetical list of the festival days.

On the 4th page, a cut of the human figure is given, showing the parts

affected by the various constellations—a feature common to old Almanacks—and the Signs of the seven planets appear on the same page.

The 5th page exhibits a table of the reigns of various English sovereigns, from William I down to Charles I, “Set forth for profitable use of Lawyers, Scriveners, &c.”

The Almanack proper begins on p. 6 with January. Each month occupies nearly two pages of the Almanack, and at the end of each month a space is left, apparently for notes. A four-line couplet is given at the head of each month’s calendar. Special dates or festivals are indicated in red ink. The quarters of the Moon and forecasts of the weather are given, together with other information of a similar kind.

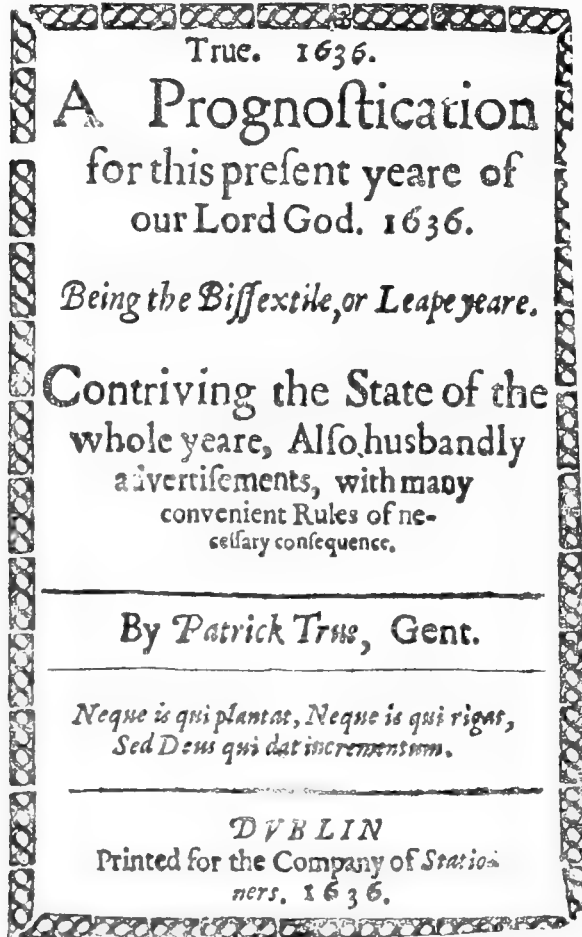
In March, opposite the 17th, the name of “*St. Patrick*” appears, but, apart from this fact, the statement on the title-page, the imprint, and a table of the hours and minutes of “Full Sea at the bar of *Dublin*,” there is no indication of special application to Dublin, except, perhaps, on the last page, where the periods of the Law Terms are set out. Presumably these must have been the Law Terms kept in Dublin, as no others would be of any local use.

With reference to the table showing high water at Dublin bar, the computation is qualified by the statement, “if not hindered by great winds, great calms, or Land Floods,” and at the foot of the table, p. 31, there is this note—“The ☾ (Moon) being E.N.E. or W.N.W., always maketh a full sea on the West part of *Ireland*, And at the Barre of Dublin, she being S.E. and by E.”

This little Almanack has been much worn and probably cut down. Its present size is about $5\frac{1}{4}'' \times 3\frac{3}{8}''$. There are two scraps of contemporary writing on it. On the title-page appears the year, “Anno R.Rs. Caroli XII,” and in the month of March on the blank space for notes opposite the 14th March is written, “My son John was born at 2 in the morning.” Later owners have scribbled in the book, some in ink and some in pencil. One of the spaces, at the end of September, refers to an eclipse, but unfortunately the date of the year is not given, but the handwriting seems to be that of its owner, in 1811. In the space at October is written in modern writing the “Repeal Rents” for about 5 weeks. In the space for November someone has written the year “1802.”

When the Almanack first came into my possession I found, as already mentioned, that there were certain leaves inserted, all dated 1811. These I have had bound in at the end, thus preserving whatever interest may attach to them. One entry relates to the large following at the funeral of the Rev. Mr. Beatty, who was buried in St. Michan’s Church in February, 1811.

Following the Almanack comes the Prognostication with a separate title-page. This page is in ordinary Roman type, some indeed in italics. It is by the same author, Patrick True, and bears the same imprint. It is enclosed in a little border of simple design. Like the Almanack, it is in one sheet folded in eights, but unfortunately only a fragment of the last leaf of the sheet remains. On the verso of the title-page is a catalogue of "Some breefe



Computations of memorable Accidents compleat within this yeere." The compiler begins with the Creation, given as occurring 5585 years prior to 1636, and continues thence downwards until he comes to the "Birth of our hopeful Prince *Charles*, 29 May, 6 (years)" that is, presumably, six years before the Prognostication appeared. It is given almost entirely in Black Letter. The four quarters of the year, beginning with winter, occupy 4 pp.

some description of each quarter being given, and on the 7th page (sig. c 4) we have rules of good husbandry for each month: following which is information as to eclipses, a short view of astronomy "to give satisfaction to the Vulgar," and "Ordinary Signes of faire Weather" and of rain and wind.

On the second leaf, page 3, is the signature c 2, next c 3, and then c 4, and the capital letter "A" appears on the right-hand lower corner of the verso of c 7 (page 14).

Interest in this Almanack is much enhanced by the fact of its having been hitherto unknown, or at all events uncatalogued. It is not mentioned by Evans in his well-known work on Irish Almanacks.

Some three or four years ago I had the pleasure of submitting to the Academy a detailed account of a still earlier Almanack, printed in Dublin in 1612, the earliest Almanack known to have been printed in Ireland, consequently the present one comes second.

The Christian name of the composer suggests that he was Irish, as the name "Patrick" was not used in England at that time. It *was* used in Scotland, however, and possibly he may have been a Scotchman. The only printers in Dublin at that period were the Company of Stationers; but I think "printed for" means that it was printed at Dublin, and most probably by William Bladen, their agent here, as he bought their Dublin business some four years later.

It is almost wonderful to think how a booklet like this could survive, especially as it appears to have suffered in its time a considerable amount of rough treatment; and though, perhaps, of little intrinsic value, yet it is interesting, inasmuch as it shows the kind of Almanacks produced during that period and the kind of information they provided.

IX.

ON AN OGHAM INSCRIPTION RECENTLY DISCOVERED IN
COUNTY WICKLOW.

BY PROFESSOR R. A. S. MACALISTER, D.LITT., F.S.A.

PLATE XXXII.

Read JUNE 26. Published AUGUST 10, 1916.

THE Ogham-inscribed monument which forms the subject of this paper was found under curious circumstances. I had occasion, two or three months ago, to purchase some lantern-slides of rude stone monuments from the stock of Mr. Thomas Mason, of Dame Street in this city; and among them was a slide of this stone, which Mr. Mason had photographed some twelve or fifteen years ago. I found the tips of the scores in examining the lantern-slide. The marks had been seen at the time by Mr. Mason, as he tells me, but he had not been able to make up his mind as to whether they were Ogham or not. The photograph had been taken from the side opposite to the Ogham, so that only the tips of the letters on the H-side were visible; but it seemed impossible to doubt that the monument was a genuine Ogham. I visited it on 17 April 1916, along with some friends, including the Rev. R. K. Hanna, who kindly placed his motor-car at our disposal, thereby solving the problem of reaching a most inaccessible monument with the minimum of difficulty. The site will be found on the six-inch map, Wicklow sheet 22, a little to the left of the middle of the sheet. The name of the townland is there spelt "Knickeen"—it should be *Cnuicín*—and the stone is marked "The Long Stone," in italics, not in the Gothic lettering in which antiquities are usually marked. The same is true of the other Ogham in the neighbourhood, that now in Mr. Goddard's garden at Donard.

The monument is a slab of granite, 7 feet 6 inches above ground. It is comparatively narrow below, but broadens out fan-wise to a width of 6 feet on the north and south faces. The thickness is 2 feet 2 inches. The stone has had pieces broken from it, seemingly in comparatively recent times, to judge from the appearance of the fractures; one block, which possibly once

belonged to it, is lying on the ground at its foot. These injuries have fortunately done no damage to the inscription.

The scores are broad and shallow; they are all traceable, and most of them easily read, though, as is usual in the case of a granite stone, the surface is much disintegrated. The inscription occupies the left-hand edge of the northern face of the stone, and runs up over the angle at the top. It is quite short, consisting of the following eight letters only:—

MAQI NILI

The L is at the upper angle of the inscribed edge, and the concluding I is on the top of the stone. There is no sign that the inscription was ever longer; I searched all the angles and the face of the stone carefully, but in vain, for any name to precede MAQI.

The stone thus commemorates a certain "son of Niall." The name as written is certainly NILI, not NELI, which is what we might have expected. The fifth score of the I is, however, considerably deeper than the other four (all of which are traceable), and it is not impossible that the writer cut an I in error, and endeavoured to cancel the superfluous score, with the result that he made it all the more emphatic!

The great size of the stone would suggest that we have in it the monument of a person of some importance. Yet the person's name is not given. This anomaly can be explained in one of two ways.

(1) That the stone commemorates "The Mac Néill," *par excellence*, the head of the Clann Néill of his time. The objection to this is two-fold. In the first place, the stone is far from any Clann Néill territory. In the second place, this method of nomenclature is hardly old enough, so far as the existing documents permit us to judge, to be found in an Ogham inscription.

(2) I therefore reject the foregoing explanation, in favour of the alternative, which is to the effect that the importance of the person commemorated lay not in himself but in his father. Niall was presumably the chief of the district; the owner of the monument had no claim to renown except through the accident of birth which had made him the chief's son. He may, indeed, have been a mere youth; and under such circumstances it would not be surprising if he had been commonly spoken of in the district as "Niall's son" rather than by his own insignificant name.

We have then to find a chief of the ancient tribe in whose territory the stone is standing—that is, the Ui Máil. The brief genealogical fragments relating to this tribe in the Books of Leinster and of Ballymote, and in the Bodleian ms. Rawl., B 502, give us no help. But on turning to the Annals of the Four Masters we find what we want at once. Niall, son of Aedh Allan,

chief of Ui Máil, died A.D. 847. What is more, another chief of the same tribe, by name Cairbre mac Cionaedha, died earlier in the same year; Niall's tenure of office must therefore have occupied only a few months. We are not absolutely certain that Niall mac Aedha Allain was the only chieftain of the name who held that rank among the Ui Máil; our list of chieftains of this tribe is very imperfect. But he must have been a person of some note to have earned a place in the Annals, notwithstanding the shortness of his reign; and while we cannot be certain, I venture to think there is some probability in the identification suggested. If it could be maintained, it would give us what we have never had before: an Ogham stone dated exactly to the year.

X.

UNPUBLISHED LETTERS OF WILLIAM PENN.

By REV. R. H. MURRAY, Litt.D.

Read JUNE 26. Published AUGUST 10, 1916.

THROUGH the kindness of Mr. Neale, of Dublin, I have been able to secure copies of the following unpublished letters of William Penn. The first is unsigned but addressed, while the second is signed but unaddressed. They were written after the final return of the great Quaker to England, and deal, *inter alia*, with his financial embarrassments. The colonies had no proper defensive force, and the establishment of such a force occupied the attention of the province of Pennsylvania. The agent of Penn, James Logan, became involved in the interminable disputes between the province and the territories. Governor John Evans, to whom the first letter is addressed, took an active part in these local squabbles. One matter of importance was the proposal to convert Pennsylvania and the territories into Crown colonies. In 1701 a bill had been introduced into Parliament with this very purpose in view. The "D. L." of the letters is David Lloyd, a leading Quaker lawyer. There were serious personal differences between him and Penn. So long as the latter remained in the colony he found he was able, on the whole, to beat Lloyd: the election of 1700 is a case in point. Colonel Quarry proposed the impeachment of Lloyd, but the Council voted only to suspend him. Penn was to find out the difficulty of defeating a rival, especially when the rival was on the spot, and he was living in the suburbs of London.

London, 30.7.1705.

Coll. Evans &
Esteemed Frd.

Thy last was of the 5th month last, in hast, so short, chiefly intimating the hasty coming over of Coll. Quarry. I hope he has no commission from our ungrateful crew on that side of the water, the unwearied troubler of our poor Israel, and here are our Pennsylvania Company and Lumbys that await upon him, and I fancy next Coll. Nicholsons and perhaps Ld. Corn.¹ affaires, those Law Suits may go a good way to engage him upon this Voyage: However I hope the

¹ This is Lord Cornbury (1638-1709), afterwards second Earl of Clarendon.

man that knows him to ye. Bottom will tread hard upon his heels, or close at least, If you there apprehend any mischief.

I have in mine by Burnam, and in my last by Guy, or that Ship at least been large to several of thine, and therefore shall only tell thee that thine of the 7th Mo. 1703/4, 29th 3/mo. 1704, 30th 3/mo. 1704, 27th 5/mo. 1704, 25th 6/mo. 1704, 4th 8/mo. 1704, and 6th 2/mo. 1705 came alsoe to hand which saving that I have mentioned, I have answered. I lament the separation of the Province & Counties; and I affirm I never intended so, but upon my condition I left my Governmt. and then, that ye. Countyes as well as Province should have the same freedome.

But the Lower Countyes were too much the occasion of of¹ all this Confusion, I fear by adhering to ye. Enemyes of the Province. 2. and moor, those Villanous Vipers. And it pleases me not a little, to find thee so apprehensive of their practices, and that thou hast made so great part of the best of the Church People sensible of their base and unreasonable designs. Not but that D. L. (one of y^e. worst of men) envying moor, as folks of a trade use to do, as well as moor leading him thy way by begrudging Loyd his large practice among our Frnds. hath contributed to our Confusions. I have not yet presented the Queen any of the Addresses sent me,² because signed by a person so obnoxious as D. L. and I am discouraged from it on that Acct. As for the Laws if the Fleet stays but 14 days longer longer,³ what are allowed shall be sent and a letter from the Lords Commissioners for Trade and Plantations that will not disgust thee. No Surrender yet but when done (if done) depend upon it, I shall make it my care for myself as well as thee, to secure ye. Governrs. place for thee. The old Keeper is out, and William Cooper will be declared to morrow, and changes after that manner elsewhere are expected which I hint for thy Aime. Coll. Quarry with his Protector Perry have been with me, professes all fairness and friendlyness, and though thou didst not take his advice in proceeding agt. the vessel in an Admiralty way, yet he will only ask ye. opinion of the Commissioners of ye. Customs for information and not complaint. I know the Lords of Trade will drop it, and that of the Wool if not prest, for they were pleased ye New-Englanders came at the Wool of the Road Island so ingenuously as they did 2 yeares ago by sheering of them on Connetticutt Side. But complaint came to me from Philadelphia against ye. increase of publick houses, and the high rates of 8% Licence yearly which at 50 of them comes to 400 £ p annum, and they say it is more than twice the value of what they have or give here for them. I called tother day at thy mothers, but she was not at home, is well, so thy Friends salute thee, much is said of the lewdness of Pensilvania. I beg of thee to have a regard to my character, and give not that advantage against me either with God or good or bad men whose ill use

¹ There are two "ofs" in the original.

² This underlining is done by Penn.

³ There are two "longers" in the original.

of it I most fear, on a publick acct. I just now Recd. thine of 5th 5/mo. (July) and am very sorry that wicked man D. L. could blow up any of his mermaidons to such a pitch of brutishness as thy Acct. of William Biles relates that is a meer vox & praeterea nihil, a Coxcomb and a Pragmatick in graine. That Fellow's plantation is a Robbery upon Pennsbury, and if there be a grant 'twas not a purchase from me, nor any I owed Land unto, for it was surveyed long before and done in my absence, formerly, and judge Mompesson¹ can tell if I may not be deceived, in my Grant as well as the Crown, be it King or Queen, Since, if confirmed, it was upon Surprize, and rattle an Inquisition about his Eares, if not a prosecution. And know that when the time is expired of Sessions he may be taken to task, Since the Service he may pretend he was to attend is over. And first complain to the Friends, and if they wont or cant bow him to make satisfaction, take it by Law, thy Selfe. Pray mind what I say, be secret, which is discreet, and fall on him or any other such unruly People at once, and make some one example to terrifie the rest. Thou hast not only my leave, but liking and encouragement whether call'd Quakers or others. I hope yet to weather my Difficulties here and there, and I hope what I sent p T. Guy 3 or 4 mo ago to testifie my care of a Surrender, of their Priviledges, every way, will deeply affect the honest hearted to be thankful and grateful. I have told thee of Coll. Qs discourse and professions before Mercht. Perry and some of our Friends and shall watch his steps. I pretty well ken and shall watch him. Do you that are very good Friends there, your part to compose and maintain my just cause there, and I hope with Gods assistance to prevent our Enemies here. I long since told J. Logan I wanted a duplicate of the Laws, those sent under ye. great Seal,² being presented to the Lords, and so out of my power, but as I occasionally borrow them. Howbeit almost $\frac{1}{2}$ of them are demur'd to, as I have already observ'd. Perhaps by this opportunity I may say more about them, I could have those that are approv'd to send presently but all ye. Laws being under one Seale they scruple having them presented by parcells and they cant present the body but the rest will receive the Queens negative, and then they cease and you will be thereby deficient in Governmt, so that I am at a stand, whether it may not be best to let them rest as they are, till those excepted agt. are amended, wording them more properly being the greatest reason for the Attorney-Genl. and Lords Exceptions. Wherefore if

¹ Penn appointed him Chief Justice of Pennsylvania, February 17, 1705. In the letter accompanying the judge's commission Penn wrote: "I went to Pennsylvania to found a free colony for all mankind of any nation, belief, or circumstance that should go thither, more especially those of my own profession, Not that I would lessen the civil liberties of others, because of their persuasion, but screen and defend our own from any infringement on that account."

² The great Seal of these early provincial days consisted of the arms of the Penn family: there were a shield crossed horizontally by a fess or band bearing three torteux or biscuit and the motto, "Mercy, Justice." The shield and motto were surrounded by a band bearing the words: "William Penn, Proprietor and Governor of Pennsylvania."

they approved by the Lords go no further. it is to save the rest till they come in fuller Termes to be approved also. My Toyle and expensive daily attendance with a boy to wait on me. and a Scribe to assist me at above 40 5£ p anno besides lodgings and food etc are well known here even to great streightness. How I can do more and serve them better I dont know. The Lord uphold my life to my poor Family under all my troubles. Among many that ask for thee Sr. Roger Mosson is one, 'twas yesterday and remember to thee, and was not displeas'd at the Acct. I gave him.

Our hearts here are great, and the mightiest party making that . . .

[Here the letter abruptly ends.]

London, 7th. 12 mo. 1705.

Honoured Friend

I did in my last inform thee, of what Letters I Recd. from thee, since which came that of the 22nd Augt. the last before being of 5th of July as thy dates express. I am truly glad thy state of health returns thy great usefullness to me engages me to desire and hope it and my Friendship not less; and as it is pleasing news to all thy Friends.

I sent thy Mother and friend Lawton theirs, who are with the rest of thy Friends well and salute thee: Mine are also I bless God, with the addition of another boy. now five in all, and with their Mother at their Grandfathers at Bristol. Our Laws are before the Queen, and what cannot be done at once must be done at twice. for I will take the Confirmation as I can get it. J. Logans last was of 9th 9mo. that by the Nonsuch is not yet come to hand nor Ld. Cornberrys 2 days ago. the lessor Letters are come to hand. which I admire at, so can send no answer.

Things go smooth with the Queen as to home and foreign business and in Spain by Ld. Peterboroughs Letter to me (who succeeds so far that most of Valentia and Arrogan have declared for the now King Charles the 3rd) who has made him Generallissimo of all his Armies everywhere, I had a letter from him of the 2d. 9mo. last. two days after the Secretarys and if the Recruits sent him, get time enough that King will in all probability be in possession of Spain in a years time. For my surrender I govern myself by the dealings I find among you towards me. If I may believe Coll. Quarry he goes highly disposed to favour our affairs, words and his had. before divers. have pledged performances and I cannot perceive here otherwise. he sees how it is with me and that it will not hurt his interest to befriend mine. and a little time after his arrival if thou etc think it for my advantage that he comes into the Council, he is willing, and I should be so too, and that he be first or second thereof to show he is reconciled.

I wait ye. conclusion of the last assembly, finally to take my own measures, and I hope to have it by the Pacquet not yet come to hand. I cannot at this distance judge. but must depend upon thy Judgmt. and my best friends and time.

James writes to make the best of my time, and again that ye. people would not have me to do so, if not done. Pray agree what I have to do and send it me p first. I will lose no opportunity, the inclosed is the original of the wt. I sent of 7 and 8 last, by our last opportunity, fear not my regards to the , I hear by Coll. Quarrys Pacquet that is arrived p Nonsuch, that the lower Countys have granted 1d p pound, I hope ye. Province will in no wise come behind them the continuas̄on whereof would make our wheels go the faster, and you then got fresh heart. I know thy natural abilitys, and acquired address, and hope to feel the good effects thereof. I send thee a new Commission wth. that Bullbegger left out of reservas̄on to me or my Heirs in Legislatiōn lodging that in thy brest of Integrity, which I rely upon, for that was made a mighty thing of. I Hope thou keeps a good correspondence wth. Coll. Seymour our next neighbour because of the Marylanders claim that I hope is more vexatious than hurtfull. I shall press the ruīng of the line, as I have done, and so no fault of mine it has not been before, but I know not what James Logan means by securing against ye Crowns petentions as to the Boundaries. I have writ him of my private affairs and I hop his zeal honesty and good service, will keep him firm, and his own prudence in a due temper to give them acceptance with the concerned. In all occasions show an utmost care not to offend on the side of the Queens Revenue, and the just bounds of Admiralty authority, Coll. Quarry has promised great moderation, and prays thou wilt take him with thee, as he desires to confer with thee in those things, that so all occasions of misunderstanding may be prevented. I have writ also largely to our Frds, that writ so copiously to me, and they and their Interest prevails in this last Election and Assembly.

My sister, Cous Pools, Cous John, from Dantick, my own son, and self dined at my son and Daughter Aubreys to day all well and salute thee. Coll. Quarry going early to morrow I must close (leave much to him to discourse and advise, upon honour, for the ships lye in the Downs) but not without the honest love and regards; wishing thee the best success, for thy own honr. and interest as well as mine and am

Thy faithfull and affecte friend

Wm. Penn

Give my salutes to all our friends
in Governmt. & professions as if named.
Vale.

Penn was a courtier, a scholar, and a soldier. He was the personal friend of men so diverse and hostile as John Locke, Algernon Sydney, Archbishop Tillotson, and George Fox. He knew intimately James II and William III: he was presented at the Court of Louis XIV, and he met the Czar.

Montesquieu compared him with Lycurgus. Jefferson pronounced him "the greatest lawgiver the world has produced; the first in either ancient or modern times, who laid the foundations of Government in the pure and unadulterated principle of peace, of reason, and of right."¹ He had a respect for the freedom of conscience unusual in his own day. His relations with the Indians, his plan for the union of the American colonies are proofs of his far-sightedness in his adopted country, while his scheme for a general European federation, and his advocacy of peace, attest it in the land of his birth. Nor was this idealism confined to paper. In the constitution which he probably framed for Pennsylvania in 1676 he attempted to combine democracy and toleration. In the course of time some of the theoretical devices of the new constitution disappeared, but civil and religious liberty remained secure. That Montesquieu and Voltaire should admire it is intelligible. That Coleridge and Wordsworth should have contemplated emigrating to the land where it was in operation is remarkable.

This practical idealism was quite in keeping with the character of the man. To say with William Penn, "The Tower is to me the worst argument in the world," is one matter, but to act upon it is another. Penn did act as he wrote, and this lends additional weight to his book on "The Great Case of Liberty of Conscience Once more Briefly Debated and Defended," 1671. Perhaps the zeal of the Quaker received some inspiration from the fact that he was in Newgate when he wrote this carefully reasoned plea. To him the sphere of the State and that of the Church were distinct. The business of the State is to protect the property of men, not to save their souls. Here, indeed, is the contribution he made to the theory which John Milton and Roger Williams had advocated before him. Penal laws were, therefore, wrong, for they destroyed the security of property. His writings prove, if proof were required, that England was becoming a commercial nation. Can such a nation impose a test for all the occupations of life? Will it not thereby be seriously hampered in the mercantile struggle?

These are practical arguments in favour of toleration, but his pamphlet presents idealistic arguments. As a Quaker he held that God gave inner light to man. As this inner light was given to man in sundry stages and in divers manners, how could one man be so presumptuous as to persecute another? Penn elaborately demonstrates that the imposition, restraint, and persecution for matters relating to the conscience directly invade the Divine prerogative. Is a proof required of this statement? At once he tells you that government over the conscience is the incommunicable right of God,

¹ Hazard, "Register," xvi. 43.

that it constitutes a claim to infallibility, and that only the operation of God's Spirit can beget faith. Revealed religion thus helps the claims of conscience: so too does natural religion. With Grotius and the Cambridge Platonists he maintains that toleration is a natural right. In a state of nature men perceive that there is a God, but obviously no form of worship is prescribed. Penn quotes that great master of the sentences, Dominicus a Soto, "That every man hath a natural right to instruct others in things that are good, and he may teach the Gospel truths also; but he cannot compel any to believe them, he may explain them."

The survey from history is illuminating. The dicta of the fathers are invoked. Lactantius, Hilary, Jerome, and Chrysostom all yield evidence that they understood the blessings of liberty of conscience. Nor are modern times forgotten. The precepts of James I and Charles I are set forth. Moreover, did not Stephen, King of Poland, say: "I am king of men, not of consciences; a commander of bodies, not of souls"? Did not the King of Bohemia affirm, "That men's consciences ought in no sort to be violated, urged, or constrained"? It is clear that Penn has taken heed to the advice of Hobbes, viz., that predominance should not be given to classical parallels. Republican as he was, Penn saw the force of the objections of the philosopher of Malmesbury, and used illustrations from his own day. He is on strong ground when he uses in his "Persuasion to Moderation to Church Dissenters" the success of the measures of toleration granted in the Netherlands, France, Bohemia, Germany, and the plantations. Even Russia furnishes an example for Penn. "Strifes about religion," said Grotius, "are the most pernicious and destructive; where provision is not made for the Dissenters: the contrary most happy, as in Muscovy."

From this view Penn never wavered. In 1687 he published another of his many pamphlets, "Good Advice to the Church of England, Roman Catholic, and Protestant Dissenter." Now he considers a national church highly inadvisable. Of course, he supported the Declaration of Indulgence. That it was unconstitutional did not move him in the least. Was not the constitution of man more fundamental than that of England? There was a natural right to follow reason and conscience, and no human law ought to infringe such sacred rights.

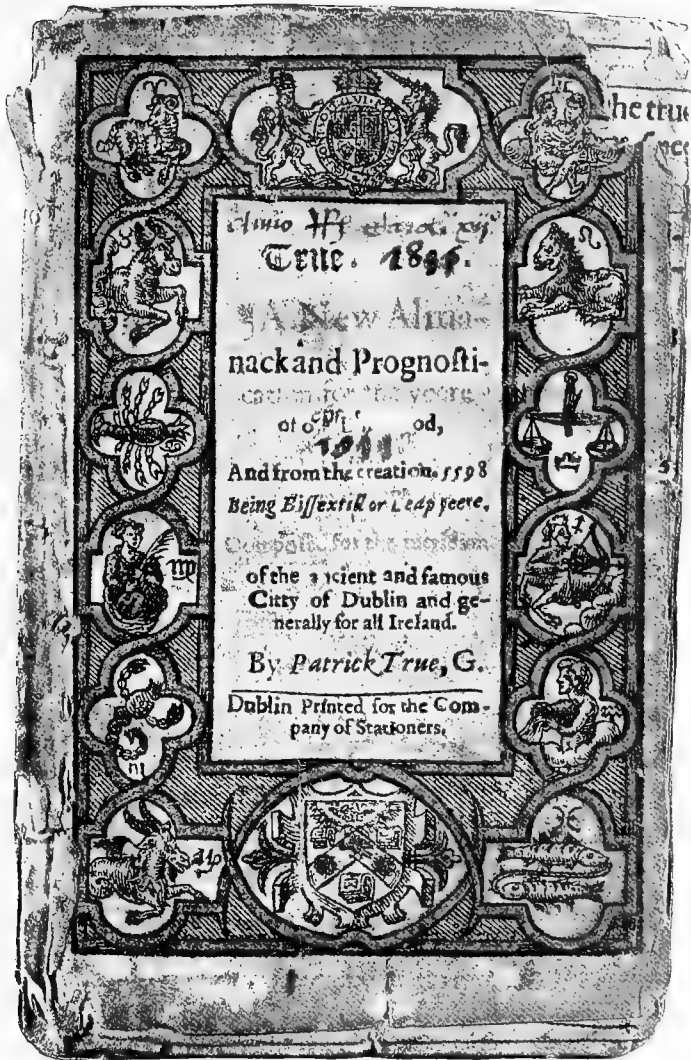
The belief in inherent right is no discovery of William Penn. It lies implicit in the English tendency to look to the past as the age in which its liberties were preserved undefiled from more modern developments. "To recover our birthrights and privileges as Englishmen," "to purchase our inheritances which have been lost,"—such are the reasons Cromwell's men

assigned for taking up arms.¹ Lilburne makes the same complaint, which moves Thomas Edwards to scorn.² Lilburne, however, represented his time more truly than Edwards.³ The Puritans, then, produced the theory of natural rights. What it means Rousseau has made plain enough to the world.

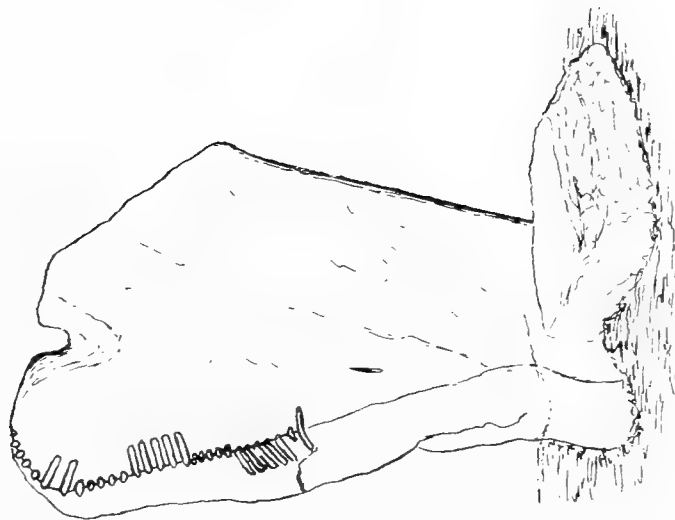
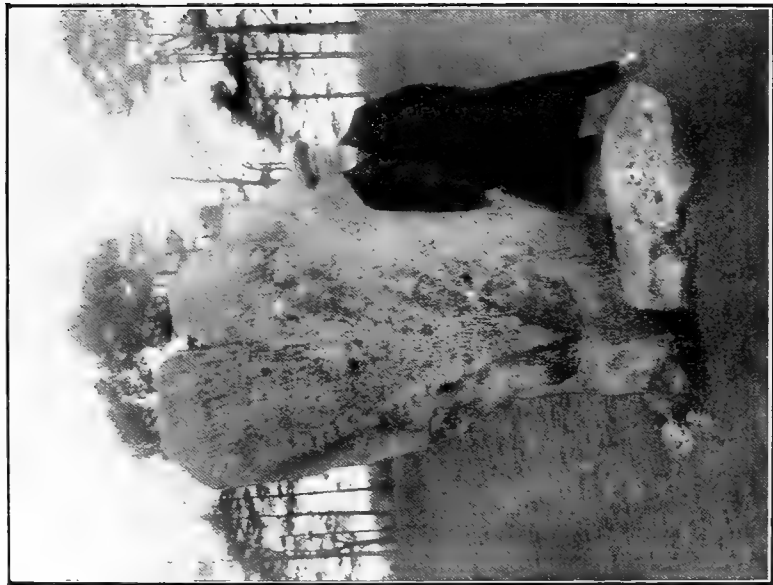
¹ The Clarke Papers, ed. C. H. Firth, vol. i., pp. 235, 322.

² Lilburne, *Just Man's Justification*, pp. 11-15.

³ Edwards, *Gangraena*, pt. iii, pp. 16, 20.



Title-page.



MACALISTEE.—OGHAM INSCRIPTION IN CO. WICKLOW.

XI.

THE CATHACH OF ST. COLUMBA.

BY REV. H. J. LAWLOR, D.D., LITT.D.

PLATES XXXIII-XXXVIII.

Read JANUARY 10. Published SEPTEMBER 4, 1916.

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PRINCIPAL AUTHORITIES.

ADAMNAN.—*Adamnani Vita Sancti Columbae*. See REEVES.

BERGER.—*Histoire de la Vulgate pendant les premiers siècles du Moyen Age*, par Samuel Berger, Paris, 1893.

BRIGHT-RAMSAY.—*Liber Psalmorum*. The West-Saxon Psalms; being the prose portion, or the “first fifty” of the so-called Paris Psalter, ed. J. W. Wright and R. L. Ramsay, Boston and London, 1907.

COD. SAL.—*Acta Sanctorum Hiberniae ex Codice Salmanticensi*, ed. C. de Smedt et J. de Backer, Edinburgh, 1888.

COLGAN.—*Acta Sanctorum veteris et maioris Scotiae seu Hiberniae*, vol. i, 1645, vol. ii (*Triadis Thaumaturgae . . . Acta*), 1647, ed. Joannes Colganus.

HEYSE-TISCHENDORF.—*Biblia Sacra Latina Veteris Testamenti*, ed. T. Heyse et C. de Tischendorf, Lipsiae, 1873.

KEATING.—*The History of Ireland* by Geoffrey Keating, D.D., ed. D. Comyn and P. S. Dinneen (Irish Texts Society), London, 1902-1914.

LAGARDE.—*Psalterium iuxta Hebraeos Hieronymi*, ed. P. de Lagarde, Lipsiae 1874.

- PEREGR.—The tract “de Causa Peregrinationis Sancti Columbae,” printed below, Appendix III.
- PLUMMER.—*Vitae Sanctorum Hiberniae partim hactenus ineditae*, ed. C. Plummer, Oxford, 1910.
- REEVES.—The Life of St. Columba, Founder of Hy, written by Adamnan, ed. W. Reeves (Irish Archaeological and Celtic Society), Dublin, 1857.
- SKENE.—*Celtic Scotland, a History of Ancient Alban*, by W. F. Skene, vol. ii (Church and Culture), Edinburgh, 1887.
- STOKES.—*Lives of Saints from the Book of Lismore*, ed. W. Stokes, Oxford, 1890.
- VALLARSII.—The text of the Gallican Psalter as printed in *Sancti Eusebii Hieronymi . . . operum tomus decimus . . . studio ac labore Dominici Vallarsii*, Veronae, 1707, col. 180–430.
- ZCP—*Zeitschrift für Celtische Philologie*.

MANUSCRIPTS AND TEXTS.

- A.—Codex Amiatinus: Florence, Laurentian Library (Latin Bible, with Psalter according to the Hebrew. Northumbria, c. 700). Old Testament, in Heyse-Tischendorf.
- B.—The Argumenta Psalmorum of Bede. Printed in Bright-Ramsay.
- C.—The Cathach Psalter.
- D.—British Museum, Cotton, Vespasian A. i. (Psalter of St. Augustine, Roman. St. Augustine’s, Canterbury, cent. viii. The headings, which are on ff. 9–11, are later than the text).
- E.—British Museum, Egerton, 1139 (Psalter of Queen Melissenda, Gallican. England, c. 1140).
- F.—British Museum, Cotton, Vitellius E. xviii (Latin Psalter, Gallican. England, cent. xi).
- G.—Vienna, Hofbibliothek, 1861, formerly 652 (Psalter of Dagulf, Gallican. France, between 782 (?) and 795).
- H.—British Museum, Harl., 5786 (Triple Psalter, Greek, Latin (Roman), Arabic. Before 1153).
- K.—The Blickling Psalter, in the Library of the Marquis of Lothian at Blickling Hall (Roman. England, cent. viii).
- L.—Library of Lambeth Palace, 427 (Anglo-Saxon Psalter. South of England, cent. xi). The superior numbers indicate the four series of Psalm-headings in this ms.: 1 blue, 2 green, 3 black, 4 violet.
- M.—British Museum, Add. 18859 (Psalter, Roman. Monte Cassino, cent. xii).
- N.—British Museum, Royal, 2. B. 5 (Latin Psalter, Roman. England, cent. xiv).

- O.—Oxford, Bodleian, Auct. D. 4. 6 (Psalter, Gallican. Reading, 1158–1164).
- P.—Paris, Bibliothèque Nationale, lat. 2 (Second Bible of Charles the Bald. Psalter Gallican. France, c. 865). I quote the rubrics from Ferrand; *Liber Psalmorum cum Argumentis, Paraphrasi et Annotationibus, Luteciae Parisiorum, 1683.*
- Q.—Paris, Bibliothèque Nationale, lat. 4 (Bible of Le Puy. Psalter according to the Hebrew. France, cent. ix init.). I quote the rubrics from Ferrand, *op. cit.*
- R.—Karlsruhe, Augiensis, 107 (Psalter according to the Hebrew, cent. x). I have taken the Psalm-headings from the collation in Lagarde.
- S.—Paris, Bibliothèque Nationale, lat. 8824 (Anglo-Saxon Psalter, cent. xi). The entire series of psalm-headings is printed in Bright-Ramsay.
- T.—British Museum, Cotton, Tiberius C. vi (Latin Psalter, Gallican. England, cent. xi).
- V.—Vulgate or Gallican text of the Psalter, as printed in Heyse-Tischendorf.
- Z.—British Museum, Stowe 2. (Latin Psalter, Gallican. England, cent. xi).
- Σ.—St. John's College, Cambridge, C. 9. (Southampton Psalter. Irish, cent. xi).
- α.—Lost ancestor of A and R; see p. 266.
- β.—Lost ancestor of A and B: see p. 275.
- γ.—Lost ancestor of A and C: see p. 288.
- ρ.—Lost ancestor of R and Bamberg A. 1. 14 (Quadruple Psalter, 909): see Lagarde, p. iv, and below, p. 266.

INTRODUCTION.

THE DISCOVERY OF THE MANUSCRIPT.

IN the Library of the Royal Irish Academy, where it has been deposited since 1843,¹ there is a very remarkable cumdach, the property of E. Thomas O'Donel, Esq., D.L. It is of silver, overlaid, in some parts, with gold.² From an inscription on the shrine itself, and another on the case in which in later days it was enclosed, we learn something of its history. It was constructed between 1062 and 1098, at the order of Cathbarr O'Donnell, the head of the clan of which St. Columba of Iona was a member, and Domhnall mac Robartaigh, comarb of St. Columba at Kells, by Sitric, one of a family of artificers who had some connexion with the monastery of Kells. It was repaired some

¹ It was handed over to the Royal Dublin Society by Sir Richard O'Donel in April, 1842 (Proc. R.D.S., vol. lxxviii, Proceedings of Council, p. 66), and transferred to the Academy at the end of May, 1843 (*ibid.*, vol. lxxix, p. 104, Proc. of Council, p. 61; Proc. R.I.A., ii, 370, 403).

² For a full description, see Appendix I.

centuries later, apparently in the fourteenth century, when the present lid was substituted for that which had originally been attached to it. After the Treaty of Limerick, Daniel O'Donel, the representative of the family to which the cumdach has always belonged, who was attached to the cause of the Stuarts, left Ireland for France, and took the cumdach with him. Twenty-seven years later he became a Brigadier General in the French army.¹ In France the shrine was found once more to be in need of repair. O'Donel caused this work to be done in 1723, and at the same time provided it with a silver case, intended to protect it from further injury. It is interesting to observe that the shrine was then believed to contain a relic (*pignus*) of St. Columba, commonly called the "caah" (*cathach*), of the exact nature of which possibly nothing was known. The cumdach was, in fact, closed, and for at least two centuries, as will appear later, it had been held that it was unlawful to open it.

The cumdach remained in France for more than a century. It was found in 1802 in a "monastery or college at Paris," was brought to Ireland by Sir Capel Molyneux, and by him was handed over to his father-in-law, Sir Neal O'Donel, Bart., of Newport, County Mayo. Ten years later his son, Sir Neal O'Donel—the second baronet—employed Sir William Betham, then assistant to the Ulster King of Arms, to compile a pedigree of the O'Donel family. Sir William borrowed the shrine from Dame Mary O'Donel, to whom it had been bequeathed by her husband, the first Sir Neal, with a view to inserting a description of it in the pedigree; and while it was in his custody, in 1813,² he performed the "unlawful" act of opening it. He found, contrary to current belief, that it contained a wooden box, "very much decayed,"³ in which were some leaves of a Latin Psalter and "a thin piece of

¹ J. C. O'Callaghan, "History of the Irish Brigades," 1870, pp. 113-115.

² The date is fixed by the Bill of Complaint of Dame Mary O'Donel, dated 30 April, 1814, and the reply of Sir William Betham, sworn 9 June, 1814. Lady O'Donel had instituted an action in Chancery against Betham, charging him with having opened the shrine, contrary to an undertaking given by him that he would not do so, and with having purloined its contents. Betham's reply gives a full account of the opening of the cumdach, much more interesting than that which he published thirteen years later, but inconsistent with it, and less creditable to himself. He states, *inter alia*, that, in spite of the report that it contained a portion of St. Columba's body, he himself expected to find a manuscript enclosed in it. This was a very astute inference from the parallel case of the shrine of the Book of Mulling, which had been examined by Vallancey.

³ This description is certainly true. For Sir William Betham, before the shrine was opened, tested his hypothesis that it contained a manuscript by passing a "slender wire" through a small opening in it, with which he rubbed the edges of the vellum leaves. It must have pierced the decayed wood. It may be added that this test would have been useless if the manuscript had then been a solid mass. See below, p. 246, note ¹. There are wooden cases in the Domnach Airgid and Lough Erne shrines in the Academy's collection.

board covered with red leather, very like that with which eastern MSS. are bound." The leaves, he tells us, "appeared to have been originally stitched together, but the sewing had almost entirely disappeared."¹

It appears that no one thought it worth while to preserve the wooden box or the board covered with red leather, or even to measure or describe them. And though the stitching had not entirely disappeared, no record was kept of the way in which the leaves were arranged in gatherings. The binder's knife has deprived us of all possibility of discovering the arrangement now.²

By the kind permission of its present owner, I have been enabled to make a study of this interesting manuscript, the results of which I propose to lay before the Academy.

DESCRIPTION.

The Cathach³ is a fragment consisting of fifty-eight consecutive leaves, all of which are more or less mutilated. The first verse of which any part is legible is Ps. xxx. 10, and the last Ps. cv. 13. Consequently the existing leaves, before mutilation, included rather more than half the Psalter, and the manuscript when complete must have had about 110 leaves. That it was complete in the eleventh century is not probable.⁴ It is true that the loss of portions of the leaves may be due, not to rough usage before it was encased, but to the action of damp after that event. And it is possible that a considerable number of the leaves were so far decomposed when the cumdach was opened that they were thought unworthy of preservation. Sir William Betham is not very explicit on that point. He writes thus⁵:—"It was so

¹ W. Betham, "Antiquarian Researches," i, 110. Betham was obviously ignorant of O'Donnell's Life of St. Columba, which will engage our attention in the sequel. The shrine, he says, had been closed for "more than a century" (*i.e.* from the time of Daniel O'Donel?), "under an idea that it contained the bones of St. Columkill himself." This, I believe, was an inference from the inscription on the outer case, according to which it held a *pignus Columbani*. The word *pignus* was used for the body of a Saint after death (see, *e.g.*, *V. S. Brendani* I, § 105, Plummer, i. 151). Betham was unable to discover the meaning of the name *Cathach*, "which is not an Irish word"!

² It may be conjectured, however, that the two pairs of transposed leaves, 35, 36, and 42, 43 (see below, p. 247, note), were pairs of conjugates, each in the middle of a gathering. If that be so, the two successive gatherings to which they belonged had probably one 6 and the other 8 leaves, or both 6 leaves, with the addition of a leaf without a conjugate in one of them. But I must add that I find it difficult to reconcile this supposition with other phenomena of the MS.

³ This word is sometimes used as the name of the shrine. It is properly applicable to the book preserved in the shrine.

⁴ Betham held the contrary opinion. "From the depth of the wooden box," he writes (p. 111), "there is no doubt but it once contained the whole Psalter." A most precarious inference.

⁵ *Ibid.*, p. 110 f.

much injured by damp as to appear almost a solid mass. By steeping it in cold water I was enabled to separate the membranes from each other, and by pressing each separately between blotting-paper, and frequently renewing the operation, at length succeeded in restoring what was not actually decayed to a legible state."¹

What became of the parts which were "actually decayed," or whether they are represented by the still illegible portions of the Psalter, we are not told. But it is to be observed that the leaves which have suffered most are in the earlier part of the manuscript. As we go on we find less and less mutilation, and in the last twenty-seven leaves only eleven lines have wholly disappeared, some of these having been pruned away by the binder. If the losses had been due merely to causes operating after the Psalter was placed in its shrine, we should have expected the opening and closing leaves to be similarly affected. Moreover, the last page (f. 58^v) is considerably rubbed, the result, no doubt, of contact with a hard substance for a long period. It is scarcely open to question, whether or not it has lost some of its earlier leaves since the eleventh century, that then as now its final leaf was f. 58. It was a fragment when its cumdach was made.

It was also a dilapidated fragment, if I am not mistaken. The original size of the leaves cannot be accurately determined, but wherever the rulings can be measured we find that the vertical distance between the top and bottom rules of a page is 200 mm., and the horizontal distance between the left and right marginal rules 120 mm. The upper and lower margins are practically gone in all cases, and but little is left of the outer margins. The widest of the existing left-hand margins of the recto pages measures 16 mm., but everywhere the binder has cut away a considerable portion of the inner margins.² We may safely assume, therefore, that the writing was surrounded

¹ My friend Professor Douglas Hyde, in his "Literary History of Ireland," p. 175, omits Betham's "almost," and says the manuscript was "a mass of vellum stuck together and hardened into a single lump." He was, perhaps, unconsciously influenced by his recollection of the *Domnach Airgid* Gospels (see *Transactions R.I.A.*, xxx, 308). I conceive that much stress must be laid on the two words, "appeared almost," considering the success of Betham's somewhat crude "operation." Cp. above, p. 244, note ³.

² The amount of injury which was thus done to the manuscript can to some extent be gauged. Someone, perhaps Betham, wrote a number on the recto—or what he supposed to be the recto—of each leaf, beginning with the last. Thus the leaves were numbered backwards, from 1 to 58. Up to f. 14 such of the numbers as remain are in the middle of the leaves, but after f. 14 they are written in the inner margin. Now, it is not likely that in most cases the number was written on the extreme edge of the vellum. But nearly one-third (13 out of 44) have been cut across by the binder, and four have entirely disappeared, probably cut off. Again, in the centre of one sheet there was a large hole, extending down three lines of text. The right-hand edge of this hole remains in f. 32,

by a margin over 16 mm. in width. In that case the height of the pages was not less than 235 mm., and the breadth not less than 155 mm. But the inner measurements of the box which originally contained the manuscript cannot have been greater than those of the present lining of the cumdach, *i.e.* 220 × 165 mm. The box, therefore, could not have held the manuscript in its original state; still less the boards in which it seems to have been bound. Thus we once more reach the conclusion that the Psalter was already mutilated when it was placed in the shrine.

Nearly three-quarters of the leaves of the Cathach appear to have been ruled with horizontal lines for the guidance of the scribe,¹ and probably most of these had also vertical lines separating the margins from the text.² The rules were heavily drawn on the recto pages with a pointed instrument; and thus for each sunk rule on the recto there was a raised rule on the verso. Consequently, if we allow for a curious tendency of the scribe to write a little above the rule on the recto, and a little below it on the verso, the lines of script on the two sides of a ruled leaf closely corresponded with each other. On the other hand, there are certain leaves in which there can be detected no trace, or only very uncertain traces, of ruling,³ and in most of which the lines of writing on verso and recto do not correspond.⁴ It is almost certain that they were unruled. Among these, again, a few have marks such as we see in other leaves of the MS., indicating the ends of horizontal rules:⁵ in spite of this the rules were not drawn.⁶ It is plain, then, that the vellum used by the scribe was of three sorts. Some of the leaves were fully prepared for writing; on some the process had gone as far as the ticking of the ends of

but no trace can be found of the other edge. It is evident that the binder, in separating f. 32 from its conjugate, cut away a wide strip of the vellum.

It may be remarked that there were some errors in the numeration mentioned above. Thus ff. 10, 12, 14 were reversed, the numbers being in each case on the verso. The binder has corrected the error in ff. 10, 14; but he did not notice it in f. 12, which still has its verso to the front. Similarly, ff. 35, 36 were transposed, and still remain so. On ff. 42, 43 the numbers are correctly placed, but the binder has transposed the leaves. There are no numbers on ff. 1-3: in the manuscript as bound, they are all reversed, and ff. 2, 3 are, in addition, transposed. Thus ff. 1^r, 1^v, 2^r, 2^v, 3^r, 3^v, 12^r, 12^v, 35, 36, 42, 43 are in the manuscript numbered respectively 1^v, 1^r, 3^v, 3^r, 2^v, 2^r, 12^v, 12^r, 36, 35, 43, 42. These errors are corrected in the text as printed below.

¹ Clear traces of the rules are visible on ff. 1-5, 9-11, 13, 19-23, 29-34, 36, 39-45, 49-52, 55, 56. They are more doubtful on ff. 6, 12, 14, 38, 46, 54, 57. In all these leaves, 41 in number, the script on the recto corresponds with that on the verso.

² Visible on ff. 1, 3, 9, 10, 19-23, 29-34, 39-45, 48 (?), 49-52, 55. The mutilation of the MS. would cause many of these marginal notes to disappear.

³ None on ff. 7, 8, 16-18, 24-28; and apparently none on ff. 15, 37, 47, 48, 53, 58.

⁴ The exceptions are ff. 16, 24, 25, 48, 58.

⁵ ff. 24, 26, 28, 53 (?).

⁶ Most evidently so on f. 28, where the points do not tally with the script.

the rules; on the rest not even so much as that had been done. The scribe had obviously some difficulty in procuring the material for his work. The ruled pages were intended each to receive 25 lines of writing. It seems that with only three exceptions¹ that was the number of lines actually written on every page, ruled or unruled.

The manuscript is written throughout, as I believe, by one hand. The script is good, and on the whole regular, though varying somewhat in size. The style of the writing is not such as to lend itself to rapid work, most of the letters being formed by several strokes, after each of which the pen must have been raised. This is specially manifest in one of the two forms of the letter *s* used by the scribe, in which there are three distinct strokes, all drawn from left to right, and not in contact with each other.

Nevertheless some signs of haste, if not of speed, appear. Errors are by no means rare, and most of them are due to carelessness. I have counted nearly 250—an average of about one in ten lines: and my list has no claim to be regarded as complete.² Among these a good many cases occur in which one or more letters of a word have been omitted.³ Only a comparatively small number of these slips has been corrected.⁴ This fact suggests that the scribe did not systematically compare his manuscript with the exemplar after the work of copying was completed. But there are not a few errors which have been corrected either by the original scribe or by some subsequent reader of the manuscript,⁵ and which, in view of this suggestion, deserve a careful examination. Let us consider first the large class in which the correction is effected by the erasure (or in one case expunction) of one or more letters. I have noticed over seventy corrections made in this way.⁶ In some cases it is obvious that the scribe had written a

¹ Ff. 18^r, 28^r, 50^r.

² It is probable that many readings which have the appearance of genuine variants should be referred to this class—*e.g.*, twice *deus* is written for *dominus*, and eight times *dominus* for *deus*. These words are easily confused when contracted.

³ See xxxi. 5, 6; xxxiv. 3, 25; xxxvi. 37; xxxvii. 21; xxxviii. 12; xl. 10 (*bis*); xli. 3; xliv. 10; xlv. 3; xlviii. 7, 16, 19; xlix. 21; liv. 24; lvii. 1; lix. 2; lx. 5; lxii. 6; lxvii. 26; lxviii. 8, 14, 29; lxix. 3; lxx. 1, 19; lxxiii. 23; lxxiv. 3; lxxvi. 18, 21; lxxvii. 31, 38, 39, 54; lxxix. 2, 3, 14; lxxx. 14, 16; lxxxii. 7; lxxxvi. 4; lxxxviii. 8; xci. 13; xcvi. 17; civ. 4, 37.

⁴ xxxviii. 12; xl. 10; xlv. 3; xlviii. 7 (partial correction); xlix. 21; lvii. 1; lxxvii. 26; lxxx. 16 (corr. by later hand); cv. 9.

⁵ I have counted about 120.

⁶ See xxx. 20, 23; xxxii. 4; xxxiii. 9, 21; xxxiv. 21; xxxv. 5; xxxvi. 26, 38; xxxvii. 12; xxxviii. 12; xli. 4; xliv. 11; xlviii. 19; xlix. 21; l. 18; lv. 6; lvi. 6, 7; lviii. 3, 16; lx. 3; lxiii. 6; lxiv. 8, 9; lxv. 5; lxvii. 7, 9, 23; lxviii. 8, 10, 19, 21, 33; lxx. 9, 20; lxxi. 9; lxxiii. 2; lxxv. 12; lxxvii. 2, 3, 8, 14, 17, 32, 55, 59; lxxviii. 11, 13; lxxx. 6; lxxxii. 19; lxxxiii. 6; lxxxvii. 12 (*bis*), 16; lxxxviii. 11, 36; xc. 10; xci. 12; xcvi. 6, 7, 10; xcvi. 5; xcix. 3; c. 5; cii. 13, 21; ciii. 13, 16; civ. 35, 40; cv. 6.

superfluous letter, which was afterwards deleted. For example, at xxxiii. 21, the second *n* of *conterentur* has been erased, at lxvii. 23 apparently the first *s* of *bassan*, at lxviii. 8 the *t* of *operuit*, at lxx. 20 the first *s* of *quantass*, at lxxxii. 19 the first *g* of *cognoscant*, at lxxxiii. 6 the second *s* of *disspossuit*, at civ. 35 the second *m* of *commedit*. May we suppose then that in all cases the erased letter was one that had been introduced by mere *lapsus calami*, and was subsequently removed? If so, we must assume that the insertion of letters was the most frequent error of the scribe; and yet one that was almost always detected and set right: for I have noted only eighteen such mistakes which have not been corrected.¹ On the other hand, omission of letters, to which he was also prone, has been detected by him, as we have seen, but rarely. But in two of the instances just mentioned the effect of the erasure is not merely the removal of a superfluous letter, but the substitution of one part of a verb for another. In xxxiii. 21 the plural is altered to the singular, and in lxviii. 8 the third person to the first. Another case of the same kind is instructive. In lxxxvii. 16 the words *a iuventus* occur at the end of a line, the letter *s* being erased. Above the line, after the manner of Irish scribes, is written *te mea*. Thus *iuventus* is transformed into *iuventute*. We may affirm, with a probability not far removed from certainty, that the scribe perceived his error immediately after he had written *iuventus*, and erased the *s* before he penned the conclusion of the clause. Now a large number of the erasures which we are considering are patient of a similar explanation.² In very many cases the erasure immediately precedes the termination of a verb or substantive; and we may well believe that the scribe had caught himself in the act of writing a wrong termination, and made the necessary correction immediately. Other examples of the scribe's habit of correcting himself as he went along are forthcoming. In some instances between two words of the text there is an erased letter which can scarcely have been written as part of either of them. Thus, xxx. 5: *malitiam / ÷ autem*:. Here the scribe may have begun to write *autem*, omitting the obelus. Similarly he would seem in lxi. 10 to have penned the first letter of some other word instead of *uani*, the first letter of a substitute for *a* at lxvii. 9, and of a substitute for *uirtus* at lxx. 9. At lxviii. 33 he may, perhaps, have written *animae*; but the error

¹ xxxii. 16; xxxiv. 8; xxxvii. 12; xliii. 19, 23; xlvi. 16; liv. 10; lxii. 1; lxvii. 13; lxxv. 6; lxxviii. 8; lxxx. 17; lxxxii. 6; lxxxvii. 16; lxxxviii. 10; xciii. 2; ci. 29; civ. 30.

² *E.g.*, xxx. 23; xxxiii. 9, 21; xxxvii. 12; xlix. 21; lviii. 16; lx. 3; lxiii. 6; lxviii. 8, 10; lxxi. 9; lxxiii. 2; lxxv. 12 (*dno*, corr. from *do*); lxxvii. 3, 32, 55; lxxviii. 11; lxxxviii. 11; xc. 7; cii. 13; civ. 40.

was surely corrected before he wrote the following *uestra*. Again, at lxiv. 9 we have the reading *terminos terre*, with an erased *m* after the first *r* of *terre*, and another erased letter at the end of the word. Plainly the scribe detected himself, first in repeating *terminos*, and again in a second error after *terre*: both mistakes were at once corrected. In xxxvi. 37 we find *relique* for *reliquiae*, in v. 38 *reliquiae* with an erasure after *qu*. No doubt in the latter place the scribe was repeating his former error, and had written *relique*: he erased *e*, and after the erasure wrote *iae*. In xl. 10, *magnificabat*, the letter *b* seems to have been corrected from *t*, and the next letter appears to be written in an erasure. If so, the scribe wrote *magnificat*, and perhaps began the word *super*. Then he discovered his mistake, and altered the former word to *magnificabat*, carrying *super* over to the next line. Similarly at xl. 7 he was on the point of omitting the *t* of *ingrediebatur*, when he discovered and corrected his error. In lxiv. 4 *uerbum* seems to have been written, the second *u* being afterwards changed to *a*, *m* erased, and the first letter of *iniquorum* written in the erasure. A curious mistake was apparently made in xcv. 6: the scribe wrote *pulchritusp* (under the influence of *conspectu*: thus omitting *-do in con-*?), then erased *s*, and altered *p* into *d*. This seems to be another instance of a mistake set right immediately after it was made. In civ. 35, 37, the first *e* of *corum*, *eos* was originally written *i*; from which we may infer that the scribe began to write *illorum*, *illos*, and in each case checked himself in time. In lxxi. 9 the *i* of *aethiopes* seems to have been altered into *y*: if so, the correction was made before the next letter was penned.

This investigation, though it does not pass in review all the errors of our scribe, may suffice to indicate the type of mistake to which he was most addicted. It leads also, if I do not err, to two probable conclusions. The first of these is, that the manuscript was not compared with the exemplar after it was completed, but that at least a large proportion of the corrections which appear in it were made by the scribe in the course of the work of transcription. Some may have been made at a later time; but most of these could have been effected by an intelligent reader without the help of manuscript authority. Our second conclusion is this: The rapid detection of error, to which the manuscript itself bears witness, forbids the supposition, which the considerable number of blunders which it contains might suggest, that the scribe was either incompetent or naturally careless. On the contrary, the impression left on my mind, by the character of his hand, by his errors, and by his corrections, is that he was a penman of more than average excellence, who could not write rapidly, but who was working at unusually high pressure when he made this transcript of the Psalter.

Punctuation marks by the original scribe are not numerous. There was indeed little need for them; for, as a rule, each clause is written in a separate line. When, as sometimes happens, a clause ends in the middle of a line, and the next clause begins in the same line, a mark resembling a colon (:) is placed after the first: but some of these may be later insertions. We also find a mark (÷) at the close of a group of two or three clauses, and thus most commonly at the end of a modern verse. This mark, however, was almost certainly added after the manuscript was completed. It is written in inferior ink, and is often above the line, or in the wrong place. Thus, for example, when a clause ends on the line above that on which it begins, the mark is sometimes placed in the margin, opposite the lower line; and, therefore, before the end of the clause.¹ Moreover, though it resembles the obelus which, as we shall see, was used by the original scribe, a careful comparison reveals differences between the two symbols such as we might expect if they were written by different hands. It should be added that obviously in many cases this mark has disappeared through fading of the ink or mutilation of the manuscript.

The end of a psalm was in many cases indicated by a group of dots and commas. The psalms are usually divided into sections, the end of each section (except the last) being marked by a cross, preceded and followed by similar arrangements of dots and commas. Similarly the psalms in the Southampton Psalter (Σ) are divided into sections, and "the end of a section is apt to be marked with a cross."² These marks may be set out in a table. It will be observed that the cross never appears at the end of a psalm.

Psalm endings.	Section endings.
...	..., + ...
·: ...,, +
..., ...	
..., ..., ...	
..., ·: ..., ·: ...	
..., ·: ..., ·:	
·,	·, + ·,
·, ·,	·, + ·,
;	; + ;
,	, + ,
	·, + ,
:	:, + :,
	·, + :,
	: + :
	: + ·:

¹ See, *e.g.*, f. 27^v, ll. 7, 8; f. 29^v, ll. 16, 17.

² M. R. James, "Cat. of mss. St. John's College, Cambridge," No. 59.

At the beginning of each psalm there is a large initial letter, followed often by a second letter of the same or nearly the same size, not elaborate in design, and of little artistic merit.¹ The majority of these initials appear to have been adorned with pigments of various colours. Sixty-five of them remain, and of these eighteen have traces of colour in the body of the letter, while the outlines are marked with red dots, in the manner usual in Irish manuscripts;² twenty-four have red dots, apparently without other colour;³ and two have traces of colour without dots.⁴ It is remarkable that such signs of ornament still exist, for though the manuscripts of St. Columba, like those of other Irish saints, are reported to have been immune from injury by water,⁵ it was hardly to be expected that their illuminations should have been proof against Sir William Betham's blotting-paper. They are in fact so faint that we do not wonder that they escaped the vigilance of Dr. Reeves.⁶ Some at least of the initials were drawn, at any rate in outline, simultaneously with the writing of the rest of the text; for in one case some letters of the text are in the middle of the initial *O*, and in another the word *et* is written to the left of the shaft of the initial *Q*.⁷ The colouring and dots were probably added later.

Above the first or second word of each psalm there is a dot enclosed in a circle (⊙). Once (Ps. xxxii. 21) there is a similar mark, together with a cross, above a word. These marks seem to have been added by a more recent hand.

The rubrics are in the hand of the scribe of the text. More must be said about them hereafter. But it may be noted here that they appear to have been added, after the completion of the text, in spaces left to receive them. This was a usual procedure. That it was followed in the Cathach is made probable by the fact that the rubrics do not always fit the spaces. Sometimes they are spread out so as to fill a larger space than was necessary; sometimes the writing is closely crowded, and occasionally it overruns the allotted space, the last words being written in the margin of the text. In one instance

¹ In one case an animal's head forms part of the design (f. 48); in three cases crosses are introduced into the initial (ff. 6, 48, 50^v). See Westwood, "Pal. Sac.," Irish Bibl. MSS., Pl. ii, fig. 8.

² Pss. xliii, xlv, xlvi, xlviii, l, lvi, lvii (?), lxiii, lxix, lxx, lxxi (?), lxxii, lxxv, lxxvi, lxxviii, lxxix, lxxx, c.

³ Pss. xxxvi, xxxvii, lv, lviii, lx, lxii, lxxiii, lxxiv, lxxx, lxxxii-lxxxv, lxxxvii, xciii, xciv, xcvi-xcviii, xcvi, ci-civ.

⁴ Pss. liii, lxxvii.

⁵ Adamnan, ii, 9.

⁶ See his "Adamnan," p. 319, where he refers to "the total absence of decoration" in the manuscript.

⁷ Pss. xlvi, lxxxiii.

(Ps. xliii), the first word of the last line is written somewhat out of its proper place, so as to make room for an initial *D*. It was evidently penned after the initial.

Our scribe is singularly sparing in the use of contractions. With the exception of the usual abbreviations of *Deus*, *Dominus*,¹ *Christus*, *Spiritus*, *sanctus*, and the suspension diāb for *diabsalmus* (= *diapsalmus*) we find only the following:—

b: = *bis*, 17 times (xxxiii. 7; xxxiv. 10, 25; xxxix. 6; xlv. 9 (*bis*); lviii. 6; lxvii. 27; lxxv. 1; lxxviii. 2; lxxxiii. 1; lxxxv. 5; lxxxvi. 1; lxxxviii. 26; xci. 12; xciii. 13; ciii. 22).

ñ = *non*, once (lxviii. 5).

q: = *que*, 19 times (xxxv. 6; xxxvi. 1; xxxvii. 7; lii. 4; lxi. 13; lxx. 19; lxxi. 8 (*bis*); lxxiii. 10; lxxiv. 7; lxxix. 12; lxxx. 5; lxxxii. 2; lxxxv. 9; xciii. 15; ci. 3 (*bis*); ciii. 9, 23).

s̄ificatio = *sanctificatio*, thrice (lxxvii. 54; xcv. 6; xevi. 12).

s̄ificauit = *sanctificauit*, once (xlv. 5).

s̄ificium = *sanctificium*, once (lxxvii. 69).

s̄imonia = *sanctimonia*, once (xcv. 6).

s̄itudo = *sanctitudo*, once (xcii. 5).

s̄uarium = *sanctuarium*, four times (lxxii. 17; lxxiii. 7; lxxxii. 13; lxxxviii. 40).

÷ = final *m*, 13 times (xliii. 1; xlv. 1; xlvi. 1; lxx. 10, 24; lxxvii. 24, 69; lxxxviii. 1; lxxxviii. 5; xcii. 5; civ. 18, 44; cv. 3).

ORTHOGRAPHY.

It is not easy to decide in all cases what forms should be included in a list of the irregular spellings of an early manuscript. In the following tables I give all spellings in which the *Cathach* varies from the text of the *Clementine Vulgate* as printed in *Heyse-Tischendorf*, though many of them cannot be regarded as anomalous. Spellings marked with an obelus (†) are exceptional.

1. *Prepositions in Composition.*

adf- for aff-

adl- for all-

adn- for ann- (annuunt, xxxiv. 19).

adp- for app- (apparuerunt, xci. 8).

adqu- for acqu-

¹ *Deos* is written in full, Pss. xciv. 3; xcv. 4, and *dominus* (applied to Joseph) in Ps. civ. 21.

- † ads- for as- : adsteti.
 ads- for ass-
 adt- for att-
 † ass- for as- : asspargis (l. 9).
 comb- for comb-
 conl- for coll-
 coup- for comp-
 † di- for de : †dilecto (ciii. 34), †dilinguo (delictum xxxi. 5, lxviii. 6),
 direlinquo (dereliquit, xxxvii. 11), dirideo, discendo, dispicio.
 † exs- for ex- : exsaecratio, exsaecror, exspectatio, exspecto, exsultatio,
 exsulto, exsurgo.
 inf- for inf- (infigo, xxxvii. 3, lxviii. 15 ; inflammo, lxxii. 21, civ. 19).
 inl- for ill-
 inm- for imm-
 † inp- for imp- : inpedio, inpleo (imple, lxxxii. 17), inpono, inpugno.
 inr- for irr-
 obp- for opp-
 subp- for supp- (supplantatio, xl. 10).

2. Other Variant Spellings.

- † a for e : asspargo (l. 9).
 † ae for e : adpraehendo, faecclesia, aedo, faegemus, faegymus (cv. 6),
 aepulor, Aetham, aequus, caedrus, caera, conpraehendo, consaecutus,
 consaequor, depraecabilis, depraectio, depraecor, †discaedo (discedo,
 xxxiv. 22), exsaecratio, exsaecror, incaedo (incedo, xli. 10), per-
 saequor, persaecutus, praecis, saecreto, †saecundum (xciv. 9), saecuris,
 saepelio, saepulchrum, saequor, spraeui.
 ae for oe : paenitentia (xliii. 1).
 † b for u : aedificabit (ci. 17), †saluabit (xxxiii. 7, xcvii. 1), †inplebit (lxxix.
 10), †regnabit (xcv. 10, xcvi. 1).
 † bs for ps : diabsalmus, inobs.
 † c for ch : Sicima.
 † c for qu : cotidie.
 † ech for ch : bracchium.
 † ch for c : Amalech, Chora, macheria.
 † ex for x : anxior, distincxi, finexi, praecinexit, unexi.
 † d for t : †capud (lxxxii. 3) ; pentecusde (lxxxii. 1).
 † e for ae : demonium, emulor, erugo, fex, hereditas, heredito, †Idumea,
 Idumeus, Iudea, †Iudeus, Matheus, †terre (lxiv. 9, ci. 15), terrigene,
 Zefeus.

- † e for ai : † Effrem (Efferr-) (lxxvii. 9, 67).
- † e for i : adsteti, ancella, concedo, †conplectemini (xlvii. 13), conteneo, decedo, deiudico, deluculo, deuerto, dilego (diligio, lxxxvi. 2), dime-dium, dirego, erenacius, fodeatur, †imfermitas (xl. 4), incedi, intellego, iteneris, loquemini, †obliuiscemini (xlix. 22), obteneo, †omni (xlii. 1), †persaequemini (lxx. 11), procedo, redemo, Selo, sempeternus, susteneo, tympanistrea, uendemeant.
- † e for oe : fenum.
- † f for ph : orfanus, profeta, Zefeus.
- † ff for ph : coffinus, Effraim (-rem, -errem).
- † gg for g : Aggareni.
- † gu for g : intinguatur (lxvii. 24).
- † h (*init.*) added : †habundantia (xxxii. 17), harauea, heremus, holus, Hyeru-salem (Hier- lxiv. 2).
- † h (*init.*) omitted : erenacius, erodius, ymnus.
- † h (*med.*) added : abhominabilis, abhominatio, †exhibit (ciii. 23), Israhel, Israhelita.
- † h (*med.*) omitted : Abraam.
- † i for e : calciamentum, cecidi, conpisco, decim, †delicto (xliv. 9), dulcidinis, egredireris, flagillo, flagillum, neominia, pinna, pinnata, possidi, †redimi (lxxiii. 2), scabillum, sedis (*subs.*), †sedit (xlvi. 9), †suscipi (xlvii. 10), timitis. *See also above, di- for de-*.
- † i for ii : adicio, erodi, proicio, †uis (uiis xc. 11).
- † l for ll : milia, pelicanus.
- † ll for l : †sollemnitas (lxxx. 4).
- † m for n : Aetham, Madiam.
- † mp for m : calumpniator, sol(l)empnitas.
- † mp for n : temptatio, tempto.
- † o for u : fulgor, motatio *and compounds*, moto *and compounds*, †oculus (xxxiv. 19), torquolar.
- † oe for e : proetium.
- † p for pp : oportunus.
- † qu for e : torquolar.
- † rr for r : Sisarra.
- † s for e : senyfes.
- † s for ss : †abysus, Asur, confesio (confessio, xli. 5), Cyson, discesi gresus, humiliasem, Iese (lxxi. 20), ingresus, †Manases (Man-nasses, lxxix. 3), missisem, †paser, †pasio (lxxviii. 1), †percusi (percussit, civ. 33, 36), percusus, †possesio (possessio, ciii. 24), suffosa (lxxix. 17).

- † *ss for s* : bassiliscus, cassia, †confussio (confusio, lxx. 13), diffussus, †effussus (effusus, lxxii. 2), homolegessem (xliii. 1), †inlussio (inlusio, lxxviii. 4), missi *and compounds*, †occassus (occeasus, lxxvii. 5), occissio, possitus, possui *and compounds* (posuisti, ciii. 9, 20), propositio, uissio, †uissito (lviii. 6).
- † *t for d* : †Dauit (lxxxviii. 4).
- † *t for th* : Neptali.
- † *t for tt* : Matheus.
- † *th for t* : Loth.
- † *ti for ci before vowel*.
- † *u for b* : †honorificauit (xlix. 23), †saluauit (liv. 17), †sperauit (lxiii. 11), †narrauit (lxxxvi. 6), †obumbravit (xc. 4), †clamauit (xc. 15), †pertransiuit (cii. 16).
- † *u for o* : †apustolicus, †apustolus, consulatio, consolor, corroburo, †dolus (xxxiv. 20), domu (domo, li. 2), dulus, incensu, lucusta, †morus (lxxvii. 47), pentecusde (lxxxii. 1), †romanus (xliiii. 1).
- † *u for uu* : pluia, fluuius, diluuium (xxxii. 6).
- † *x for s* : mixto.
- † *y for i* : †aegymus (cv. 6), Aethyopia, Aethyops, cybo, cybaria, cylicium, Cyson, cythara, Hyerusalem (Hierusalem, lxiv. 2), hyrcus, Lybanus (Libanus, lxxi. 16), senyfes, †synus, ymber.
- † *y for oe* : cynomia.

THE TEXT.

That the text of the Cathach is fundamentally Hieronymian is proved by the fact that it is to some extent provided with asterisks and obeli. In the Preface to his second revision of the Latin Psalter St. Jerome mentions as one of the distinguishing features of that work that in it he used asterisks and obeli to denote respectively words in the Hebrew, but not in the Septuagint, and words in the Septuagint, but not in the Hebrew.¹ Of the three versions of the Psalter made by St. Jerome, these symbols therefore belong only to the second or Gallican, now usually bound up with the Vulgate; they had no place in the Roman Psalter, nor, of course, in the Psalter translated from the Hebrew. The Cathach Psalter has then as its ultimate base the Gallican text.

¹ *In Psalterium quod secundum septuaginta editionem correxit praefatio* : "Notet sibi unusquisque uel iacentem lineam uel signa radiantia; id est, uel obelos uel asteriscos. Et ubicumque uiderit uirgulam praecedentem, ab ea usque ad duo puncta quae impressimus, sciat in septuaginta translatoribus plus haberi. Ubi autem stellae similitudinem perspexerit, de hebraeis uoluminibus additum nouerit aequae usque ad duo puncta, iuxta Theodotionis dumtaxat editionem, qui simplicitate sermonis a septuaginta interpretibus non discordat.

It has not, however, a complete series of the symbols. I have noticed only 21 asterisks and 25 obeli, a mere fraction of the number in Vallarsi's edition.¹ As to the position of the symbols our scribe differs in no less than twelve instances from Vallarsi, and not always for the worse. The passages are the following:—

Ps. xxxvi. 40. *Cathach*: et adiuuabit eos dominus ÷ et liberabit eos: et eruet eos a peccatoribus.

Vallarsi has no mark. But C rightly obelizes the second clause; for though it is in the Hebrew as now read, St. Jerome's version from the Hebrew omits it: "et auxiliabitur eis dominus et saluabit eos ab impiis."

Ps. liii. 3. *Cathach*: * et: in uirtute tua iudica me.

Vallarsi has no mark, and both Heb. and LXX have *et*. But C is probably right. It is difficult to believe that the asterisk would be inserted without reason; and the LXX as read by Jerome may have lacked *et*.

Ps. liii. 5. *Cathach*: * et: non proposuerunt deum.

Vallarsi has no mark. C is right: Heb. has *et*, while LXX omits it.

Ps. lxxv. 7. *Cathach*: qui dominatur in uirtute sua * in aeternum.

Vallarsi: qui dominatur in uirtute sua ÷ in: aeternum.

LXX (MS. R): τῷ δεσπόζοντι ἐν τῇ δυναστείᾳ αὐτοῦ τοῦ αἰῶνος.

The Latin correctly represents the Hebrew (though in the version from the Hebrew St. Jerome renders the word *olam* by *saeculo*), while the LXX would give *uirtute sua aeterna*. On the analogy of other passages this would be indicated by *uirtute sua * in: aeternum*. Thus both Vallarsi and C are wrong, the former in substituting an obelus for an asterisk, the latter in misplacing the points.

Ps. lxx. 8. *Cathach*: Repleatur os meum laude * tua: ut cantem gloriam tuam.

Vallarsi: repleatur os meum laude ÷ ut cantem gloriam: tuam.

The LXX read as Vallarsi: Jerome's Hebrew has "impleatur os meum laude tua." These facts are correctly represented in Vallarsi. They would have been more conveniently represented by the insertion (as in C) of an asterisked *tua*, but then the following clause should have been obelized.

Ps. lxxxiv. 12. *Cathach*: ÷ et: ueritas de terra orta est.

Vallarsi, with Heb. and LXX, omits *et*. But (1) it is unlikely that a word would be wrongly inserted, and at the same time obelized; and (2) words obelized by St. Jerome are often omitted in the MSS. Hence it is more probable than not that C is right.

Ps. lxxxviii. 45. *Cathach*: * et: sedem eius.

¹ Allowing for lacunae, C may have had about a quarter of the number of such marks found in Vallarsi.

Vallarsi has no mark. C is right.

Ps. LXXXIX. 17. *Cathach*: ÷ et opera manuum nostrarum direge super nos : et opus manuum nostrarum direge.

Vallarsi: et opera manuum nostrarum dirige super nos * et opus manuum nostrarum dirige:

The Heb. has both clauses: LXX (ms. B) omits the second. C is wrong.

Ps. xci. 10. *Cathach*: ÷ quoniam : ecce inimici tui domine ÷ quoniam : ecce inimici tui peribunt.

Vallarsi: * quoniam ecce inimici tui domine : quoniam ecce inimici tui peribunt.

Several mss. of LXX read as C; while St. Jerome's Heb. differs only in omitting *quoniam* twice. Thus C is apparently right. But Vallarsi is not without justification: the Hebrew as now read has *quoniam* in both places, while LXX (ms. B) omits the whole of the first clause.

Ps. xciv. 9. *Cathach*: probauerunt ÷ me : et uiderunt.

Vallarsi has an asterisk; rightly, since LXX (ms. B, &c.), against Heb., omits *me*.

Ps. xcvii. 5. *Cathach*: Psallite domino in cythara ÷ in cythara :

Vallarsi has again an asterisk; no doubt rightly, though *in cythara* is repeated in LXX as well as in Hebrew. Cp. above on liii. 3.

Ps. ciii. 7. *Cathach*: a uoce tonitruī * tui: formidabunt.

Vallarsi has no mark: C is probably right, though both LXX and Heb. have *tui*.

In seven of these twelve cases our verdict has been given in favour of C against Vall., in four against C in favour of Vall.; and in two of the latter C has merely misread the asterisk of his exemplar as an obelus. Once both C and Vall. are slightly astray. Thus it would seem that C has gone astray only five times, and its exemplar only twice or thrice out of forty-six. This is a fairly good record.

The *Cathach* is by no means a pure Gallican Psalter. It has some mixture of Old Latin readings. Sufficient proof of this may be gathered from an examination of the text of Pss. xc-xciii. I have selected these psalms at random from the latter part of the manuscript, in which investigation is less impeded by lacunae than elsewhere. Excluding mere variations in orthography,¹ we find in them the following readings, which differ from the Clementine Vulgate:—

xc. 4 in scapulis*; te. 9. *om. es.* 10. *accident ad te mala**; flagillam.

¹ Among these I include *obumbravit* (xc. 4) and *clamanit* (xc. 15), though the first occurs in Sabatier's Old Latin.

14. speravit et*. 15. *om.* ego; clarificabo. xci. 12. auris tua*. 13. ut cedrus§; multiplabitur. 14. *om.* domus§. xcii. 1. fortitudine§. 4. eleuationes; mirabiles in. xciii. 8. qui insipientes estis§. 12. erudies. 15. iuxta illa sunt omnes. 16. consurget mecum. 17. habitavit. 20. fingis dolorem*. 22. dominus mihi; adiutorem.

Of these the variants in xc. 10 (flagillam), xci. 13 (multip.), and xcii. 4 are mere clerical errors, and may be neglected. Those marked with an asterisk are supported by Sabatier's Old Latin text, and those marked with the symbol § by authorities cited in his notes: they may be set down as Old Latin. Thus we find that in 60 verses C has 19 substantial variants, of which 5 are in Sabatier's text and 4 in his other authorities—9 in all, which are apparently due to Old Latin mixture. In the same 60 verses Sabatier's Old Latin varies 82 times from the Vulgate.

Now let us lay this result beside another obtained from a similar comparison in the New Testament. In the four passages—Matt. xxiv. 16–31; xxvi. 24–31; xxvii. 20–27; Lk. ix. 45–62—Codex Usserianus (*r*¹), which has an Old Latin text, differs substantially from Codex Amiatinus of the Vulgate 105 times. In the same passages the Book of Kells, with a mixed text, differs 46 times. In 18 of these readings it agrees with Codex Usserianus, and in 7 others it is supported by the Book of Mulling, which also represents the Old Latin.¹ Thus it has 25 Old Latin readings. These passages have only 50 verses, as against 60 in our four psalms. But verses are longer in the Gospels than in the Psalms, and the 50 Gospel verses are equivalent to about 70 Psalm verses. We see, then, that while the variation of the Old Latin from the Vulgate in the New Testament is slightly in excess of that in the Psalter, the variation of the Book of Kells from the Vulgate is twice as great as that of the Cathach from the printed Gallican text, and that its Old Latin mixture exceeds that of the Cathach in the proportion of more than two to one.

But take a manuscript of a different type, the Book of Durrow. This codex, in the same passages of St. Matthew and St. Luke, differs from the Amiatine 24 times, and against it agrees with Codex Usserianus or the Book of Mulling 9 times. It has, therefore, 9 Old Latin readings. Thus the total amount both of its variation from the Vulgate and of its Old Latin element, judged by the same standard as before, is nearly identical with that of the Cathach.

To sum up. The Cathach Psalter approaches very closely to St. Jerome's

¹ I make use here of tables prepared many years ago for a different purpose. They may be seen in my "Chapters on the Book of Mulling," pp. 50, 63. So far as the present inquiry is concerned, the passages may be regarded as taken at random.

Gallican recension. It has but little in common with the Old Latin. And, as regards mixture, it is almost on a level with the Book of Durrow, the manuscript which of all our early Irish evangelia is most purely Vulgate.

It is right, however, to add that this conclusion as to the general character of the text of our manuscript can only be regarded as provisional. The received text of the Vulgate undoubtedly differs to some extent from St. Jerome's translation. It is probable that it has, on the one hand, Old Latin readings which he discarded, and, on the other, readings introduced in later times which have no support from ancient versions. It follows that in some places where it differs from the Clementine Vulgate the Cathach may preserve the Hieronymian text, and that elsewhere, where the two are in agreement, they may follow an Old Latin recension rather than St. Jerome. For a strictly scientific estimate of the relation of the Cathach text to the Old Latin and Gallican versions we must wait till the commission at present engaged in preparing a critical edition of the Vulgate have finished their work.

Moreover, when we discover that a phrase peculiar to C or V is Old Latin we have not proved the existence of mixture in the proper sense. For, as we have seen, St. Jerome incorporated in his Gallican version many readings peculiar to the Septuagint, marking them with an obelus; and it is probable that in many cases he took the Latin rendering of such readings, unaltered, from a current version. When, later on, scribes began to omit the obeli, they sometimes omitted with them the words to which they were attached. Accordingly, when of two manuscripts one contains, and the other omits, an Old Latin word or phrase, it may be that the former, and not the latter, agrees with St. Jerome.

It may be well therefore to attempt, by another method, to form some notion of the value of the Cathach considered as a manuscript of the Gallican Psalter. In the production of that version St. Jerome for the first time made serious use of the Hebrew original. In the determination of the text he placed the Hebrew and Greek to some extent on an equal footing, merely distinguishing their respective contributions by his system of asterisks and obeli. Now, V has entirely, and C to a large extent, omitted the asterisks and obeli; and in some cases we can assert with some confidence that one or other of them has also omitted the corresponding words or phrases. Thus in two places V has a reading supported by the Hebrew which C, following the Septuagint, omits:¹ lxviii. 31 et; lxxxii. 15 et. In 9 places C follows the

¹ By the Hebrew, where the contrary is not stated, I mean St. Jerome's version from the Hebrew (Lagarde). It is the best witness to the original text, as read by St. Jerome,

Hebrew in omitting words found in V and the Septuagint; liii. 6 *et*; liv. 16 *et*;¹ lvi. 5 *et*; lxiv. 3 *meam*; lxxvii. 5 *ea*, 6 *et*; lxxix. 16 *hominis*; xevi. 10 *dominus*; cii. 20 *omnes*. To these we may add two passages which are less decisive. In xli. 11 V has *qui tribulant me inimici mei*. Here the Hebrew (*hostes mei*) and two MSS. of the Septuagint (*οἱ ἐχθροὶ μου*) support *inimici mei*, while C, with the remaining MSS. of the Septuagint (*οἱ θλίβοντές με*), has *qui tribulant me*. Probably St. Jerome wrote the text as it appears in V, marking the first phrase with an obelus and the second with an asterisk; and C omitted *inimici mei*. Again at xlvi. 3 we have in V *simul in unum*, in the Hebrew *simul*, and in the Septuagint *ἐπὶ τὸ αὐτό* (= in unum?). C, omitting *simul*, seems to follow the Greek. We conclude that C probably omitted 4 asterisked readings, and 9 obelized readings, 13 in all. The defects of V in such cases are less numerous. It follows the Hebrew in omitting Septuagint readings 5 times: xxxv. 3 *et*; xlii. 3 *me*; xlix. 15 *et*; lxxvii. 12 *quae*; lxxxix. 16 *et*: and twice with the Septuagint, it omits Hebrew readings: lxx. 8 *tua*: lxxvii. 21 *non*. Probably also at lxiv. 9 C correctly reads *terminos terrae*, the former word coming from the Hebrew (*extremis*), agreeing with the majority of Greek MSS. (*τὰ πέρατα*), the latter from St. Jerome's copy of the Septuagint (= \aleph^* *τὴν γῆν*). V omits *terrae*. V therefore omits 6 obelized and 2 asterisked words: 8 in all. These facts suggest that C used more freedom in dealing with the readings marked with asterisks and obeli than V, and so far gives an inferior text.

But this impression is modified when we consider another class of readings—those in which there is no conflict between St. Jerome's authorities, and which, we may therefore presume, were not marked by him as deficient in attestation. In 17 places there are words inserted in V which are absent from both Hebrew and Septuagint, and also from C; viz.² xxxiv. 14 *et*; xxxvii. 23 *deus**; xliii. 2 *et*; xlv. 13 *omnes*; xlv. 6 *et*; xlviii. 20 *et**; l. 16 *et*; liii. 7 *et*; liv. 13 *meus*; lviii. 14 *et**;³ lxvii. 7 *qui**; lxxvii. 51 *omnis*;⁴ lxxx. 5 *in*; lxxxiii. 5 *domine*; xcv. 2 *et*; xevi. 7 *et*; civ. 16 *et*. Only 4 such insertions are peculiar to C: lxvi. 8 *et*; lxx. 7 *domine*: lxxv. 4 *et*; lxxxii. 10 *et**. In omissions of the same kind the numbers are more evenly balanced. We have 4 in V: xlix. 22 *nunc**;⁵ lxxii. 16 *et*; lxxix. 3 *et*, 10 *et*: and 7 in

and also to his mature judgement as to the way in which it should be rendered into Latin. By the Septuagint is meant the text as printed in Dr. Swete's "Old Testament in Greek," where it is supported by all the MSS. cited in his apparatus.

¹ Omitted by two of Lagarde's MSS. and present Heb.

² In this and the following lists an asterisk indicates that a reading is supported by Sabatier's Old Latin version.

³ Some MSS. of Sept. have *καί*.

⁴ Some MSS. of Sept. have *παντός*.

⁵ This word is in the received Heb., not in St. Jerome's version from the Heb.

C: xxxviii. 12 *in*; xlv 12 *et*; liv. 16 *et**; lxvi. 8 *nos*: lxviii. 20 *meam*; lxxii. 17 *dei**; lxxvii. 13 *eos*.

Hitherto we have been concerned with passages in which one of our two texts omits something which the other has. But it often happens that the difference between them does not consist in omission or insertion, but in the substitution of one phrase for another. And in such cases one is often supported by both Hebrew and Septuagint against the other. There can be little doubt that in most instances the Latin reading which is supported by the Hebrew and the Greek is Hieronymian. I append a list of such variations between V and C.

<i>Cathach.</i>	<i>Fulgate.</i>	<i>Septuagint and Hebrew.</i>
xxx. 24. ueritates	ueritatem*	ἀληθείας: fideles
xxxiv. 13. in synum meum	in sinu meo*	εἰς κόλπον μου: ad sinum meum
xliii. 4. non	nec	οὐ: non
22. omni die	tota die	ὅλην τὴν ἡμέραν: tota die
xlix. 22. dominum*	deum	τοῦ θεοῦ: deum
li. 3. gloriatur . . . qui potens	gloriaris . . . qui potens	ἐγκαυχᾶ . . . ὁ δυνατός: gloriaris . . . potens
lv. 5. homo	caro	σάρξ: caro
6. consilia*	cogitationes	διαλογισμοί: cogitationes
lviii. 11. uoluntas	misericordia	τὸ ἔλεος: misericordia
14. dominatur	dominabitur	δεσπόζει: dominator
lix. 12. tuis	nostris	ἡμῶν: nostris
lxi. 4. interficitis uniuersos*	interficitis uniuersi	φονεύετε πάντες: interficitis omnes
lxv. 18. deus	dominus	κύριος: dominus
lxvii. 6. patres . . . iudicis	patris iudicis	πατὴρ . . . κριτοῦ: patri . . . defensori
29. deus hoc	hoc deus*	ὁ θεὸς τοῦτο: deus hoc
30. adferent*	offerent	οἴσουσιν: offerent ¹
lxviii. 28. in tua iustitia	in iustitiam tuam*	ἐν δικαιοσύνη σου: in iustitia tua
lxxii. 8. in nequitia	nequitiam*	ἐν πονηρίᾳ: in malitia
27. omnem qui fornicatur	omnes qui fornicantur	πάντα τὸν πορνεύοντα: omnem fornicantem
lxxiii. 15. fontem	fontes	πηγὰς: fontes
19. animam	animas	ψυχὴν: animam
lxxiv. 10. in saeculo	in saeculum	εἰς τὸν αἰῶνα: in sempiternum
lxxv. 4. potentia arcum	potentias arcuum	τὰ κράτη τῶν τόξων: uolantia arcus
5. inluminas	illuminans*	φωτίζεις: lumen tu es
9. timuit	tremuit	ἐφοβήθη: timens
lxxvi. 2. dominum*	deum	τὸν θεόν: deum

¹ The received Heb. rather corresponds to *adferent*.

<i>Cathach.</i>	<i>Vulgate.</i>	<i>Septuagint and Hebrew.</i>
lxxvii. 13. quasi	quasi in*	ὡσεὶ: quasi
25. in abundantiam	in abundantia*	εἰς πλησμονήν: in saturita- tem
49. inmissionem	inmissiones	ἀποστολήν: inmissionem
51. primitium	primogenitum	πρωτότοκον: primogenitum
lxxxii. 1. deus	deos	θεοὺς: deos
lxxxv. 10. facies*	faciens	ποιῶν: faciens
xcii. 12. auris tua*	auris mea	τὸ οὖς μου: auris mea
xcvi. 5. terrae	terra*	τῆς γῆς: terrae
ciii. 10. inmittis	emittis	ἀποστέλλων: emittis (<i>al.</i> inmittis)
15. laetificat . . . con- firmat	laetificet . . . confirmet	εὐφραίνει . . . στηρίζει: laetificat . . . roborat
civ. 12. numero breues	numero breui	ἀριθμῶ βραχεῖς: uiri pauci
25. ut dolum facerent	et dolum facerent*	τοῦ δολιοῦσθαι: ut dolose agerent

This table registers 19 readings of V and 19 of C which may be regarded as Hieronymian. But the predominance would have been on the side of C if some readings of that manuscript which are probably mere slips of the scribe had been excluded; as, for example, those in xlix. 22; lxi. 4; lxv. 18; lxvii. 6; lxxiv. 10; lxxvi. 2. The application of the test of agreement with both Hebrew and Septuagint seems, therefore, to give some slight indication of the superiority of C to V.

Reference has already been made to St. Jerome's attempt to exhibit the readings of both the Hebrew and the Greek, distinguishing them from one another by asterisks and obeli. But this could rarely be done except when one authority contained words which had no place in the other. When the Septuagint, for example, had an underlying Hebrew word which differed from that of St. Jerome's Hebrew text, or when it mistranslated a word, it was often impossible to put the corresponding Latin words side by side. One or other must be omitted. In such cases what course did St. Jerome take? Was he content to translate the Greek, ignoring the Hebrew? or did he translate the Hebrew, ignoring the Greek? *A priori* we should expect that he would usually adopt the latter method. And this expectation seems to be justified by the facts. There are not a few places in which C and V differ from each other, one following the Hebrew, and the other the Septuagint. It is most unlikely that the rendering from the Septuagint came from St. Jerome, and that it was corrected from the Hebrew by a later scholar. We are warranted, therefore, in claiming that the reading supported by the Hebrew is most commonly Hieronymian, while that which is based on the Greek is from an Old Latin version. And a similar claim may be made for readings which have the authority, in addition to the Hebrew, of one or more

Greek manuscripts, while the remaining manuscripts support its rival. In this case, however, it is not necessary to suppose that St. Jerome deliberately rejected the rival reading. The Greek manuscripts which side with the Hebrew may give the Septuagint text as he knew it. The following is a list of such pairs of readings ;—

<i>Cathach.</i>	<i>Vulgate.</i>	<i>Septuagint and Hebrew.</i>
xxxiv. 10. fortioris	fortiorum	στερωτέρων : ualidiore
xl. 13. nostris	eorum	ἡμῶν, <i>al.</i> αὐτῶν : eorum
xliv. 12. adora	adorabunt*	προσκυνήσουσιν, <i>al.</i> προσ- κνήσης : adora
18. memor ero	memores erunt*	μνησθήσονται, <i>al.</i> μνησθή- σομαι : recordabor
xlv. 11. dominus	deus	ὁ θεός, <i>al.</i> ὁ κύριος : deus
liii. 7. auertit ¹	auerte	ἐπιστρέψαι, <i>al.</i> ἀποστρέψει : redde
lvii. 10. uos	eos	ὑμᾶς, <i>al.</i> αὐτούς : eas
lix. 13. et*	quia	καί : enim
lxvii. 19, 20. deus*	deum	ὁ θεός : deum
25. ingresus tui ²	ingressus tuos	αἱ πορίαι σου : itinera tua (<i>acc.</i>)
lxviii. 13. exercebantur	loquebantur	ἠδολέσχουν : loquebantur
36. iudeac*	iuda	τῆς ἰουδαίας : iuda
lxix. 5. deus	dominus*	ὁ θεός, <i>al.</i> ὁ κύριος : deus
lxxiii. 12. salutes	salutem*	σωτηρίαν : salutes
lxxvii. 2. parabola	parabolis*	παραβολαῖς, <i>al.</i> παραβολῆ : parabola
20. potest	poterit	δυνήσεται, <i>al.</i> δύναται : poterit
68. et ³	sed	καί : sed
lxxix. 2. oues*	ouem	πρόβατα, <i>al.</i> πρόβατον : gregem
lxxx. 4. nostrac	uestrac	ἡμῶν, <i>al.</i> ὑμῶν : nostrac
5. dei	deo*	τῷ θεῷ : dei
lxxxiii. 8. benedictiones.	benedictionem*	εὐλογίας, <i>al.</i> εὐλόγιον : bene- dictione ³
lxxxviii. 7. domino	deo	τῷ κυρίῳ, <i>al.</i> τῷ θεῷ : domino
xcvii. 4. domino*	deo	τῷ θεῷ, <i>al.</i> τῷ κυρίῳ : deo ⁴
6. in conspectu regis domino*	in conspectu regis domini	ἐνώπιον τοῦ βασιλέως κυρίου, <i>al.</i> ἐνώπιον τοῦ β. κυρίῳ : coram rege domino
c. 7. habitat	habitabit	κατῴκει : habitabit
ci. 5. percussus est	percussus sum	ἐπλήγην, <i>al.</i> ἐπλήγη : per- cussus est
16. domini	tuum domine	σου κύριε, <i>al.</i> κυρίου : domini
17. aedificabit	aedificauit	οικοδομήσει : aedificauit

¹ For *auertit*.³ The Hebrew word is plural.² Sabatier ; *itinera tua* (*nom.*).⁴ The received Heb. has *domino*.

We have here 28 pairs of alternative readings. It appears that in 14 of them C is to be preferred to V (including lxxxiii. 8, and xcvi. 4); and that in the remaining 14 V is to be preferred to C.

The general result of our comparison of V and C with the Hebrew and Greek may now be stated. We have examined 119 pairs of readings. In 62 of these C has seemed better than V, and in 57 V has seemed better than C. C, therefore, is apparently a somewhat better witness to the Gallican text than V. The preponderance of good readings in it, or rather in the exemplar from which it was copied, would have been more marked if *lapsus calami* of its scribe had been excluded from consideration.¹ Both V and C show signs of mixture. We have recorded in the immediately preceding table 14 readings in each which we may suspect to be survivals from an Old Latin text; and, looking at the matter from a slightly different point of view, we have noted in the last three lists 23 apparently non-Hieronymian readings of V and 18 of C, which are supported by Sabatier's Old Latin.² Thus it would seem that the pre-Hieronymian element is slightly larger in V than in C.

THE RUBRICS.

The conclusions which can be deduced, as may hereafter appear, from a discussion of the rubrics, warrant a treatment of them somewhat more lengthy than might at first sight seem to be necessary. These rubrics are not, in all cases, easy to read; and a good many have baffled my efforts to decipher them. But when I discovered that those which presented little difficulty were very similar to the corresponding rubrics of the Codex Amiatinus, I obtained a clue which enabled me to read, or reconstruct with some confidence, most of those that remained. The greater number of those that proved absolutely illegible are, in whole or in part, lost through mutilation.

Speaking generally, a complete rubric consists of three parts:—(a) the title of the psalm, from the Septuagint; (b) a few words indicating its mystic or spiritual interpretation; and (c) a direction as to its liturgical use. These, in the absence of more satisfactory terms, we may call respectively—(a) the *titulus*, (b) the heading, and (c) the liturgical note. Thus, for example, in the rubric of Ps. lxxviii the *titulus* is *in finem pro his quae commotabuntur psalmus david*, the liturgical note *legendus ad lectionem ionae profetae et ad euangelium iohannis*, and the heading, *vox christi cum pateretur*. Here the liturgical (or, as in this case we might term it, lectionary) note seems to connect the psalm with certain lessons. But it is not always of this character. At Ps. lxxxv,

¹ Discounting such lapses, there would remain about 113 pairs, in 62 of which C is superior to V, and in 51 V is superior to C.

² They are marked with asterisks (*).

for instance, we have *per ieiunium*. The liturgical note is often wanting, and occasionally the heading.

The purpose of the present section is to ascertain, as far as possible, the relation between the rubrics of the Cathach (C) and the series in the Codex Amiatinus (A),¹ and others of the same general type, those, namely, of the *De Psalmorum Libro Exegesis* attributed to Bede (B)², the Paris Anglo-Saxon Psalter (S)³, and the Karlsruhe Psalter, Codex Augiensis 107 (R)⁴.

Thanks to the insight of G. B. de Rossi and the learning of F. J. A. Hort, the story of the origin of A was revealed about thirty years ago.⁵ It was written, *circa* 700, either at Wearmouth or at Jarrow, and was sent by the Abbot Ceolfrid in 716⁶ as a present to the Pope. It is now in the Laurentian Library at Florence. The copy of the Book of Psalms which it contains follows St. Jerome's version according to the Hebrew verity. Let us begin by comparing its rubrics with those of R.

The Karlsruhe Psalter, which is of the tenth century, and one of the columns of the Bamberg Quadruple Psalter (A. I. 14: Lagarde's W), which was written in 909,⁷ contain St. Jerome's rendering from the Hebrew; and they were copied from the same exemplar, presumably of the ninth century. We may call it ρ . Lagarde tells us that ρ is closely related to A; and this statement can be verified by anyone who will undertake the troublesome task of comparing their texts as revealed in the published collations.⁸ But ρ is not a direct descendant of A; for though many of the readings in which the former differs from the latter may be accounted for on that supposition, there remain not a few which cannot be so explained, and which indicate that A and ρ are derivatives from a common archetype. Thus, for example, in Ps. lxxxviii (lxxxix). 29 RW agree with the text of Lagarde in reading *custodiam*, while A has *seruabo*. It will be convenient to designate the common ancestor of A and ρ by the letter a .

Little as the texts of R and W differ from each other, the scribe of W

¹ Printed in Heyse-Tischendorf.

² Migne, *Pat. Lat.*, xciii. 477 ff.

³ Edited by B. Thorpe, "Libri Psalmorum Versio Antiqua Latina cum paraphrasi Anglo-Saxonica," Oxon., 1835. Psalms i-1 have been re-edited in Bright-Ramsay. This volume exhibits the entire series of rubrics, together with the *argumenta* of Bede.

⁴ Printed in Lagarde.

⁵ See H. J. White, "The Codex Amiatinus and its birth-place," in *Studia Biblica*, ii. 273 ff.

⁶ For the date see Plummer's *Bede*, ii. 367.

⁷ So Lagarde and A. Chroust, "Monumenta Palaeographica," Ser. i, Lief. xvi, Taf. 3. But S. Berger, "Histoire de la Vulgate," 1893, pp. 130, 377, assigns it to the eleventh century.

⁸ A is collated with the Vulgate in Heyse-Tischendorf, and RW with St. Jerome's version from the Hebrew in Lagarde.

has made one drastic change in copying his exemplar. He has rejected all the rubrics of ρ , and substituted for them the *tituli* of the version from the Hebrew. Thus for the rubrics we can only use R. But an examination of the R rubrics shows that they stand in exactly the same relation to the Amiatine rubrics as the ρ text to the Amiatine text; that is to say, they are derived from a common archetype, no doubt α . It will suffice to give proof of this for the headings and liturgical notes: though it would be equally easy to establish the same conclusion for the *tituli* by a similar argument.

R reproduces the headings and liturgical notes of A in a majority of cases, including some in which A is certainly incorrect. There are, in fact, only about 37 instances in which the two manuscripts differ from one another, and in more than half of these the variation is insignificant. We find in R 18 clerical errors from which A is free,¹ and in A 4 similar (and easily corrected) errors, from which R is free.² But 16 rubrics remain³ in which the differences are of more importance, and which exclude the hypothesis of direct derivation of the R series from that of A. They are the following:—

Ps. ii. A: *legendus ad euangelium lucae uox patris et apostolorum et christi ad caput scribendum.*

R adds *ad christum* after *patris*, and at the end *inrepatio potestatum.*

Evidently the clause which follows the liturgical note in AR is not a psalm-heading. It may be explained thus: A scribe was employed to make a copy of the Psalter from an exemplar in which there were no headings. This clause was written on the exemplar as a direction to insert the headings from another source in the proper places. The scribe not only obeyed the direction, but actually transcribed it as part of the rubric of the second psalm—the first which had a rubric in the exemplar.⁴ It may be noted that the exemplar, though it lacked headings, probably had a more or less complete series of notes; for the direction follows the note both in A and R, and it obviously applies in strictness only to headings beginning with the word *uox*. It is clear, then, that A has no heading for Ps. ii. On the other hand, R has a heading which suits the psalm. We must assume that it was derived from α .

Ps. v. A: *christus ad patrem.*

R adds *dicit.*

¹ Pss. xxxv, xliii (two errors), xlvi, liv, lvi, lxiii, lxviii, lxxv, lxxxii, xcvi, xcvi, xcix, cv, cxxx, cxliii, cxlvii, cxlix. Mere differences of spelling are not counted.

² Pss. xvi, xxi, xxxi, lxviii.

³ The heading of Ps. li is erased in R.

⁴ Ps. i had no *titulus*—a fact which is often remarked upon by early commentators.

The word *dicit* has no other support, and was probably added by a later scribe.

Ps. xviii. A: *propheta operantem hortatur.*

R: *de aduentu christi per quem reseratur psalmus cxviii ibi coniungitur nouum et uetus testamenti.*

The heading in A is inappropriate. It is doubtless borrowed from Ps. xix, where it appears in AR, as in other authorities. The words *de aduentu christi* in R are in harmony with the use of Ps. xviii as a Christmas psalm, and have good support. They were almost certainly in *a*. I am less confident about the following clause. It is badly copied, and should, perhaps, run thus: *per quem referatur psalmus ad psalmum cxviii. ibi coniungitur nouum et uetus testamentum.* It has a parallel in Bede's *argumentum* to Ps. xxxiv: *per christum ad omnes psalmos referri potest*; and the comparison of Ps. xviii with Ps. cxviii is not unhappy. On the whole, it is probable that the clause comes from *a*.

Ps. xxxv. A: *propheta cum laude opera ipsius iudae dicit.*

R: *propheta cum laude dei opera ipsius iudae dicit.*

The reading *iudae* in R is certainly wrong. The word *dei* is doubtful. It has some support from other mss., but it may have arisen from a repetition of *de*.

Ps. xxxvi. A: *ortatur omnes admonstrans salutem ecclesiae credentem monet ad fidei firmamentum.*

R has *ad fidem demonstrans* for *admonstrans*.

The reading of A is, so far as I know, without support. The scribe has apparently omitted *fidem de*, confused, it would seem, by the repetition of the letters *dem*, or by the words *ad fidei* below. R is certainly not derived from A, and probably follows *a*.

Ps. xxxix. A: *patientia populi est.*

R: *patientia est populi.*

R might have been derived from a text identical with A; but it is equally possible that it follows *a* more exactly than A.

Ps. xlv. A: *legendus ad euangelium mathei de regina austri propheta.*

R adds *pro patre de christo et ecclesia dicit.*

A is almost certainly incorrect; for the words *de regina austri* define the passage of St. Matthew referred to (xii. 42),¹ and *propheta* is thus without meaning. In R *propheta* begins a new clause, which forms an appropriate heading for the psalm. Thus R, if it does not exactly reproduce *a*, is much nearer to it than A. We may suspect, however, that *pro patre*, whether it was in *a* or not, is not original.

¹ So the phrase is obviously taken in B, which has the second clause of R in a slightly different form, but puts it before *legendus*.

Ps. xlv. A: *legendus ad lectionem actus apostolorum.*

R adds *vox apostolorum.*

A has no heading. The insertion of the heading *vox apostolorum* in R would be difficult to account for; while its omission in A is explained by homoeoteleuton. Once again, therefore, R preserves the text of a.

Ps. 1. *legendus ad lectionem esaiæ prophetæ et lectionem actus apostolorum ubi paulus elegitur vox christi pro populo penitentiae et vox pauli ad penitentiam.*

R has *paenitente* for *penitentiae*. This seems to be the better reading. If it was in a, it might give rise to *penitentie*, and that to *paenitentiae* (A). But other explanations of the variant may be suggested; and reason will be given hereafter for rejecting *pro pop. paenit.* as a false reading of a.

Ps. lxxxiii. A: *legendus ad euangelium mathei ad eos qui fidem sunt consecuti vox christi.*

R adds *ad patrem decclesia* (l. *de ecclesia*).

The addition of R is suitable to the psalm, and it is supported by L'Q. It may, therefore, be accepted as the reading of a.

Ps. xciii. A: *vox ecclesiae ad deum de iudeis.*

Ps. cxxxviii. A: *vox ecclesiae ad populum conlaudans deum.*

R in both places has *dominum* for *deum*.

Either reading might arise from the other.¹

Ps. cx. A: *ecclesia de christo cum laude.*

R has *vox ecclesiae* for *ecclesia*.

Here again we leave undecided which is the more original text.¹

Ps. cxviii *Beth*. A: *vox nouelli populi et iuuenum credentium.*

R adds *in deum*.

The probability is that the longer text comes from a, as in Pss. ii, xlv, xlv, lxxxiii; but it is no more than a probability.

Ps. cxxv. A: *vox apostolorum de impiis iudeis.*

R adds *et de infidelibus convertentibus se peccatis.*

There is little likelihood that the additional words in R are original. They are of a type of which we shall find other examples. An attempt is made to enlarge the application of the heading, and in the very act a new order of thought is introduced, and thereby the heading loses point.² It does not, as, for example, the addition at Ps. xlv does, form an integral part of the

¹ B supports R in Pss. xciii, cx, and A in Ps. cxxvii. This testimony, however, cannot be used at the present stage of the discussion.

² In this case the heading, even as it appears in A, is inappropriate to the psalm. But it must have originally belonged to a psalm which might plausibly be viewed as an utterance of the apostles concerning the Jews. If it was conceived of as equally applicable to all unbelievers, the Jews need not have been mentioned.

heading. But it is very probable, nevertheless, that it came from *a*. In such cases as this there is always a presumption that the longer reading is the earlier; and R does not seem prone to enlarging headings, while A is certainly in some places shorter than *a*. In the present case R is supported by F.

Ps. cxxvii. A : *propheta de christo et de ecclesia dicit.*

R puts *propheta* after *dicit.*

In headings of this form the word *propheta* usually stands first. A, therefore, probably gives the text from which R has accidentally deviated.¹

Ps. cxxxviii. See above, Ps. xciii.

This comparison establishes some important conclusions. In the first place, it is clear that the rubrics of R were not derived from A, but from an ancestor of A : *a* (see Pss. ii, xviii, xxxvi, xlv, lxxxiii). Again, in every case but two (Pss. v, cxxvii) in which it is possible to form an opinion (see Pss. xxxv, xxxix, l, xciii, ex, cxxxviii), there is a probability greater (Pss. ii, xviii, xxxvi, xlv, lxxxiii) or less (Pss. cxviii *Both*, cxxv) in favour of the hypothesis that R retains the reading of *a* where A departs from it. In other words, in spite of the fact that A was the work of a more careful scribe than R, and in spite of the fact that it is earlier than R by at least two centuries, its text, apart from clerical errors of the most superficial kind, is distinctly inferior to that of R.

We now pass to the *Psalmorum Ecegesis* (B). In this work we find for each psalm (1) the *titulus*, (2) a paragraph headed *Argumentum*, (3) a paragraph entitled *Explanatio*, and (4) the *Commentarius*, in which the psalm is expounded verse by verse. The first of these divisions need not be considered, and the last is probably of much later date than Bede.² But a good case has been made out for regarding the *Argumenta* and *Explanaciones* as having come from his pen.³ If this conclusion is correct, they were compiled between 731 and 735. The work of Bede is by no means an original contribution to the interpretation of the psalms. His *Explanaciones* are drawn from Cassiodorus;⁴ and the larger part of the *Argumenta*, which have more immediate interest for us, have their ultimate source in the commentary of Theodore of Mopsuestia,⁵ though Bede was certainly unaware of this fact.

¹ See p. 269, note 1.

² See D. G. Morin, "Le Pseudo-Bède sur les Psaumes et l'*Opus super Psalterium* de Maître Manegold de Lautenbach" in "Revue Bénédictine," xxviii. 331.

³ R. L. Ramsay, "Theodore of Mopsuestia and St. Columban on the Psalms," and "Theodore of Mopsuestia in England and Ireland," in ZCP, viii. 421, 452.

⁴ From his "divisio psalmorum." Sometimes they are borrowed from St. Jerome, once (Ps. xxxvi) from St. Columbanus. Ramsay, *l.c.*, p. 459.

⁵ J. D. Bruce, "The Anglo-Saxon Version of the Book of Psalms, commonly known as the Paris Psalter," Baltimore, 1894; reprinted from the Publications of the Modern Language Association of America, vol. ix, no. 1.

He seems to have learnt what he knew of Theodore's opinions through a Bobbio Psalter, perhaps the work of St. Columbanus, now preserved at Milan.¹

But in each *argumentum*, following the part derived from Theodore, we find, as a rule, another sentence or two, introduced by some such word as *item* or *aliter*, which cannot have emanated from Theodore or any one of his school. These additions are, in fact, of the same character as the rubrics of C, and comprise in each case a heading, or a liturgical note, or both. We may, for the sake of brevity, call them (inaccurately) the rubrics of B.

Whence came these rubrics? Mr. R. L. Ramsay² can suggest no more definite hypothesis than that they were taken from a lost *collectio* similar to "that preserved in the works of Cardinal Thomasius," but differing from it in detail. But the *Collectio Argumentorum* of Cardinal Tommasi, to which he refers, is merely a collection of rubrics compiled by Tommasi himself from many sources: he did not preserve, but made, a *collectio*; and it is extremely unlikely that any such repository of rubrics was in existence in Bede's time. It is, indeed, probable that Bede selected his rubrics from more than one source. But we can point to one manuscript, an exemplar of which, immediate or remote, he must almost certainly have used. It is the Codex Amiatinus, which we have already compared with R. It was written, as we have seen, in Bede's monastery of Jarrow, or in the sister house at Wearmouth, while he was a young man, some thirty or forty years before he put together his *Argumenta Psalmorum*. He cannot but have known an exemplar from which it was derived; and it is unlikely, if it contained rubrics such as he preserves for us, that he did not use it. Now that an ancestor of A⁴ did contain such rubrics is clear. The facts are as follows. In 75 cases the rubrics of *a* are identical with those of B, viz., in Pss. iv, ix, xv, xvi, xix, xxiv-xxvi, xxxiii, xxxv, xl, xlvi, li, lii, lv-lvii, lix, lxv, lxviii, lxx-lxxii, lxxiv-lxxvii, lxxix-lxxxii, lxxxiv-lxxxvi, lxxxviii, xci, xcii, xcv, xcvii-xcix, ci, cii, civ-cvii, cix-cxi, cxv-cxvii, cxx-cxxvi, cxxviii, cxxix, cxxxi, cxxxiii, cxxxvi, cxxxvii, cxxxix, cxli, cxlii, cxliv-cl.⁵ In 18

¹ Ramsay, *l.c.*

² *l.c.*, p. 457.

³ I. M. Thomasi Opera omnia, ed. A. F. Vezzosi, vol. ii (Romae, 1747), Ven. Card. Thomasius ad lectorem, sig. b, fol. 1: "Collectio argumentorum in Psalmos, quae hinc illincque praesertim ex mss. Codicibus excerpta, ne antiquitatis fragmenta perirent, collegimus."

⁴ By this I mean a source from which A derived its rubrics. As we shall see, it is not to be assumed that its text came from the same source.

⁵ I have included some cases in which the clauses containing the headings and the references to the lectionary are transposed, some in which there are slight verba differences in the latter, not affecting the sense; four in which both *a* and B are without headings or liturgical notes (Pss. xxiv, xcii, cxli, cxlii), and one in which it agrees with R against A (cx). See above, p. 269.

cases the differences are inconsiderable: Pss. iii, v, xxvii, xxxviii, xlvi, lxiv, lxix, lxxxvii, lxxxix, xc, xciii, c, cviii, cxii, cxxvii, cxxx, cxxxv, cxliii.¹ Again, the headings, as distinct from the liturgical notes, in *a* are in exact agreement with those of *B* in Pss. vi, xii, xxii, lxxxv, xcvi, and differ from them but slightly in Pss. viii, xi, xiii—eight times in all.² The rubric of Ps. xli in *a* is nearly identical with that in *B*, except that the latter adds at the end some words from the rubric of Ps. xlii, and a lectionary note. *B* agrees with *a* in the liturgical notes of Pss. xlv, xlvi (2), xlix, and only differs slightly in those of Pss. ii, xlii, xliii³—six cases. Finally, in three instances *a* seems to have two rubrics for a single psalm, one of which is found in *B*: Pss. xxix, xxx, 1;⁴ and twice elsewhere, in like manner, *B* has two headings, one of which appears in *a*: Pss. liii, cxiv.⁵ Thus there are no less than 113 rubrics in *a* which bear a striking resemblance to those of *B*.

But that is not all. The printed text of *B* is faulty, and in some places it may be corrected with the aid of the Paris Psalter⁶ (*S*). This manuscript contains an Anglo-Saxon translation of the Psalter. Prefixed to each psalm there is usually a Latin rubric and an Anglo-Saxon *argumentum*. Mr. J. D. Bruce⁶ has established the fact that these rubrics and *argumenta* are derived for the most part from the Bedan *Exegesis*. Now it occasionally happens that the Latin rubrics of *S* differ from the printed text of the corresponding *argumenta* of the *Exegesis*. This is sometimes due to carelessness, but sometimes also to the use by the compiler of a better text of *B* than ours. Hence, when *S* agrees with *a* against *B*, as printed, it may be assumed that it gives the genuine text. Some instances of the application of this principle must be given.

¹ In Pss. v, cxxvii, the resemblance is closer to *A* than *R*; in Ps. xciii, closer to *R* than *A*; in Pss. xlvi, xciii, cxxxv, *Σ* agrees exactly with *a*; in Pss. c (*de quie*), cxxvii (*et ecclesia*), it differs from it less than the printed text of *B*.

² It is uncertain whether in xiii *in matthæo* is a liturgical note: it is omitted by *a*. The lectionary notes are omitted by *B* in Pss. lxxxv, xcvi; elsewhere by *a*.

³ I count the words *ad eos*, &c., in the rubric of Ps. xlii as a liturgical note. In Pss. xliii, xlv, xlix, *B* omits the heading; in Ps. xlii, *a*. In Ps. xliii *Σ* differs from *a* only in spelling (*exemologesim*, omitting *in*).

⁴ Ps. xxix. *a*: *Propheta ad patrem et ad filium dicit de pascha christi futura ecclesia orat cum laude*. The last four words are in *B*. Ps. xxx. *a*: (1) *in finem psalmus david huic fidei confessio credentium deum* (2) *huic david uox christi in passione de iudeis dicit*. Rubric (2) is from Ps. xxxiv; (1) is in *B*, with a variant. Ps. l. *a*: (1) *legendus ad lectionem esaiæ prophetæ* (2) *et lectionem actus apostolorum ubi paulus elegitur* (3) *uox christi pro populo paenitente* (4) *et uox pauli ad paenitentiam*. Clauses (2) and (4) are in *B*, with variants.

⁵ Ps. liii. *aB*: *uox christi ad patrem*. *B* adds *uel cuiuslibet fidelis auxilium dei contra uitia fugitantis*. Cp. with this addition the heading of Ps. liv in *B*: *fidelis quispiam contra uitia carnis et ipsam carnem deprecatur*. Ps. cxiv. *a*: *uox christi est*. *B* omits *est*, and adds *uel cuiuslibet fidelis de temptationibus erepti*.

⁶ *Op. cit.*, p. 18 ff.

Ps. i. **a S**: *de* (om. S) *ioseph dicit qui corpus christi (domini S) sepeliuit.*
B nil.

Ps. xiii. **a S**: *uerba (uox S) christi ad diuitem interrogantem se (se int. S) et*
 (om. **a**) *de populo iudaico.*

B: *uerba christi ad diuitem se interrogantem in matthaeo et de populo iudaico.*

Probably in *matthaeo* is an interpolation in **B**.¹

Ps. xxi. **a**: *uerba christi cum pateretur.*

S: *uox christi ad patrem in cruce eleuatam* (sic). **B nil.**

Ps. xlv. **a**: *legendus ad lectionem actus apostolorum uox apostolorum.* **B omits**
uox apostolorum.

S: *uox apostoli in passione christi.*

Ps. l. **a**: *legendus ad . . . lectionem actus apostolorum ubi paulus elegitur*
 . . . *et uox pauli ad poenitentiam.*

S: *uox dauid ad poenitentiam.*

B: *in actus apostolorum ubi paulus eligitur et uox pauli poenitentis.*

The autograph of **B** probably read *ad poenitentiam*.

Ps. liii. **a S**: *uox christi ad patrem.*

B: *uox christi ad patrem uel cuiuslibet, &c.*

Ps. lviii. **a S**: *uox christi de iudeis ad patrem (ad pat. de iud. S).* **B nil.**

Ps. lxxxiii. **a**: *legendus ad euangelium mathei ad eos qui fidem sunt consecuti*
uox christi ad patrem de ecclesia.

S: *uox christi ad patrem de his qui fidem sunt consecuti.*

B: *uox christi ad patrem de ecclesia.*

Ps. lxxxix. **a S**: *uox apostolica ad dominum.*

B: *uox apostolorum ad dominum.*

Σ *has apostolica.*

Ps. xciii. **a S**: *uox ecclesiae ad dominum (deum A) de iudeis.*

B reads *de iudaeis ad dominum.*

Σ agrees exactly with **a** (**R**).

Ps. cviii. **a S**: *uox christi de iudaeis.*

B: *uox christi ad patrem de iudaeis.*

Ps. cxiii. **a S**: *uox apostolica cum iudeis increpat (-pans S) idola.* **B nil.**

Ps. cxiv. **a S**: *uox christi est.*

B: *uox christi uel cuiuslibet, &c.*

Ps. cxviii. **a S**: *uox christi ad patrem (+ et apostolorum de aduersario et a) de*
iudeis et (+ de a) passione sua et de aduentu suo et eius regno et iudicio
(iud. eius et reg. a)

B: *uox christi ad patrem de iudaeis et de passione sua.*

¹ The words *ad diuitem . . . matthaeo et* are absent from **Σ**.

Ps. cxxxii. *a*BS : *vox ecclesiae*.

a adds *orantis* ; S adds *regnantis*.

In these rubrics the combination *a*S indicates a reading of the copy of B which lay before the translator of S. By means of them our argument is therefore considerably strengthened. For we learn that eight psalms, which in the printed text of B are without headings (Pss. i, xxi, xlv, lviii, cxiii), or have headings dissimilar to those of *a* (Pss. cxiv, cxviii, cxxxii) had in this S text headings exactly or approximately identical with those of *a*. Thus the number of striking coincidences between *a* and B is increased to 121. In one of the psalms just mentioned (Ps. cxiv) we are able to recognize an addition to the heading, beginning *uel cuiuslibet*, as an insertion which is to be ascribed, not to Bede, but to some later scribe or editor of his work. In like manner a similar addition to the heading of Ps. liii vanishes from the text. Thus there disappear the only double headings which we have hitherto noted in B, and in their place remain headings almost identical with those of *a*. And with these additions to the headings of Pss. liii, cxiv, a whole class of clauses, of which they exhibit the type, becomes suspicious.¹ Comparison with S also restores a portion of the liturgical note of Ps. lxxxiii in B, of which the printed text preserves not a word. In other cases a rubric, which in the printed text resembles that of *a*, is found in the S text to have resembled it more nearly (Ps. xciii), or to have been identical with it (Pss. lxxxix, cviii). In other words, it has been shown that the earlier text of B was more like that of *a* than the text which is now in our hands.

And a moment's reflection convinces us that this conclusion may be carried further. The translator of S² did not always take his rubrics from Bede's *argumenta* ; still less did he always confine himself to that part of the *argumenta* with which we are concerned ; and he sometimes, no doubt, made mistakes in transcribing Bede. Moreover, some of his rubrics are lost. Thus it is in comparatively few cases that S gives us any material to work upon in restoring the text of B. And we must also remember that though S had a better text of B than ours, it by no means follows—indeed it is most improbable—that it was an exact reproduction of the autograph. In short, S proves that in more than a dozen rubrics B resembled *a* more closely than the printed text warrants us in assuming : it suggests that in many other rubrics, in regard to which it gives us no direct help, the resemblance was as great.

¹ *E.g.*, the B heading of Ps. liv, though it is supported by S ; and the addition to the heading of Ps. cxxv in R. See above, pp. 269, 272.

² Perhaps I should rather say the editor of the Psalter from which the rubrics were derived, for they seem to have come from a source different from that of the text.

There can be little doubt, then, that Bede used a manuscript which had rubrics differing not very greatly from those of *a*. We designate this lost source by the letter β .

It has been already hinted that Bede probably derived his rubrics from sources other than β , though we may be confident that it was his principal authority. Can we detect any clause of the rubrics of *B* which did not come from β ?

Of the headings there are very few which we can safely refer to this class. The following may, perhaps, be among them:—

Ps. ii. *a* : *increpatio potestatum.*

B : *christus de passione et potestate sua dicit.* *S* : *uox christi de passione.*

Ps. xxxiv. *a* : *uox christi in passione de iudeis dicit.*

B : *totus psalmus ex persona christi est et per (so Σ) christum ad omnes psalmos referri potest.* *S* : *totus psalmus est ex persona christi.*

Ps. lxiii. *a* : *uox pauli de passione christi.*

BS : *uox martyrum christi.*

Ps. xciv. *a* : *uox christi ad apostolos.*

B : *uox ecclesiae poenitentiam suadentis.* *S* : *uox ecclesiae.*

Ps. cxxxviii. *a* : *uox ecclesiae ad populum conlaudans deum (dominum R).*

BS : *uox petri apostoli poenitentis.*

In the liturgical notes we stand on firmer ground. *B* has 30 or 31 references to the lectionary, which may be divided, according to their form, into three classes.¹ Nine begin with the word *lege*²; four, or perhaps five, with a preposition—*in* or *ad*³; seventeen with the words *legendus ad*.⁴ This difference of form is naturally explained by a difference of source. A compiler who pieces together scraps from earlier writers—and this was in the main the procedure of Bede in his *argumenta*—will not in most cases reduce them to a common formula. And that the explanation here suggested

¹ I do not include here the words *super lazaro et diuine purpurato* (Ps. xlviii), common to *a* and *B*, best explained as a lectionary note. See below, p. 280 f.

² Pss. ii, vi, viii, x, xi, xxxvi, xxxvii, xxxix, xli. Σ omits three of these notes (Pss. vi, x, xi).

³ Pss. xii, xvii, xviii, xxii. Σ omits the lectionary note to Ps. xxii; for Ps. xviii it gives *ut in mathio legit*. The words *in matthaeo* in the rubric of Ps. xiii, which occur in the middle of the heading, are probably not a reference to the lectionary. In any case, they do not seem to be Bedan. See above, p. 273, and below, p. 277. For Ps. l, see note ⁴.

⁴ The full form is *legendus ad lectionem* (or, in the case of the Gospels, *euangelium*), followed by a genitive. See Pss. xxvi-xxviii, xl, xliii-xlvii, xlix, lii, lxviii, xc, cv, cvi, cxxix. In this class we may also include Ps. l on the authority of Σ , which prefixes *legendus* to the lectionary note.

is the true one becomes more than probable when we turn to *a*. It has only eighteen lectionary notes; and they are all cast in the third form, beginning with *legendus*. Eleven of them agree *verbatim* with the corresponding notes of B; five are found in it with slight variation.¹ In another, of which more will be said immediately, the variations are greater, and include a change of form. There is also one which has no parallel in the printed text of B.² But at that place the text of B is certainly corrupt, omitting the whole of the liturgical note of which the reference to the lectionary would have formed part.³ We must therefore pass it by. Thus, setting it aside, all the *a* lectionary notes are in B, and all but one⁴ assume in B the same form as in *a*. On the other hand, there is in B but one note of that type which does not appear in *a*;⁵ and, with the exception just referred to, not a single note in B which takes either of the other forms has a counterpart in *a*. We can scarcely escape the conclusion that the notes beginning with the word *legendus* were copied by Bede from *β*, and that the others were taken from a different source or sources.

But it may be asked, why in the exceptional case did he abandon his primary authority? Let us look at it. It is the rubric of Ps. ii. It runs thus in our authorities:—

B: *christus de passione et potestate sua dicit lege ad lucam.*

S: *vox christi de passione ad lucam euangl'.*

a: *legendus ad euangelium lucæ vox patris et apostolorum et christi ad capitulum scribendum increpatio potestatum.*

Bede, with good reason, regarded the heading of *a* (which we assume to have been in *β* as well) as corrupt.⁶ He therefore turned to another manuscript for the heading; and he naturally took from it also the liturgical note, though it differed from that of *a* only in form.

It appears, then, that 17 lectionary notes in B came from a MS. nearly related to *a*, while the remaining 13 or 14 were derived from other sources. Thus our contention that Bede borrowed largely from an ancestor of A is confirmed.

We must now address ourselves to another question. Taking it as

¹ In Pss. xxvi, xxvii, xl, 1, the word *lectionem* is omitted, and the following genitive becomes an accusative. In Ps. cvi we have *lectionem numeri et iudicium* for *iudicium et numeri libros*.

² Ps. lxxxiii.

³ See above, p. 273.

⁴ Ps. ii.

⁵ Ps. xxviii. In *a*, Ps. 1 has a double note, only one member of which appears in B (see p. 272). But this does not affect the argument. See below, p. 279.

⁶ See above, p. 267.

established that among the direct ancestors of A there were two manuscripts, sources respectively of R and B, which was the earlier? Was α an ancestor of β , or β of α ? It is important for our purpose that this question should be answered. But it is not easy to answer it, on account of the difficulty of discovering the text of β . Bede did not always follow β , and in the printed text of B, even when emended with the help of S, we are very far from having a correct copy of what Bede wrote. Consequently, where B has, in any instance, a reading which has the appearance of having been derived from α , we cannot at once conclude that α was prior to β . The fact may be that β was identical, or nearly identical, with α , while the printed text of B differs from both. Under such circumstances it is reasonable to give much more weight to evidence which points to the greater originality of the B text over that of α than to evidence which points in the contrary direction, or, in other words, to have more regard to the merits than to the defects of B.

To take an example. Thirteen psalms which have rubrics in α are without them in B, as printed. This would be a strong argument against the theory that α was derived from β , if our text of B accurately represented Bede's autograph. But we know that in the S text of B at least four of these psalms had rubrics similar to those of α .¹ It would be unreasonable to assume, because our scanty evidence carries us no further, that the remaining nine had no rubrics in Bede's manuscript, still more so to conclude that they were without them in β . The constant tendency of scribes was to omit all matter added to the *tituli*.

As the first indication of the priority of β to α we may take the lectionary notes. The conclusion which we have reached regarding them may be stated thus. Apparently β had all the lectionary notes of α , while α lacked one of those which B took from β . If this is true, it is impossible that β should have been derived from α ; but there is no difficulty in supposing that α was derived from β .

I now proceed to mention some rubrics in which the text of β seems to be more original than that of α . I avoid those in which we have found reason to believe that Bede did not follow β , including all in which the lectionary note is not cast in the form used in α .

Ps. xiii. *uerba christi ad diuitem se interrogantem et de populo iudaico.*

So the heading runs in the S text of B. In α the word *et* is omitted, to the detriment of the sense. The α heading, therefore, seems less original. But we must admit that the form in both cases is unusual: *uerba (uox) christi ad* is almost always followed by *patrem*, and the few exceptions to the rule (Pss. li, civ, cxxvi, cxlv, cxlvii) do not supply a close parallel to *uerba christi ad diuitem*.

¹ See p. 273.

Moreover, the reference to the rich man of Matt. xix. 16 ff. is not pertinent. There is good reason, therefore, to suspect that the words *ad diuitem se interrogantem et* are not Bedan. And Σ, whose variants cannot be disregarded with safety, omits them, giving the absolutely appropriate heading (cp. Rom. iii. 9) *uerba christi de populo iudaico*. This seems to be the original reading of B, taken from β; α and the S text of B inserting *ad diuitem*, &c., from a common source. The addition is found also in HPQ, and is supported by the word *interrogans* in F.

Ps. xxi. *uox christi ad patrem in cruce eleuatum* (l. *eleuati*).

So S (B omits), the last words being, doubtless, a paraphrase of the translator for *cum pateretur*. α omits *ad patrem*, words which were more likely to be dropped out by a scribe than to be inserted. They are omitted in many mss. at this place.

Ps. xxvii. *christus de iudaeis dicit ad patrem*.

α has *de iudaeis christo dicit*. This is obviously corrupt. The subject of *dicit* in α is Daniel, the prophet mentioned in the preceding lectionary note: a construction without parallel. It would require *ad christum* according to the usage of the writer. The words *ad patrem* are a further mark of priority in β.

Ps. xxix. *ecclesia orat cum laude*.

α prefixes another heading (see above, p. 272), which does not suit the psalm.

Ps. xxx. *confessio est credentium deum*.

α adds the heading of Ps. xxxiv. Possibly the double rubric was also in β; for at Ps. xxxiv B has recourse to another authority, indicating, perhaps, that he found no heading there in β. But in that case α must still be counted later, since it has the heading in both places. In many mss. the headings of Pss. xxx and xxxiv are similar to one another.

Ps. xlii. *ad eos qui fidem sunt consecuti a christo uox ecclesiae*.

B in the preceding psalm deserted β.¹ The present rubric begins with words which are a repetition of part of the rubric of Ps. xli, with one variant. This repetition is evidence of a difference of source; and we therefore conclude that β is again being copied. α omits *a christo*, and also the words *uox ecclesiae*, which are the heading proper. But see below, p. 284.

Ps. xlv. *uox apostolorum in passione christi*.

So the heading may be reconstructed with the help of S. α omits *in passione christi*. It must be admitted, however, that these words are scarcely appropriate to the psalm. If they are set aside, α and β are identical.

Ps. xlvi. *uox apostolorum postquam ascendit christus ad patrem*.

¹ See above, p. 275.

The first two words are recovered from S. They are not in *a*, where their absence is due to homoeoteleuton, the preceding lectionary note being *legendus ad lectonem actus apostolorum*. Obviously the reading of β is better than that of *a*. The latter leaves the psalm without a heading, and gives a lectionary note to which it is difficult to attach any meaning. The heading in β is appropriate to a psalm which has always been associated with Ascension Day.

Ps. l. *uox pauli ad paenitentiam.*

a has a double heading, of which this is the second member (see p. 272). The first member can hardly be described as appropriate to the psalm. Moreover, it seems to be a derivative of the second: *populus* would readily come from *paulus* (see Ps. xxxix) and *paenitente* as readily from *ad paenitentiam* (so in the present case *paenitentis* (B) from *ad paenitentiam*: see p. 273). It may be added that when the heading proper was thus changed the original lectionary note would become unsuitable, and another would be substituted for it. In this way we may account for the fact that *a* has a double note as well as a double heading. It seems clear, therefore, that the rubric of *a* was derived—though probably not immediately—from that of β .

Ps. lxxviii. *uox apostolorum post passionem christi.*

a repeats the *titulus* and heading of Ps. lvi. B, which has good support from other mss., may be supposed to have followed β . It certainly gives a more original reading.

Ps. ciii. *uox ecclesiae laudantis deum.*

a repeats the heading of Ps. cii, and has no support from other authorities.

Ps. cxviii. *uox christi ad patrem de iudeis, &c.* (see above, p. 273).

After *patrem a* (without countenance from any other authority) adds *et apostolorum de aduersario et*. This breaks in upon the order of the sentence, and harmonizes ill with *passione sua, &c.*, lower down. It is clearly an interpolation.

Ps. cxix. *uox christi ad patrem (+ in passione S) de iudaeis.*

a has *uox christi ecclesiae*, which is obviously wrong. It probably arose from a heading beginning *uox christi*, *ecclesiae* being a marginal correction. Cp. below, p. 281, on Ps. lxix.

Ps. cxxiv. *uox ecclesiae operantibus quae increpat idola.*

The words which follow in *a*, *gentium quod nulla sunt*, seem to be a later addition. They are found also in F in a corrupt form.

Ps. cxl. *uox ecclesiae contra haereticos.*

The last two words are not in *a*. They introduce a thought not often met with in these headings; but they are sufficiently appropriate to the psalm.

As we should expect, there are also readings in *a* which at the first glance seem to be more original than the corresponding readings of B. But they are less impressive than those which we have been considering. In many cases the divergence of B from *a* is probably due to alterations made by Bede in copying β , or to errors of subsequent scribes. I have noted the following:—

Ps. xxviii. *ad superpositionem dici sabbati pascae postquam consummata est ecclesiae christi.*

B has the false reading *superstitionem* (*superstionem* Σ) and omits *postquam*, &c.

As a rule in headings the longer reading is to be preferred. But here the text of *a* is suspicious, inasmuch as it omits a lectionary note found in B, and obviously suitable to the psalm, *legendus ad noe diluuium*. The concluding words in *a* seem to be suggested by *in consummatione tabernaculi* in the *titulus*.

Ps. xliiii. *eximologesim . . . propheta ad dominum de operibus eius paenitentiam gerens pro* (om. R) *populo iudaico.*

B is superior to *a* in reading for the first word *in exomologesim*; but it offends by omitting the whole of the heading proper. It is not certain that in either case B follows its source. The ungrammatical *eximologesim* might have been corrected, and the heading omitted, by scribes. It is worthy of note that one ms. of B (Σ) reads *exemologesim*, omitting *in*. Nor is it certain that Bede here made exclusive use of β . That he took the lectionary note from it is indeed highly probable,¹ but the words *uox apostoli* in S suggest that originally B had a heading derived from another source.

Ps. xliv. *propheta pro patre de christo et ecclesia dicit.*

B lacks *pro patre*, and reads *ad ecclesiam*. The omission of the former is a mark of posteriority. But we can scarcely assume that in this B followed β . If the phrase is equivalent to "in the name of the Father," it might have been rejected by Bede as superfluous; for it was the ordinary function of a prophet to speak in the name of God. But we must return to this heading in the sequel.

Ps. xlvi. B: *uox ecclesiae super lazaro et diuitem purpurato.*

a prefixes *diuitem increpat qui ad inferna descendunt cum mortui fuerint.*

The opening words in *a*, with or without the addition of *uox ecclesiae*, would serve as a satisfactory heading for the psalm. But it is difficult to suppose that the words *super lazaro*, &c., originally formed part of the same heading. Hence it might appear that *a* has a double heading, one member of which is preserved in B. But, on the other hand, the heading as it stands

¹ See above, p. 275.

in B can hardly be accepted. For *super* we should have expected *de*; and the allusion in a psalm-heading to a person who existed only in a parable is without parallel. Perhaps the simplest explanation is that the final clause is (or represents) a lectionary note—a reference, in fact, to St. Luke xvi. 19 ff. In that case *a* may give the rubric nearly in its original form, and may be identical with *β*. Bede, not perceiving that *super lazaro* was a lectionary note, would regard the first clause as a somewhat pointless generalization of it, and would accordingly omit it.

Ps. xlix. *de aduentu christi propheta dicit et iudicio futuro increpatio iudaeorum.*

B omits. But the S text appears to have had a heading which to some extent corresponded with it: the rubric of S runs, *dauid dicit ad increpandum peccatores*. And in the *argumentum* of the printed text there are coincidences both with this heading and with that of *a*: "Nunc ad *iudaeos* loquitur, consternare uolens et emendare *peccantes* . . . quod totum exsequitur terribiliore suggestu, quasi *tribunal iudiciale* describens." It will be noticed, however, that *increpatio* occurs in *a*, and *increpandum* in S, but no cognate word in the printed text of B. It is not impossible, therefore, that *β* agreed with *a*.

Ps. lxiv. *uox ecclesiae ante baptismum paschalismatum.*

B omits the last word, which must surely be original. But it may have been in *β*. So strange a word would have been liable to omission by an editor or scribe.

Ps. lxix. *uox ecclesiae ad dominum.*

B has *uox christi uel ecclesiae ad dominum*; and S supports it in some measure: *uox christi ad patrem*. But obviously *christi* was a marginal note incorporated in the text by a scribe (cp. R, Ps. lxxv: *uox christi ecclesiae ad christum*), and it consorts ill with *ad dominum*. Accordingly S substitutes *ad patrem*. It is scarcely possible that B preserves Bede's text.

Ps. lxxxv. *per ieiunium uox christi ad patrem.*

B omits the liturgical note, *per ieiunium*. Probably a scribe's error.

Ps. lxxxvii. *uox christi de passione sua dicit ad patrem.*

B omits *dicit*.

Ps. xevi. *ad confessionem prophetia uox ecclesiae ad aduentum christi.*

B omits the first three words. But there is no difficulty in the supposition that they were in *β*, and were omitted by Bede, or by a scribe of his work.

Ps. c. *uox christi ad patrem de requie sanctorum.*

For *requie* B has the wholly unsuitable *reliquae*. Bede must have written *requie*, with *a*. The exemplar of *Σ* (which has *dequie*) obviously read *de requie*. Probably, therefore, *β* agreed with *a*.

Ps. cxxx. *uox ecclesiae rogantis.*

B has *uox ecclesiae regnantis.* The reading of *a* is more in harmony with the psalm. The translator of S seems to have noticed the incongruity, for he adds *uel sanctae mariae.* It is unnecessary to suppose that *regnantis*, in spite of the support of S, was in β . It may be a scribe's misreading of *rogantis.*

On the whole it may fairly be claimed that the balance of probability is strongly in favour of the view that *a* was a descendant of β , and that both were ancestors of A. The correctness of this theory will be assumed in what remains to be said.

At last, after this long but not unnecessary preface, we come to the rubrics of the Cathach Psalter (C). Here our sphere is more limited; for C contains, in whole or in part, only 76 psalms, and of eleven of these the headings and liturgical notes are lost or illegible, and wholly irrecoverable.¹ Thus we have 65 rubrics to consider. It appears that in at least 27 cases the headings and liturgical notes are identical with those of *a* β ,² though in a few rubrics, which are not completely legible, the identity is not absolutely certain. There are also seven psalms in which C agrees with *a*, and probably also with β , though it differs from the existing text of B.³ And finally, there are six headings of C which agree with those of *a*, while B either gives no rubric,⁴ or relies on some authority other than β ,⁵ and in which the text of β , therefore, cannot be ascertained. These facts, though they by no means constitute the whole of the evidence, suffice to show that C belongs to the same group as *a* and β . A discussion of the remaining 25 rubrics may enable us to give it its proper place in the group.

Ps. xxxvi. *hortatur moysem ad fidem demonstrans salutem ecclesiae credentem monet ad fidei firmamentum.*

C *a* stand alone, so far as I know, in the reading *ad fidei firmamentum*, though no doubt Tommasi copied from some MS. the words *ad fidei firmitatem* which appear in his *Collectio Argumentorum.*⁶ In *a* we have *omnes* for *moysem* (C). But *moysem* has good support from other MSS.,⁷ and the difficulty of the reading would provoke emendation. C seems, therefore, to have the original text from which *a* deviated. β was perhaps identical with either C or *a*.

¹ Pss. xxx, xxxi, xxxii, xxxv, xxxix, xl, xlvii, lv, lxi, lxvi, xcvi.

² In Pss. xxxiii, li, lii, lvi, lix, lxx, lxxiii, lxx, lxxi, lxxii (?), lxxiv, lxxv, lxxvi, lxxvii, lxxix, lxxx, lxxxi, lxxxiv, lxxxviii, xci, xcii, xcix, cii, civ, cv, they agree with *a* and B; in Pss. liii, lviii, with *a* and the text of β as reconstructed with the help of S (see p. 273).

³ Pss. xlix (?), lxiv (?), lxix, lxxxv, lxxxvii, xcvi, c. See p. 281.

⁴ Pss. lx, lxii, lxxiii.

⁵ Pss. xxxiv, lxiii, xciv. See p. 275.

⁶ Opera, vol. ii, p. 1.

⁷ HPQ.

It is true that at the beginning of Bede's *explanatio* we find the words "Hic psalmus hortatur ad fidem demonstrans ecclesiae salutem; monet credentes quoniam plerique mortalium pro afflictione bonorum et impiorum prosperitate turbantur, adeo ut et non remuneratas in hac uita uirtutes desiderent et uitia consectentur: ad huiusmodi repellendum errorem psalmus iste componitur qui finem magis utrorumque considerandum crebra repetitione moneret." The first part of this passage, down to *credentes*, resembles the headings of Ca; it is just possible that it was originally in the *argumentum*, and was transferred from it by a scribe. The remainder is a quotation, with verbal changes and an addition at the end, from the Commentary on the Psalms attributed to St. Columbanus.¹ The rest of the *explanatio* is, as usual, taken from Cassiodorus. The most probable explanation of the facts is that Bede combined the heading in β and the comment of Columbanus, using reasonable licence with both, into a passage which should serve as an introduction to his *explanatio*. Having done this, it was natural that in his *argumentum* he should discard the β rubric, and put in its place the lectionary note *lege ad sapientiam salomonis*, taken from another source.²

Ps. xxxvii. *confessio sapientiae uirtus ad salutem.*

This is not very intelligible; and a, which inserts *in* before *sapientiae*, makes matters worse. B has *confessio patientiae et uirtus³ ad salutem*, which, though it is not satisfactory, and is not from β ,⁴ may suggest the true reading. The word *patientiae* is, at any rate, in harmony with the liturgical note which follows, *lege iob*. Let us suppose that the original rubric was *confessio patientiae uirtus ad salutem. lege iob*. The first point being omitted, it was natural to connect *patientiae* with *confessio*. A later scribe inserts the seemingly innocent *et*, and so we reach the reading of B. On the other hand, *patientiae* was easily altered to *sapientiae* in transcription, and this slip produces the text of C. But the phrase *confessio sapientiae* is difficult, and so from it arises *confessio insipientiae*, as in a and Q, or *insipientiae*, as in P. The substitution of *sapientiae* for *patientiae* may have been facilitated by the liturgical note of the preceding psalm in the source of B, *lege ad sapientiam salomonis⁵* (mistaken perhaps for a marginal correction), and the further change to *insipientiae* (*insipientiae*) by xxxvii. 6, "a facie insipientiae meae."

¹ G. I. Ascoli, "Il Codice Irlandese dell' Ambrosiana," Roma, Torino, Firenze, 1878-1889, vol. i, p. 212.

² See p. 275.

³ Σ : *poenitentiae et uirtutis*. This seems to be a corruption of the printed text. Cp. Ps. xxxix, where FQ (= ϕ) have *patientia populi* corrupted in H to *penitentis populi*. The readings of DN in Ps. xxxvii (see p. 419) therefore witness to a primitive text reading *patientiae*.

⁴ See p. 275.

⁵ In Σ , *lege salomonis sapientiam*.

Thus the reading of C appears to be that from which those of *a* and PQ sprang; while Bede, exchanging β for another manuscript, copied the older, if not original, reading which was corrupted into that of the printed text of B.

Ps. xxxviii : *profeta increpat eos qui diuitias habent, &c.*

Thus apparently C should be read (see note *ad loc.*): and if so, it agrees with β against *a* (*iudeos* for *eos*),

Pss. xli, xlii. *ante baptismum uox christi est* [. . .] (xlii) *ad eos qui fidem sunt consecuti.*

a differs from C in two points: it omits the (erased?) letters following *est*, and it reads *consecuti sunt*. It is plain that while *a* might have been derived from C, C was probably not derived from *a*. On the other hand, B agrees with C against *a*, as to the order of the words in Ps. xlii, and differs from both in adding *a christo uox ecclesiae*. Here it depends on β , though in Ps. xli it drew from another source.¹ The most obvious explanation of these facts would be that C was derived from β and *a* from C. But this explanation is not altogether satisfactory. There is no evident propriety in describing Ps. xli as *uox christi*, and Ps. xlii as *uox ecclesiae* (B): they are exactly similar in tone, and are, in fact, parts of a single psalm, arbitrarily divided into two. We may suspect that in β Ps. xlii, as Ps. xli in *a* and Bede's second source, was headed *uox christi*. This may later on, as has evidently happened elsewhere, have been altered to *uox ecclesiae*. Then a marginal correction,² *christi*, would readily give rise to *a christo uox ecclesiae*. Thus B may originally have differed from *a* only in the addition *uox christi*. It seems far from improbable that these two closely related psalms had originally but one title, the first part of which was afterwards assigned to Ps. xli, and the second part to Ps. xlii. We seem to see the scribe of C in the act of making the division. He writes the words *ad eos* above Ps. xli, finds he has no room for the rest, erases those two words, and puts *ad eos, &c.*, over Ps. xlii. Bede, finding this liturgical note in β and aware of the connexion between the two psalms, adds to it *uox christi* from Ps. xli. So β may have come from C, *a* from β , and B from β .

Ps. xliii. *ex homolegessem legendus ad epistolam pauli ad romanus profeta ad dominum de operibus eius paenitentiam gerens pro populo iudaico.*

a agrees exactly with C, except in spelling. Bede seems to have derived the liturgical note from β , taking the heading (*uox apostolorum?*), which he

¹ Above, p. 278.

² That *a christo* is a later addition is made probable by the difference of its position in the authorities. Σ has it before, the rest after, *sunt consecuti*.

substituted for *profeta*, &c., from another source.¹ B has no heading. The heading in Ca is supported by FHPQ.

Px. xlv. *legendus ad euangelium mathei de regina austri profeta ad patre de christo et ecclesia dicit.*

R reads *pro patre* for *ad patre*, B omitting the words. B reads *ad ecclesiam*.

Obviously *patre* is an error for *patrem*, due, in the first instance, to accidental omission of the mark representing *m*. *Profeta ad patrem*, though the phrase is unusual, is probably original: it has a parallel in the heading of Ps. cxxxi. The reading of R, *pro patre*, is most easily explained as a false emendation of *ad patre*; for it is unlikely either that *pro patre* arose directly from *ad patrem*, or *ad patre* from *pro patre*. We may therefore assume, in the absence of evidence from A, that *a* read *ad patre* with C, or *pro patre* with R. It follows that if β was prior to *a* it had either *ad patrem*, *ad patre*, or *pro patre*. If it had either of the last two readings, the omission of the phrase in B is explained (cp. above, p. 268). B further differs from Ca in reading *ad ecclesiam* for *de ecclesia*. Either reading might give rise to the other (cp. Ps. cxxvii). But *de ecclesia* seems more suitable to the psalm; and if *ad patrem* be accepted as original, *ad ecclesiam* is manifestly incorrect. It may be attributed to Bede, or to a scribe of his *argumenta* (a very early scribe, since it is supported by I²S). Thus the text of C accounts for R and B: while *a* and β either agreed with C or attempted to emend it.

Ps. xlv. *legendus ad lectionem actus apostolorum uox apostolorum.*

So *a*, and β according to the testimony of S. S is probably wrong in adding *in passione christi*.²

Ps. xlvi. *ad lectionem actus apostolorum uox apostolorum postquam ascendit christus ad patrem.*

Except in the omission of the word *legendus*, this rubric agrees with β against the corrupt text of *a*.³

Ps. xviii. *diuites increpat qui ad inferna descendunt cum mortui fuerint uox ecclesiae super lazaro et diuite purpurato.*

Here C agrees with *a* against B, which gives only the latter clause. Probably β agreed with Ca, the omission in B being due to Bede.⁴

Ps. l. *legendus ad lectionem actus apostolorum ubi paulus eligitur uox pauli ad penitentiam.*

If this reconstruction of the illegible heading is correct (see note *ad loc.*), it sides with β against a double heading of *a*.⁵

Ps. liv. *uox christi aduersus magnatos iudeorum et de iuda traditore.*

The greater part of this rubric is irrecoverable. The one word of the

¹ S has *uox apostoli* (see p. 419).

² See p. 278.

³ See p. 278 f.

⁴ See p. 280 f.

⁵ See p. 272.

heading which remains legible (*uox*) suggests that it agreed with *a*, and proves that it differed from B. B has nothing in common with *a*: *fidelis quispiam contra uitia carnis et ipsam carnem deprecatur*. We may suppose either that Bede here deserted β , or that the heading of β has dropped out of B, and that what remains is only a later note such as we find at Ps. cxiv.¹

Ps. lvii. *profeta denioribus iudaeorum dicit*.

Here *denioribus* is a blunder for *de senioribus*, which is in *a* β . It may be questioned whether a scribe copying from C could have corrected the error.

Ps. lxxvii. *profeta aduentum christi adnuntiat*.

So *a*. B has *resurrectionem christi et posteriores glorias* for *aduentum*. Neither heading is very suitable to the psalm; but the reference to the Resurrection in B is singularly unhappy. We may suspect that in it the rubric has been mangled by scribes. It is supported, however, by L^sS.

Ps. lxxviii. *uox apostolorum post passionem christi*.

C agrees with β against *a*, which repeats the rubric of Ps. lvi.² C β have the support of KL^sP. Other mss. follow a different tradition, perhaps Italian. DFHQT have *uox martyrum de eorum effusione sanguinis*; and M (from Monte Cassino) *uox martyrum*.

Ps. lxxxii. *uox ecclesiae ad de iudeis et de uitis hominum*.

a β rightly insert *dominum* after *ad*: an easily made correction, for *uox ecclesiae* is almost as regularly followed by *ad dominum* as *uox christi* by *ad patrem*.

Ps. lxxxiii. *legendus ad euangelium mathei ad eos qui fidem sunt consaecuti uox christi ad patrem de iudaeis*.

With this *a* agrees, and apparently also β ,³ except that they have *de ecclesia*, which suits the psalm admirably, for *de iudaeis*, which does not. C is therefore corrupt.

Ps. lxxxvi. *uox apostolica*.

a β add *de ecclesia*, which is found also in almost all the mss., and is obviously correct.

Ps. lxxxix. *uox apostolica ad dominum*.

So *a*, against B as printed (*apostolorum*). But β agreed with *a*.⁴

Ps. xc. *uox ecclesiae ad christum legendus ad euangelium marci ubi temptatur christus*.

So *a*: B has *dominum* for *christum*. Here it is probable that β agreed with *a*, B substituting a customary for a rare phrase.

Ps. xciii. *uox ecclesiae ad dominum de iu de iudeis*.

¹ See p. 274.

² See pp. 269, 273.

³ See p. 279.

⁴ See above, p. 273.

C differs from $a\beta^1$ only in the accidental repetition of *de iu.* This would be easily corrected by a scribe copying from C.

Ps. xcv. *vox ecclesiae uocantis ad fidem.*

C, which has the support of P, is probably correct. $a\beta$ omit *ad fidem.*

Ps. xcvii. *vox ecclesiae ad dominum et ad apostolos.*

The second *ad* is omitted by a and the printed text of B. But it is in Σ , and was therefore not improbably in β .

Ps. ci. *vox christi et ecclesiae cum ascendisset ad patrem.*

a and the printed text of B add *christus* after *ascendisset.* But C agrees with Σ , and probably with β .

Ps. ciii. *vox ecclesiae laudat dominum opera eius narrans fidei populo suo.*

This heading is restored with the help of FHM Q . Whether or no the illegible letters have been correctly supplied, it is clear that β , *vox ecclesiae laudantis deum,* may have come from it by way of abbreviation; while C could not have depended on β . The heading of a , *vox ecclesiae ad populum suum,* might also have sprung from that of C (though not through β): but actually it is simply repeated from Ps. cii.

Let us collect the results to which this discussion leads. In the first place, it leaves the impression that C has a good text in its rubrics. In certain cases we have found it in agreement with a where β probably also agreed with a ,² or where its text cannot be recovered.³ But more striking is the evidence that C has the text of a manuscript from which a and β have been derived. Three times the text of a appears to have been derived from that of C, the text of β being irrecoverable.⁴ Once β is an abridgement of C, while a repeats the rubric of a previous psalm.⁵ Thrice both a and β show signs of derivation from the C text.⁶ Six times C agrees with β against a .⁷ If these cases stood alone, it might be inferred that C has the text of which all the other texts in our group are derivatives. It would be possible even to suggest that a and β were descendants of the manuscript C itself: a suggestion which would receive confirmation from the curious phenomena of the rubrics of Pss. xli, xlii, xliv. But there are other facts to be taken into account, which negative this hypothesis. There are five places in which C, though differing from $a\beta$, is clearly derived from an exemplar which had their text.⁸ In some of these no doubt C differs from his exemplar only by a slip which could easily be set right by a subsequent

¹ See above, p. 273.

² Pss. xliii, liv, lxvii.

³ Ps. ciii.

⁴ Pss. xxxviii, xlvi, l, lxxviii, xcvi, ci.

⁵ Pss. lvii, lxxxii, lxxxiii, lxxxvi, xciii.

⁶ Pss. xlv, xlvi, lxxxix, xc.

⁷ Pss. xxxvi, xxxvii, xli.

⁸ Pss. xlii, xlv, xc.

scribe copying from C,¹ and, therefore, do not prove that α and β were not derivatives of C. But the remainder are not of this character. We conclude, therefore, that C, α , and β had a common archetype, which we may call γ .

We can now illustrate the relation between the different members of the group by a diagram, in which Greek letters indicate lost mss.



From this diagram it is clear that A is separated from γ by a greater number of ascertained steps in the process of transmission than C. But we may go further. For the deviations of A from γ are not only more numerous than those of C; they are of a much more serious character. Now, the scribe of A was singularly careful and accurate. It seems to me impossible that he could have fallen into the serious errors which disfigure his text in Pss. xxxvi (*admonstrans*), xliv, xlv, l, lxxxiii,² if the manuscript from which he copied had been free from them. But none of them was in α . Hence at least one ms. must have intervened between A and α . In like manner it might be argued, though with less security, that β was not the immediate exemplar of α ; for three important errors of α (Pss. xlvi, lxxviii, ciii) appear to have been absent from β . Thus the line of descent from γ to A had probably at least four or five stages. But, on the other hand, it is fairly clear that from γ to C was but one stage. For the scribe of C, whatever his normal habit may have been, was not in this case an accurate worker. Yet the six readings in which he certainly differs from γ for the worse are not errors of the most serious kind, and they are quite in his manner. One consists of the omission of a couple of letters (lvii: *den* for *desen*); two of the omission of a word (lxxxii) or two words (lxxxvi); one of the repetition of four letters (xciii: *deiu*)—all characteristic slips which have many parallels in the text of the psalms; and one of the substitution of one word for another not very unlike it in appearance (lxxxiii).³ These are such mistakes as one might expect the scribe of C to make: we should not have been surprised if he had made more of the same kind. We may be fairly confident, therefore, that γ was his immediate exemplar.

¹ Pss. lxxxii, xciii, and perhaps lvii.

² I confine myself here to the 66 psalm-headings in which comparison with C is possible.

³ Ps. xlviii would supply a more serious error if C differed in it from γ ; but it is not probable that γ agreed with B.

Furthermore, there is no room for question that C was written by an Irish scribe, and scarcely more room for question that it was written in Ireland. Consequently, we may assume that γ , if not written by an Irishman, was in Ireland when C came into existence. It, or a manuscript descended from it, was eventually carried to Northumbria, and was the source from which came the rubrics of the Codex Amiatinus, and the greater number of the additions to the *argumenta* of Bede.

But here an objection may be made. It is beyond doubt that the Codex Amiatinus was based on an Italian manuscript.¹ How, then, can it be claimed that its psalm-headings were borrowed, not from Italy but from Ireland? The question is easily answered. Anglo-Saxon scribes, as M. Berger has told us, found it impossible to produce a copy of a foreign text "without giving it, so to speak, the local colour of the texts of their own country."² The Codex Amiatinus is itself an illustration of the truth of this remark. Its biblical text is not Italian but Northumbrian; and the same may be said of the summaries which it gives of some of the books of both Old and New Testaments. If the text was so altered as to give it a Northumbrian character, why should it be thought unlikely that for the rubrics of its Italian archetype there should be substituted others regarded as of more value by English students of the Psalter?

There is, in fact, evidence that these rubrics did not come from the same source as the text which they illustrate. It is well known that the Amiatine text of the Psalms is that of St. Jerome's rendering from the Hebrew. But with that version the *tituli* of the manuscript have nothing to do. They are not the *tituli* of the Hebrew, which St. Jerome translated for his third edition of the Latin Psalter. How greatly they differ from them may be shown by printing the two versions of one of the longer *tituli* side by side. I select, almost at random, that of Ps. lix (lx).

Amiatine.

In finem pro his quae commotabuntur
testimonium in tituli inscriptione dauid
in doctrina cum succedit
mesopotamiam
syriae sabaa et conuertit ioab et
percussit in uallem salinarum duo-
decim milia.

Hebrew

Victori pro liliis
testimonium humilis et perfecti dauid
ad docendum quando pugnavit aduer-
sum syriam mesopotamiae et aduersum
syriam sobal et reuersus est ioab et
percussit edom in ualle salinarum
iii.

¹ Berger, p. 37 ff.² *Ibid.*, p. 38.

It is not indeed easy to classify the *tituli* of A. On the whole, they resemble those of Jerome's Roman and Gallican Psalters. They are in many cases identical, or nearly identical, with one or both of these against the Old Latin version of Sabatier; but, so far as I have observed, they never take the side of the Old Latin against them. But their resemblance to the Gallican and Roman series is not very close. An examination of 73 successive psalms (xxxiii-cv) gives the following results:—A agrees with both Roman and Gallican 14 times; it agrees with the Gallican against the Roman 10 times, and with the Roman against the Gallican 14 times (some of the agreements not amounting to identity). But, on the other hand, it stands alone 35 times, 15 times where the Roman and Gallican are identical, and 20 where they differ. The general character of its *tituli*, nevertheless, is Septuagintal and Hieronymian. In other words, we should not be surprised to find such *tituli* as these either in a Gallican or a Roman Psalter; but they would be out of place in the Old Latin. They are utterly incongruous in a Psalter according to the Hebrew verity. It was, perhaps, a sense of their unsuitability to such a position that led the scribe of the Bamberg Psalter to discard them, with the appended headings and liturgical notes, in favour of the rubrics proper to the version from the Hebrew. We cannot but suspect, therefore, that they were not in the copy of the Psalter brought from Italy, which was the main source of the text of this part of the Amiatine Bible.

And now we turn to the Cathach Psalter (C). Here the *tituli*, like the headings, are very similar to those of the Codex Amiatinus: a similarity all the more remarkable because both series are of an aberrant type. The differences between them are obviously due to the blundering of scribes on the one side or the other.¹ Thus from the *tituli* we have fresh proof of the close connexion between the two manuscripts, in spite of the fact that their texts are entirely unlike. The *tituli*, with the headings and notes, must somehow have found their way from one of the two texts to the other. But in C they are at home, for, as we have seen, it is fundamentally Gallican. These rubrics may have stood for many generations in the line of manuscripts from which it sprang.

¹ A good many of the *tituli* of C are lost or illegible; but some 63 are available for comparison. Of these, 10 differ from A, but have the support of R: presumably they agree with *a*, the common parent of A and R. Of the remaining differences, all but the following are too trivial to call for mention. In the rubrics of Pss. xxxiii (*cum innotavit* for *commutavit*), lxxviii (where *a* repeats the *titulus* of lvi), lxxxvii (where *a* puts the first clause of the *titulus* after the heading), C gives the correct text. C omits the *titulus* of Ps. xlvi. It omits also the first clause of the *titulus* of Ps. xcvi, the word *dauid* in that of Ps. lxxxv, the words *in tituli* and *in (tert.)* in that of Ps. lix, where also it has *et syriam sabba* for *syriae sabaa*; it inserts the word *psalmus* in the *titulus* of Ps. lxxxiii, and substitutes *famuli* for *hominis* in that of Ps. lxxxix. In one or two of these readings C is possibly superior to *a*.

Which is the more probable supposition, that they passed from their natural home to alien surroundings, or that they took the contrary course? I think there can be no doubt. That the rubrics of A came to it from an ancestor of C seems to me unquestionable.

THE DATE OF THE MANUSCRIPT.

If the argument of the foregoing paragraphs is accepted, it appears that several of the ancestors of A had headings of the type of those found in that manuscript, but approaching more nearly in form to those of γ and C. The earliest of these which we can assert with confidence to have been in Northumbria is β , which was used by Bede when he was compiling his *Argumenta Psalmorum*. Now we have seen that A was probably at least the fourth in descent from β in the direct line.¹ Allowing ten years for each step in the transmission, this would give us about 660 as the date of β ; and we may infer that the arrival of the Irish copy of the Amiatine rubrics in Northumbria was not much later, if it was not earlier, than the middle of the seventh century.

The same conclusion may be reached in another way. Irish influence was paramount in this district from the mission of Aidan from the Columban establishment at Iona in 635 to the Synod of Whitby in 664. That during those thirty years copies of the Psalter were imported in considerable numbers from Iona, or from Ireland through Iona, is more than likely. That they should have come earlier than 635 may be pronounced impossible; and every year after 664, when Irish ecclesiastical influence in the kingdom was on the wane, such importations of books from Ireland became more improbable. Benedict Biscop and Ceolfrid, it is true, procured many manuscripts for the monasteries of Wearmouth and Jarrow in 678 and later years, but they came from Rome.²

It seems, therefore, that the manuscript containing the psalm-rubrics which was used by Bede was written not later than about 650. The Irish manuscript γ , from which it was derived, must have been somewhat earlier; and there is nothing to hinder us from believing that it and C, the transcript made from it, belonged to the early years of the seventh century, or even to the sixth, if other evidence points to that conclusion. What has been

¹ See above, p. 288.

² *Historia Abbatum auctore Baeda*, 6, 9, 11, 15 (with Plummer's notes), *Hist. Abb. auctore Anonymo*, 9, 20. I do not, of course, deny the possibility that books may have been brought from Ireland to Northumbria after 664. For when Irish teachers ceased to visit Northumbria, Anglian students flocked to Ireland. They seem to have come without books; but they may have returned better provided. Bede, H. E. iii. 27.

established is that C, which is earlier than β ,¹ may be dated with high probability not later than the middle of the seventh century, and that it had some connexion with Iona.

It might be expected that palaeography would give us some help towards a more exact determination of the date; but in the present state of our knowledge it is almost impossible to infer from the script of an Irish manuscript the century to which it belongs. The palaeographical features of C seem to point to the sixth or seventh century. But it cannot be said that the script gives absolutely decisive evidence.² If in the end we conclude that the manuscript was written in the second half of the sixth century, it will be on the ground of testimony of a different order, the value of which we must now attempt to estimate.

THE BATTLE OF CUL DREMHE.

It has been said, with truth, that "the grand repertory of all later and questionable additions to the biography of St. Columba is the elaborate Life by Manus O'Donnell, chief of Tyrconnell, compiled in the year 1532."³ It is my duty to relate the most remarkable, and most often quoted, of O'Donnell's stories. But in so doing I shall make use of the translation published in the *Zeitschrift für Celtische Philologie*⁴ instead of the faulty Latin rendering of Colgan,⁵ which has been relied on by the majority of writers on St. Columba.⁶ Colgan professes to abridge the original;⁷ and in some places he abridges overmuch, but he also at times enlarges, without informing his readers that he has done so.⁸ O'Donnell's narrative is as follows:—

§ 168. Once upon a time Colum Cille visited Finnian (*Findéin*) of Druim Finn (*Droma Find*). He asked the latter for the loan of a book, which he obtained. And Office and Mass⁹ being over, he was wont to remain after the rest of the community in the church

¹ See p. 288. If the immediate exemplar of C (γ) was the manuscript brought into Northumbria from Iona, it is certain that C was written before that event. But if not γ , but one of its descendants, was the imported ms., it may still be argued that C was at least as early as that manuscript, and *a fortiori* as early as β .

² The question is discussed by Professor Lindsay in Appendix II.

³ Skene, p. 80.

⁴ ZCP, iii. 516 ff.; iv. 276 ff.; v. 26 ff.; ix. 242 ff.; x. 228 ff. This edition has unhappily not yet been completed. The story with which we are concerned is told in §§ 168–182, edited and translated by A. Kelleher (ZCP, ix. 258–273).

⁵ Colgan, ii. 388 ff. There is another rendering of parts of the story in vol. i, p. 644 ff.

⁶ An exception is Professor O'Curry ("Manuscript Materials of Ancient Irish History," re-issue 1878, p. 328 ff.). But O'Curry does not follow O'Donnell very closely.

⁷ p. 388: "Quinta Vita S. Columbae, ex ea quam Magnus O Donellus . . . descripsit, succinctius excerpta," &c.

⁸ *E.g.*, § 168 (Colgan's lib. ii, cc. 1, 2) is amplified towards the end. There are also some mistranslations which have misled later writers.

⁹ Mr Kelleher has "Mass and Office."

of that place, engaged in transcribing that book unknown to Finnian. At night time, while engaged at that transcription, the fingers of his right hand were as candles, which shone like five very bright lamps, whose light and brightness filled the entire church. On the last night, when Colum Cille was completing the transcription of that book, Finnian sent for it. When the messenger arrived at the door of the church, wherein was Colum Cille, he was astonished at the great light he saw within, and great fear seized him. Timorously he glanced through a hole which was in the valve of the door of the church, and when he beheld Colum Cille, as we have described him, he dared not address him or demand the book of him. It was revealed to Colum Cille, however, that the youth was thus watching him, whereat he became very angry, and, addressing a pet crane of his, said: "If God permits it, you have my permission to pluck out that youth's eyes, who came to observe me without my knowledge." With that the crane immediately went and drove its beak through the hole of the valve towards the youth's eye, plucked it out, and left it resting on his cheek. The youth then returned to Finnian, and related to him the whole of his adventure.

Thereupon Finnian was displeased, and he blessed and sained the youth's eye, and restored it to its place, so that it was as well as ever, without being injured or affected in any way. When Finnian discovered that his book had been copied without his permission, he went to reprove Colum Cille, and said he had acted wrongly in transcribing his book without permission. "I shall appeal to the King of Ireland, viz., Diarmaid mac Cerbuill, for judgement," says Colum Cille. "I shall agree to that," says Finnian. They then proceeded together to Tara of the Kings, where Diarmaid mac Cerbuill resided. Finnian pleaded his case first to the King as follows: "Colum Cille transcribed my book without my knowledge," says he, "and I maintain that the transcript belongs to me." "I hold," says Colum Cille, "that Finnian's book has not decreased in value because of the transcript I have made from it, and that it is not right to extinguish the divine things it contained, or to prevent me or anybody else from copying it, or reading it, or from circulating it throughout the provinces. I further maintain that if I benefited by its transcription, which I desired to be for the general good, provided no injury accrues to Finnian or his book thereby, it was quite permissible for me to copy it." Then Diarmaid declared the famous judgement, to wit, "to every cow her offspring"—that is, her calf—"and to every book its transcript" (*le gach lebhur a leabrán*). "And therefore," says Diarmaid, "the transcript you have made, O Colum Cille, belongs to Finnian." "It is a wrong judgement," says Colum Cille, "and you shall be punished for it." Curnan mac Aedha, son of Echaid Tirmcharna, that is, the son of the King of Connaught, happened at that time to be a hostage from his father at the court of the King of Ireland. A contention arose between him and the son of the steward of Tara at a hurling match concerning a hurley ball. He gave the latter a blow with his hurley on the head, which caused instantaneous death. He then placed himself under the protection of Colum Cille, and the King commanded that he be dragged from Colum Cille's presence, and be put to death because of the deed he had done.

The rest of the story, with which we have less concern, may be told more shortly. Columba at once (§ 169) threatened vengeance on King Diarmaid, and (§ 170) fled with his men from Tara. He reached Monasterboice the same night. (§ 171) The next day he crossed Sliabh Bregha, where he escaped an ambush, and finally (§ 172) arrived at the territory of his cousins the Kings of Cinel Conaill and Cinel Eogain, to whom he related his wrongs. The outcome was the battle of Cul Dremhne, between Sligo and Drumcliffe. (§ 173) On the one side fought Ainnire, King of Cinel Conaill, Fergus and

Domnall, King of Cinel Eogain, and Aedh, son of Echaid Tirmcharna, King of Connaught, with the *Ui Maine* of Connaught, aided by the prayers of Columba; on the other, Diarmaid, King of Ireland, aided by the prayers of Finnian. The night before the battle Columba "fasted on God," and (§174) the Archangel Michael appeared to him, and announced that, according to his prayer, he and his friends would be victorious. But he added "that, for having made such a worldly request, God would not be pleased with him until he would exile himself beyond the seas, and never return to Ireland's shores, nor partake of her food and drink, except during his outward journey, nor behold her men and women for evermore." (§175) During the battle the Archangel was seen in the form of a warrior, armed with shield and sword, at the head of Columba's host. Needless to say (§176), Diarmaid was beaten, losing 3000 men. Of the victorious army but one man was killed. He had crossed the stream which flowed between the contending hosts, thus violating a command of the Archangel.

"Then," says O'Donnell, who may again be quoted *verbatim* :—

§ 179. Colum Cille addressed his relatives and followers thus: "It behoves me to go into exile and never return to Ireland, as the angel has declared unto me, because of the multitudes you have slain on my account at the battle of Cul Dremhne and at the battle of Cul Fedha, where you defeated Colman Mor mac Diarmada, because his son Cumaine mac Colmain slew Baedan mac Nindedha, King of Ireland, at Leim an Eich, notwithstanding my protection of him, and at the battle of Cul Rathain, where you defeated Fiachna mac Baedain, King of Uladh and Clan Rudraige, through my contention for Ros Torothair—that is, the land concerning which a contention arose between me and Comghall" . . .

§ 180. Moreover, the saints of Ireland murmured against Colum Cille, and accused him of unrighteousness, considering all his people that were slain in those battles as a result of his counsel. Then Colum Cille, acting on the advice of the saints of Ireland, proceeded to Molaise of Damh Inis to confess his crime to him. And Molaise ratified the sentence the angel had passed on him previously, namely, to abandon Ireland and never to behold her, and to abstain from her food and drink, and the sight of her men and women, and never to tread her soil.

(§ 182) After the battle of Cul Dremhne, Columba visited a holy man named *Cuibneach Fraech*, and was duly reprimanded by him for the slaughter which he had caused. The saint was less penitent than might have been expected. "I am not responsible for that," he said, "but the unjust judgement passed on me by Diarmaid mac Cerbuill." The words thus put into his mouth, as we shall see, are not without interest, but we may pass over the remainder of the interview. The story ends with the departure of Columba from Derry for Iona, in fulfilment of the sentence of exile passed upon him.

It is manifest that this narrative cannot be accepted without reserve as in all its parts historical. Three times over (§§174, 179, 180), for example, we

are told that Columba, in consequence of his participation in the battle of Cul Dremhne, was condemned to exile from Ireland—an exile of the most uncompromising kind: he was never to return to Ireland, never to partake of Ireland's food or drink, or to behold her men and women. Yet he certainly visited Ireland on the occasion of the gathering at Drumceatt in 575, and perhaps at other times.¹ It must be admitted, at the least, that his banishment was not as absolute as O'Donnell leads us to suppose. But this is only such embroidery as might be expected in a story substantially true, but told many centuries after the event. We have three accounts of the sentence, written in the fourteenth century, and probably copied or translated from older documents, in which its terms are less severe.² It is important, however, to note that the earliest known reference to it, which dates at the latest from the eleventh century, implies a banishment as rigorous as that which O'Donnell records. In the Farewell to Ireland, attributed to St. Columba, we read:—

There is a grey eye
That shall not look upon Erin [fading] behind it,
It shall not see henceforth
The men nor the women of Erin.³

It must be added further that in the Preface to the *Amra Coluim Cille*, as it appears both in the *Leabhar na hUidre* (c. 1100),⁴ and in the somewhat later manuscript, Rawlinson B. 502,⁵ it is related that Columba went to Drumceatt blindfold, so that, in fulfilment of his promise, he should not see Ireland. This is obviously a later development of the story of the absolute

¹ Adamnan, i. 3, 10, 11, 38, 40, 42, 49, 50; ii. 6, 19, 36, 41, 43. According to Skene (p. 83), "ten different visits to Ireland are recorded"; but there is apparently an error in his references, which I have failed to verify. It is, of course, not to be assumed that every incident the scene of which is laid in Ireland implies a special visit to that country.

² In Peregr. 6, he is directed to undertake missionary work, and in § 11 to follow the "theoric" life in a remote place. According to the *Vita Lasriani* (§ 31, Plummer, ii. 139), he was to remain for ever in exile, but nothing is said about not seeing the men and women of Ireland.

³ Reeves prints the whole poem in his Adamnan, p. 285 ff. This stanza is found in the Introduction to the *Amra Coluim Cille* in the *Leabhar na hUidhre*, this portion of which was written at Clonmacnoise about the year 1100 (see below, p. 300, note ²). It was in the possession of the O'Donnells before 1340, when it was carried off by Cathal og O'Conor. It was recovered in 1470, and was therefore probably known to Manus O'Donnell. (*Leabhar na hUidhre*, Facsimile Edition, Int., p. x f.)

⁴ J. O'Beirne Crowe, "The *Amra Choluim Chill* of Dallan Forgaill . . . in *Lebor na Huidre*," Dublin, 1871, p. 9.

⁵ "Revue Celtique," xx. 39. For the date of this MS. see Kuno Meyer's Facsimile Edition, Int., p. iv f., and an article by Mr. R. I. Best in "Eriu," vii. 114 ff.

banishment of Columba, and proves that the story came into existence long before 1100.

But O'Donnell is responsible for misstatements more serious than this. The exile, according to him (§179), was the penalty enjoined upon St. Columba for three battles of which he had been the cause—the battles of Cul Dremhne, Cul Fedha, and Cul Rathain. Now the battle of Cul Fedha was fought in 587,¹ twenty-four years after the settlement of the saint at Hi; and Reeves has shown that the battle of Cul Rathain cannot have occurred before he left Ireland.² Clearly O'Donnell has ante-dated them both. Keating has done the same, doubtless following some older authority; but unfortunately he does not tell us what his authority was.³ The fact is that these conflicts were closely associated with each other in early tradition, as the three battles which Columba had stirred up in Ireland. The Preface to the *Altus Prosator* informs us that that hymn was composed by him as a plea for forgiveness for his share in them.⁴ A gloss on the *Amra Coluimcille* mentions them as the "Three Cúils."⁵ And they are commemorated in verses of Dallan Forgaill quoted by O'Donnell.⁶ We may suspect that this legendary association has caused the later battles to be dragged into a tale which originally was concerned only with the battle of Cul Dremhne. They, as well as it, thus came to be regarded as a cause of Columba's banishment.

Now when we turn to O'Donnell's *Life*, we find complete justification of this suspicion. The battles of Cul Fedha and Cul Rathain are not really worked into his narrative. They are referred to only once, and that in the most awkward way, in the speech which Columba is represented as having made to his followers after Cul Dremhne. And the saint, in addressing the very men who had been victors on both occasions, is made to give them a full account of the cause of the battles, together with the names of the foes over which they had triumphed. O'Donnell is plainly embellishing his story with a tradition drawn from another source. The very form of his narration warns us that we need not place much reliance on what he says about the battles of Cul Fedha and Cul Rathain. And in earlier notices of the cause of Columba's departure from Ireland they are not so much as mentioned.⁷

If we carry our investigation further, we shall discover other cases in which O'Donnell betrays the fact that he is combining different, and sometimes inconsistent, traditions. For example, we ask, who imposed on

¹ *Annals of Tigernach*. Cp. *Annals of Ulster*, s. a. 586; *Four Masters*, s. a. 572.

² *Reeves*, p. 253 f.

³ *Keating*, iii. 87.

⁴ *Lib. Hymn.* (ed. Bernard and Atkinson), ii. 23.

⁵ *Ibid.*, p. 68.

⁶ *Life*, § 179.

⁷ *Vita S. Lasriani*, 31 (*Plummer*, ii. 139); *Peregr.* 6. 11.

St. Columba the sentence of banishment? There are several answers. One names the Archangel Michael (§ 174). This may have been a fairly old legend.¹ But later on we are told (§ 180) that after the battle, on the advice of the saints of Ireland, Columba made his confession to Molaise of Damh Inis, and that he “ratified” the sentence of the angel. But why should the sentence of Michael the Archangel need the approval of Molaise? Obviously O’Donnell is ingeniously finding a place for a rival account of the sentence. He may have taken it from the Life of Molaise.² But that is not all. By way of confirmation he quotes (§ 181) a couple of lines from St. Columba’s Farewell—a poem to which reference has been made above—which allude to the sentence as “Molaisi’s words at the Cross of Ath Imlaise.”³ But unfortunately the reference here is to another Molaise, the patron saint of Inishmurray, the well-known island off the coast of Sligo, which is included in the parish of Ahamlash.⁴ Thus O’Donnell reveals his knowledge of three different stories of the sentence. All these cannot be true; and it would be hazardous to affirm that any one of them is to be accepted. There were indeed other traditions which perhaps O’Donnell did not know, or did not find capable of combination with those which he selected. The author of the “*De Causa Peregrinationis S. Columbae*” in one place states that St. Finnian the bishop, who is also called Finnbar—that is to say, St. Finnian of Maghbile—was the author of the sentence⁵; in another, with greater probability, as I venture to think, he tells us that after the synod at which St. Columba narrowly escaped condemnation, Brendan advised him to adopt the “theoric life in a remote place.”⁶ Here there is no word of a formal sentence.

But we must continue our examination of O’Donnell’s Life. Every reader will observe the abrupt transition which takes place towards the end of § 168. When Diarmaid has delivered his judgement, Columba declares, “It is a wrong judgement, and you shall be punished for it.” With that the narrative about Finnian’s book comes to an abrupt end. In the next sentence,

¹ It is probably to be associated with the tradition that St. Michael fought with Columba’s forces (§ 175), which is evidently alluded to in an addition to *Vita Brendani Prima*, 90 (Plummer, i. 144). Brendan declares that he has heard the angel of the land of Ui Maine fighting in his name. The hagiographer explains this as a reference to the battle of Cul Dremhne.

² V. Lasr. 31.

³ Reeves, p. 287.

⁴ Colgan apparently noticed this inconsistency, for he omits the words “of Damh Inis” in § 180.

⁵ § 6. For Finnian the bishop, see Reeves, 103, 195.

⁶ § 11. St. Brendan of Birr is meant. See Adamnan, iii. 3. It is remarkable that the action of the synod and the advice of St. Brendan are not connected with the battle of Cul Dremhne, but with another misdemeanour of the saint.

without a word of preface, begins the story of the death of Curnan.¹ Can it be that here also O'Donnell is combining two different stories? It may seem so; for though in § 169 the wrong judgement and the violation of sanctuary in the case of Curnan are mentioned as joint causes of the battle, in subsequent sections the latter incident passes out of sight. In § 172 Columba tells his relatives in Ulster of "the wrong judgement passed on him by the King of Ireland," and mentions no other grievance. In § 178 we read of "the book on account of which the battle was fought." In § 182 Columba excuses himself to Cruimthir Fraech for instigating the battle: "I am not responsible for that, but the unjust judgement passed on me by Diarmaid mac Cerbuill." And in fact we know that two accounts of the occasion of the battle were given. That it was due to Diarmaid's judgement in favour of Finnian, Keating learned from the Black Book of Molaga; that it arose out of the violation of sanctuary he read in the Dun Book of Ciarain.² And we have still in our hands two narratives of the battle, one of which does not refer to Curnan at all,³ while the other makes no mention of Finnian's book.⁴ The former may well have been the story current among the Cinel Conaill and Cinel Eogain; and thus we might account for its prominence in O'Donnell's Life. But outside Ulster the murder of the King of Connaught's son would certainly be accounted the main cause of the conflict.

If O'Donnell brought together these two stories from different sources,⁵

¹ Colgan conceals the rapidity of the passage from the first to the second story by thus amplifying the words of Columba quoted above: "Datam a rege sententiam ut absonam et aperte iniquam S. Columba iusta censura palam taxauit, simul praedicens tantam arbitrii obliquitatem non diu abituram inultam." And then he introduces the story of Curnan with "Interea." In his second translation (i. 645) he further adds: "Quod et euentus probauit. Sed antequam ultio quam uir sanctus est minatus sequeretur, intercessit et alia causa quae accelerauit et auxit eandem." And by way of introduction to § 169 he inserts the following: "Aegre tulit uir sanctus repetitam iniuriam; aegrus admodum ecclesiasticae immunitatis praedudicium, unde seu prophetico spiritu futura praedicens seu iustitiae zelo commeritam ultionem intentans." A curious example of his method of abridging the verbosity of O'Donnell.

² Keating, iii. 56 ff. Nothing seems to be known of the Book of Molaga. The Dun Book of Ciarain is perhaps the ms. in the Library of the Academy known as "Leabhar na hUidhre," though at present it does not appear to contain an account of the battle. A book written at Clonmacnoise would be likely to give the view of the conflict held in Connaught. And since it belonged to O'Donnell's clan (see above, p. 295), it was probably used by him as well as by Keating.

³ Peregr., 1-4.

⁴ Book of Lismore, f. 94 b (Stokes, p. xxviii).

⁵ He had early authority for doing so; for the following lines quoted by him (§ 139: ZCP, v. 65), and attributed to Diarmaid, seem to refer to the murder of Curnan as well as to the false judgement:—

Three things deprived me of luck
and ousted me from the Kingship of Temair:

we cannot blame him. He would naturally prefer the story of the surreptitious copying of Finnian's book, both because it was the story generally believed by his own tribesmen, and because, as we shall see, he was familiar with a relic of St. Columba, which he would regard as guaranteeing its truth. But that story, making all allowance for the ease with which feuds could be stirred up between Irish tribes, could scarcely by itself be taken as a sufficient account of the origin of the battle of Cul Dremhne. O'Donnell tells us—and his statement is supported by almost all the notices of the battle that have come down to us—that on the side of Columba fought not only the chiefs of Cinel Conaill and Cinel Eogain, but also Aedh son of Echaid Tirmcharna, King of Connaught, the father of the murdered hostage, together with the Ui Maine.¹ Why should the Connaughtmen take sides in a battle which did not concern them? On the other hand, the murder of Curnan when he was under the protection of Columba would have been a sufficient *casus belli* for both Ulster and Connaught. But the feud thus caused would certainly have been much aggravated if about the same time Diarmaid had taken Finnian's side against Columba in the quarrel about the book.

We have pruned O'Donnell's narrative very considerably. What remains, omitting details,² is this. The double grievance of St. Columba, on the one hand the judgement about St. Finnian's book, on the other the murder of Curnan, led to the battle of Cul Dremhne. The part which St. Columba played in it brought him into disfavour with the ecclesiastics of Ireland. In consequence, whether of his own choice, as a counsel of prudence, or by the advice or command of someone whose authority he respected, he left Ireland and began his missionary labours in Scotland. Can this be accepted as true?

The malediction of chaste Colum Cille,
and the curse of Ruadán,

The judgement concerning the book of Colum Cille and of affable Finden,
When with deceptive intent I said the saying, "To every book its booklet" (*Re gach leabar a lebhhrán*).

¹ So the Annals. Cp. Lib. Hymn., ii. 68. Keating, at iii. 57, does not mention the men of Connaught; and at iii. 89 they are allied with Diarmaid.

² It may be remarked that some of the details of the story, as commonly told, do not form part of it in O'Donnell's Life. Even Skene (p 81) writes: "A synod of the saints of Ireland was held, before whom Columba was arraigned . . . and they decided that he must win from paganism as many souls as had been slain in this battle." The saints who "murmured" may have been assembled in synod, but it is Colgan, not O'Donnell who says so. Neither does O'Donnell say that Columba was "arraigned" before them. The sentence was not passed upon him by a synod, but by the Archangel Michael and by Molaise; and the terms of it as reported by Skene differ considerably from those given by O'Donnell, and approach more nearly to the account given in the Life of Molaise (§ 31, Plummer, ii. 139) and Peregr. 6. That Columba landed at Colonsay (Skene, *l.c.*) is not told in the sections of O'Donnell with which we are concerned.

It may be well to point out at once that the inconsistencies of O'Donnell do not present a fatal objection. The true inference from them is that he made use of contradictory traditions; and variety of tradition is an argument in favour of an underlying basis of historical fact. Thus, for example, O'Donnell bears unconscious witness to the tradition that the sentence of banishment was passed on Columba by Molaise of Inishmurray. That, no doubt, gave rise to the later story that the banishment was decreed by Molaise of Damh Inis. Incidents in the life of one saint are readily transferred to another of the same name.¹ But there is less probability that other traditions, current in the fourteenth century, which made Finnian of Maghbile or Brendan of Birr the author of the sentence, sprang from it. It is more likely that both it and they came from a yet older tradition, in which the confessor who pronounced the sentence was anonymous. And that carries us back a long way. For the tradition that named the saint of Inishmurray is imbedded in the Preface to the *Amra Coluim Cille* preserved in the *Leabhar na hUidhre*. This part of the *Leabhar na hUidhre* is of the eleventh century; the Preface is probably earlier; earlier still must have been the poem from which the Preface quotes a single stanza;² and prior to it was the story of the anonymous confessor. But quite independent of this ancient tale is the companion story of the Archangel Michael. It obviously springs from a belief that St. Columba determined to leave Ireland without any suggestion save the prompting of his own heart. Now, all these traditions, going back to a period not removed by a very great interval from St. Columba himself, agree in telling that the exile was a penance for some misconduct of the saint; and most of them connect it with the battle

¹ When, in the course of the development of the legend, a name was given to the confessor of St. Columba, it was natural that Molaise of Inishmurray should be selected. He was the principal saint of the district of Carbury, in which the battle was fought; and St. Columba's tribe, the Cinel Conaill, was nearly related to the Cinel Cairbre, the former tracing its descent to Conall, and the latter to Cairbre, sons of Niall of the Nine Hostages. Damh Inis was situated in the territory of a tribe of different stock, the Fir Manach.

² See above, p. 295. The Preface was written by scribe A (see R. I. Best, "Notes on the Script of *Lebor na hUidre*," in *Eriu*, vi. 161 ff.), from whose hand scribe M (Mael Muire of Clonmacnoise, *ob.* 1106) took up the pen on two occasions. Thus the quatrain mentioned in the text may go back to the early eleventh or late tenth century. Earlier, in its present form, it seems, we cannot place it for linguistic reasons (though Zimmer would have dated the Preface in the ninth century: "Sitzungsber. der k. preussischen Ak. der Wissensch.," li (1910), 1035 f.). But it must be conceded that the remainder of the poem may be later. It is, as Mr. E. J. Gwynn tells me, a composite structure, the older substratum of which may belong to the tenth or eleventh century. Cp. above, p. 295, note 3.

of Cul Dremhne.¹ The details are, of course, doubtful; but the essential parts of the narrative, as O'Donnell tells it, were believed many centuries before he wrote, and long before his time had gained currency with various forms of legendary accretion. The variety attests, at the least, the great antiquity of the story.

But there is more direct confirmation of its substantial truth. Let us note first that the battle of Cul Dremhne is an indubitable event of history. The *Annals* record that it was fought in 561, and the more reliable of them² state, with O'Donnell, that Columba aided the victors with his prayers. They agree also that he migrated to Iona in 563—two years after the battle. These dates are in noteworthy harmony with our story. But Adamnan carries us a step further. He twice mentions the battle of Cul Dremhne as a well-known incident; and in each case he refers to it as if it were an epoch in Columba's career, and in some way connected with his "pilgrimage." These are his words: "Hic anno secundo post Culedrebinæ bellum, ætatis uero suæ xlii, de Scotia ad Britanniam pro Christo peregrinari uolens enauigauit"; and again: "Post bellum Cule Drebene, sicut nobis traditum est, duobus transactis annis, quo tempore uir beatus de Scotia peregrinaturus primitus enauigauit,' &c."³ The significance of these two sentences will be appreciated by those who have observed Adamnan's habitual carelessness in regard to historical and chronological data.

Again, Adamnan⁴ gives an account of a Synod held at Tailte (Teltown), at which, "for certain venial, and so far excusable, matters," Columba was excommunicated. It is true that on the intervention of St. Brendan of Birr the excommunication was subsequently withdrawn. But it is difficult to believe that the feeling of the ecclesiastics towards one against whom they had pronounced so severe a sentence, notwithstanding its rescission, should be altogether cordial. Thus, O'Donnell's statement that "the saints of Ireland murmured against Columcille" is justified, though possibly the assembly at Teltown included only the ecclesiastics of Meath.⁵

What trivial offences of Columba had brought about this condemnation

¹ The only real exception is *Peregr.* 11. The story of Molaise of Inishmurray seems to have been in agreement with the other traditions in this respect. See note ¹, p. 300, and bear in mind that the story of Molaise of Damh Iuis, which is apparently derived from it, is explicit on the point.

² *Annals of Tigernach, Annals of Ulster.*

³ Adamnan, *Praef.* 2; i. 7.

⁴ *iii.* 3.

⁵ O'Donnell does not appear to have connected the murmuring of the saints with the Synod of Teltown. He has an account of that assembly in a different context (§ 72: ZCP, iv. 283).

Adamnan does not tell us, and there is nothing recorded by him which can with probability be regarded as causing it. O'Donnell connects it with the battle of Cul Dremhne.¹ And the conduct of Columba in fomenting the strife which culminated there, as recorded by O'Donnell, however it might "afterwards appear in the end," would account for the action of the Synod. That the departure of Columba from Ireland followed shortly after the Synod is, perhaps, implied by Adamnan.²

And in one matter of detail O'Donnell's account of the battle itself appears to have been founded upon an early legend which bears on its face the mark of truth. We are told in the Annals of Ulster and elsewhere³ that Diarmaid caused a druid's *airbe* to be made between the armies. The *airbe* was overthrown, and one of Columba's men leaped over it and was immediately slain. He was the only man of the northern host who lost his life that day. The meaning of this is not clear, but the important fact is that it represents Diarmaid as under the influence of pagan druids.⁴ This was very probably the case: it is most unlikely to have been the invention of a later age, when Ireland was entirely Christian.⁵ And it is to be noted that a serious disagreement between Columba and Diarmaid, supposing the latter to have been a semi-pagan, together with a violation of Christian sanctuary by him, would be a very natural prelude to his open apostasy. O'Donnell alters the story in one point. He substitutes a stream for the *airbe*, no doubt because that word was as unintelligible to him as it is to us,⁶ and consequently omits the statement that it was overturned.

We have reasonable ground, therefore, for the suspicion that the battle of Cul Dremhne, like the battle of Clontarf four centuries and a half later, was a struggle between the old faith and the new, between Paganism and Christianity. Thus we may account for the deep impression which it made on the imagination of the Irish people. But it is right to add that this

¹ In Peregr. § 11 the excommunication is consequent on an escapade of the saint elsewhere, I believe, unrecorded. But in § 5 it is connected with the battle of Cul Dremhne.

² See Adamnan, iii. 3, 4, with Reeves, p. 196, note *e*.

³ *E.g.*, in the Book of Lismore, f. 94 b: see Stokes, p. xxviii f. Compare Annals of Tigernagh.

⁴ That Diarmaid had a Druid in his retinue is more than once stated by O'Donnell. His name was Beg mac De. See §§ 98, 129 (ZCP, iv. 321; v. 51).

⁵ Compare on this J. H. Todd, "St. Patrick," p. 107 ff.

⁶ In the Lismore Lives, Stokes translates it "fence," but elsewhere "host" (ZCP, vi. 240). O'Donnell also omits the recitation by St. Columba of "three stanzas," on the meaning of which see Lawlor, "Chapters on the Book of Mulling," p. 166. A poem quoted by O'Donnell (§ 159: ZCP, ix. 253) calls the three stanzas a *sciathluirech*. This is in harmony with the view expressed in the context of the passage cited as to the significance of the last three stanzas of a *lorica*.

supposition raises a fresh difficulty in O'Donnell's narrative. For it may be asked, How can we believe that St. Finnian supported the Pagan hosts by his prayers? And in other records of the battle he is not named as having taken part in it. It is, indeed, quite possible that this incident is a later addition. It would be suggested by the tradition that the contest originated in the quarrel between Columba and Finnian. But it should not be forgotten that even in a battle which was essentially a contest between Christianity and Paganism, individual Christians might have fought on the pagan side. It was so at the battle of Clontarf,¹ when the hostility between Christian and Pagan was probably more acute than in the sixth century.

But it is argued that in making the battle of Cul Dremhne the cause of Columba's "pilgrimage," O'Donnell contradicts Adamnan. "Adamnan," writes Dr. Skene,² "had no idea that Columba was actuated by any other motive than that of a desire to carry the Gospel to a pagan nation, when he attributes his pilgrimage to a love of Christ (*pro Christo peregrinari uolens.*)"

One may, perhaps, venture to say that Dr. Skene's remark is scarcely warranted by the words on which it is professedly based—"pro Christo peregrinari uolens."³ For there is nothing in them which necessarily suggests missionary zeal. The verb *peregrinor* does not do so. St. Brendan of Clonfert, "not unmindful of the command given to Abraham, 'Get thee out of thy country, and from thy kindred, and from thy father's house, unto a land that I will show thee,' ardently desired to go on pilgrimage (*peregre proficisci*)."⁴ But in the accounts of the voyage which was the accomplishment of this desire there is no record that he preached the Gospel. His quest was "a place of retirement amidst the ocean waves."⁵ And in the course of his wanderings he visited an old man living in pilgrimage in a small island, who was certainly not a missionary.⁶ St. Columbanus also, stirred as Brendan had been by the command to Abraham, went on pilgrimage;⁷ but when he left Bangor, as Krusch has shown,⁸ the conversion of the heathen had only a secondary place in his thoughts. Many foreigners came to Ireland as pilgrims, just as many Irish pilgrims went to Rome,⁹ but

¹ Todd, "War of the Gaedhil with the Gaill," pp. 165, 191, 209.

² Skene, p. 183.

³ Adamnan, Praef. 2.

⁴ Vita Prima, 12 : Plummer, vol. i, p. 103. He and his companions are called pilgrims in § 76 (p. 139), and in the Irish Life (Stokes), p. 259.

⁵ Plummer, vol. i, p. cxxii. Compare Irish Life, p. 252.

⁶ Irish Life, p. 259. Cp. Vita Prima, 75 (p. 138).

⁷ Vita, i. 7 (B. Krusch, "Ionae Vitae Sanctorum," Hannoverae et Lipsiae, 1905, p. 159).

⁸ *Op. cit.*, p. 33.

⁹ Stokes, p. cviii.

there is no probability that in either case they preached to the heathen. And, speaking generally, the primary idea of the word *peregrinatio* is not evangelistic labour, but exile from the mother country and its temptations, for the purpose of leading a life of austerity. This is clearly brought out in the paragraphs of the old Irish Life of St. Columba which expound the "three ways in which one leaves his fatherland when he goes into pilgrimage."¹ Gen. xii. 1 and Matt. xix. 29 are quoted; but there is not the smallest allusion to missionary work. It was just because the central thought of pilgrimage was seclusion and asceticism that it is so often referred to as a form of penance.² Many Irish pilgrims preached to pagans, but this was not the ideal of their pilgrimage. And if missionary activity is not already in the word *peregrinari*, it cannot be forced into it by the addition *pro Christo*. Anyone who believed that exile and asceticism belonged to the highest form of Christian life would go on "pilgrimage" for the love of Christ, even though it was no part of his purpose to carry the Gospel to the heathen. The text, so often quoted in this connexion, "Everyone that hath forsaken houses or brethren . . . for my name's sake" (Matt. xix. 29), if it refers to "pilgrimage," would certainly warrant the phrase *pro Christo*.

But further, the word *uolens* should not be pressed, as Dr. Skene seems unconsciously to press it. It might legitimately be applied to voluntary acquiescence in the advice or command of others. There is such a thing as willing obedience to distasteful orders.

Let us assume, however, that which seems to me so far from evident, that Adamnan believed Columba to have left Ireland under the influence of "a desire to carry the Gospel to a pagan nation." It remains doubtful that this was his sole motive. Certainly, in spite of his strong assertion, Dr. Skene considered himself free to suggest another which, to say the least, is not vouched for by any direct statement of Adamnan. After reminding us³ that in 560 the Irish colony of Scottish Dalriada suffered a serious reverse at the hands of Brude, king of the northern Picts, he makes the definite statement: "This great reverse called forth the mission of Columba . . . and led to the foundation of the monastic church in Scotland."⁴ The theory is elaborated a little further on. "Separated from him by the Irish Channel was the great pagan nation of the northern Picts, who, under a powerful king, had just inflicted a crushing defeat upon the Scots of Dalriada, and threatened their expulsion from the country; and, while his missionary zeal impelled

¹ Stokes, p. 169.

² Plummer, "Vitae," i, p. cxxii; "Bede," ii. 170.

³ p. 79.

⁴ The only authority cited for this is the Prophecy of St. Berchan (*ibid.*, p. 83).

him to attempt the conversion of the Picts, he must have felt that if he succeeded in winning a pagan people to the religion of Christ, he would at the same time rescue the Irish colony of Dalriada from a great danger, and render them an important service, by establishing peaceable relations between them and their greatly more numerous and powerful neighbours, and replacing them in the more secure possession of the western districts they had colonized."¹ This is a very attractive theory. If Columba's missionary zeal was due solely to the love of Christ, it is hard to understand why he deferred his evangelistic enterprise till he was forty-two years of age, or why he selected Scotland as the sphere of his work. Dr. Skene's theory helps us to explain these things. But it has no express support from Adamnan. He had—or rather gave expression to—no idea that Columba was inspired by any other motive than "a desire to carry the Gospel to a pagan nation." If that is a good argument against O'Donnell's story, it is a still better argument against Skene's theory, for O'Donnell had on his side an early and widespread tradition to which Skene could not appeal.

If we admit a second motive, I cannot see why we should not admit a third. It must be remembered that Columba had for nearly twenty years been doing notable work "for Christ." He had founded at least two great ecclesiastical establishments, one at Durrow and the other at Derry. It might have seemed that there was no reason why he should not continue to labour in Ireland to the end, as his master, Finnian of Clonard, had done. In Ireland there was still much to be accomplished. It was not only that the Church was in need of fuller organization. There were nominal Christians who were pagans at heart; and we need not doubt that there were still avowed pagans to be converted to the Faith. What induced Columba to abandon this work, so full of promise, in the prime of life? For it was in a real sense abandoned when he departed from Ireland. For the future he could supervise and control it. But he could have little share in it; he could not extend it. When he was gone, it must to some extent languish. O'Donnell's narrative enables us to supply an answer to our question more satisfying than Skene's, and not inconsistent with it. If it had become apparent to Columba that, in consequence of the battle of Cul Dremhne, his relations with the native ecclesiastical leaders would be less harmonious than they had been in the past, and his work less effective, a fresh reason would suggest itself for withdrawing from Ireland, and of his own will embracing the opportunity of service which presented itself in Scotland.

¹ *Ibid.*, p. 84. Professor G. T. Stokes agrees ("Ireland and the Celtic Church," 1907, p. 112 ff.), as does also Bishop Dowden ("Celtic Church in Scotland," p. 92).

It is not necessary for our purpose to discuss the question whether this semi-political scheme for Christianizing the Picts was already conceived when Columba first determined to leave Ireland, or was a later development. But it is worthy of remark that both Adamnan (if I understand him aright) and O'Donnell leave the question open. For the former the enterprise is merely a "pilgrimage," for the latter a departure into exile, which is a somewhat different expression of the same idea. On the other hand, both the *Life of St. Molaise of Damh Inis* and "*De Causa Peregrinationis*"¹ represent it as having had from its very inception a missionary character. This seems to indicate that O'Donnell follows a tradition earlier than that of either of the fourteenth-century authorities.

But another objection to O'Donnell's story of Cul Dremhne must be briefly noticed. Why, it is asked, if the incidents which he describes really happened, are they passed over in silence by Adamnan, and even by the less trustworthy author of the *Old Irish Life*? The reason is to be found in the aim of these two writers and the method of their work. We may confine ourselves to Adamnan; for what has to be said of him may be applied with very slight alteration to the later writer. Now Adamnan, valuable as his account of St. Columba is, can scarcely be called a biographer in the modern sense. His *Vita Sancti Columbae* is not a regular narrative. It is a collection of anecdotes. He recounts prophecies, miracles, and angelic visions; and sometimes these things are more or less loosely connected with historical incidents of a more ordinary kind. But historical facts have for him, as for other hagiographers, a merely secondary importance. "To relate an ecclesiastical occurrence for its own sake was foreign to the scope of his work";² and so the synod, which has been already referred to, and St. Columba's excommunication thereat, are alluded to only by way of introduction to a more edifying tale. "Had there been no vision to relate, no fact would have been recorded." Bearing this characteristic of his work in mind, we shall not be surprised to find few references in Adamnan's pages to the events recorded by O'Donnell. He might have mentioned the copying of St. Finnian's book for the sake of the light that streamed from Columba's fingers, or the incident of the pet crane; or he might have included among his anecdotes the vision of the Archangel at Cul Dremhne, if any of these supernatural events had come to his ears. But to tell the story as a whole was exactly the thing that he would not do. Indeed, there are not many of Adamnan's anecdotes whose scene is laid in Ireland, probably because he knew much less about the saint's earlier life than of the incidents which were preserved in the traditions of Iona.

¹ § 6; not so § 11.

² Reeves, p. 193.

But again, the battle of Cul Dremhne was not a creditable episode in Columba's career. The recognition of that fact has led some writers to minimize the part which he took in it. Thus, for example, the *Annals of Tigernagh* and the *Annals of Ulster* attribute the victory to Columba's prayers; the *Four Masters* carefully avoid doing so.¹ Similarly in the *Life of St. Abban*, according to the *Codex Salmanticensis*, St. Columba comes to St. Abban desiring him to pray "for the souls of those who were slain in the battle lately fought through our persuasion," which the scribe of another manuscript has altered to a request that St. Abban would assure him "whether the Divine Majesty would deign to save the monks committed to his care," with corresponding changes in the rest of the passage—all reference to the battle of Cul Dremhne being omitted.² Similarly, to take a cognate instance, the battle of Cul Fedha is said in the *Annals of Tigernagh* to have been fought "by the prophecy" of Columba, which is no doubt a milder version of the tradition that he was its instigator: the *Four Masters*, and even the *Annals of Ulster*, strike out all allusion to his connexion with it. With these instances before us we can well believe that Adamnan may have omitted incidents in the life of his predecessor, not solely because they lay outside his design, but because they were not altogether in harmony with the impression of the character of the man which he desired to produce. And we are confirmed in this belief when we remember that once, having occasion to mention some pardonable deeds of St. Columba, he does not give us the opportunity of judging whether his description of them is correct by telling us what they were.

The argument, therefore, that because certain allegations about St. Columba are not confirmed by Adamnan they must be false, cannot be maintained.

ST. FINNIAN'S BOOK.

Hitherto I have been concerned to maintain the substantial truth of O'Donnell's story as a whole, especially in its later incidents. But this has only been preparatory to the consideration of the event from which it sets out—the judgement of Diarmaid about St. Finnian's book, which is for our purpose of supreme interest. It has been necessary to show that it cannot be summarily dismissed as unhistorical, merely because it is part of a longer narrative which is unworthy of credence. We must now give closer attention to this opening section. For its historical value does not stand, nor fall, with the rest of O'Donnell's narrative. The incident of the quarrel between Finnian and Columba is not inconsistent with what follows; and it has been

¹ Reeves, p. 250.

² Plummer, i. 28.

shown that it may have been a subsidiary cause of the battle of Cul Dremhne. But it is obviously not an essential part of the story; and, in fact, it has been rejected by Skene, who is disposed to admit the probability of the murder of Curnan having given occasion to the famous conflict.

Let us consider first his argument against its historicity. It is comprised in a single sentence. This episode, he says, "is inconsistent with the terms of affection and respect which appear from Adamnan (iii. 4) to have subsisted between Bishop Finnian and Columba, and bears the stamp of spurious tradition."¹ Since we are not told in what the mark of spuriousness consists, the latter part of the statement cannot be discussed. But in the former part allusion is made to a visit paid by Columba to Finnian. As he approached, Finnian saw that he was accompanied by an angel, and said to the brethren who stood by: "Behold, now ye may see the holy Columba drawing near, who has deserved to have an angel from heaven as his companion in travel." It is a slight foundation on which to build. But the visit is dated.² It took place two years after the battle, on the eve of Columba's departure from Ireland. Is it unthinkable that in that interval there had been a reconciliation between the two men? The fiery and passionate saint must have had considerable power of renewing friendships which had been severed for a time, or he would have had few friends left. And that he had in his lovable nature a great reserve of such power readers of Adamnan will not doubt. If Columba had shown real penitence for his impetuous folly, and had made amends so far as was possible, it is unlikely that Finnian would not meet his old friend half way. And least of all would he be likely to repel him at the moment when he saw him for what might prove to be the last time. For Finnian was already an old man, although he lived till 579. Moreover, if we read between the lines, we may see in Finnian's words about the angel a defence of Columba against his opponents, like the similar words of Brendan at the Synod of Tailte,³ or the speech attributed to Gildas in answer to the taunt that Columba had been condemned by an Irish Synod.⁴ In all cases

¹ Skene, p. 82.

² *Vita Columbae auctore Cumino*, § 4 (J. Pinkerton, "*Vitae Antiquae Sanctorum qui habitauerunt in ea parte Britanniae nunc vocata Scotia*," London, 1789, p. 29); Adamnan, iii. 4: "Eisdem diebus sanctus . . . ad Britanniam transnaugavit." Adamnan's fourth chapter reproduces Cumnian's § 3, but includes also the words quoted, which in Cumnian are the beginning of § 4. In Cumnian they are followed by an incident which belongs to a much earlier period (Adamn. ii. 1), introduced by the phrase, "quo proueniens." Regyes' remark—"This clause is borrowed from Cumnian, but differently applied"—though accurate, is misleading. Cumnian applies it both to the farewell visit of Columba to Finnian and to the miracle of Adamn. ii. 1. Adamnan confines it to the former.

³ Adamnan, iii. 3.

⁴ *Peregr.* 7.

the defence is the same: the manifest favour of God reverses human judgements. It may be that the brethren who stood by Finnian were less inclined than their master to forgive the violent conduct of Columba, and that he found it necessary to vindicate his revived affection for his headstrong pupil. But, be that as it may, that there had been contention between Finnian and Columba does not make the scene described for us by Adamnan impossible. It rather gives it an added pathos.

It is not my purpose to prove that there is no legendary element in the tale of the copying of St. Finnian's book as related by O'Donnell. On the contrary, there are in it two trivial miracles which must at once be set aside. Columba, we are told, was enabled to write at night by supernatural light which streamed from the fingers of his right hand. This is a commonplace of Irish hagiographers; it comes from the stock of miraculous embellishments wherewith they delighted to adorn their anecdotes. St. Canice, retiring into a wood alone, read by night, light shining from his uplifted hand.¹ When St. Columba of Terryglass read in the night time, his fingers became, as it were, lamps of fire.² St. Maccartin, too, when reading by night, was assisted by supernatural light, though we are not told that it came from his hand.³ St. Flannan ground at the mill by the light of the fingers of his left hand.⁴ St. Buite of Monasterboice kindled a fire with flames that issued from his fingers;⁵ and St. Patrick wrought a similar miracle.⁶ When St. Fintan of Dun Bleise put three of his fingers into the mouth of one who was possessed, the devil fled, as from flames of fire.⁷ Whatever may be the ultimate origin of these stories,⁸ they are, of course, legendary; and so is the light that came from Columba's right hand. But we can take it out of the story without tearing away with it anything that is essential. Working at night was apparently not uncommon in ancient Ireland, and it did not necessarily involve any miracle. St. Finnian, in our story, was apparently

¹ Vita S. Cainnici, 35 (Plummer, i. 165).

² Acta S. Columbae de Tyre da Glass, 6 (Cod. Sal., col. 447).

³ Acta S. Maccartini, 4 (Cod. Sal., col. 802).

⁴ Acta S. Flannani, 5 (*ib.*, 647).

⁵ Vita S. Boecii, 19 (Plummer, i. 93).

⁶ Stokes, p. 151.

⁷ Vita S. Fintani de Duleng, 12 (Cod. Sal., col. 230).

⁸ Mr. T. J. Westropp calls my attention to an interesting parallel in an unexpected quarter. Mr. E. W. Lane gives the following, from El Jabartee's History, vol. i, obituary of the year 1188, as an example of the "innumerable miracles related to have been performed by Muslim saints." The lamp of a certain saint "happening to go out one night while he was reading alone in the riwák of the Jabart (of which he was the sheykh), in the great mosque of El-Azhar, the forefinger of his right hand emitted a light which enabled him to continue his reading until his nakeeb had trimmed and lighted another lamp" ("Thousand and One Nights," 1839, i. 234).

engaged in study when, during the night, he sent his messenger to Columba, and he expected to find Columba in the church occupied in the same way. So when St. Daig was in St. Comgall's monastery at Bangor, he read and worked in his smithy by day and wrote at night, and, as a result, not only copied the Gospels, but also made a beautiful case in which to keep them.¹ St. Senan also read, if he did not write, by night; and the only miracle recorded in that connexion is that he used a single candle for a whole week.² When St. Columba of Terryglass read after sundown, no miracle was worked till, by some accident, the lamps went out, and could not be re-lighted.³ Thus we omit the miracle by which the tale is made more attractive, and there remains the commonplace statement that Columba worked day and night at his books, as other industrious students were in the habit of doing. No one will question its probability.

Then, as to the other miracle, the blinding of the messenger by the crane, and the restoration of his sight by Finnian. That is not as common a miracle as the blazing hand. But we find it in the Life of St. Ciarain,⁴ and in another Life, to which I shall refer immediately. It is, of course, not historical. But there is certainly no improbability in the supposition that St. Columba, the lover of animals,⁵ should have a pet crane, as other Irishmen had,⁶ or that the messenger should spy through a hole in the door; nor does it appear very unlikely that, without the bidding of its master, the crane should have pecked at his eye.

Before passing on it may be well to quote two passages from other Lives which very closely resemble that upon which we are engaged. The first is from the *Acta Sancti Columbae de Tyre da Glass* in the *Codex Salmanticensis*.⁷

Alia autem nocte cum in illa scola sanctus iste Columba filius Crimthani solus esset in sua cellula ad lucernas legens, defecerunt ei lucerne, ante tempus congruum; nec erat oleum in domu in quo lucerne tingerentur. Tunc sanctus Columba eleuans manum suam dextram, digiti eius quasi lucerne ardebant. In illa hora unus ex discipulis eius uenit occulte ex alia domu, scire uolens quid sanctus Columba in sua ageret cellula. Et introspicens per foramen uidit illum aperto libro legentem et v. digitos manus ardentis lucide supra librum. Et non una nocte tantum hoc mirabile de ipso apparuit.

Between this passage and O'Donnell there is evidently a close relation. Either the legend of St. Columba of Terryglass borrowed from the legend of

¹ *Acta S. Dageai*, 6 (*Cod. Sal.*, 894).

² Stokes, p. 206 f.

³ *Acta S. Columbae de Tyre da Glass*, *l.c.*

⁴ Stokes, p. 270.

⁵ *Adamnan*, i. 48; iii. 23 (*Reeves*, p. 231).

⁶ "Ancient Laws of Ireland," vol. iv (ed. A. G. Richey, London, 1879), p. 120.

⁷ *Cod. Sal.*, col. 447.

St. Columba of Iona, or the story passed from the legend of the former to the legend of the latter. If it is decided that St. Columba of Iona is the borrower, there is certainly considerable difficulty in believing that the story which includes this as one of its incidents has any foundation in fact. But it seems to me that the contrary supposition is much more probable. Anecdotes travelled easily from one saint to another, as they still travel from man to man. In this case the process was no doubt helped by the identity of name. But the direction is usually from the greater to the less. It is far more likely that Terryglass should import from Iona edifying material for a life of its founder than that Iona should return the compliment. Further, it is quite clear that elsewhere the Life of the Terryglass saint attributed to him deeds which a more ancient tradition ascribed to Columba of Iona. For it is not possible that both of them should have been credited, independently, with visiting Tours and bringing back thence relics of St. Martin.¹ The evidence for this tradition in the case of St. Columba of Iona is too strong to be explained by any hypothesis of borrowing from another saint.²

But there is one part of the passage quoted above which seems to bear the mark of a relatively early date. It is the prosaic statement that the lamps went out sooner than was expected, and the implication that supernatural light would not have been forthcoming if there had been oil in the house. There is a parsimony of miracle here which is not usual in later hagiography. The clauses in which it is found would certainly have been omitted in the course of centuries from the life of Columba of Terryglass, as they have been omitted by O'Donnell. If they had remained in his narrative, it would have been more evident than it now is that the miracle of the light is an excrescence on an ancient story.

There is a more extensive, if in certain respects not quite so close, a parallel, in a chapter of the *Vita S. Flannani*, which recounts an adventure of his while he was in the monastery of St. Molua.³

Molendinum itaque predictum, ut iussus fuerat, summo diluculo intrans, usque ad crepusculum noctis sequentis annonam mole porrigendo solus ministravit. Diurna vero luce deficiente ac nullo sibi lumen aliunde apportante, diuino fretus auxilio ore suo sinistre manus digitos quinque insufflaui et ad modum et similitudinem quinque lampadum totum molendinum diuina luce per totam noctem illustravit. Proinde dum celerarius

¹ See *Acta Columbae de Tyre da Glass*, 7 (Cod. Sal., 488): *Perrexit ergo Columba ad Romam . . . et venit ad ciuitatem Martini, et ibi iuxta sancti Martini reliquias Doninum rogaret. Cuius aduentum sanctus Martinus longe ante predixerat. Nam cum Martinus prope mortem infirmatus esset dixit populo suo, 'Ecce post obitum meum ueniet ad uos quidam hospes sanctus de Hybernia insula . . . Hic autem hospes meas reliquias de sepulcro eleuabit in tempore congruo. Ponite ergo istud crismale et trabem iuxta me in scrinio, quia hec uexilla hospes ille a uobis postulabit, et dabit illi.'*

² See Reeves, p. 324 ff.

³ § 5 f. See Cod. Sal., col. 647.

se recoleret nullum lumen ex more dei seruo molente misisse, nuntium suum illuc misit, ut idem nuntius caute notaret quid regius iuuenis, pauper spiritu factus, ibidem perageret. Sed idem nuntius tanquam explorator peditentim per fissuras ac rimas hostioli prospiciens, quinque digitos sinistre manus amici dei ceu quinque luminaria molendinum totaliter dilucidare preuiderat Verum qui dicente scriptura "Nullus gladius acutior quam conscia uirtus" iuuenis deo dilectus, hanc dei uirtutem semper latere uolens, ne plausus et fauor populi magnitudine rei geste mentem eius extolleret, commotus aliquantulum animo, eidem legato celeri imprecatus ait, "Quia," inquit, "me o iuuenis in secreto dei opere agentem temerario oculo uidere presumpsisti, grus domestica, que in cella tecum comoratur, eundem oculum, cum redieris, tibi eruat." Quod ita factum est. Nam cum idem iuuenis cursitans rem ordine gestam pandere citius desideraret, iuxta uiri sancti imprecationem grus antelata in hostio celle puero celerarii unum oculorum rostro terebrauit. Cuius uulneris dolore puer idem clamans et plangens, circumstantibus claustri senioribus ac sancto patri Molue que miracula queque luminaria erga uirum dei in molendino fierent, quanta etiam proprii corporis dampna pro tam furialibus ausis receperit lacrimosis questibus intimauit. Quod senior sanctus ipsius claustri Molua abbas audiens dixit . . . Et ea uelocitate, sic deo uolente, oculum sanitati restituit sicut eundem subita cecitate lumine priuauit.

The Life of St. Flannan has the marks of a comparatively late date; and it is scarcely possible that O'Donnell, or any earlier writer on St. Columba, borrowed from it. This extract from it is, therefore, only another witness to the fact that the episode related by O'Donnell comes from a tradition both ancient and widely known.

But the discussion of these miracles has consumed too much space. Let us return to O'Donnell, and we shall find, if I am not mistaken, some indications of truth in his narrative. I begin with the lesser points. The person whom St. Columba visited, and from whom he borrowed the book, was Finnian of Druim Fiun, which is certainly the place now known as Dromin, Co. Louth. That there was a church of St. Fintan at Dromin in the early part of the fifteenth century is proved by the appointment of Nicholas Alyxander as its rector on 20 February, 1412.¹ Thus there can be no question that a saint named Fintan, or Finnian, or Finn, was the founder of Dromin, and that it takes its name from him. But I have found no mention of any such person in the Kalendars. This may be explained either by supposing that this Finnian was a very obscure saint, or that Dromin was a minor foundation of a man whose name is usually associated with another place. In either case it may be regarded as extremely unlikely that a spurious legend would give him such prominence under this title. A concocted story, even if founded on some shreds of fact, would rather have substituted a better known for the less familiar name, so as to make the opponent of Columba a saint of high repute. Now Reeves states positively that St. Finnian of

¹ Register of Archbishop Fleming, f. 45 (Calendar in Proceedings, vol. xxx, sec. C, p. 148, no. 192).

Maghbile was the founder of Dromin¹; but he gives no reason, and I suspect he based his opinion on a mistranslation of Colgan in the passage before us.² Nevertheless, the identification seems correct. Two Finians are represented as teachers of St. Columba in the old Irish Life,³ the one of Maghbile and the other of Clonard. It is natural to suppose that one of them is intended here, and the latter died many years before the battle of Cul Dremhne. Moreover, the tract "De Causa Peregrinationis"⁴ brings a certain "Saint Finnian the bishop" into the story, indicating undoubtedly Finnian of Maghbile. It is true that he is assigned the place which O'Donnell gives to Molaise; but he could scarcely have appeared in any capacity if there had not been a current tradition that he was in some way connected with this crisis in Columba's life. In the sequel I shall therefore assume, as I have assumed already, that Finnian of Dromin is no other than Finnian of Maghbile. The next two paragraphs will tend to make that conclusion more secure. Meanwhile, let us note that the bare fact that he is described as "of Dromin" is evidence that O'Donnell has faithfully preserved a trustworthy tradition.

Another mark of truth in the story is the want of generosity displayed by Finnian as to the use of his books by others. A similar characteristic comes out in the Life of Finnian of Dun Bleisc.⁵ It is there told how St. Finnian of Maghbile refused to lend a Gospel (*uolumen euangelicum, euangelium*), to his namesake, who wished to read it, and how the latter in the end got what he wanted. This coincidence is more than we could expect from a hagiological romancer. The argument of course breaks down if our assumption of the identity of Finnian of Maghbile and Finnian of Dromin should prove false. But the coincidence itself is a witness to its truth. It is worth noting in this connexion that, according to early tradition, it was not considered safe to give St. Columba free access to other people's books. When he visited Longarad of Ossory, that worthy hid his books from him.⁶

And, finally, that Columba should have borrowed this book from St. Finnian of Maghbile is in keeping with what we know of his early life. For though O'Donnell does not tell us what the book was, the context suggests that it contained a portion of the Holy Scriptures: Columba in his address to Diarmaid declares that "it is not right to extinguish *the divine things it contains*." And from Adamnan we learn that it was in the school of Finnian

¹ Adamnan, p. 103.

² He renders *Droma Fínd* in one place (ii. 408) "in ecclesia de Droim-fionn," and in another (i. 644) "habitantem in loco Druim-Finn appellato."

³ Stokes, p. 173.

⁴ § 6.

⁵ Acta S. Fintani de Duleng, 6 (Cod. Sal., col 227).

⁶ Stokes, "Calendar of Oengus," p. 199.

of Maghbile that Columba "learned the wisdom of the Holy Scriptures."¹ It was fitting that from the same master he should seek further knowledge in the same region of study. Once again we have a coincidence which not only enhances the credit of O'Donnell's story, but confirms our conclusion as to the identity of Finnian of Dromin. The argument seems to me all the stronger in view of the reasons given by writers of the greatest authority who have held an opinion different from that to which I have given expression. Reeves declares that the passage of Adamnan "renders the legend of the quarrel between St. Finnian and St. Columba, both as to cause and fact, extremely improbable";² and we have seen that Skene, relying on another chapter of Adamnan's *Life*, held a similar view. Both writers meant, it would seem, that such esteem as the two saints entertained for each other would have made the quarrel impossible, or that their mutual affection would never have revived once it had taken place. That I cannot believe. But whatever truth there is in the contention would surely have been as evident to a composer of ecclesiastical fiction as to a modern scholar, and it would easily have been avoided by choosing some other leader in the Church as the adversary of Columba.

But let us attack our problem from a different side. Readers of O'Donnell's *Life* naturally ask the questions: Why was St. Columba so anxious to study the book which he borrowed from St. Finnian? Why was he at pains to transcribe it? And, on the other hand, why was St. Finnian so desirous, when the copy was made, to retain it in his own hands, and to prevent its circulation? At least one writer on St. Finnian of Maghbile speaks of "the beauty of his sacred books."³ Apparently, therefore, he would have answered our questions by a reference to the illuminations or some similar features of the borrowed volume. But the aesthetic charm of a book cannot be transferred to a copy made in haste. This answer, therefore, will not serve. The copy would preserve the text, and nothing else. St. Columba might have wished to possess the text of a book to which he had no ready means of access—a treatise, let us say, of some ecclesiastical writer, or a service-book of a type with which he was unfamiliar. But O'Donnell implies that Finnian's book was some part of the Biblical Canon. If so, his eagerness must have been excited by the fact

¹ Adamnan, ii. 1, where Reeves identifies "Findbarrus episcopus" with Finnian of Maghbile. But he is less dogmatic in his notes on iii. 4, where the same person appears as "episcopus Finnio." The decisive argument is that the incident of the latter chapter immediately preceded the settlement of Columba at Iona in 563, while Finnian of Clonard died in 549.

² Adamnan, p. 103.

³ J. Gammack in the *Dict. of Christian Biography*, ii. 519.

that it contained a text different from that which was then read in Ireland.¹ That is only to say in other words that it was a copy of a portion of St. Jerome's translation of the Scriptures. A biblical student like St. Columba would hail with delight a rendering superior to the Old Latin to which he was accustomed. And that the Old Latin was in common use in Ireland in St. Columba's day, or even later, is evident. It is sufficient to recall the pathetic story which tells us that on the last day of his life he wrote the words, "Inquirentes autem Dominum non deficient omni bono"; a rendering of Ps. xxxiii. 11 which differs from all the Hieronymian versions, and agrees exactly with the Old Latin printed by Sabatier.

But if this explanation is accepted, we are obliged to take a further step. The story implies that copies of St. Jerome's Vulgate were not easily procured in Ireland. St. Finnian must have been one of a very few who had command of a copy of that part of it which St. Columba transcribed. If we were justified in accounting O'Donnell's story true, it might even be inferred that the new version had recently been brought to Ireland, perhaps by St. Finnian himself.

Now of all this there is no direct hint in the story itself. It may be doubted whether O'Donnell, or any one of those who, for, let us say, three centuries before he wrote, passed on the tradition to him, had asked the questions which I have suggested: I know that many modern students have not done so. And it is yet more doubtful whether if these questions had been proposed they could have answered them. Yet the story could not have been invented by anyone who had not some conception of the reason which impelled Columba to transcribe the book. It must have originated at a time when men were well aware of the fact that a new version of the Scriptures had arrived in Ireland which differed from that which had hitherto been in ordinary use. It comes at least from an age when the Vulgate and the Old Latin were in circulation side by side. This in itself is a strong argument for accepting it as a record of historical fact.

Further, there is independent evidence that St. Finnian of Maghbile was, in fact, the agent, or one of the agents, by whom St. Jerome's translation became known in this country. Thus we read in the second *Life of St. Finnian*, printed by Colgan,² that the saint visited Rome, and was received with honour by Pope Pelagius, who presented him with various gifts. And then the narrative proceeds: "Euangelia quoque, quae terra illa nondum

¹ It is not necessary to discuss the possibility that St. Finnian was the possessor of one of the books of the Bible which were scarce in Ireland. See J. Gwynn, "*Liber Ardumachanus*," pp. cxxix, cxxxii f.

² Colgan, i. 638, § 2 f.

plene susceperat, quibus nimirum Deus tantam uirtutem concessit, quod si quis per ea iurauerit morte uel amentia in eodem anno diuina ultione mulctetur."¹ Since it is incredible that in St. Finnian's day the Irish had not "fully received" the Gospels, this statement requires some explanation. But, however glossed, it witnesses to the importation by Finnian from Rome of a manuscript of the Scriptures; and we may be confident that a Roman biblical manuscript of that date would be a copy of St. Jerome's version. Again, in the Martyrology of Oengus, under 10 September, we read:² "A kingpost of red gold with purity, over the swelling (?) sea (he came) with law, a sage for whom Ireland is sad, Findbarr of Mag Bili," which seems to refer to the same event. The glossator remarks:³ "What this verse says is that it was Findén of Mag Bile first brought the Law of Moses into Ireland. Or it is to the Gospel that the name of 'law' was given *hic*, for it is Findia that first brought the whole Gospel to Ireland. For it is Finnián of Mag Bile that brought Colmán's Gospel⁴ to Ireland." In like manner the Martyrology of Cashel:⁵ "Ipse est qui primo legem Moysaicam et totum euangelium in Hiberniam portauit."

We have here, then, a simple and perfectly natural incident, beyond the power, I venture to think, of such purveyors of the marvellous as were the Irish hagiographers to invent. Finnian has lately returned from Rome, bringing with him, among other treasures, a copy of St. Jerome's translation of the Bible, or a part of it. His most distinguished pupil, whom years before he had instructed in the wisdom of the Scriptures, pays him a visit. He begs to be allowed to read one of the precious volumes. The boon is granted to him, which might have been denied to others, less favoured because less loved. Columba, the student and scribe,⁶ is fascinated by the new version. He surreptitiously makes a copy of the manuscript, that he may peruse it at his leisure. After a time, Finnian, anxious, perhaps, for the safety of his book,⁷ sends a messenger to fetch it. St. Columba is found, putting the

¹ It should be observed that a similar story is told of St. Lasrein or Molaise of Leighlin in *Acta S. Lasriani de Lethglini*, 7 f. (*Cod. Sal.*, col. 794). Lasrein went to Rome, "ubi . . . honorifice a sancto Gregorio papa est susceptus, et ab eo utriusque testamenti uolumina ac ecclesiastica instituta didicit . . . Beatus quoque Gregorius, [qui] ipsum ordinauit, textu euangeliorum dotatum ad Christum predicandum in Hiberniam destinauit."

² *Ed. W. Stokes*, 1905, p. 193.

³ *Ibid.*, p. 205.

⁴ On this word, according to Todd ("St. Patrick," p. 104), in the Brussels copy there is a late gloss, "correctum la Cirine," "corrected by St. Jerome."

⁵ Colgan, i. 643, quoted by Todd, *ibid.*

⁶ See Adamnan, ii. 8, 9, 29, 44; iii. 23; Stokes, p. 176.

⁷ "Diuerniore concessi libri retentionem aduertens," as Colgan has it, i. 644.

finishing touches to his work; and so the fraud is discovered. The sequel we know, as O'Donnell relates it. Apart from its miraculous elements there is nothing incredible in the incident.

And a curious parallel is at hand. The Book of Durrow has the following colophon:—

Rogo beatitudinem
tuam sc̄e praesbiter
patrici ut quicumque
hunc libellum manu te
nuerit meminerit colum
bae scriptoris . qui hoc scripsi
(mi)hi[m]et euangelium . per xii.
dierum spatium . gtia (?) dñi n̄ri s. s

Now there are three things to be noted here: first, that this fine copy of the Gospels is called a *libellus*; secondly, that the scribe is said to have written it for his private use (*mihimet*); and, thirdly, that he did so in the short space of twelve days—*i.e.* in a fortnight, excluding Sundays. It was scarcely to be expected that the word *libellus* would be applied to such a manuscript as this, with its 250 beautifully written and illuminated leaves.¹ It is difficult to believe that a copy of the Gospels, on which so much care was lavished, was intended to be used by the scribe for the purpose of private

¹ This word, however, is not applied exclusively to small books. Professor Lindsay tells me that in the colophon of Paris, B.N., lat. 1603 (Canons), containing 202 leaves, 2 cols. 8vo, are the words: "Qui frequenter legit in isto libello oret pro scriptore." And Mr. R. I. Best has been good enough to remind me of the pretty quatrain which has the line:

"Above my booklet (*lebrán*), the lined one, the trilling of the birds sings to me."

Here the *lebrán* seems to be the ms. of Priscian in which the quatrain is written (Cod. Sangall., 904: see W. Stokes and J. Strachan, "Thesaurus Palaeohibernicus," ii, pp. xix, 290). But the St. Gall Priscian is a folio volume consisting, in its present imperfect state, of 120 leaves, written in two columns of 42 lines ("Verzeichniss der Handschriften der Stiftsbibl. v. St. Gallen," Halle, 1875, p. 319). We might suppose that in such cases as these the scribe used a diminutive out of humility: a motive which is not likely to have influenced one who wrote a colophon which he wished to pass off as from St. Columba's pen. But this explanation will not serve for Cologne, Dombibl., ms. ccxii (Canons), which has 172 leaves, 340 × 270 mm., with ornamental initials. In it (f. 167^v) is written in an eighth-century hand *Sigibertus bindit (i.e. sold) libellum*. (A. Chroust, "Monumenta Palaeographica," Ser. ii, Lief. iv, Taf. 8: a reference which I owe to Mr. Best.) On the other hand, in the Colmar ms., Stadtbibl. 38, *libellus* is used of a single Gospel, though it forms part of a volume containing all four (Lindsay, "Irish Minuscule," p. 18). The use of the corresponding Irish word *lebrán* for a transcript (above, p. 293, cp. p. 299, note) should be noted. The exemplar from which it was copied is in the context regularly called a *lebar*.

study. And it is absolutely incredible that the work—the mere penmanship, apart from the ornament—should have been completed in twelve days. Moreover, it is unlikely, for palaeographical reasons—though here, perhaps, we stand on less sure ground¹—that it was the work of Columba of Iona, who seems to be the person named in the colophon as the scribe.²

Are we, then, to set down the scribe's note as a tissue of falsehoods? If so, it cannot have deceived many. The scribe, and the artists who adorned the book, must have been engaged upon it for a long period. And every monk in the scriptorium where it was produced must have known that it was in progress. If the colophon is a lying statement, intended to persuade men that St. Columba wrote this manuscript, it was a lie, not of the scribe himself, but of the community to which he belonged. And even if we accept this, we have not explained how the book came to be called a *libellus*, nor how the community dared to clothe the forged colophon in the form of an invocation of St. Patrick.

Dr. Abbott's hypothesis is much more probable, and may be accepted without hesitation.³ He held that St. Columba wrote, in a small and rapid hand, in twelve days,⁴ a copy of the Gospels, and appended to it a note in which this fact was stated. Of that little book an elaborate copy was subsequently made, which is the manuscript now known as the Book of Durrow. The colophon reproduced above was simply transcribed from the exemplar. Its statements are therefore applicable, not to the volume in which it is found, but to the *libellus* of St. Columba.

¹ But see Appendix II, p. 406.

² I once doubted this. See my "Chapters on the Book of Mulling," p. 16. But I now regard the reasons which I gave for my scepticism as insufficient.

³ "Hermathena," vol. viii, p. 199 ff. I have presented the argument in my own way, and have made some additions to it for which I have no desire to claim the authority of my lamented friend.

⁴ In a private communication Professor W. M. Lindsay calls my attention to the colophon of the Munich MS. 14437: "Augustinus in epist. i S. Iohannis" (Pal. Soc. i, pl. 123). It states that the manuscript was written by two scribes in seven days. Presumably, therefore, it might have been written by one in fourteen days. The performance was obviously a *tour de force*. It has 109 leaves, and if we may judge from the published page its text is less in extent than that of the four Gospels, apart from *argumenta* and other additional matter, by about one-sixth. Plainly, moreover, its script is comparatively rapid. It supplies, therefore, convincing evidence that the Durrow Gospels, with their slowly formed letters, could not possibly have been written in twelve days. For further information as to the rate at which scribes worked, see an article by Professor Lindsay in "Hermathena," xviii, 44 f., and Plummer, ii, 24 (Vita S. Cronani, 9), 133 (Vita S. Lasriani, 11). I have satisfied myself by actual trial that the text of the Gospels could be written in a modern hand, with sufficient care to ensure that every letter could be easily read by a person unacquainted with the Latin language, in 112 hours, that is, in twelve days of rather more than nine working hours.

This conclusion is confirmed by two facts. In the first place, *himet* is written in the colophon in error for *mihimet*. This mistake is quite possible in the case of a scribe copying a document: it is much less likely to have been made in the note as originally written.

Again, the colophon is in a most unusual place. It stands quite early in the volume in the second column of f. 12^v, immediately before the beginning of the Gospel according to St. Matthew. Now ff. 8-12, 234^v-244 contain the *breues causae* and *argumenta* of the four Gospels. Examination proves that some of these leaves have been misplaced. They may be divided into two groups of originally consecutive leaves. The first group consists of ff. 234^v-237,¹ 11, 12. It contains the *breues causae* of St. Luke and St. John and the colophon. The second group consists of ff. 8-10, 238-244. It contains the remainder of the *breues causae* and the *argumenta*; and, so far as the indications of the text go, it may have either preceded St. Matthew or followed the *breues causae* of St. John. But the manuscript is much stained by water which has clearly been poured upon it, and has filtered through a number of leaves. As might be expected, the outlines of the stains on successive leaves are very similar to each other.² Now using this test, we find that the leaves divide themselves again into two groups, each group containing leaves which were not necessarily consecutive, but which must have been near each other at the time when the book was subjected to injury by water. These groups are ff. 8-11, 12 (?), 238-244, and ff. 234-237. There is, therefore, no doubt that ff. 8-10, the first three of the second group of consecutive leaves mentioned above, must have been in close proximity to ff. 11, 12, the last two of the first group of consecutive leaves. Thus the whole set of leaves which we are considering must have followed the fourth Gospel in the order, 234^v-237, 11-12, 8-10, 238-244.

Having re-arranged these leaves, let us note their contents. They are as follows:—

Breues causae of St. Luke.

Breues causae of St. John.

Colophon.

Breues causae of St. Matthew.

Argumentum of St. Matthew.

Breues causae of St. Mark.

Argumentum of St. Mark.

Argumentum of St. Luke.

Argumentum of St. John.

¹ This leaf is reversed.

² Mr. A. de Burgh, Senior Assistant Librarian of Trinity College, called my attention to this fact.

An inspection of this list is sufficient to convince us that the Book of Durrow was copied from an *euangelium* which had the *breues causae* of St. Luke and St. John only, and lacked all the *argumenta*. The scribe, however, had access to another manuscript in which the *argumentum* of each of the four Gospels followed its *breues causae*; and from it he supplied the deficiencies of his principal exemplar. It shows us also that the colophon which runs in the name of St. Columba was at the place where we should expect to find it, supposing it to have been transcribed from that exemplar—at the end of the book.¹ It need only be added that the column at the head of which the colophon stands is for the greater part of its length blank except for the words half way down:

Ora pro me fra
ter mi dñs tecum
sit,

This supplies fresh evidence, if it is needed, that all that follows is of the nature of an appendix.² This note may be the composition of the anonymous scribe, or it may have been copied from his exemplar.³

It seems, then, that the proof of Dr. Abbott's theory of the origin of the Book of Durrow comes as near to demonstration as in such a case is possible. If it is correct, the book, though probably written in the seventh century, contains a sixth-century text. And yet it is a copy of the Hieronymian Gospels. It is almost pure Vulgate; and, indeed, it is one of the most valuable manuscripts now in existence of that translation, as we have lately been told.⁴ This is the more remarkable, inasmuch as, though it is one of the earliest of the Gospel-books of the Celtic Church in Ireland, it is the only one which is free from serious Old Latin mixture.

Let us pause to consider what that means. It shows us, in the first place, that the rapid transcription of a biblical text was a task from the execution

¹ Reeves (p. 327) is in error when he says that it was originally at the end of the (present) volume.

² It is well known that as late as the sixteenth century it was believed that by pouring water on the Book of Durrow and "suffering it to rest there a while," cattle could be cured of disease (*Annals of Clonmacnoise*, ed. D. Murphy, 1896, p. 95). This belief was no doubt the cause of the stains which disfigure its pages. But we can now see that care was taken to pour the water over the closing leaves, which were less richly ornamented than those which contained the text of the Gospels. Thus the volume incurred less injury from this strange usage than might have been expected.

³ I am glad to be able to refer to the excellent note on the Colophon of the Book of Durrow which Professor Lindsay has been so kind as to contribute to this Essay (Appendix II, p. 403), as supplying abundant confirmation of the conclusions reached in the foregoing paragraphs.

⁴ J. Gwynn, *op. cit.*, pp. cxxxix f., clxxiii.

of which Columba was not averse when occasion called for it. But the very fact that he undertook it in this instance indicates that there was in the text of his exemplar something which distinguished it from that of other manuscripts which he already possessed; that it was a text which he deemed worthy of special study. It indicates also that the exemplar did not belong to him, but was borrowed, and was at his command only for a limited time. If so, it was probably of a type rarely found in Ireland at that period, if not unique. For it is clear that Columba, while still a young man, had attained a position which would have made accessible to him almost any text of which more than one or two copies existed in the north or east of Ireland. And we need no proof that his exemplar was a Vulgate Gospel-book. He transcribed, we may suppose, one of the first, if not the very first, of such books to arrive on these shores. The likeness of the situation revealed by the phenomena of the Book of Durrow to that revealed by O'Donnell's story is too close and too striking to be mistaken; and it confirms our faith in the historic value of the tale of Finnian's book.

But since the rarity of Vulgate Gospels in Ireland in Columba's time is of some importance for our argument, I may be permitted to mention a further proof of it. It appears that when the illuminations of the Book of Durrow were executed illuminated Vulgate Gospels were still not easy to procure. For in it the full-page representations of the evangelical symbols are misplaced, the Lion being assigned to St. John instead of to St. Mark, and the Eagle to St. Mark instead of to St. John. This may be explained if we remember that the present order of the Gospels was introduced into the West by St. Jerome, the Old Latin order being Matthew, John, Luke, Mark. The Durrow illuminator would naturally seek a model for his symbols in some other illuminated manuscript. The one which he actually used followed the non-Vulgate order, in which John was second and Mark fourth.¹ Thus the transposition of the symbols is accounted for; but this way of accounting for it presupposes that illuminated Gospel Books of the Old Latin type were more easily accessible than those of the Vulgate type.

By way of confirmation of this conclusion attention may be called to an acute remark of the Rev. S. F. H. Robinson. He observes that the page of the Book of Durrow which exhibited the four evangelical symbols as a group shows "acquaintance with a very old tradition which gave the symbol of the Eagle to St. Mark and the Lion to St. John."² "The symbols on that page

¹ For a fuller statement of the argument see my "Chapters on the Book of Mulling," 1897, pp. 17-29.

² "Celtic Illuminative Art," 1908, note on Pl. xii. It is curious that in spite of this Mr. Robinson calls the Eagle, which in the same ms. precedes St. Mark's Gospel, "the symbol of the Evangelist St. John" (Pl. iv).

stand thus: 1. Man 2. Eagle 3. Lion 4. Ox. The question is, what order of the Gospels is assumed? Since Luke is the third Gospel in both the Old Latin and the Vulgate, only two routes are open to anyone who examines the page. He may pass from 1 to 2, and thence to 4 and 3; or he may go in the direction 1, 3, 4, 2. But in the latter case he performs a left-hand turn, which no seventh-century Irish artist can have intended him to do. The order of the Gospels implied in the design is therefore 1, 2, 4, 3; Man, Eagle, Ox, Lion; Matthew, John, Luke, Mark. In other words, the design originated in a pre-Hieronymian Gospel Book.

But to return to our study of O'Donnell's story. It has been already remarked that he does not inform us what the text was which St. Columba copied. He is content to call it a book,¹ intimating somewhat obscurely that it was a portion of the Bible. But we note that earlier authorities are more explicit. The Black Book of Molaga, as quoted by Keating,² definitely informs us that it was an euangelium. So also does a note on the Amra Coluim Cille, where we are told, with a curious inversion of the facts, that St. Columba won the battle of Cul Dremhne "from St. Molaise, in vengeance for his wrong judgement about the Gospel, and from Diarmait, son of Cerball."³

In view of these statements, in the mind of anyone who has been impressed by the closeness of the parallel between the facts elicited by the insight of Dr. Abbott from the Colophon of the Book of Durrow and the story of the transcript of Finnian's book, there shapes itself the theory that the exemplar of the Book of Durrow was no other than the volume surreptitiously written by Columba. And one is even tempted to speculate as to the identity of the book from which it was copied with the "evangelical volume" which Finnian declined to lend to his namesake of Dun Bleisc.⁴

Both suggestions are sufficiently plausible to deserve mention. But both are apparently contradicted by evidence which must now be set forth. Manus O'Donnell, when he has finished his account of the battle of Cul Dremhne, proceeds thus (§ 178):

"The Cathach⁵ indeed is the name of the book on account of which the

¹ Peregr., I is equally, or more, vague.

² iii, 89.

³ "Revue Celtique," xx, 435.

⁴ See above, p. 313.

⁵ That is "battler." Several other cathachs are known. Such was the crozier of St. Findchua, known as his *Cenncathach*. It is said to have been carried by himself before the army of the King of Munster; but usually it was borne by a cleric (Stokes, p. 240 f.). Other of his relics were used in the same way (*ibid.*, p. 245). Other cathachs

battle was fought. It is Colum Cille's chief relic in the land of Cinel Conaill Gulban. It is encased in gilded silver, and it is not lawful to open it. And if it be taken thrice right-hand wise round the host of Cinel Conaill, when about to engage in battle, they always return safe in triumph. It is on the bosom of a comarb or a cleric who is as far as possible free from mortal sin that it should be borne round the host."

There is no doubt that reference is made in this passage to the beautiful shrine, of which a description is given below,¹ and which is said, in the eighteenth-century inscription on its outer cover, to have contained the "pignus sancti Columbani," commonly called the Caah, handed down to Daniel O'Donel from his forefathers. Manus O'Donnell tells us that the book which, till a century ago, it concealed from view, is the transcript made by Columba's hand from St. Finnian's book. Can we accept his statement?

Let us note, in the first place, that the statement itself has considerable weight as evidence. For O'Donnell is obviously reporting the tradition of the tribe to which both he and St. Columba belonged. Apart from that tradition, he had no reason to assume that the shrine contained a book. For two centuries, ever since the present lid had been made for it,² it had not been possible to test the accuracy of the tradition on that point. The tradition itself had apparently been forgotten when Daniel O'Donel repaired the shrine;³ it was certainly lost by the beginning of the nineteenth century, when Sir William Betham was informed that it contained such things as St. Columba's bones. But there is now no doubt that when Manus O'Donnell declared that it was a book-shrine he was right. And, apart from this, we are becoming more convinced as time goes on that the absolute rejection of such traditions is unscientific.

Moreover, the conclusions to which we have been led in an earlier part of this essay supply valuable confirmation of the truth of Manus O'Donnell's statement. We have seen that in the eleventh century Cathbarr O'Donnell

were the bell of St. Patrick, the Misach of Cairnech (Reeves, 329), St. Columba's crozier, called the *Cathbhnaidh* (*ibid.*, 332 f.), and St. Caillin's cross (O'Donovan, "Hy-Many," p. 82). St. Darerca is said to have left to the tribes around her monastery various articles that had belonged to her, to serve a like purpose, though the term *cathach* is not applied to them (Acta S. Darercae, 30: Cod. Sal., col. 184). To which may be added St. Declan's bell (Life of St. Declan of Ardmore: Irish Texts Society, vol. xvi, p. 51), and St. Grellan's cross ("Hy-many," p. 81). Neither of these last two is called a *cathach*. It is remarkable that thirty-five years before O'Donnell wrote, Columba's *cathach* was carried into battle by the O'Donnells on an occasion when they suffered defeat (Four Masters, s. a. 1497).

¹ Appendix I. See also above, p. 243 f.

² See below, p. 395.

³ Above, p. 244.

caused a cumdach of elaborate workmanship to be made for the Cathach. But it was then nearly as fragmentary as it is now.¹ It was never a book of special beauty, though nine centuries ago its illuminated initials may still have retained their colour.² There is no way of explaining the construction of the cumdach for the head of the O'Donnell tribe and in the Columban Monastery of Kells except on the supposition that in the eleventh century, among the kinsmen of St. Columba and the monks of his order,³ there was a strong tradition, by no means suggested by the appearance of the manuscript, that it was a relic of their patron saint written by his own hand.⁴ Traditions of that kind are certainly sometimes misleading;⁵ but they count for something.

But again, the features of the manuscript are in harmony with the belief that it may have been written in the circumstances indicated in O'Donnell's story of St. Finnian. We have seen that the scribe had apparently some difficulty in procuring properly prepared vellum.⁶ The script shows us that the text was penned by a man whose habit was not to write rapidly,⁷ but who, nevertheless, worked in this case at high pressure, and corrected his fairly numerous slips as he went along.⁸ If, as we are told, Finnian demanded his exemplar at the moment when the transcript was being finished, there can have been no time for revision. And we have found reason for thinking that it was not, in fact, compared with the exemplar.⁹ An anecdote told by

¹ Above, p. 246 f.

² Above, p. 252.

³ From the fifteenth to the seventeenth century the family of Mac Robartaigh of Tory had the official custody of the Cathach (Reeves, p. 320). If it could be shown that this arrangement was in existence in the eleventh century, and that Domnall mac Robartaigh, the abbot of Kells who was concerned in the making of the shrine, belonged to the Tory family, the argument that the Cathach was believed to be the handiwork of St. Columba by the monks of his order, as distinct from the members of his tribe, would be discounted. But there is no proof of either hypothesis. There seem to have been families of Ua Robartaigh or Mac Robartaigh in different parts of Ireland. Thus Ua Robartaigh, herenagh of Connor, died in 1081, and Diarmaid Ua Robartaigh, abbot of Durrow, in 1190 (*Annals of Ulster*). Cp. Reeves, pp. 284, 285, 400 f.

⁴ This argument is confirmed by a fact of which I have been informed by my friend, the Rev. P. S. Dinneen. In the T.C.D. ms., H. 2. 6, there is a tract on the Maguire princes. It was written in 1716 in late Irish; but it was copied—the language being, no doubt, modernized by the scribe—"from the old historical book," which may have been contemporary with the events of the thirteenth or fourteenth century which it relates. It is significant, therefore, that it records an oath of the O'Donnell of that period, "by the Cathach, by which Tir Conaill swears."

⁵ As in the case of the Book of Armagh (see Gwynn, "*Liber Ardmachanus*," pp. xiv f., ci f.) and the Book of Durrow (above, p. 317 ff.). But these manuscripts are of an exceptional order. A closer parallel is the Book of Mulling (see my "*Chapters on the Book of Mulling*," p. 13 ff.).

⁶ Above, p. 247 f.

⁷ Above, p. 248.

⁸ Above, p. 249 f.

⁹ Above, p. 248 ff.

Adamnan may lead us to suppose that even if he had been given the opportunity St. Columba would not unwillingly have omitted this part of his task, for when Baithen had written a Psalter and desired to have it corrected by one of the brethren, his master would not allow such unnecessary trouble to be taken.¹ But, however that may be, the considerable number of mistakes in the manuscript, together with the quickness with which many of them were detected and set right, suggests that it was written by an accurate scribe who worked with more speed than his wont.²

But again, in our discussion of O'Donnell's story of the writing of the Cathach, it was suggested that St. Finnian's book was probably a copy of a portion of St. Jerome's Latin Bible, rather than of the Old Latin version then in use in Ireland; and attention was called to the fact that the Book of Durrow, the exemplar of which was apparently written in like circumstances by the same scribe, St. Columba himself, exhibits a Vulgate text with singularly little pre-Hieronymian taint.³ But I have also shown that the manuscript now known as the Cathach is a copy of St. Jerome's second recension of the Psalter—the Gallican—and that its freedom from mixture is almost as conspicuous as that of the Durrow text.⁴ In other words, it is exactly the sort of text we might have expected it to be if it was indeed copied from St. Finnian's book. When we recall that St. Columba, or any other scribe of his day, must have known his Latin Psalter by heart, we shall see that, working against time on the new version, he would readily revert now and then to the phrases of the more familiar text. Such accidental mixture would be more likely to occur in the Psalms than even in the Gospels, for constant recitation of the "three fifties" must have made the actual words of the Psalter more familiar than those of any other part of the Bible. Thus some of the Old Latin renderings in our manuscript may have been unconsciously contributed by the scribe. His exemplar may have been at least as free from them as the exemplar of the Durrow Gospels.

The exemplar of the Cathach, as we have seen,⁵ was more or less fully provided with the Hieronymian asterisks and obeli. This, perhaps, helps us to explain a gloss on the Amra Colum Cille. The words "He secured correctness of psalms" are explained thus: "*i.e.* he corrected the psalms by

¹ Adamnan, i, 23. "Cur hanc super nos infers sine causa molestiam? nam in tuo hoc de quo dicis psalterio nec una superflua reperietur litera nec alia deesse, excepta I uocali quae sola deest." Of course Adamnan does not interpret the tale as I have done.

² Above, p. 250.

³ Above, pp. 314 f., 320 f.

⁴ Above, pp. 256, 258 ff.

⁵ Above, p. 256 ff.

obelus and asterisk.”¹ Whether the explanation is right or no—and the original purpose of obeli and asterisks was certainly to preserve the genuine text—the glossator not only indicates St. Columba’s knowledge of the Psalms, he implies that he was acquainted with the Gallican Psalter, to which these marks belonged, and had some part in making it known in Ireland. And indeed the words of the *Amra* itself sound like an obscure allusion to his study of a version superior to that which was generally current. And since neither text nor gloss can have been based on O’Donnell’s *Life*, they may be regarded, not only as confirming his story, but as showing that our Psalter is the book to which it refers. Another gloss on the same poem seems also to intimate that St. Columba used both the old and new versions: “He made known the Psalms, returning to them after leaving them.”² The last words of this comment may be interpreted as indicating a temporary desertion of one translation in favour of another.

Finally, in the rubrics of the *Cathach* we have found evidence to connect it with St. Columba’s great foundation at Iona.³ It appears that a manuscript, descended from the Psalter from which they were copied, was brought to Northumbria between 635 and 650 by Irish teachers, and was the source from which eventually came the rubrics of the *Codex Amiatinus* and some parts of Bede’s *Argumenta Psalmorum*. If the Psalter is thus shown to have had some connexion with Iona, we are prepared to give due weight to any indication that it was connected with Columba the founder of Iona. Now, we have already observed that the rubrics were apparently added, after the completion of the text, by the original hand.⁴ Thus their source (γ) need not be supposed to have been St. Finnian’s book. They may have been derived from another codex then or later in St. Columba’s possession. Thus the common ancestor of the rubrics of the *Cathach* and of the *Codex Amiatinus* was possibly a manuscript in the library of the monastery of Iona.

But, whatever may be thought of the speculation in which I have just now ventured to indulge, it is clear, I believe, that we have in the argument which I have presented very good reason for accepting the conclusion that the manuscript now in our hands is a genuine relic of St. Columba, and that it was written by him on the eve of the battle of *Cul Dremhne*.

But one objection must be met. If this conclusion is correct, St. Finnian’s

¹ *Lib. Hymn.*, ii, 67. The addition to this gloss (“*Revue Celtique*,” xx, 253), “or under titles and arguments,” may refer to the peculiar rubrics of our manuscript. See next paragraph.

² “*Revue Celtique*,” xx, 255.

³ Above, p. 287 ff.

⁴ Above, p. 252.

book was a Psalter.¹ What, then, are we to make of the tradition, older by far than O'Donnell's Life of Columba, that it was an euangelium?²

It may be observed, first, that the word "Gospel" was on some occasions used with considerable latitude. The volume known as "The Gospel of St. Martin of Tours"³ is called in the story of its invention by St. Columba a "liber Missalis."⁴ A book written by St. Gildas is called both "missalis liber" and "euangelium Gildae" in the same sentence of the Life of St. Cadoc.⁵ And in glosses quoted on a previous page⁶ it is suggested that "law" and "gospel" are convertible terms, or that the entire New Testament might be called the Gospel. These examples are sufficient to show that the word "Gospel" might be used of a non-biblical ecclesiastical book, and probably of any book of the Scriptures. If so, there is no reason why a Psalter should not be so called. The "Gospel" of the Black Book of Molaga may be merely the equivalent of O'Donnell's "book."

But there is more to be said. In the later Lives of the Irish Saints mention is very frequently made of their biblical books—the books that they read and the books that they wrote. They are almost always called Gospels. We read of Gospels transcribed by saints⁷ or other scribes.⁸ Saints are described as engaged in the study of Gospel-books;⁹ they possessed Gospels which for that reason were later held in reverence.¹⁰ And Gospels are occasionally mentioned in other connexions.¹¹ When we turn to other

¹ Possibly a portion of the Old Testament, including the Psalter.

² It is curious that very little attention has been paid to this difficulty, even by those who are disposed to reject O'Donnell's story as a fable. Thus Skene (p. 81), as though quoting from O'Donnell, says, without any note of doubt, that the book was "a copy of the Book of Psalms." Similarly Montalembert, "Les Moines d'Occident," iii, 125; O'Curry, "Manuscript Materials," p. 328; Stokes, "Ireland and the Celtic Church," 1907, p. 107; Hyde, "Literary History of Ireland," p. 175.

³ Stokes, p. 175; Annals of Ulster, s. aa. 1166, 1182.

⁴ Reeves, p. 325.

⁵ Rees, "Lives of Cambro-British Saints," p. 66.

⁶ p. 316.

⁷ Martin (Stokes, p. 208), Daig (Vita, 6: Cod. Sal., 894), Adamnan (Vita Geraldii, 15: Plummer, ii, 115), Canice (Vita, 41: *ib.* i, 167, note).

⁸ Vita Albei, 33 (Plummer, i, 59); Vita Cronani, 9 (*ib.*, ii, 24); Vita Lasriani, 11 (*ib.*, 133).

⁹ Abban (Vita, 36: Plummer, i, 24), Brendan of Birr and Canice (Vita Aedi, 2: *ib.* 35), Canice (Vita, 18, 29: *ib.* 159, 163).

¹⁰ Martin (Stokes, p. 175), Senan (*ib.*, 208), Ciaran (*ib.*, 275; Vita, 27: Plummer, i, 211), Cronan (Vita, 26: Plummer, ii, 30), Enna (Vita, 19, 23: *ib.*, 68, 71), Lasrean (Vita, 22: *ib.*, 136), Declan (Life in Irish Texts Society, xvi, 53; Vita, 26: Plummer, ii, 51), Flannan (Acta, 34: Cod. Sal., 679), Coirbre (Vita Eugenii, 12: *ib.*, 920), MacNessa (Vita, 15: *ib.*, 930).

¹¹ Every pupil of St. Finnian of Clonard received a crozier, or a Gospel, or some other sign, as a parting gift (Stokes, p. 226). See also Vita Colmani, 29 (Plummer, i, 270) for a Gospel at Clonmacnoise.

books, we find a remarkable contrast. The Psalms are not seldom mentioned as read by lads in training for the monastic life,¹ which proves that Psalters were often written. The Gospels are much less frequently referred to in this connexion.² Nevertheless, the mention of Psalters is rare. I have observed only one reference to the copying of a Psalter,³ and only one passage in which a Psalter is specially associated with a distinguished ecclesiastic.⁴ As to the remaining books of the Bible, they might almost seem to have been unknown if we trusted the hagiographers. St. Colman Ella is said to have transcribed the Acts;⁵ St. Moling, on one occasion, to have read a book containing "the Epistles of the Apostles";⁶ and a youth named Aedhan to have studied "the twelve minor prophets under St. Sinell."⁷ I have noted no other references. In a comparatively small number of cases the manuscript of a saint is described as "a book," without a more definite description. These facts might seem to suggest the inference that ancient Irish churchmen seldom read or copied any book of the Bible other than the four Gospels. But that is, of course, an absurd supposition; though, if we may judge from the existing remains, the book most copied and most read was the Book of the Gospels, and the Psalter came next to it. The simplest explanation of the phenomena is this. In the earliest Lives a portion of the Scriptures was commonly called a "book." In most cases these books would be Gospels. And so in the course of time the hagiographers, wishing to give to their stories the vividness and interest which comes of definiteness, changed *liber* into *euangelium* in practically every case, though sometimes they were doubtless Psalters or Service Books. It is not at all improbable, therefore, that Keating or the writer of the Book of Molaga substituted "Gospel" for the vaguer "book."

Thus the contradiction, real or apparent, between the "Gospel" of Keating and the "book" of O'Donnell is by no means fatal to our theory. But when O'Donnell uses the word "book" he may be believed to be reproducing the earliest form of the story: for, while "Gospel" might take the place of

¹ Stokes, pp. 206, 222, 249, 268; Plummer, i, 201, 205; Cod. Sal., 166, 179, 446, 916.

² Plummer, i, 69, 206 (= Stokes, p. 269).

³ By Colman Ella, when he also wrote Acts and other books (Acta, 42: Cod. Sal., 439). This is in strange contrast to Adannan, who says that St. Columba was copying a Psalter on the day of his death (iii, 23). The only other book of the Bible mentioned by him as written in Iona was also a Psalter (i, 23).

⁴ Colman of Dromore (Acta, 13: Cod. Sal., 832). Also Maighen of Kilmainham in Martyrology of Donegal, December 18.

⁵ See note 3.

⁶ Vita, 4: Plummer, ii, 191.

⁷ Vita Comgalli, 54: Plummer, ii, 19.

“book” in a later writer, it is less likely that “book” would be substituted for “Gospel.”

This might suffice as an answer to the objection. But there is another solution of the difficulty which may be offered for consideration. Apart from the fact that the *Cathach* is actually a Psalter, a good case might be made out for the view that the exemplar of the Durrow Gospels was the book mentioned in O'Donnell's story as written by Columba. And Professor Lindsay forcibly argues that the subscription “transferred from the original into the Book of Durrow connects the original very definitely with the story of St. Finnian and St. Columba.” Moreover, if St. Finnian imported portions of St. Jerome's translation into Ireland, it is inconceivable that they would not include the Gospels. And any Irish ecclesiastic who desired to have a copy of the new version would certainly, above all, wish to possess the Gospels and the Psalter: but the Gospels first. Is it not, then, possible that when he was at Dromin Columba transcribed both? His copy of the Psalms, we may suppose, passed to the O'Donnells, and was venerated by them as their *Cathach*. The copy of the Gospels became the property of the community of Durrow, and found its way into the story as told in the Book of Molaga. If this is what actually happened, the two *libelli* had an identical origin: O'Donnell's tale applies to both. It was quite natural that he should ignore the copy of the Gospels, no longer in existence, and probably never associated with his clan, which shared with the *Cathach* the distinction of having been a cause of the famous battle of Cul Dremhne.

If O'Donnell's narrative of Finnian's book and his statement about the *Cathach* be assumed as correct, there can be no doubt as to the date of our Psalter. It was written shortly before the battle of Cul Dremhne, about the year 560.

CONCLUSION.

The *Cathach* Psalter has been little studied. It is true that there are many references to it in the pages of writers on the history and antiquities of Ireland, some of which have been cited in this introduction. But very few of them show signs of having examined it with care, and we may suspect that the majority had never seen it. To Sir William Betham belongs the credit of having made it known.¹ In the “*Palaeographia Pictoria Sacra*” of J. O. Westwood (1843-5), there was published a description of the manuscript, only a few lines in length, accompanied by a facsimile of two lines (f. 48).² Some thirteen years later, in 1857, appeared a very brief notice of

¹ His facsimile (pl. viii, part of f. 54^v) is useless.

² “*Pal. Sac.*,” *Irish Biblical MSS.*, plate ii, fig. 8, and p. 3.

it by Reeves,¹ which added little to the information given by Betham, but doubtless drew to it the attention of many scholars who had not before heard of it. Professor Eugene O'Curry, in 1860, published a short description of the manuscript, in which attention was called, apparently for the first time, to the fact that it was embellished "with some slight attempts at illumination." He gave a facsimile of part of f. 19^r.² In 1874 four facsimiles (ff. 41^r, 48^r, 50^r, 51^r), which are almost, if not exactly, identical in size with the original, were published in the "National Manuscripts of Ireland," Part i, plates iii, iv; but the editor, Sir J. T. Gilbert, tells nothing about the manuscript which he might not have gathered from Betham and Reeves. The facsimiles are useful, but the reader should be cautioned that they are not accurate reproductions in regard of the initials and rubrics. His longer notice, printed the same year by the Historical Manuscripts Commission,³ though evidently based on first-hand knowledge, is not, regarding the characteristic features of the manuscript, much more informing. The only attempt at a detailed description of the book which has come under my notice is from the pen of Mr. M. Esposito, and appeared in "Notes and Queries," ser. xi (1915), nos. 286, 301 (xi, 466; xii, 253), under the title, "The so-called Psalter of St. Columba." Mr. Esposito's notes are somewhat fragmentary, and they are not always accurate; but I have made some use of them.

The text of the Cathach is here published for the first time. I have printed it line for line from the manuscript. Contractions have been expanded, supplied letters being indicated by italics. Clarendon type has been used for the rubrics. Lost or illegible words or letters are enclosed in square brackets. I have copied them from V, or in the case of rubrics from A, except in places where it was clear that the scribe did not follow the received Gallican or Anniatine text, the spelling being assimilated to that of the legible parts of the manuscript. Obvious errors of the scribe are marked with an obelus (†). An attempt has been made, by means of capitals, to indicate the occasional use by the scribe of letters of large size; but it was not possible to do this on a consistent principle throughout.

It is with some shame, as well as much gratitude, that I place on record the assistance which I have received from scholars, who ungrudgingly spent time and labour in response to my inquiries. Mr. E. C. R. Armstrong has contributed the valuable account of the shrine of the Cathach, printed as the first Appendix; Professor W. M. Lindsay has written in Appendix II, as no

¹ Adamnan, pp. 233, 249, 319.

² "Manuscript Materials of Ancient Irish History" (re-issue 1878), p. 332, and pl. 1b.

³ Appendix to Report iv, p. 584 ff.

other living scholar could have written, on the Script of the Cathach, and on the Colophon of the Book of Durrow; and Appendix IV is practically the work of Professor H. J. White, D.D., who was so good as to copy for me the rubrics of the Psalms in no less than nine manuscripts in the British Museum and the Library of Lambeth Palace, some of them difficult to read. The subject of psalm-headings, so important for my purpose, was indeed to me a *terra incognita* when I began my work, and I have to thank Mr. J. P. Gilson, Keeper of Manuscripts in the British Museum, Canon Brightman, the Rev. H. A. Wilson, Dr. H. M. Bannister, and Mr. K. Sisam of Merton College, Oxford, for much help in finding my way through it. I need not add that if I have sometimes wandered from the path they cannot be held responsible for my mistakes. Mr. Alfred Rogers, of the University Library, Cambridge, kindly made extracts for me from the Southampton Psalter, and Miss E. G. Parker helped me by doing similar work in the Bodleian Library. But it is not possible to mention here all who have assisted me by criticism and suggestion, and in other ways. Let me assure those who are not named that I am not forgetful of their kindness.

H. J. L.

TEXT.

Ps. xxx. 10-xxxii. 1.

10. [miserere mei domine quoniam tribulor
contu[r]b[atus] [est in ir]a oculu[s] meus
anima mea et] uenter meus f. 1.
11. quoniam defecit in dolore uita mea
et an[im]i mei] in gemitibus ÷
imfirma[ta e]s[et] in paupertate uirtus mea
[et o]ssa mea conturbata sunt ÷
12. [su]per omnes inimicos meos factus sum obpr[obrium]
et uicinis meis ualde et timor notis meis . . . , [+ . . . ,]
qui uiderunt me foris fugerunt a me
13. obliuioni datus sum tamquam mortuus a co[r]de
f]actus sum tamquam uas perditum
14. [quo]niam audiui uituperationem multoru[m]
commorantium in circ[ui]tu ÷
[i]n eo dum conuenirent simul aduersu[m] me]
accipere animam meam consiliati sunt
15. ego autem in te speraui domine dixi deus meus e[s] tu
16. in] manibus tuis sortes meae
[eripe me de manu in]imicorum meorum
[et a persequentib]us [me] ÷
17. [ill]ustra faciem tuam super seruu[m] tu[um]
saluum me fac in misericordia tua
18. domine non confundar quoniam inuocaui te f. 1v.
erubescant impii et deducantur in infernum
19. muta fiant labia dolosa
quae loquuntur aduersus iustum iniquitatem
in superbia et in abusi]one
20. [quam magna m]ultitudo dulcedinis tuae domine
[qu]am abscondisti timentib[us] te
[p]erfecisti eis qui sperant in te
[i]n] conspectu filiorum ho[mi]num / hominum
21. [abs]condes eos in abdito faciei tuae a conturbat]ione]
[pro]teges eos in tabernaculo
[tuo a con]tradictione linguarum . . . , +
22. [benedi]ctus dominus quoniam mirificauit
misericordiam suam mihi in ciuitate munita ÷
23. [eg]o autem dixi in excessu mentis meae
[p]roiectus sum a facie oculorum tuorum
[i]n] deo exaudisti uocem orationis meae dum clamarem ad te
24. [di]legite dominu[m] omnes sancti eius
[qu]oniam ueritates requiret dominus
[et ret]ribuet abundanter facientibus superbia[m] ÷
25. [uir]ilite]r agite et confortetur cor uestrum
[o]mnes qui spera]tis] in domino
[XXXI huic] dauid post baptismum uox paenitentium
1. Bea]ti q]uorum remissae sunt iniquitates
et quorum tecta sunt peccata

Ps. xxxi. 2-xxxii. 13.

2. beatus uir cui non imputauit dominus peccatum f. 2.
nec est in spiritu eius dolus
3. quoniam tacui inueterauerunt ossa mea
dum clamarem tota die ¹There are traces
of the letters
in die.
4. quoniam die¹ ac nocte grauata est super me manus tua
conuersus sum in erumna mea dum configitur spi]na . . . , [+ . . . ,]
5. del[i]ctum meum cognitum * tibi : feci
[et in]iustitiam meam non abscondi ÷
[dixi domin]e² contebor† aduersus me iniustitiam m[eam domino
et tu re]missisti impietatem peccati mei ÷ d[iabsalma] ² This letter is
uncertain. Pos-
sibly the word
domino at the end
of the line should
be omitted.
6. pro hac orabit ad te omnes† sanctus in tempore oportu[no]
uerumtamen in diluio aquarum multarum
non adproximabunt ÷
7. [tu] es refugium meum a tribulatione quae circum[dedit me
ex]sultatio mea erue me a circumdantibus me . . . , [+ . . . ,]
8. [int]ellectum tibi dabo et instruam te
[in ui]a hac qua gradieri[s]
firmabo super te oculos meos ÷ [/ lectus]
9. nolite fieri sicut aequus et mulus quib[us non est intel]
i]n camo et freno maxillas eorum con[stringe
qui non] adproximant ad te
10. [multa flagilla pecca]toris
[sperantem autem in domino misericordia circumdabit
11. laetamini in domino et exsultate iusti
et gloriamini omnes recti corde

XXXII psalmus dauid profeta cum laude dei populum hortatur f. 2v.

1. **E**Xsultate iusti in domino rectos decet conlaudatio
2. **C**onfitemini domino in cythara
in psalterio decim chordarum psallite illi
3. cantate ei canti]cum nouum
[bene psall]ite ei in uociferatione
4. [quia r]ec/tum est uerbum domini
[et] omnia opera eius in fide
5. [dilegit] misericordiam et iudicium ÷
[mise]ricordia domini plena est terra
6. [uerb]o domini caeli firmati sunt
[et spirit]u oris eius omnis uirtus eorum . . . , + . . . ,
7. [congre]gans sicut in utrem aquas maris
8. [pon]ens in thesauris abyssos : ÷ timeat dominum omnis terra
[ab e]o autem commoueantur omnes inhabitantes orbem
9. [quo]niam ipse dixit et facta sunt
[ipse m]andauit et creata sunt ÷
10. [dominus dissip]at consilia gentium
[reprobat au]tem cogitationes populorum
[et reprobat] consilia principum ÷
11. [consilium autem domin]i manet in aeternum
[cogitationes cordis eiu]s a gen[era]t[ione et generatione
12. beata gens cuius est dominus deus eius
populus quem elegit in hereditatem sibi
13. de caelo respexit dominus uidit omnes filios hominum

Ps. xxxii. 14-xxxiii. 18.

14. de praeparato habitaculo suo respexit f. 3.
super omnes qui habitant terram
15. qui finxit sigillatim corda eorum
qui intellegit omnia opera eorum
16. non saluatur rex per multam uirtutem
[et gigas non saluatur in multitudine] [uirtutis suae]
17. fallax aequus ad salutem
in habundantia autem uirtutis suae non saluabitur]
18. Ecce oculi domini super metuentes eum
qui sperant super misericordia eius ÷
19. ut eruat a morte animas eorum : et alat eos in fame]
20. anima nostra sustenet dominum
quoniam adiutor et protector noster est
21. quia¹ in eo laetabitur cor nostrum ¹ Over this word, in a later hand,
are the marks, + ⊙
et in nomine sancto eius sperauimus ÷
22. fiat misericordia tua domine super nos
quemadmodum sperauimus in te . . . ,

XXXIII [dauid]cum innotauit uultum suum coram abimelech dimisit eum et abiit uox fidei per ieiunium]

2. **BEN** EDicam dominum in omni tempore]
semper laus eius in ore meo
3. in domino laudabitur anima mea
audiant mansueti et laetentur]
4. magnificate dominum mecum
et exaltemus nomen eius in idipsum
5. exquisiui dominum et exaudiuit me f. 3v.
et ex omnibus tribulationibus meis eripuit me
6. accedite ad eum et inluminamini
et facies uestrae non confundentur
7. iste pauper clamauit et dominus exaudiuit eum
et de omnibus tribulationibus ÷ ei saluabit eum
8. dabit angelus domini in circuitu timentium eum et eripiet eos
9. gusitate et uidete quoniam suauis est dominus
beatus uir qui sperat in eo
10. timeete dominum ÷ omnes : sancti eius
quoniam non est inopia timentibus eum ÷
11. diuites egerunt et esurierunt / diabsalmus
inquirentes autem dominum non minuentur omni bono : + :
12. uenite filii audite me timorem domini docebo uos ÷
13. quis est homo qui uult uitam
dilegit uidere dies bonos ÷
14. prohibe linguam tuam² a malo ² There are, perhaps, some erased
letters in the space after tuam.
et labia tua ne loquantur dolum ÷
15. deuerte a malo et fac bonum
inquire pacem et saequere eam ÷
16. oculi domini super iustos
et aures eius in praeces eorum
17. uultus autem domini super³ facientes mala ³ The letters nisi are doubtful.
ut perdat de terra memoriam eorum
18. clamauerunt iusti et dominus exaudiuit eos

Ps. xxxiii. 18—xxxiv. 16.

- et ex omnibus tribulationibus eorum liberauit eos f. 4.
19. iuxta est *dominus* iis qui tribulato sunt corde
et humiles *spiritu* saluabit
20. multae tribulationes¹ iustorum ¹ There are traces of some letters of this word.
et de om[ni][bus] hi[s] lib[era]uit eos [*dominus*]
21. [*dominus* cus]todit omnia ossa eorum
[un]um ex his non contere/tur² ÷ ² The erased letter is apparently *n*.
22. mors peccatorum pessima
et qui oderunt // iustum dilynquent ÷
23. Redemi[t] *dominus* animas seruorum suorum
et non dilynquent omnes qui sperant in [eo]
- XXXIII [h]uic **dauid uox christi in passi**
one de iudeis dicit
- U DICA *domine* nocentes me
expugna inpugnantes³ me ÷ ³ *e* corr. from *i*.
2. adpraehende arma et scutum
et exsurge in adiutorium mihi ÷
3. effunde frameam et conclude
aduersus eos qui persaequantur† me
dic animae meae salus tua ego sum ÷
4. [conf]undantur et reuereantur quaerentes [animam
meam auertantur retrors]um
[et confundantur cogitantes m]ihi m[ala
5. fiant tamquam puluis ante faciem uenti
et angelus *domini* coartans eos
6. fiat uia illorum tenebrae et lubricum f. 4v.
et angelus *domini* persaequens eos
7. quoniam gratis absconderunt mihi interitum laquei sui
superuacuae exprobrauerunt a]nim[am meam
8. ueniat illi la]que[us quem ignorat
et ca]ptiuo[rum] quam ab[s]condit conpraehendat eu[m]
et in] laqueo c[ad]at in ipso . . . , + . . . ,
9. [a]nima autem mea exsultabit in *domino*
[et] delectabitur super salutari suo ÷
10. [omni]a ossa⁴ dicent *domine* quis similis tui ⁴ *mea* added in margin.
[eripi]ens inopem de manu fortioris eius
[aeg]e]num et pauperem a diripientibus eum ÷
11. [su]rge[n]tes testes iniqui
[qu]ae ignorabam interrogabant me ÷
12. [r]etribuebant mihi mala pro bonis
[st]erilitatem animae meae ÷
13. [ego au]tem cum mihi molesti essent induebar cylicio
[humilia]bam in ieiunio animam meam
[et oratio m]ea in synum meum conuertetur . . . , + . . . ,
14. [quasi] proximi[m] quasi fratrem nostrum sic conplacebam
[quasi] lugens] et contristatus sic humiliabar ÷
15. [et aduersum m]e * laetati : su[nt et] conu[en]erunt
[congregata sunt sup]er [me flagilla et ignorau]i
16. dissipati sunt nec compuncti
temptauerunt me subsannauerunt me subsannatione

Ps. xxxiv. 16-xxxv. 11.

- frenduerunt super me dentibus suis f. 5.
17. domine quando respicies restitue animam meam
a malignitate eorum a leonibus unicam meam
18. confitebor tibi in ecclesia magna
in populo graui laudabo te . . . , + . . .
19. [non] supergaudeant mihi qui aduersantur mihi inique
qui oderunt me gratis et annuunt oculis ÷
20. quoniam mihi quidem pacifice loquebantur
et in iracundia * terrae loquentes dolus cogitabant ÷
21. et dilatauerunt super me os suum
dixerunt euge euge uiderunt oculi nostri ÷
22. uidisti domine ne sileas : domine ne discedas a me ÷
23. exsurge et intende iudicio meo
deus meus et dominus meus in causam meam . . . , + . . .
24. Iudica me secundum iustitiam tuam domine deus meus
et non supergaudeant mihi ÷
25. non dicant in cordibus suis euge euge animae nostrae]
nec dicant deorauiumus eum ÷
26. erubescant et reuerentur simul qui gratulantur malis] ¹ ¹ There is scarcely room
induantur confusione et reuerentia] for malis meis.
qui maligna loquuntur aduersum me ÷
27. [exsultent et laetentur qui uolunt iustitiam meam
et dicant semper magnificetur dominus
qui uolunt pacem serui eius
28. et lingua mea meditabitur iustitiam tuam
tota die laudem tuam f. 5v.
- XXXV in finem seruo domini dauid profeta cum laude
opera ipsius iudae dicit**
2. **D**ixit iudaeus ut illinquit in secretis
Non est timor dei [ante oculo]s eius
3. quoniam dolose egit in conspectu eius
ut inueniatur iniquitas eius et odium ÷
4. uerba oris eius iniquitas et dolus
noluit intellegere ut bene ageret
5. iniquitatem meditatus est in cubili suo
adstetit omni uiae non bonae :
malignitatem ÷ autem : non odiuit . . . , + . . . ,
6. domine in caelo misericordia tua
et ueritas tua usque ad nubes ÷
7. iustitia tua sicut montes dei
iudicia tua abysus multa ÷
homines et iumenta saluabis domine
8. quemadmodum multiplicasti misericordiam tuam deus
filii autem hominum in tegmine alarum tuarum sperabunt ÷
9. inebriabuntur ab ubertate domus tuae
et torrente uoluntatis tuae potabis eos . . . , + [. . .]
10. quoniam apud te est fons uitae
et in lumine tuo uidebimus lumen
11. praetende misericordiam tuam scientibus te
et iustitiam tuam his qui recto sunt corde

Ps. xxxv. 12—xxxvi. 21.

12. non ueniat mihi pes superbiae
et manus peccatoris non moueat me f. 6.
13. ibi cicerunt qui operantur iniquitatem
expulsi sunt nec potuerunt [stare
XXXVI] ipsi dauid huic hortatur moy[sem ad fidem de]
monstr[ans s]alutem eccle[siae credentem]
monet ad fid[ei] fi[r]mamen[tum]
- N**^OL I emulari in malignantibus
neque zelaueris facientes iniquita[tem]
2. quoniam tanquam fenum uelociter ar[escent]
Et quemadmodum holera herbarum cito de[cedent]
3. Spera in domino et fac bonitatem
Et inhabita terram et pascaris in diuitiis eius ÷
4. Delectare in domino et dabit tibi petitiones cordis tui
5. Reuela domino uiam tuam et spera in eo et ipse faciet
6. et educet quasi lumen iustitiam tuam
et iudicium tuum tanquam meridie
7. ¹subditus esto domino² et ora eum ÷ ¹ In left margin [. . .]eloch.
² Corrected from domine.
Noli emulari in eo qui prosperatur in uia sua
in homine faciente iniustitias ÷
8. [d]esine ab ira et direlinque furorem
Noli emulari ut maligneris ÷
9. [quo]niam qui mali[gnantur] exterminab[untur]
sustentantes autem dominum ipsi hereditabunt terram
10. et adhuc pusillum et non erit peccator
et quaeres locum eius et non inuenies f. 6v.
11. mansueti autem hereditabunt terram
et delectabuntur in multitudine pacis
12. obseruabit pecca[t]or iustum
et strid[ebit] super eum dentibus suis
13. [dominus] au[tem] inridebit eum ÷
[qu]ia prospicit quoniam ueniet dies eius
14. [gl]adium euaginauerunt peccatores
[in]tenderunt arcum suum ÷
[ut d]ecipiant pauperem et inopem
[ut t]rucident rectos corde ÷
15. [gl]adius eorum intret in corda ipsorum
[et] arcus eorum confringatur . . . , + . . . ,
16. [mel]ius est modicum iusto
[su]per diuitias peccatorum multas ÷
17. [quon]iam brachia peccatorum conterentur
[confi]rmat autem iustos dominus⁴ ÷ ⁴ s dominus written over an erasure.
18. [nou]it dominus dies immaculorum
[et] hereditas eorum in aeternum erit ÷
19. [non] confundentur in tempore malo
[et in die]bus famis saturabuntur
20. [quia peccat]ores peribunt ÷
[inimici uero domini] mox hon[o]r[ificati] peri[bunt]
et exaltati deficientes quemadmodum fumus deficient
21. motuabitur peccator et non soluet

Ps. xxxvi. 21-xxxvii. 4.

- iustus autem miseretur et tribuet
 22. quia benedicentes ei hereditabunt terram
 maledicentes autem ei disperibunt
 23. apud dominum gresus ho]minis [diregentur
 et uiam e]ius uo[let
 24. cum c]iciderit non conlidetur
 [qu]ia dominus subponit manum suam ÷
 25. iunior fui et senui et non uidi iustum direlictum
 nec semen eius quaerens panem ÷
 26. tota die misere//tur¹ et commodat²
 et semen illius in benedictione erit ÷
 27. ³declina a malo et fac bonum
 et inhabita in saeculum saeculi ÷
 28. quia dominus amat iudicium
 et non direlinquet sanctos suos
 in aeternum conseruabuntur ÷ . . . , + . . . ,
 INiusti punientur et semen impiorum peribit
 29. iusti autem hereditabunt terram
 et inhabitabunt in saeculum saeculi super e[am]
 30. Os iusti meditabitur sapientiam
 [et] lingua eius loquetur iudicium ÷
 31. [lex d]ei eius in corde ipsius
 [et non su]bplanta[buntur] gresu[s] eiu[s]
 32. considerat peccator iustum
 et quaerit mortificare eum
 33. dominus autem non direlinquet eum in manibus eius
 nec damnabit eum cum iudicabitur illi
 34. exspecta dominum et custodi uiam eius
 et exaltabit te ut] heredit[ate capias terram
 cum per]ierin[t] peccator[es] uidebis . . . , + [. . .]
 35. [uidi i]mpium superexaltatum
 [et el]euatum sicut caedros lybani ÷
 36. et transiui et ecce non erat
 et quaesiui eum et non est inuentus. ÷ locus eius [:]
 37. [c]ustodi innocentiam et uide aequitatem
 [quo]niam /// sunt relique† homini pacifico ÷
 38. [in]iusti autem disperibunt simul
 [r]eliqu[iae] impiorum peribunt
 39. [s]alus autem iustorum a domino
 et protector eorum est in tempore tribulationis ÷
 40. [et] adiuu[a]bit eos dominus ÷ et liberabit eos :
 [et] eruet eos : a peccatoribus
 [et sal]uabit eos : quia sperauerunt in eo . . . , . . . ,

f. 7.

¹ The second erased letter is *e*.
² *d* corr. from another letter.

³ In left margin there is a note,
 the greater part of which has been
 cut away: . . . | . . . n | . . . h.

f. 7v.

[XXXVII] psalmus dauid in r[e]memora[t]ionem diei sabb[ati]
 hic confesio sapi[entiae] uir]tu[s] a]d salutem

2. **D**omiNE Ne in furore tuo arguas me
 Neque [i]n ira tua conripas me
 3. [quo]niam sagitt[ae] tu]ae infixae sunt [mihi
 et confirmasti super me manum tuam
 4. non est sanitas in carne mea a facie irae tuae

Ps. xxxvii. 4—xxxviii. 4.

- non est pax ossibus meis a facie peccatorum meorum f. 8.
5. quoniam iniquitates meae supergressae sunt caput meum
et sicut onus graue grauatae [sunt sup]er [me
6. putruerunt et corru]p[t]ae sunt cica[tr]ices me[ae
a fac]ie insipientiae me[ae . . .], + . . . ,
7. misser factus sum et curuatus sum usque in finem
[t]ota die contristatus ingrediebar ÷
8. quoniam lumbi mei inpleti sunt inlusionibus
et non est sanitas in carne mea ÷
9. Adfictus sum et humiliatus sum nimis
Rugiebam a gemitu cordis mei ÷
10. domine ante te omne desiderium meum
et gemitus meus a te non est absconditus ÷
11. cor meum conturbatum est
dereliquit me uirtus mea
et lumen oculorum meorum et ipsum non est mecum . . . , [+ . . . ,]
12. Amici mei et proxim/i mei aduersus me
Adpropinquauerunt† et steterunt ÷
ET qui iuxta me erant de longe steterunt
13. [et] uim faciebant qui quaerebant animam m[ea]m ÷
qui inquirebant mala mihi locuti sunt uanitate[s
et dolo]s tota [die medita]bantur
14. [ego autem tamquam surdus non audiebam
et sicut mutus non aperiens os suum
15. et factus sum sicut homo non audiens
et non habens in ore suo redargutiones f. 8v.
16. quoniam in te domine speraui : tu exaudies me domine deus meus
17. dixi nequ]ando [sup]ergaude[ant mihi inimici mei ¹ Apparently *quia* is omitted.
et dum c]ommouentur pedes mei
[sup]er me magna locuti sunt
18. [qu]oniam ego in flagilla paratus sum
et dolor meus in conspectu meo semper
19. quoniam iniquitatem meam adnuntiabo
et cogitabo pro peccato meo ÷
20. [i]nimici autem mei uiuent† et confirmati sunt super me
et multiplicati sunt qui oderunt me inique ÷
21. qui retribunt† mala pro bonis detrahebant² mihi ² *tr* written over an erasure.
quoniam saequebar bonitatem ÷
22. non direlinquas me domine deus meus ne disceris a me
23. [int]ende in adiutorium meum domine salutis meae . . . , . . . ,
XXXVII]I in finem pro idithun psalmus prof[eta] in[crepat]
eos³ [q]ui diuitias habent et nesciunt cui dimit[tant]
2. **DI**XI custodiam uias meas ³ This word is not abso-
lutely certain. The scribe
ut non dilinguam in lingua mea ÷ may have written *iudeos*, the
Possui ori meo custodiam first three letters being in the
[cu]m consisteret peccator aduersus me ÷ previous line, and now illeg-
ible. But we should expect
3. [obmut]ui et humiliatus [sum et] silui [a] bonis *iu|deos* rather than *iud|eos*.
[et dolor meus renouatus⁴ est ⁴ Part of the first stroke of
one letter (*n*?) remains.
4. concaluit cor meum intra me
et in meditatione mea exardescet ignis

Ps. xxxviii. 5-xxxix. 11.

5. locutus sum in lingua mea f. 9.
 notum fac mihi domine] finem [meum
 et numerum dierum meorum] [quis est ut sciam quid desit mihi
6. ecc]e mensurabi[les] p[os]suisti di[es] meos
 [et] substantia mea tamquam [nihil]um ante te ÷
 ueruntamen uniuersa uanitas omnis homo uiue[ns]
7. ueruntamen in imaginem pertransit homo
 sed et frustra conturbatur ÷
 thesaurizat et ignorat cui congregabit ea : + [:]
8. et nunc quae est expectatio mea nonne dominus
 et substantia mea apud te est ÷
9. ab omnibus iniquitatibus meis erue me
 obprobrium insipienti dedisti me ÷
10. obmutui et non aperui os meum quoniam tu fecisti
11. amoue a me plagas tuas ÷
12. a fortitudine manus tuae ego defec/i / [nem]¹ ¹ Perhaps *no[men]*.
 increpationibus propter iniquita^tem corripuisti[i] ho[mi]
 et tabescere fecisti sicut haraneam animam eius
 ueruntamen uane conturbatur omnis homo
13. [ex]audi orationem meam domine et depraecationem [meam
 a]uribus percipe lacrimas meas ÷
 [ne si]leas [quonia]m ad[ue]na sum apud te
 [et peregrinus sicut omnes patres mei.
14. remitte mihi ut refrigerer
 priusquam abeam et amplius non ero

XXXVIII in finem psalmus dauid patientia populi est

f. 9v.

2. **E**xpectans exspe]ct[au]i dominum et intendit mihi
 3. et exaud]iuit prae[ces meas]
E [et] edux[it m]e [d]e lac[u m]iseriae et de luto fecit
 et statuit super petram pedes meos
 [et] direxit gresus meos ÷ / tro
4. [et] inmissit in os meum canticum nouum carmen do² nos
 [ui]debunt multi et timebunt et sperabunt in domino
5. [b]eatus uir cuius est nomen domini spes ipsius ² For *deo*; mark
 of contraction
 omitted.
 [et] non respexit in uanitates et insanias falsas ÷
6. [m]ulta fecisti tu domine deus meus mirabilia tua
 [et] cogitationibus tuis non est qui similis sit tibi . . . , + . . . ,
 [a]dnuntiaui et locutus sum
 multiplicati] sunt super numerum ÷
7. sacrificium et oblationem noluisti
 [au]res autem perfecisti mihi ÷
 [h]olocaustum et pro peccato non postulasti
8. [tunc] dixi ecce uenio ÷
 [in cap]ite libri scriptum est de me
9. [ut fa]cerem uoluntatem tuam deus meus uolui
 [et leg]em tuam in medio cordis mihi . . . , + . . . [,]
10. [adnunti]aui iustitiam in ecclesia magna
 [ecce labia mea non prohibebo domine tu scisti
11. iustitiam tuam non abscondi in corde meo / cordiam tuam
 ueritatem tuam et salutare tuum dixi : non abscondi miseri

Ps. xxxix. 11—xl. 12.

- et ueritatem tuam a concilio multo
12. tu aute]m domine [ne lon]ge fac[ias misericordiationes tuas a] me
Misericordia tua [et ueritas tua semper s]uſceperunt [m]e
13. quoniam circumdederu[nt me] mala
quorum non est numerus / ut uider[em]
Conpraehenderunt me iniquitates meae et non po[tui]
multiplicatae sunt super capillos capitis me[i]
Et cor meum reliquit me ÷
14. conplaceat tibi domine ut eruas me
domine ad adiuuandum me respice . . . , + . . . ,
15. Confundantur et reuereantur simul
qui quaerunt animam meam ut auferant eam
conuertantur retrorsum et reuereantur
qui uolunt mihi mala ÷
16. ferant confestim confuſionem suam
qui dicunt mihi euge euge ÷ / t[e]
17. exsultent et laetentur super te omnes quaer[entes]
et dicant semper magnificetur dominus
qui diligunt salutare tuum ÷
18. [ego] autem mendicus sum et pauper
[dominus so]llicitus est mei / tardaueris
[adiutor meus et protector] meus es deus me[us ne]

f. 10.

[XL psalmus dauid legendus ad lectionem esaiiae
profetae uox christi de passione sua et de iuda traditore

2. **B**eatus qui intellegit super egenum et pauperem
in die mala liberabit eum dominus
3. dominus conseruet eum] et uiuif[i]ce[t eum
et] beatum faci[at] eum [in ter]ra
[et non] tradat eum [in an]imam inimicorum eius
4. [dominus op]em ferat illi super lectum doloris eius
[uniu]ersum stratum eius
[uers]asti in¹ infirmitate eius . . . , + . . . ,
5. [ego] dixi domine miserere mei
[sa]na animam meam quoniam peccaui tibi ÷
6. [ini]mici mei dixerunt mala mihi
[qu]ando morietur et peribit nomen eius ÷
7. [et] si ingrediebatur² ut uideret uana loquebatur
[c]or eius congregauit iniquitatem sibi ÷
8. egrediebatur foras et loquebatur in idipsum : + : ÷
aduersum me susurrabant omnes inimici mei
[a]duersus me cogitabant mala mihi ÷
9. [uerbu]m iniquum constituerunt aduersus me
[num]quid qui dormit non adiciet ut resurgat ÷
10. [ete]nim homo pacis me] in quo speraui
[qui ae]debat panes meos magnificabat³
super me supplantat[i]onem] . . . , + . . . ,
11. [tu au]tem domine mis[erere mei et resuscita me
et retribuam eis
12. in hoc cognoui quoniam uoluisti me
quoniam non gaudebit inimicus meus super me

f. 10v.

¹ Corr. from *im.*

² *t* is a correction.
Apparently the scribe
wrote the first stroke of *u*
immediately after *a*, and
then, perceiving his mis-
take converted it into *t*.

³ *b* is apparently corr. from
t and *a* partly written over
the erasure of a letter or
punctuation mark which fol-
lowed *t*.

Ps. xl. 13-xlii. 5.

13. me autem propter innocentiam suscepisti
et confirmasti me in consp]ectu [tuo in aete]rn[um] f. 11.
14. benedictus dominus deus israhel
a saeculo et in saeculum fiat fiat
- XLI in finem intellectus filiis chore ante
baptismum uox christi est [. . .]¹ aquarum**
2. **Q**UEMADmodum desiderat ceruus ad fontes
Ita desiderat anima mea ad te deus ÷
¹ The five or six letters after *est*, now illegible, may have been erased.
3. **S**ituiuit animea† ad deum fortem uiuum
quando ueniam et parebo ante faciem dei ÷
4. fuerunt mihi lacrim/ae meae/ panes die ac nocte
dum dicitur mihi cotidie ubi est deus tuus . . + : , ÷
5. Haec recordatus² sum et effudi in me animam meam
quoniam transibo in locum tabernaculi
admirabilis³ usque ad domum dei ÷
in uoce exultationis et confessionis sonus aepulantis ÷
² Three points (··) under the first two letters of this word.
³ Two points (··) under the first two letters of this word.
6. quare tristis es anima mea et quare conturbas me ÷
spera in deo quoniam adhuc confitebor illi
salutare uultus mei . . . , + . . . ,
7. [deus]⁴ meus ad meipsum anima mea conturbata est
[propt]erea memor ero tui de terra iordanis
[et hermoniim a monte m]odico ÷
⁴ There is not room for *et* before *deus*.
8. [abyssus abyssum inuocat
in uoce cataractarum tuarum
omnia excelsa tua et fluctus tui super me transierunt
9. in die mandauit dominus misericordiam suam
et in] nocte canticum [eius
a]pud me oratio deo uitae meae
10. dicam deo susceptor meus quare oblitus es mei
quare contristatus incedo dum adfligit me inimicus
11. dum confringuntur ossa mea
exprobrauerunt mihi qui tribulant me ÷
dum dicunt mihi per singulos dies ubi est deus tuus
12. quare tristis es anima mea
et quare conturbas me ÷
[sper]a in deo quoniam adhuc con, fitebor⁵ illi
salutare uultus mei et deus meus . . . , . . . ,
⁵ *n* corr. from *m* by erasure.

XLII psalmus dauid [ad eos] qui fidem sunt consaecuti

- I**U DICa me deus et discerne causam meam
De gente non sancta
AB omne iniquo et doloso erue me ÷
2. quia tu es deus fortitudo mea quare me repulisti
[et] quare tristis incaedo dum adfligit me inimicus
3. [e]mitte lucem tuam et ueritatem tuam
[ipsa] me deduxerunt et adduxerunt me in montem
[san]ctum tuum et in tabernacula tua . . . , [+ . . . ,
4. et intr]oibo ad [alt]are [dei
ad deum qui laetificat iuuentutem meam
confitebor tibi in cythara deus deus meus
5. quare tristis es anima mea et quare conturbas me

f. 11v.

Ps. xlii. 5-xliii. 21.

spera in deo quoniam adhuc confitebor illi f. 12.
salutare uultus mei et deus]meus . . . ,

[X]LIII in finem filii chore ad intellectum hic ex homo
legessem legendus ad epistolam pauli ad roma
nus† profeta ad dominum [d]e operibus eius paeni
[t]entiam^{m1} gerens pro populo iudaico

¹This word is written above the rule, so as to make room for the ornamental letters *DS*, and is parted from *gerens* by a space containing part of *S*.

2. **D**^{eu}**S** auribus nostris audiuimus
Patres nostri adnuntiauerunt n[obis]
opus quod operatus es in diebus
eorum in diebus antiquis ÷
3. Manus tua gentes disperdet et plantasti eos
Adfixisti populos² et expulisti eos ÷ ² os corr. from *us*.
4. non enim in gladio suo possiderunt terram
et brachium eorum non saluauit eos ÷
sed dextera tua et brachium tuum
et inluminatio faciei tuae
quoniam conplacuisti in eis . . . , † . . . ,
5. tu es ipse rex meus³ et deus meus ³ s written over an erasure (two letters).
qui mandas salutes iacob
6. [in t]e inimicos nostros uentilabimus cornu
[et i]n nomine tuo spernimus insurgentes in [nobis]
7. non] enim [in a]r[cu meo s]per[a]bo
[et gladius meus non saluabit me
8. saluasti enim nos de affigentibus nos
9. et odientes nos confudisti : in deo laudabimur tota die
et in nomine tuo confitebimur in saeculum f. 12v.
10. nunc] aut[e]m repulisti et confudisti [n]o[s
et] non egredieris in uirtutibus nostris ÷
11. auertisti nos retrorsum post inimicos nostros
et qui oderunt nos diripiebant sibi ÷
12. dedisti nos tamquam oues escarum
et in gentibus dispersisti nos ÷
13. [uen]didisti populum tuum sine proetio
[et] non fuit multitudo in commotionibus nostris ÷
14. possuisti nos obprobrium uicinis nostris
subsannationem et dirisum his qui sunt in circuitu nostro : † :
15. possuisti nos in similitudinem gentibus
commotionem capitis in populis ÷
16. tota die uerecundia mea contra me est
et confusio faciei meae cooperuit me ÷
17. a uoce exprobrantis et obloquentis
[a f]acie inimici et persaequentis ÷
18. [ha]ec omnia uenerunt super nos nec obliti sumus te
[et i]nique non egimus in testamento tuo⁴ ÷ ⁴ t corr. from another letter (s ?)
19. [et] non recessit† retrorsum cor nostrum
[et] declinasti semitas nostras a uia tua
20. [qu]on [iam] humilias[ti] nos i[n loco adf]l[icti]on[is
et cooperuit nos umbra mortis
21. si obliti sumus nomen dei nostri
et si expandimus manus nostras ad deum alienum

Ps. xliii. 22-xliv. 16.

22. nonne *deus* requiret ista f. 13.
 ipse] enim nouit abscondita cordis ÷
 quoniam propter te mortificamur omni die
 aestimati sumus sicut oues occissionis ÷
23. exsurge quaere] obdormis *domine*
 exsurge et ne repellas in finem ÷
24. quare faciem tuam auertis
 obliuisceris inopiae nostrae et tribulationis nostra[e]
25. quoniam humiliata est in puluere anima nostra
 conglutinator est in terra uenter noster
26. exsurge *domine* adiua nos
 et redeme nos propter nomen tuum . . . ,
- XLIII in finem pro his qui commotabuntur filiis chore
 legendus ad euangelium mathei de regina
 austri profeta ad patre] de christo et ecclesia dicit
2. **E**RUCTauit cor meum uerbum bonum
 Dico ego opera mea regi / bentis
 lingua mea calamus scribae uelociter [scri]
3. speciosus forma prae filiis hominum
 [dif]fusa est gratia in labiis tuis
 [pr]opterea benedixit te *deus* in aeternum
4. [accing]e[re gladio tuo sup]er fe[m]ur tuu[m] pote[ntissime]
5. specie tua et pulchritudine tua intende
 prospere procede et regna
 propter ueritatem et mansuetudinem et iustitiam
 et deducet te mirabiliter dextera tua 13v.
6. sagitt]ae tua[e acutae populi sub te] cadent
 in corde inimicorum regis . . . , +
7. sedis tua *deus* in saeculum saeculi
 uirga directionis uirga regni tui ÷
8. dilexisti iustitiam et odisti iniquitatem
 propterea unxit te *deus deus* tuus
 o[1]eo laetitiae prae consortibus tuis ÷
9. mirra et gutta et cassia a uestimentis // / tuis
 [a] domibus eburneis ex quibus delictauerunt te
10. filiae regum in honore tuo ÷
 adstetit regina a dextris tuis // // in estitu] deaurato ¹ The first of the erased
 letters is d.
 circumdata ueriae tuae] ÷ . . . , +
11. audi filia et uide et inclina aurem tuam
 et obli uiscere populu] m tuum et domum patris tui ÷
12. et concupiscet rex decorem tuum
 quoniam ipse est *dominus deus* tuus adora eum ÷
13. [et] filiae tyri in muneribus
 [uu]ltum tuum depraecabuntur diuites plebis ÷
14. [omn]is gloria eius filiae regis ab intus
15. [in] fimbriis aureis circumamicta uariae tatibus]
 [add]ucen[tu]r regi [uirgines post eam
 proximae eius adferentur tibi
16. adferentur in laetitia et exultatione
 adducentur in templum regis

Ps. xlv. 17–xlvii. 2.

17. pro patribus tuis n]at[i sunt tibi filii constitues f. 14.
 eos¹ prin]cip¹ [es su]per omne[m t]er[ram]
18. memor ero nomi¹ nis tui in omni
 generatione et generatione ÷ ¹ Spaces due to holes
 in the vellum.
 propterea populi confitebuntur tibi
 in aeternum et in saeculum saeculi . . . ,¹ . . . ,

**XLU in finem filiis chore pro arcanis psalmus legend[us]
 ad [le]ctionem actus apostolorum uox apostolor[u]m²**

2. **D**eus noster refugium et uirtus / nos nimis
 ADiutor in tribulationibus quae inuenerunt
3. propterea non timebimus dum turbatur³ terra
 et transferentur montes in cor maris ÷
4. sonauerunt et turbatae sunt aquae eorum
 conturbati sunt montes in fortitudine eius ÷
5. Fluminis impetus laetificat ciuitatem //⁴dei
 sancti ficauit tabernaculum suum altissimus ÷
6. Deus in medio eius non commouebitur⁵
 [a]diuuabit eam deus mane deluculo
7. [co]nturbatae sunt gentes et inclinata sunt regna
 [ded]erunt uocem suam mota est terra ÷
8. [dominu]s uirtutum nobise[um
 su]sc[e]ptor noster deus iacob . . . , + . . . ,
9. [uenite et uidete opera domini
 quae possuit prodigia super terram
10. auferens bella usque ad finem terrae
 arcum conteret et confringet arma f. 14v
 et] scuta [con]buret⁶ igni ⁶ Space due to a hole in the vellum.
11. [ua]cate et uidete quoniam ego sum dominus
 [e]xaltabor in gentibus et exaltabor in terra ÷
12. [domi]nus uirtutum nobiscum : susceptor noster deus iacob . . . ,

XLUI ad lecti]onem actus apostolorum uox apostolorum postquam

2. **m**nes gentes plaudite manibus **ascendit**
 iubi Late deo in uoce exsultationis ÷ ⁷ **christus ad patrem**
3. Quoniam dominus excelsus terribilis ⁷ This mark was inserted after
 the rubric was written.
 Rex magnus super omnem terram ÷
4. subiecit populos nobis ÷
- [et] gentes sub pedibus nostris
5. elegit nobis hereditatem suam
 speciem iacob quam dilexit . . . , + . . . , ÷
6. ascendit deus in iubilo dominus in uoce tubae ÷⁸ ⁸ b corr. from another let-
 ter (i, or r partly written?).
7. [psa]llite deo nostro psallite
 psallite regi nostro psallite ÷ ⁹ Dots over this word,
 marking it for deletion.
8. quoniam rex omnis terrae deus psallite
9. [p]sallite⁹ sapienter : ÷ regnabit deus super gentes
 [deu]s sedit super sedem sanctam suam ÷
10. [p]rincipes populorum cong[rega]ti sunt cum deo abra[am
 qu]oniam d[i]i fortes ter[rae uehementer] ele[uat]i su[nt]

**XLVII] psalmus [cantici filiis chore secunda sabbati legendus ad
 apocalipsim iohannis figura ecclesiae hyerusalem futurae**

2. Magnus dominus et laudabilis nimis

Ps. xlvii. 2-xlviii. 12.

- in ciuitate dei nost[r]i in monte *sancto* eius f. 15.
3. fundatu[r] exsultati[one] uniuersa[e] te]rrae
monte sion latera aquilonis ciuitas regis magni ÷
4. *deus* in domibus eius cognoscetur cum suscipiet eam ÷
5. quoniam ecce reges terrae congregati sunt
conuenerunt in unum . . . , + . . . , ÷
6. IPsi uidentes sic admirati sunt
conturbati sunt commoti sunt
7. Tremor adpraehendit eos ÷
ibi dolores ut parturientis
8. *spiritu* uehementi conteres naues tharsis ÷
9. sicut audiuimus sic uidimus
in ciuitate *domini* uirtutum in ciuitate dei nostri
deus fundauit eam in aeternum . . . , + . . . , ÷
10. suscipimus *deus* misericordiam tuam in medio templi tui ÷
11. Secundum nomen tuum *deus* sic et laus tua in fines terrae
iustitia plena est dextera tua ÷
12. laetetur mons sion
et exsultent filiae iudae¹ propter iudicia tua *domin*[e] ¹ *a* corr. from *i*.
13. [ci]rcumdate sion et complectemini eam
narrate in turribus eius ÷
14. [po]nit[e] cor[da] ue[stra] in ui[r]tu]te eius
[et] distribuite domos eius ut enarretis in progenie altera
15. quoniam hic est *deus deus* noster in aeternum
et in saeculum saeculi : ipse regit nos in saecula
- XLVIII in fine]m fili[is] cho[re psalmus hic diuites] f. 15v.
increpat qui ad inferna discendunt [cum mor]
tui fuerint uox ecclesiae super l[azaro et di]
2. **A** UDITE haec omnes gentes **uite purp[urato]**
auribus percipite omnes qui habitatis orbem
3. **A** quique terrigene et filii hominum
IN unum diues et pauper ÷
4. os meum loquetur sapientiam
et meditatio cordis mei prudentiam ÷
5. inclinabo in parabola aurem meam
aperiam in salterio propositionem meam ÷
6. Cur timebo in die malo
iniquitas calcanei mei circumdabit me . . . , + . . . , ÷
7. Qui confidunt in uirtute sua
et in multitu¹ diuitiarum suarum gloriantur ÷ ¹ *ne* (*sic*) added in margin.
8. frater non redemet redemet homo
non dabit deo placationem suam ÷
9. et proetium redemptionis animae suae
10. [et] laborauit in aeternum et uiuet adhuc in finem ÷
11. [no]n uidebit interitum : ÷ cum uiderit sapientes morientes
[si]mul insipiens et stultus peri[b]unt ÷
[et] relinquent al[ie]nis [diuitia]s [suas]
12. [et] sepulchr[a] eorum domus illorum in aeternum
tabernacula eorum in progenie et progenie
uocauerunt nomina sua in terris suis

Ps. xlviii. 13–xlix. 13.

13. et homo cum in honore esset non intellexit
comparatus est iumentis insipienti]bus [et]
similis factus est illis f. 16.
14. haec uia illorum scandalum¹ ipsis
et post ea in ore suo conplaccebunt ÷
¹ *lu* corr. from a letter
written in error, (a?)
15. sicut oues in infernum possiti sunt mors depasce[t eos]
et dominabuntur eorum iusti in matutino
et auxilium eorum ueterescet in inferno a gloria s[ua]
16. uerumtamen *deus* redemet animam meam
de manu inferiit cum aceperit me ÷
17. ne timueris cum diues factus fuerit homo
et cum multiplicata fuerit gloria domus eius ÷
18. quoniam cum interierit non sumet omnia
neque descendet cum eo ponet gloria eius ÷
19. quia anima eius in uia† ipsius benedicetur
confitebitur tibi cum benefeceris ei // ÷
20. introibit usque in progenies patrum suorum
usque in aeternum non uidebit lumen
21. homo in int honore cum esset ///// non intellexit
[co]mparatus est iumentis insipientibus
[et] similis factus est illis ÷ . . . , . . . , . . .
[XLVIII] in finem [psalmus filiiis chore] legendus
[a]d eua[n]gelium mathei de aduentu christi profeta
dicit et iudicio futuro increpatio iudeorum
Deus deorum *dominus* locutus est et uocauit terram
a solis ortu usque ad oc]ca[sum f. 16v.
2. ex si]on species decoris eius
3. *deus* manifeste ueniet *deus* noster et non silebit ÷
ignis in conspectu eius ardebit
et in circuitu eius tempestas ualida ÷
4. [ad]uocauit caelum desursum
[et t]erram discernere populum suum ÷
5. [con]gregate illi *sanctos* eius
qui ordinant testamentum eius supra sacrificia ÷
6. et adnuntiabunt caeli iustitiam eius
quoniam *deus* iudex est . . . , + . . . , *diabalmus* ÷
7. Audi populus meus et loquar tibi
israhel * et : testificabor tibi *deus deus* tuus ego sum ÷
8. non in sacrificiis tuis arguam² te
holocausta autem tua in conspectu meo sunt semper ÷
² *a sec.* corr. from *i.*
9. non accipiam de domu tua uitulos
neque de gregibus tuis hyrcos ÷
10. quoniam meae sunt omnes ferae siluarum
[iu]menta in montibus et boues ÷
11. [c]ognoui omnia uolatilia caeli
[et] pulchritudo agri mecum est ÷
12. [si] esuriero non dicam ti[bi]
meus est enim orbi]s [terrae et plenitudo eius]
13. numquid manducabo carnes taurorum
aut sanguinem hyrcorum potabo

Ps. xlix. 14-1. 13.

14. immola deo sacrificium laudis
et redde] alt[issimo vota tua] f. 17.
15. et inuoca me in die tribulationis
et eruam te et honorificabis me ÷ . . . , + . . . , diabsalmus
16. peccatori autem dixit deus
quare tu enarras iustitias meas
et adumes testamentum meum per os tuum ÷
17. tu uero odisti disciplinam
et proiecisti sermones meos retrorsum ÷
18. si uidebas furem currebas cum eo
et cum adulteris portionem tuam ponebas ÷ ¹ b corr. from another letter
(i, or partly written r ?).
19. os tuum abundauit malitia
et lingua tua concinnabat dolos ÷
20. sedens aduersus fratrem tuum loquebaris
et aduersus filium matris tuae ponebas scandalum : + :
21. Haec fecisti et tacui ÷
existi² iniquitatem quod ero tui similis ² masti added in margin.
arguam t/e et statuam contra faciem tuam ÷
22. intellegite nunc haec qui obliuiscemini dominum
[ne]quando rapiat et non sit qui eripiat ÷
23. [sacr]ificium laudis honorificauit me
[et illic] iter quod os[te]nd[am] ill[i sa]lutare dei . . . ,
[L in finem psalmus dauid quando uenit ad e]um n[a³
than profeta quando intrauit ad bersabe legen
dus ad lectionem actus apostolorum ubi paulus
elegitur uox pauli ad penitentiam]⁴ f. 17v.
3. **M**I Serere mei deus secundum [magnam]
misericordiam tuam
et secundum multitudinem miserationum tua
rum dele iniquitatem meam ÷ ³ The letters -um n- are un-
certain.
4. [a]mplius laua me ab iniquitate mea
et a peccato meo munda me ÷ ⁴ The available space would not
have sufficed for the rubric which
appears here in α (above, p. 269),
in which there are nearly 200
letters. Since the first line has
37 letters, an average of 53 or 54
each would be left for the remaining
three. Of the two rubrics com-
bined in α, the longer, printed
above, requires four lines; the
shorter might have been written in
three without undue crowding.
5. quoniam iniquitatem meam ego cognosco
et peccatum meum contra me est semper ÷
6. tibi soli peccaui et malum coram te feci
ut iustificeris in sermonibus tuis
et uincas cum iudicaris . . . , + . . . , ÷
7. ecce ÷ enim : in iniquitatibus conceptus sum
et in peccatis concepit me mater mea ÷
8. ecce enim ueritatem dilexisti
Incerta et occulta sapientiae tuae manifestasti mihi ÷
9. asspargis me hyssopo et mundabor
[lau]abis me et super niuem dealbabor ÷
10. [au]ditui meo dabis gaudium et laetitiam
[et] exultabunt ossa humiliata ÷
11. auerte faciem tuam a peccatis meis
et omnes iniquitates [m]eas [dele] . . . , + . . . ,
12. [co]r m[undum] crea in me deus
et spiritum rectum innoua in uisceribus meis
13. ne proicias me a facie tua et spiritum sanctum tuum ne auferas a me

Ps l. 14–lii. 6.

14. redde mihi laetitiam salutaris] tui
et spiritu principali confirma me ÷ f. 18.
15. docebo iniquos vias tuas
et impii ad te conuertentur ÷
16. libera me de sanguinibus deus deus salutis meae
exaltabit lingua mea iustitiam tuam ÷
17. Domine labia mea aperies
et os meum adnuntiabit laudem tuam . . . , + . . . , ÷
18. Quoniam uolu/isses sacrificium dedissem utique
holocaustis non delectaberis ÷
19. sacrificium deo spiritus contribulatus
Cor contritum et humiliatum deus non spernit ÷
20. benigne fac domine in ÷ bona : uoluntate tua sion
et aedificentur muri hyerusalem ÷
21. Tunc acceptabis sacrificium iustitiae
oblaciones et holocausta

¹ This page seems to have had 26 lines. Possibly, however, the scribe accidentally omitted the last line of the page.

[tu]ne inponent super altare tuum uitulos . . . , . . . ,
[LI] in fin[em intellect]us dauid cum uenit doec idumeus et adnun[ti]auit sau[li et di]xit uenit dauid in domo ahimelech uox christi [ad]

3. **QUID** G Loriatur in malitia qui potens iniquitatem
4. T[ota di]e iniustit[ia]m cogitauit lingua tua
[sicut nouacula acuta fecisti do]lum iud[am t]r[a
5. [dilexisti malitiam super benignita]tem d[itorem]
- [iniquitatem magis quam loqui aequitatem
6. dilexisti omnia uerba praecipitationis lingua dolosa
7. propterea deus destruet te in finem¹
euellet te et e]migrabit te de ta[bernaculo tuo] f. 18v.
et r]adicem tuam de terra uiuentium . . . , + . . . , diabsalmus
8. uidebunt iusti et timebunt et super eum ridebunt ÷²
9. ecce homo qui non possuit deum adiutorem suum ÷² et dic[ent] added in margin.
sed sperauit in multitudine diuitiarum suarum
et praeualuit in uanitate sua ÷³ n corr. from m.
⁴ saeculi ÷ added in margin (m. sec. ?).
10. ego autem sicut oliua fructifera in domu dei
sperauit in misericordia dei in aeternum et in³ saeculum⁴
11. Confitebor tibi in saeculum quia fecisti
et exspectabo nomen tuum quoniam bonum
in conspectu sanctorum tuorum . . . , . . . , . . . ,

LIi in fin[em] pro mele[c]h [intelligentia dauid] legendus ad euangel[ium] m[a]the[i] increpat [iu]d[eos] in[cr]e[dulos] operibus neg[ante]s deum

- D**XIT insipiens in corde suo non est deus ÷ / tibus
2. Corrupti sunt et abhominabiles facti sunt in iniquita
non est qui faciat bonum ÷
3. deus de caelo prospexit in filios hominum
ut uideat si est intellegens aut requirens deum ÷
4. omnes declinauerunt simul inutiles facti sunt
non est qui faciat bonum non est usque ad unum . . . , + [. . . ,]
5. Nonne scient om[nes qui o]perantur iniquitatem
[q]ui deuoran[t plebem meam ut cibum panis
6. deum no]n inu[ocauerunt]
illic trepidauerunt timore ubi non erat timor
quoniam deus dissipauit ossa eorum qui hominibus placent

Ps. lii. 6–liiii. 14.

- confusi sunt quoniam deus s]pr[aeuit eos f. 19.
7. qu]is dabit ex sion salutare israh[h]el
dum conuertit deus captiuitatem plebis suae
exsultabit iacob ÷ et : laetabitur israhel . . . ,
- LIII in finem [in carmini]bus intellectus dauid
2. [cum] uenissent [z]efei et dixissent ad saulem
nonne dauid absconsus est apud nos uox christi ad patrem
3. **E**^{eu} In nomine tuo saluum me¹ fac ¹ After *saluum* the scribe wrote *s*, and
*² et : in uirtute tua iudica me ÷ ² Written over an erasure. then corrected that letter into *m*.
4. **E** deus exaudi orationem meam
auribus percipe uerba oris mei ÷
5. quoniam alieni insurrexerunt aduersum me
et fortes quaesierunt animam meam / *diabalsmus*
* et : non propossuerunt deum ante conspectum suum : + :
6. ecce enim deus adiuuat me
7. dominus susceptor animae meae : ÷ auertit mala inimicis meis
in ueritate tua disperde illos ÷ :
8. uoluntarie sacrificabo tibi
confitebor nomini tuo domine quoniam bonum ÷
9. quoniam ex omni tribulatione eripuisti me
et super inimicos meos dispexit oculus tuus . . . ,
- [LIII in f]inem [intellectus in carminibus] dauid uox [christi]³
aduersus magnatos iudeorum et de iuda traditore ³ Traces of this
word remain.
2. **E**xaudi deus orationem meam
et ne dispexeris depraecationem meam
3. intende mihi e]t [exaudi me f. 19v.
cont]ristatus sum [in e]xercitatione mea
4. et] conturbatus sum a uoce inimici
et a tribulatione peccatoris ÷
quoniam declinauerunt in me iniquitatem
et in ira molesti erant mihi ÷
5. Cor meum conturbatum est in me
et formido mortis cecidit super me ÷
6. timor et tremor uenit super me
et contextit me tenebra ÷
7. et dixi quis dabit mihi pinnas sicut columbae
et uolabo et requiescam ÷
8. ecce elongaui fugiens : et mansi in solitudinem *diabalsmus* ÷
9. exspectabam eum qui saluum me fecit
[. . .]lanimate¹ spiritus et tempestate . . . , + . . . , ÷ ¹ There are ap-
parently three letters
before *ll*, of which
the last seems to be *a*.
The *a* following *ll*
appears to be a cor-
rection from some
other letter.
10. praecipita domine diuide linguas eorum / tem†
quoniam uidi iniquitatem et contradictionem in ciuita
11. [di]e et nocte circumdabit eam super muros eius
12. iniquitas et labor in medio eius et iniustitia
[et] non defecit de plateis eius usura et dolus
13. [qu]oniam si inimicus maledixisset mihi
sustenuisse[m utique] / fuiss[et]
[et si] is qui ode[rat me saper me magna locutus]
[abscondissem me forsitan ab eo
14. tu uero homo unanims dux meus et notus meus

Ps. liv. 15–lv. 11.

15. qui simul mecum dulces ca]pie[bas cibos] f. 20.
in domu dei ambulauimus cum consensu . . . , [+ . . . ,]
16. ueniat mors super illos
discendant in infernum uiuentes ÷
quoniam nequitiae in habitaculis eorum in medio eor[um]
17. ego autem ad deum clamaui et dominus saluauit me ÷
18. uespere et mane et meridie narrabo et adnuntiabo
et exaudiet uocem meam ÷
19. Redemet in pace animam meam
ab his qui adpropinquant mihi
quoniam inter multos erant mecum ÷
20. exaudiet deus et humiliabit eos qui est ante saecula . . . , + . . . , dia[bsalmus]
non enim est illis commotatio et non timuerunt deum
21. extendit manum suam in retribuendo ÷
contaminauerunt testamentum eius
22. diuisi sunt ab ira uultus eius
et adpropinquauit cor illius ÷ / cula
molliti sunt sermones eius super oleum et ipsi sunt ia
23. iacta super dominum curam tuam et ipse te enutriet
non dabit in aeternum fluctuationem iusto ÷
24. [t]u uero deus deduces eos in puteum interitus ÷
[uir]i sanguinum et doli non dimediabunt dies suos
[ego a]utem [s]p[erabo in te domine
LU in finem pro populo qui a sanctis longe factus est dauid in
tituli inscriptione cum tenuerunt eum allophili in get uox christi]
2. **M**isere[re mei deus quoniam conculcauit] f. 20v.
me homo ad patrem me
Tota die impugnans tribulauit
3. [con]culcauerunt me inimici mei tota die
quoniam multi bellantes aduersus me ÷
4. ab altitudine diei timebo : ego uero in te spero
5. in deo laudabo sermones meos ÷
IN deo speraui non timebo quid faciat mihi homo : + : ÷
6. Tota die uerba mea ex/saerabantur
aduersum me omnia consilia eorum in malum ÷
7. [in]habitabunt et abscondent
[ip]si calcaneum meum obseruabunt ÷
sicut sustenerunt animam meam
8. pro nihilo saluos facies illos
in ira populos confringes . . . , + . . . , ÷
9. Deus uitam meam nuntiaui tibi
possuisti lacrimas meas in conspectu tuo ÷
sicut in promissione tua
10. tunc conuertentur inimici mei retrorsum ÷
[i]n quacumque die inuocauero te
ecce cognoui quoniam deus meus es tu ÷
11. [i]n deo laudabo uerbum
[in domi]no laud[abo sermonem
in deo speraui
non timebo quid faciat mihi homo

Ps. lv. 12–lvii. 9.

12. in me sunt *deus* uota tua quae reddam laudationes tibi f. 21.
 13. quoniam eripuisti a[nimam] de [morte]
 et pedes meos de lapsu
 ut placeam coram deo in lumine uiuentium . . . ,
LUI in finem psalmus dauid cum fugisset a facie saulis in spe
l[u]nc[a] uox pauli post resurrectionem ∴ ∴
2. **M**iserere mei *deus* misereri mei
 quoniam in te confidit anima mea
 et in umbra alarum tuarum sper[a]
 . . . , . . . , ∴ . . . , ∴ . . . , ∴ . . . bo donec transeat iniquitas ÷
3. **CLAmabo ad deum altissimum: deum qui benefecit mihi ÷**
 4. missit de caelo et liberauit me
 dedit in obprobrium conculcantes¹ me *diabalsalmus* ÷
 missit *deus* misericordiam suam et ueritatem suam . . . , + . . . ,
 5. Eripuit animam meam de medio catulorum leonum
 dormiui contur batus ÷
 filii hominum dentes eorum arma et sagittae ¹ *ul* apparently written
 over an erasure.
 et lingua eorum gladius acutus ÷
6. exultare super cae/los *deus*
 et in omnem terram gloria tua . . . , + . . . , ² That the space after *i*
 contains an erasure is un-
 certain.
7. laqueum parauerunt pedibus meis
 et incurauerunt ani/mam² meam ÷ / eam di[abalsalmus]
 [fod]erunt ante faciem meam foueam et incederunt [in]
 8. [paratum cor meum *deus* paratu]m cor meum
 [cantabo et psalmum dicam
 9. exsurge gloria mea exsurge psalterium et cythara f. 21v.
 exurgam de]lu[culo]³
10. confiteb]or tibi in populis *domine* ³ The letters *lu* are doubtful.
 [et] p[sa]lmum dicam tibi in gentibus ÷ / tua
11. quoniam magnificata est usque ad caelos misericordia
 et usque ad nubes ueritas tua ÷
12. [ex]altare super caelos *deus*
 [et] super omnem terram gloria tua . . . , . . . ,
[L]UII in finem ne disperdas dauid in ^{ti}tuli inscripti
one profeta denioribus iudaeorum dicit
2. **SI** Uere utique iustitiam loquimini⁴ ⁴ Margin, *i* for *e*.
 recta iudicate filii hominum ÷
3. etenim in corde iniquitates operamini in terra
 iniustitiam⁵ manus uestrae concinnant ÷
4. alienati sunt peccatores a uulua ⁵ The third *i* is apparently
 written over an erasure.
 errauerunt ab utero locuti sunt falsa ÷
5. furor illis secundum similitudinem serpentis
 sicut aspidis surde et obturantis aures suas ÷
6. quae non exaudiuit uocem incantantium
 et uenefici incantantis sapienter ÷ . . . , + . . . [.]
7. *deus* conteret dentes eorum in ore ipsorum
 [mo]las leonum confringet *dominus* ÷
8. [ad n]ihilum deuenient [t]amquam aqua decur[rens
 inten]dit arcum su[am] donec infirmentur
9. sicut caera quae fluit auferentur

Ps. lvii. 9–lviii. 18.

supercidit ignis et non uiderunt solem]

f. 22.

10. priusq[uam intelle]gent spinae uest[r]ae ram[um]
sicut uiuentes sicut in ira absorbet uos . . . , † . . . ,]
11. Laetabitur iustus cum uiderit uindictam
manus suas lauabit in sanguine peccatoris ÷
12. et dicet homo si utique est fructus iusto
utique est deus iudicans ÷ eos: in terra . . . ,

LUIII in finem ne disperdas dauid in tituli inscriptione
quando missit saul et custodiuit domum eius
ut interficeret eum uox christi de iudeis ad patrem

2. **E** Ripe me de inimicis meis deus
et ab insurgentibus in me libera me ÷
3. eripe me de operantibus iniquitatem
et de uiris sanguinum salua m/e ÷
4. quia ecce ceperunt animam meam
inruerunt in me fortes ÷
5. neque iniquitas mea neque peccatum meum
domine sine iniquitate cucurri et direxi ÷
6. [* ex]surge: in occursum meum et uide
[et] tu domine deus uirtutum deus israhel . . . , + . . . , ÷
intende ad uisitandas omnes gentes / diabsalmus
[non] miseriaris omnibus qui operantur iniquitat[em]
7. conuertentur ad uesperam et famem
[patientur ut canes et circuibunt ciuitatem]
8. ecce loquentur in ore suo et gladius in labiis eorum
quoniam quis audiuit
9. et tu domine] diridebis eos
[ad nihil]um deduces omnes gentes
10. [forti]tudinem meam ad te custodiam
[qui]a deus susceptor meus ÷
11. [deus m]eus uoluntas eius praeueniet me . . . , + . . . ,
12. [d]eus ostendit mihi super inimicos meos
ne occidas¹ nequando obliuiscantur populi mei ÷ ¹ eos added in margin.
disperge illos in uirtute tua
[e]t depone eos protector meus domine ÷
13. [de]lictum oris eorum sermonem labiorum ipsorum
[et] conpraehendantur in superbia sua ÷
[et] de exsaecratione et mendacio
14. adnantiabuntur in consummatione ÷
[in] ira consummationis et non erunt
et scient quia deus dominatur iacob finium terrae
15. conuertentur ad uesperam† et famem
patientur ut canes diabsalmus
et circuibunt ciuitatem ÷
16. ipsi dispergentur ad manducan/dum
si uero non fuerint saturati et murmurabu[nt]
17. [ego] autem cantabo f[or]ti[tu]dinem tuam
[et exsu]ltaabo mane m[isericordi]am tuam
[quia fact]us [es susceptor meus]
18. et refugium meum in die tribulationis meae adiutor meus

Ps. lviii. 18-lxi. 2.

- tibi psallam quia *deus* susceptor meus es f. 23.
deus meus misericor]dia mea [. . .],
- LVIII in finem pr[o hi]s qui commotabuntur testimonium
2. [i]nscriptio[n]e dauid in doctrina sua cum succendit¹ mesopo
 [ta]miam syriae et syriam sabba et conuertit ioab et percus
 [si]t uallem salinarum duodecim milia uox apostolorum quan
3. **D**eus repulisti nos et destruxisti nos do *christus* pas
 Iratus es et misertus es nobis ÷ sus est
4. Commouisti terram et turbasti eam
 Sana contritiones eius quia commota est ÷
5. ostendisti populo tuo dura¹ Sic, ut uid.
 potasti nos uino conpunctionis ÷
6. dedisti metuentibus te significationem
 ut fugiant a facie arcus diabsalmus
 ut liberentur dilecti tui ÷
7. saluum fac dextera tua et exaudi me , + [. . . .]
8. *Deus* locutus est in *sancto* suo
 laelabor et portibor† sicima
 et conuallem tabernaculorum metibor
9. meus est galaad et meus est manases
 [et] effraim fortitudo capitis mei ÷
10. [i]uda rex meus moab aula† spei meae
 in idumeam ex[tenda]m calciamentum meum
 [mih]i al[ienigenae] subditi su]nt [. . . .] +
11. [quis] deducet me in ciuitatem munitam
 quis deducet me usque in idumeam f. 23v.
12. nonne tu *deus*] qui r[epulisti] nos
 et] non egredieris *deus* in uirtutibus tuis tuis†²² The letters *tu* are uncertain.
13. da nobis auxilium de tribulatione ÷
14. et uana salus hominis : ÷ in deo faciemus uirtutem
 [e]t ipse ad nihilum deducet tribulantes nos ,
 [L]X in finem psalmus dauid uox pauli apostoli de *christo* dicit
2. **E**X Audi *deus* depraecationem meam
 I Ntende orationi meae ÷
3. A finibus terrae ad te clamaui
 Dum anxietur cor meum in petra exalta/sti me ÷
4. deduxisti me quia factus es spes mea
 turris fortitudinis a facie inimici ÷
5. inhabitabo in tabenaculo† tuo in saecula
 protegar in uelamento alarum tuarum , + , diabsalmus
6. [q]uoniam tu *deus* meus exaudisti³ orationem⁴ meam
 [ded]isti hereditatem timentibus nomen tuum ÷
7. dies super dies regis adicies annos eius
 usque in diem generationis et generationis ÷³ *i sec.* written over an
 erasure (?).
8. permanet in aeternum in conspectu dei
 misericordiam et ueritatem quis requiret eius⁴ This word is written over
 an erasure.
9. [si]c psalmum dicam nomini tuo in saeculum saeculi
 [ut r]eddiam uota mea d[e die] in d[iem] ,
- LXI in fin]em p[ro] idithun psalmus dauid uox ecclesiae
2. Nonne deo subiecta erit anima mea

Ps. lxi. 2-lxii. 12.

- ab ipso enim salutare meum] f. 24.
3. N[am et ipse *deus* meus et sal]utaris meus
susceptor meus non mouebor amplius ÷
4. Quousque inruitis in hominem
INterficitis uniuersos
tamquam parieti inclinato et macheriae impulsae
5. uerumtamen proetium meum cogitauerunt repellere
Cucurri in siti / *diabsalmus*
ORe suo benedicebant et corde suo maledicebant : + [:]
6. uerumtamen deo subiecta esto anima mea
quoniam ab ipso patientia mea ÷
7. Quia ipse *deus* meus et saluator meus
Adiutor meus non emigrabo ÷
8. in deo salutare meum et gloria mea
deus auxilii mei et spes mea in deo est ÷
9. sperate in eum omnis congregatio populi
effundite coram illo corda uestra
deus adiutor noster in aeternum . . . , + . . . ,
10. Uerumtamen / uani filii hominum
mendaces filii hominum in stateris
[ut] decipiant ipsi de uanitate in idipsum ÷
11. [no]lite sperare in iniquitate
[et ra]pinas nolite concup[i]scere
[diuitiae si adfluant nolite cor adpone]re ÷
12. [semel locutus est *deus* duo haec audiui
13. quia potestas dei est : et tibi *domine* misericordia f. 24v.
quia tu r]ed[des] un[i]cuique iux[ta] opera sua

LXII ps]almus dauid cu[m] e]sset in [de]ses[e]rto† idumee uox

2. **D**eus Deus meus ad te de luce uigilo ecclesiae de christo
sitiuit in te anima mea ÷
[qua]m multipliciter tibi caro mea ÷
3. in terra deserta et inuia et inaquosa
[si]c in *sancto* adparui tibi
[u]t uiderem uirtutem tuam et gloriam tuam ÷
4. [q]uoniam melior est misericordia tua super uitas
[lab]ia mea laudabunt te ÷
5. [s]ic benedicam te in uita mea
[et i]n nomine tuo leuabo manus¹ . . . , + . . . , ÷
6. [sicu]t adipe et in pinguine† repleatur anima mea
[et la]bia† exsultationis laudabit os meum ÷
7. [si m]emor fui tui supra stratum meum
[in m]atutinis meditabor in te
8. quia fuisti adiutor meus ÷
et i[n] uelamento alarum tuarum exsultabo
9. adhaesit anima mea post te
me suscipit dextera tua . . . , + . . . ,
10. Ipsi uero in uanum quaesierunt animam me[am]
introibunt in imfer[io]ra terrae
11. [tra]den[tur] in [manus gladii partes uulpium erunt
12. rex uero laetabitur in deo

¹The letters *nu* are expuncted, and *e* is written above *a*, the word being thus altered to *mas* (*sic*).

Ps. lxii. 12–lxiv. 11.

laudabuntur omnes qui iurant in eo
 quia obstructum est o]s loqu[e]nti[um iniqua]

f. 25.

LXIII in finem psalmus dauid uox pauli de passione ch[risti]

2. **EX**audi *deus* orationem meam cum depræcor
 A timore inimici eripe animam meam ÷
3. protexisti me a conuentu malignantium
 A multitudine operantium iniquitatem ÷
4. quia exacerunt ut gladium linguas suas
 Intenderunt arcum rem amaram
5. ut sagittent in occultis immaculatum ÷
6. subito sagittabunt eum et non timebunt
 firmauerunt sibi sermonem nequam ÷
 narrauerunt ut absconderent laqueos
 dixerunt quis uide //// bit eos ÷ . . . , + . . . ,
7. Scrutati sunt iniquitates
 defecerunt scrutantes scrutinio ÷
8. Accedet homo et cor altum exaltabitur *deus* ÷
 sagittæ paruulorum factæ sunt plagæ eorum
9. et infirmatæ sunt contra eos linguæ eorum
 conturbati sunt omnes qui uidebant¹ eos
10. [et] timuit omnis homo :² et adnuntiauerunt opera dei
 [et] facta eius intellexerunt ÷
11. [laet]abitur iustus in *domino* et sperauit in eo
 [et laudabuntur omnes re]cti corde . . . ,

¹ Apparently *ð* is corrected
 from another letter.

|LXIII in finem psalmus dauid canticum hieremias et
 aggei de uerbo peregrinationis quando incipiebant
 proficisci uox ecc]le[sias ante baptismum]

f. 25v.

2. **TE** Decet ymnus *deus* in sion [paschali]sm[a]
 ET tibi reddetur uotum ÷ in hierusalem : ÷
3. [e]xaudi orationem ad te omnis caro ueniet ÷ **tum**
4. [ue]rba² iniquorum³ praeualuerunt super nos
 et impietatibus nostris tu propitiaberis ÷
5. beatus quem elegisti et adsumpsisti
 INhabitabit in atriis tuis ÷
 replebimur in bonis domus tuæ
6. [sanc]tum est templum tuum mirabile in aequitate . . . , + . . . ,
 Exaudi nos *deus* salutaris noster ÷
 [s]pes omnium finium terræ et in mari longe ÷ / tia
7. praeprans montes in uirtute tua áccinctus⁴ poten
8. qui conturbas profundum maris
 [so]num flu/ctuum eius ÷
9. [t]urbabuntur gentes et timebunt
 qui inhabitant terminos ter/re/⁵ a signis tuis
 exitus matutini et uespere delectabis ÷
10. uisitasti terram et inebriasti eam
 multiplicasti locupletare eam . . . , + . . . ,
 flumen dei repletum est aquis ÷ / tio eius
 parasti cibum⁶ illorum quoniam ita est prae[ca]
11. [riu]os eius inebria [multiplica genimina eius
 in stil]lici[diis eius laetabitur germinans]

² *a* corr. from *u* (?).

³ *i pr.* written over erasure.

⁴ *á* written in a vacant
 space, and *c pr.* over an
 erasure.

⁵ After *r pr.* the letter *m*
 is erased.

⁶ *i* written over erasure.

Ps. lxiiv. 12—lxvi. 1.

12. benedices coronae anni benignitatis tuae
et cam]pi tu[i re]plebuntur uber[tate] f. 26.
13. pinguescent speciosa deserti
et exultatione colles accingentur ÷
14. induti sunt arietes ouium
et ualles abundabunt frumento
clamabunt etenim ymnum dicent

LXU psalmus dauid uox apostolorum ad populum

- UBilate deo omnis terra
2. PSalmum dicite nomini eius
date gloriam laudi eius ÷
3. dicite deo quam terribilia sunt opera tua domin[e]
IN multitudine uirtutis tuae
mentientur tibi inimici tui ÷
4. Omnis terra adorent te et psallant tibi
psalmum dicant nomini tuo ÷ diabsalmus
5. uenite et u[idete] opera dei
terribilis in consiliis super filios hominum . . . [+ . . .]
6. Qui conuertit mare in aridam / in ipso
in flumine pertransibunt pede ibi laetabimu[r]
7. qui dominatur in uirtute sua ✱ in aeternum :
[o]culi eius super gentes respiciunt
[qui e]xasperant non exaltentur in semetipsi[s]
8. [bene]dic[ite] gentes deum nos]trum
[et auditam facite uocem laudis e]ius
9. [qui possuit animam meam ad uitam
et non dedit] in commotionem pe[des meos] f. 26v.
10. quo]niam probasti nos deus
[ign]e nos examinasti sicut examinatur argentum , + ,
11. [ind]uxisti nos in laqueum
[po]ssuisti tribulationes in dorso nostro
12. [inpo]¹ ssuisti homines super capita nostra ÷ ¹ hole in vellum.
[t]ransiuimus per ignem et aquam
[et] eduxisti nos in refrigerium ÷
13. [int]roibo in domum tuam in holocaustis
[r]eddami tibi uota mea
14. quae distinxerunt labia mea
[et] locutum est os meum in tribulatione mea ÷
15. [ho]locausta medullata offeram tibi
Cum incensu arietum
[of]feram tibi boues cum hyrcis . . . , + . . . , diabsalmus ÷
16. [u]enite audite et narrabo omnes qui timitis deum
[qua]nta fecit animae meae ÷
17. [ad] ipsum ore meo clamaui : et exaltaui sub lingua mea
18. [ini]quitatem si aspexi in corde meo non exaudiet deus
19. [pr]opterea exaudiuit dominus
[ad]tendit² uoci deprecationis meae ² Apparently there is not room
for et adtendit.
20. [bene]dictus deus qui non amouit orationem me[am]
et miser]icor[d]ia[m] suam a me

LXUI in finem in ymnis psalmus dauid profeta monet

Ps. lxxvi. 1–lxxvii. 15.

- credentes uox apostolica]
2. **D**^{eu}**S** Miser[ea]tur nostri et bene[dicat nobis]
INluminet uultum suum super n[os]
et misereatur nostri : dia[b]salmus
3. ut cognoscamus in terra uiam tuam
in omnibus gentibus salutare tuum ÷
4. Confiteantur tibi populi deus
Confiteantur tibi populi omnes ÷
5. laetentur et exsultent gentes
Quoniam iudicas populos in aequitate
et gentes in terra direges . . . , + . . . , diabsalmus
6. Confiteantur tibi populi deus
Confiteantur tibi populi omnes
7. terra dedit fructum suum ÷
8. benedicat nos deus deus noster et benedicat deus
et metuant eum omnes fines terrae

f. 27.

LXCII [in finem] dauid psalmus canticum [pr]of[eta]
adu[en]tum christi adnun[tiat]

2. **EX** Surgat deus et dissipentur inimic[i eius]
ET fugiant qui oderunt eum a facie e[ius]
3. sicut defecit fumus deficiant
sicut fluit caera a facie ignis / tur
- 4 [sic p]ereant peccatores a facie dei et iusti aepu[len]
[et exsultent] i[n co]nsp[ectu dei et dele]ctentur in laet[itia]
5. cantate deo psalmum dicite nomini eius
iter facite ei qui ascendit super occasum dominus nomen illi
exs]ultate in conspectu eius
[÷ tur]babuntur a facie eius :
6. [p]atres orfanorum et iudices uiduarum ÷
[deus] in loco sancto suo
7. [d]eus inhabitare facit unius moris in domu . . . , + . . . ,
qui educet uinctos in fortitudine / chris
[si]militer eos qui ex]asperant qui habitant in saepul ÷
8. [d]eus cum egredieris in conspectu populi tui
[cu]m pertransieris in deserto diabsalmus ÷
9. [t]erra mota est etenim caeli distillauerunt
[a] facie dei sinai // a facie dei israhel ÷
10. [pl]uuiam uoluntariam segregabis deus
hereditati tuae et infirmata est
[t]u uero perfecisti eam ÷
11. [a]nimalia tua habitabunt in ea
[p]arasti in dulcidine tua pauperi deus ÷
12. [dominus] dabit uerbum euangelizantibus uirtute multa
13. [re]x uirtutum† dilecti * dilecti :
et speciei domus diuidere spolia . . . , +
14. si dormiatis inter medios cleros
pinnae columbae deargentatae
[et] posteriora dorsi eius in pallore¹ auri
15. [dum] discerni[t caelestis reges sup]e[r eam
niue dealbabuntur in selmon

f. 27v.

¹ p cor. from l (?)

Ps. lxxvii. 16–lxxviii. 3.

16. mo]ns¹ [dei mons pinguis f. 28.
mo]ns coag[ulatus mo]ns pinguis :
17. ut quid suspicamini montes coagulatos ÷ ¹ The letters *ns* are doubtful.
mons in quo beneplacitum est deo habitare in eo
et enim *dominus* habitabit in finem ÷
18. Currus dei decim milibus multiplex
milia laetantium *dominus* in eis² in sina in *sancto* . . . , + . . . ,
19. AScendisti in altum cepisti captiuitatem ² i corr. from *o* partly formed.
Accepisti dona in hominibus
et enim non credentes inhabitare *dominum* ÷
20. *deus* benedictus *dominus* die cotidie / *diabsalmus*
prosperum iter faciet nobis : *deus* salutarium nostrarum
21. *deus* noster / *deus* saluos faciendi : et *domini domini* exitus mortis
22. uerumtamen *deus* confringet capita inimicorum suorum
uerticem capilli perambulantium in dilectis suis ÷
23. d ixit *dominus* ex ba/san conuertam
conuertam in profundum maris ÷
24. ut intinguatur pes tuus in sanguine
lingua canum tuorum ex inimicis ab ipso . . . , + [. . . ,]
25. uiderunt ingresus tui† *deus*
ingresus dei mei regis³ qui est in *sancto* ÷ ³ *me[i]* added in margin.
26. praeuenerunt principes coiuncti† psallen[tibus
in]medio iuuenularum tympanis trear[um†
27. in ecclesiis benedicite deo *domino*] de fontibus [israhel
28. ibi beniamin adolescentulus in mentis excessu f. 28v.
principes iuda duces eorum
principes zabu]lon princ[ipes n]eptali †
29. [man]da *deus* uirtutem tuam ⁴
[co]nfirma *deus* hoc quod operatus⁵ es nobis ÷ ⁴ There appear to be some letters in these spaces.
30. a templo tuo in hyerusalem ⁴ ⁵ *s* written over an erasure.
[ti]bi adferent reges munera . . . , + . . . , ÷
31. INCrepa feras arundinis
congregatio taurorum in uaccis populorum
ut excludant eos qui probati sunt argento ÷
[d]issipa gentes quae bella uolunt
32. uenient legati ex aegypto
aethyopia praeueniet manus eius deo ÷
33. regna terrae cantate deo psallite *domino* *diabsalmus* ÷ / tem
34. [ps]allite deo qui ascendit super caelum caeli ad orien
[e]cce dabit uoci suae uocem uirtutis
35. date gloriam deo super israhel magnificentia eius
[et u]irtus eius in nubibus ÷
36. [mi]rabilis *deus* in *sanctis* suis
[d]eus israhel ipse dabit uirtutem
[et] fortitudinem plebi suae benedictus *deus*

[LX]UIII in fi[ne]m pro his qu[ae] commotabu[ntur] psalmus dauid [legendus]
a[d lection]em [ion]ae profet[ae et ad] euangeli[um i]o[hannis]
uox christi cum pateretur

2. S ALuum me fac *deus* quoniam intrauerunt [aquae]

usque a[d animam m]eam

3. S [infixus sum in limo profundi : et non est substantias

⁶ This page has 26 lines, lines 17–21 being written so close to each other as to occupy the space ordinarily allotted to four lines.

Ps. lxxviii. 3-23.

- ueni in altitudinem maris et tempestas demersit me] f. 29.
 4. laboraui cl[a]mans raucae factae sun[t fauces meae]
 defecerunt oculi mei dum spero in deum meum
 5. multiplicati sunt super capillos capitis mei
 qui oderunt me gratis ÷ / iniuste
 Confortati sunt qui persaecuti sunt me inimici mei
 quae non rapui¹ tunc exsoluebam ÷
 6. deus tu scis insipientiam meam
 et delicta mea a te non sunt abscondita ÷ / tutum
 7. non erubescant in^s me^s qui exspectant te domine domine iur
 non confundantur super me
 qui quaerunt te deus israhel . . . , + . . . ,
 8. Quoniam² propter te sustenui³ obprobrium
 operui⁴ confusio faciem meam ÷
 9. extraneus factus sum fratribus meis
 et peregrinus⁵ filiis matris meae ÷
 10. quoniam zelus domus tuae comedit me
 ET obprobria exprobrantium tibi
 ciciid/erunt super me ÷
 11. ET operui in ieiunio animam meam
 et factum est in obprobriam† mihi
 12. [et] possui uestimentum meum cylicium
 [et f]actus sum illis in parabolam ÷ / [ta]
 13. [aduer]sum me exerce[ba]ntur qui sedeba[nt in por]
 [et in me psallebant qui bibebant uinum
 14. ego uero orationem meam ad te domine
 tempus] beneplaciti deus
 [in] multitudine misericordiae tuae
 [e]xaudi me in uirtute saltis† tuae ÷
 15. [e]ripe me de luto ut non infigar
 [l]iberer ab his qui oderunt me
 et de profundis aquarum ÷
 16. non me demergat tempestas aquae
 neque absorbeat me profundum
 neque urgeat super me puteus os suum ÷
 17. exaudi me domine quoniam benigna est misericordia tua
 [s]ecundum multitudinem miserationum tuarum respice me , + ,
 18. et ne auertas faciem tuam a puero tuo
 [q]uoniam tribulor uelociter exaudi me ÷
 19. [in]tende animae meae et libera eam
 [p]ropter inimi//cos meos eripe me ÷ / tiam meam
 20. [tu s]cis improperium meum et confusionem et reueren ÷
 21. [in] conspectu tuo su/nt omnes qui tribulant me
 [i]mproperium exspectauit cor meum et miseriam ÷
 [et s]ustenui qui simul contristaretur et non fuit
 [et] qui consularetur et non inueni ÷
 22. [et d]ederunt in escam meam fel
 [et in sit]i mea potauerunt me aceto ÷
 23. [fiat mensa e]orum co[ram ipsis in] laque[um
 et in retributiones et in scandalum

¹ *n̄* *ra* corr., *m. pr.*, from *ra*; the word *non* being also written in full in the margin. That this marginal correction was made before the alteration of the text is shown by the fact that the index mark (") referring to it is visible under *n̄*.

² The letter *m* has been retouched.

³ The letter *n* has been retouched.

⁴ The erased letter is *t*.

⁵ The letters *in* have been retouched.

f. 29v.

Ps. lxxviii. 24–lxx. 4.

24. obscurentur oculi eorum ne uideant] f. 30.
 et dorsu[m eorum semp]er incurua
25. effunde super eos iram tuam
 et furor irae tuae conpraehendat eos ÷
26. fiat habitatio eorum deserta
 et in tabernaculis eorum non sit qui inhabitet ÷
27. Quoniam¹ tu percusisti persaecuti sunt ¹ quem added in margin.
 et super dolorem uulnerum meorum addiderunt ÷
28. adpone iniquitatem super iniquitatem eorum
 et non intrent in tua iustitia
29. deantur† de libro uiuentium
 et cum iustis non scribantur . . . , + . . . ,
30. EGgo sum pauper et dolens salus tua deus suscepit me ÷
31. laudabo nomen dei cum cantico
 magnificabo eum in laude ÷
32. et placebit deo super uitulum nouellum
 cornua producentem et ungulas ÷
33. uideant pauperes et laetentur
 quaerite deum et uiuet anima //uestra ÷
34. quoniam exaudiuit pauperes dominus
 et uinctos suos non dispexit ÷
35. laudent illum caeli et terra / faciet sion
36. mare et omnia reptilia in eis :† quoniam deus salua[m]
 [et a]edificabuntur c[ui]itates iudeae
 [et inhabitabunt ibi et hereditate] ad[quirent eam]
37. et semen seruorum eius possidebit eam f. 30v.
 et qui dile]gunt nomen eius habi[t]abunt in ea . ,

[LX]UIII in finem psalmus dauid in rememoratione quod

∴ ∴ saluum fecit eum dominus uox ecclesiae ad dominum

2. **D**^{eu}**S** IN adiutorium meum intende
 * domine : ad adiuuandum me festina ÷
3. confundantur et reueantur† qui quaerunt
 animam meam ÷ / uolunt mihi mala ÷
4. auertantur retrorsum et erubescant qui
 auertantur statim erubescentes
 qui dicunt mihi euge euge . . . , + . . . ,
5. EXsultent et laetentur in te omnes qui quaerunt te
 [e]t dicant semper magnificetur deus
 [q]ui diligunt salutare tuum ÷
6. [e]go uero egenus et pauper deus adiua me ÷
 adiutor meus et liberator meus es tu domine ne moreris . . . ,

LXX in finem psalmus filiorum ionadab priorum

∴ ∴ captiuum† uox christi ad patrem

2. **I****N** Te domine speraui non confundar in aeternum
 IN tna iustitia libera me et eripe me ÷
 INclina ad me aurem tuam et salua me ÷
3. esto mihi in deum protectorem
 [et in] locum munitum ut saluum me facias ÷
 [quoniam fir]mamentum me[um et] refugium me[um es tu]
4. deus meus eripe me de manu peccatoris

Ps. lxx. 4-lxxi. 2.

- et de manu contra legem agentis et iniqui] f. 31.
5. quoniam tu es patientia mea *domine*
domine spes mea a iuuentute mea ÷
6. in te confirmatus sum ex utero
 de uentre matris meae tu es protector meus ÷
 in te decantatio mea semper / fortis . . . , + [. . . ,]
7. tamquam prodigium factus sum multis et tu *domine* adiutor
8. Repleatur os meum laude * tua :
 ut cantem gloriam tuam
 tota die magnitudinem tuam ÷
9. non proicias me in tempore senectutis
 cum deficiet / uirtus mea ne direlinquas¹ me ÷ ¹ *i pr.* written over an erasure.
² Here a hole in the vellum extends down three lines of the text.
10. quia dixerunt inimici mei mihi
 et qui ² custodiebant animam meam
11. consilium fecerunt in unum :[†] dicentes *deus* direliquit eum
 persae quemini et conpraehendite eum
12. quia non est qui eripiat :[†] *deus* ne elongeris a me
deus meus in adiutorium meum respice . . . , + . . . ,
13. Confundantur et deficiant detrahentes
 animae meae / mala mihi
 operiantur confusione et pudore qui quaerunt[t]
14. [e]go autem semper sperabo et adiciam super omnem laudem t[uam]
15. os meum adnuntiabit iustitiam tuam
 [to]t[a] die salutem [tu]m ÷
 [quoniam non cognoui litteraturam
16. introibo in potentias *domini* f 31v.
domine] memorabor iustitiae tuae sol[i]us
17. [*deus*] docuisti me ex iuuentute mea ÷
 et usque nunc pronuntiabo mirabilia tua
18. et usque in senectam et senium
 [*d*]e*us* ne direlinquas me :[†] donec adnuntiem bracchium tuum
 [g]enerationi omni quae uentura est ÷
19. potentiam tuam et iustitiam tuam *deus* usque in altissima + ;
 Quae fecisti magnalia *deus* quis silist tibi ÷ / las
20. quanta/s³ ostendisti mihi tribulationes⁴ multas et ma
 et conuersus uiuificasti me ³ The erased letter is s.
⁴ *t pr.* corr. from *l.*
- et de abyssis terrae iterum reduxisti me ÷
21. [m]ultiplicasti magnificentiam tuam
 [et] conuersus consulatus es me ÷ / tem ⁵ tuam *deus* ⁵ Hole in vellum (see above note ²).
22. [n]am et ego confitebor tibi in uasis psalmi
 [ps]allam tibi in cythara *sanctus* israhel ÷ *uerita*
23. [ex]sultabunt labia mea cum cantauero tibi
 [et] anima mea quam redemisti ÷
24. [se]d et lingua mea tota die meditabitur iustitiam tuam
 [cu]m confusi et reueriti fuerint qui quaerunt mala mihi ;
- [LXX]I psalmus in salamone uox ecclesiae [d]e christ[o ad dominum]
2. **D**^{eu}**S** iudicium tuum regi da
 et iustitiam tuam filio regis ÷
 [iudicare p]opulum tuum [in iu]stitia
 [et pauperes tuos in iudicio

Ps. lxxi. 3–lxxii. 7.

3. suscipiant montes pacem populo et c]olles [iustitiam] f. 32.
 4. iudicabit pauperes populi
 et saluos faciet filios pauperum / sole
 5. et humiliabit calumpniatorem:† et permanebit cum
 et ante lunam in generationes generationum . . , + . . ,
 6. descendit sicut pluia in uellus
 et sicu^t1 stillicidia stillentia† super terram ÷
 7. ² orietur in diebus eius iustitia
 et abundantia pacis donec auferatur luna ÷
 8. et dominabitur á mari usque ad mare
 et a flumine usque ad terminos orbis terrarum ÷
 9. coram illo procedent aethyop/es³
 et inimici eius terram lingent ÷
 10. reges tharsis et insulae munera offerent
 reges arabum et saba dona adducent ÷
 11. et adorabunt eum omnes reges
 omnes gentes seruient ei . . . , + . . . , ÷
 12. Quia liberabit pauperem a potente
 et pauperem cui non erat adiutor ÷
 13. parcet pauperi et inopi
 [et] animas pauperum saluas faciet ÷
 14. e[x] usuris et iniquitate redemet animas eorum
 [e]t honorabile nomen eorum coram illo ÷
 15. [et uiuet] et dabitur [ei de] auro arabiae
 [et adorabunt de ipso semp]er
 [tota die b]enedic[ent ei] f. 32v.
 16. et erit] firmamentum in terra in summis montium
 [s]uperextolletur super libanum fructus eius
 et florebut de ciuitate sicut fenum terrae ÷
 17. sit nomen eius benedictum in saecula
 ante solem permanet nomen eius ÷
 et benedicentur in ipso omnes tribus terrae
 omnes gentes magnificabunt eum ÷ / solus ÷
 18. benedictus dominus deus israhel qui facit mirabilia
 19. et benedictum nomen maiestatis eius in aeternum
 et replebitur maiestate eius
 20. omnis terra fiat fiat . . . , defecerunt laudes dauid filii
 [L]XXII iese psalmus asaph uox christi ad patrem²
 2. **QUA**m bonus israhel deus his qui recto sunt corde
 mei autem pene moti sunt pedes ² patrem is, perhaps, followed
 Pene effusi sunt gresus mei ÷ by some illegible letters.
 3. Quia zelauit super iniquis
 Pacem peccatorum uidens ÷
 4. [q]uia non est respectus morti eorum
 [e]t firmamentum in plaga eorum ÷
 5. [in] labore hominum non sunt
 [et] cum hominibus non flagillabuntur ÷
 6. [ideo t]enuit eos superbia
 [operti su]nt iniquitate [et imp]ietate sua
 7. [prodiit quasi ex a]di[pe] iniquitas eorum

Ps. lxxii. 7–lxxiii. 4.

- transierunt in affectum cor]dis ÷
8. cogitauerunt et locuti sunt in nequitia
iniquitatem in excelso locuti sunt ÷
9. possuerunt in caelum os suum
et lingua eorum transiuit in terra ÷
10. ideo conuertetur populus meus hic
et dies pleni inuenientur in eis ÷
11. et dixerunt quomodo scit *deus*: et si est scientia in excelso
12. ecce ipsi peccatores et abundantes
in saeculo obtenuerunt diuitias . . . , + . . . ,
13. ET dixi ergo sine causa iustificauit cor meum
et laui inter innocentes manus meas ÷
14. et fui flagillatus tota die / sic
15. et castigatio mea in matutino:† si dicebam narrabo
ecce nationem filiorum tuorum reprobauit ÷
16. et existimabam cognoscere: hoc labor est ante me
17. donec intrem in *sanctuarium* diabsalmus
intellegam in nouissimis eorum . . . , + . . . ,
18. uerumtamen propter dolos possuisti eis
deiecisti eos dum adleuarentur ÷
19. quomodo facti sunt in desolatione / suam
[s]ubito defecerunt perierunt propter iniquita[tem]
20. [ue]lut somnium surgentium / redige[s]
[domine] in ciuitate tua imaginem ipsorum ad [nihilum]
21. [quia inflammatum est co]r me[um]
et renes] mei comm[utati] sunt
22. et e]go ad nihilum redactus sum et nesciui
23. ut iumentum factus sum apud te
et ego semper tecum . . . , + . . . ,
24. Tenuisti manum dexteram meam
et in uoluntate tua deduxisti me et cum gloria suscipisti me
25. quid enim mihi est in caelo
et a te quid uolui super terram ÷
26. defecit caro mea et cor meum *deus* cordis mei
et pars mea *deus* in aeternum ÷
27. quia ecce qui elongant se a te peribunt
perdidisti omnem qui fornicatur abs te ÷
28. mihi autem adhaerere deo bonum est
ponere in *domino* deo spem meam ÷ / filiae sion:
ut adnuntiem omnes praedicationes tuas ÷ in portis

f. 33.

f. 33v.

[L]XXIII in finem pro idithun psalmus asaph uox christi ad p[atrem]

- U**T quid *deus* repulisti in finem / tuae
iratus est furor tuus super oues pascuae
2. memor esto congregationis tuae
quam possidisti ab initio ÷
[r]edimisti[ti] uirgam hereditatis tuae
[mo]ns sion in quo habita[ti] in eo ÷
3. [leua] manus tuas in superbias eorum in finem
[quanta m]alignatus est inim[ic]us in *sanctum*
4. [et gloriati] sunt qui o]derun[t te in medio solempnitatis tuae

¹ *sti* is written over an erasure, and perhaps also the following *in*.

Ps. lxxiii. 5–lxxiv. 6.

5. possuerunt signa sua¹ et non cognouerun]t sicut [in exitu super summum] quasi in silu[a ligno]rum f. 34.
6. in saecuribus exciderunt ianuas eius in idipsum
IN saecuri et ascia deiecerunt eam ÷ ¹ *Signa* is apparently omitted after *sua*.
7. INCenderunt igni *sanctuarium* tuum
IN terra polluerunt tabernaculum nominis tui ÷
8. dixerunt in corde suo cognatio eorum simul
quiescere faciamus omnes dies festos dei a terra ÷
9. signa nostra non uidimus : iam non est profeta
et nos non cognosces amplius . . . , + . . . , ÷
10. usquequo *deus* improperebit inimicus
inritat aduersarius nomen tuum in finem ÷
11. ut quid auertis manum tuam
et dexteram tuam de medio sinu tuo in finem ÷
12. *Deus* autem rex noster ante saeculum
operatus est salutes in medio terrae ÷
13. tu confirmasti in uirtute tua mare
contribulasti capita draconum in aquis ÷
14. tu confregisti capita draconis
dedisti eum escam populis aethyopum . . . , + . . . ,
15. tu diripuisti fontem et torrentes
[* t]u sicasti fluuios aetham : ÷
16. [tu]us est dies et tua est nox
[tu fa]bricatus es auroram et solem ÷
17. [tu fecisti omnes terminos terrae
18. aetatem] et uer tu [plasmasti ea memor esto huius
inimic]us [i]mproperauit dnm² f. 34v.
[et] *populus* insipiens incitauit nomen tuum ÷ ² For *dominum*, the mark of contraction being omitted.
19. ne tradas bestiis animam confitentem tibi
animas pauperum tuorum ne obliuiscaris in finem
20. Respice in testamentum tuum . . . , + . . . ,
Quia repleti sunt qui obscurati sunt
terrae domibus iniquitatum ÷
21. Ne auertatur humilis factus confusus
pauper et inobis laudabunt nomen tuum ÷
22. exsurge *deus* iudica causam tuam
memor esto impropriorum tuorum
eorum qui† ab insipiente sunt tota die ÷
23. ne obliuiscaris uoces inimicorum tuorum
superbia eorum qui te orunt† ascendit semper ;
- [LX]XIII in finem ne corrumpas psalmus asaph uox christi de iudicio
2. **CON**FItebimur tibi *deus* confitebimur futuro
ET Inuocabimus nomen tuum ÷
Narrabimus mirabilia tua ÷
3. Cum accepero tempus ego iustitias iudico† ÷
4. [li]quefacta est terra et omnes qui habitant in ea
[ego] confirmaui columnas eius ÷ diabsalmus
5. [dixi] iniquis nolite inique facere
[et dili]nquentibus nolite exaltare cornu
6. [nolite extollere in altum cornu uestrum

Ps. lxxiv. 6-lxxvi. 8.

- nolite loqui aduersus deum iniqui]tate[m
 7. quia neque ab oriente neque ab occidente
 neque a desertis montibus
 8. quoniam deus iudex est ÷
 hunc humiliat et hunc exaltat
 9. quia calix in manu domini uini meri plenus mixto
 et inclinauit ex hoc in hoc
 uerum fex eius non est exinanita
 bibent omnes peccatores terrae ÷
 10. Ego autem adnuntiabo in saeculo : cantabo deo iacob
 11. et omnia cornua peccatorum confringam
 et exaltabuntur cornua iusti . . . , . . . ,

f. 35

LXXU in finem in laudibus asaph canticum ad amsyrium uox

2. **N**otus in iudea deus ecclesia[.]e ad christum
 in israhel magnum nomen eius ÷
 3. et factus est in pace locus eius
 et habitatio eius in sion ÷
 4. Ibi confregit potentia arcum
 Et scutum et gladium et bellum ÷ diabsalmus
 5. inluminas tu mirabiliter de montibus aeternis
 6. turbati sunt omnes insipientes corde ÷
 dormiuerunt† somnum suum et nihil inuenerunt
 omnes uiri diuitiarum manibus suis ÷
 7. [ab] increpatione tua deus iacob
 [dormitauerunt qui ascen]derun[t aequos
 8. tu terribi]lis [es et quis resistet tibi ex tunc ira tua
 9. de cael]o auditum fecisti iudicium
 10. [te]rra timuit et quieuit :÷ Cum exurgeret in iudicium deus
 ut saluos faceret omnes mansuetos terrae ÷ diabsalmus
 11. quoniam cogitatio hominis confitebitur tibi
 et reliquiae cogitationis diem festum agent tibi ÷
 12. nouete et reddite d/omino¹ deo uestro
 omnes qui in circuitu eius adferent munera ÷ to be a.
 13. terribili et ei qui aufert spiritus principum
 terribili apud reges terrae . . . , * . . . , * . . . ,

f. 35 v.

LXXUI in finem pro idithun psalmus asaph uox christi ad patrem

2. **U**oce mea ad dominum clamaui
 uoce mea ad dominum et intendit mihi ÷
 3. in die tribulationis mea deum exquisiui
 manibus meis nocte contra eum et non sum deceptus ÷
 [r]enuit consulari anima mea
 4. memor fui dei et delectatus sum
 et exercitatus sum et defecit spiritus meus disabsalmus ÷
 5. anticipauerunt uigilias oculi mei
 [t]urbatus sum et non sum locutus . . . , + . . . ,
 6. [c]ogitauit dies antiquos
 [et] annos aeternos in mente habui ÷
 7. [et m]editatus sum nocte cum corde meo
 [et exer]citabar et scobebam spiritum meum
 8. [numquid in] aeter[num proiciet deus

Ps. lxxvi. 8–lxxvii. 10.

- aut non adponet ut conplacitior] sit ad[huc] f. 36.
9. aut in finem mi[s]ericordiam suam abscid[i]s[ti]¹
a generatione in generationem ÷
¹ Only the lower part of
s sec. remains.
10. aut obliuiscetur misereri *deus*
aut contenebit in ira sua misericordias suas , + ,
11. ET dixi nunc coepit haec motatio dexteræ excels[i]
12. memor fui operum *domini*
quia memor ero ab initio mirabilium tuorum ÷
13. et meditabor in omnibus operibus tuis
et in adinventionibus² tuis exercebor ÷ ² i tert. written over an erasure.
14. *deus* in *sancto* uia tua
quis *deus* magnus sicut *deus* noster
15. tu es *deus* qui facis mirabilia ÷
Notam fecisti in populis uirtutem tuam
16. redemisti in bracchio tuo populum tuum
Filiis iacob et ioseph ÷ . . . , + . . . , *diabsalmus*
17. uiderunt te aquae *deus* uiderunt te aquae
et timuerunt et turbatae sunt abyssi / bes
18. multitudo sonitus aquarum uocem derunt† nu
etenim sagittae tuae transeunt ÷
19. uox tonitruī tui in rota
inluserunt coruscationes tuae orbi terra[e]
commota est et contremuit terra ÷
20. [in ma]ri uia tua et sem[it]ae tuae in aquis [multis
et uestigia tua non cognoscentur
21. deduxisti] sicut oues [populum tuum f. 36v.
in man]u moysi et aar† . . . , . . . , . . . ,

[LXXU]II *intellectus asaph uox christi de iudeis*

- A**^DTEndite populus meus legem meam
INcline aurem uestram in uerba oris mei ÷
2. **A**periam in parabola os meum
eloquar propositiones ab ini/tio ÷
3. quanta audiuius et cogno/uimus ea
et patres nostri narrauerunt nobis ÷
4. non sunt occultata a filiis eorum in generatione altera ÷
narrantes laudes *domini*
et uirtutes eius et mirabilia eius quae fecit
5. et suscitauit testimonium in iacob
et legem possuit in israhel ÷
quanta mandauit patribus nostris: nota facere filiis suis ÷
6. ut cognoscat generatio altera ÷
[fili]i qui nascentur exsurgent: et narrabunt filiis suis ÷
7. ut ponant in deo spem suam: et non obliuiscantur opera dei
[et] mandata eius exquirant . . . , + . . . , ÷
8. Ne fiant sicut patres eorum / cor suum
[ge]neratio praua et exasperans: ÷ generatio quae non direxit
[et] non /// est credi/tus cum deo *spiritus* eius ÷
9. [filii e]fferrem intendentes et mittentes arcum
10. [conuersi sun]t in die belli: ÷ non custo[di]erunt testamentum dei
[et in lege eius noluerunt ambulare

Ps. lxxvii. 11-35.

11. et oblitum sunt benefactorum eius] f. 37
 et mirabilium eius quae ostendit eis ÷
12. coram patribus eorum quae fecit mirabilia
 in terra aegypti in campo taneos ÷
13. interrupit mare et perduxit
14. statuit // aquas quasi utrem :[†] et deduxit eos in nube diei
 et tota nocte in inluminacione ignis ÷
15. interrupit petram in heremo
 et adaquavit eos uelut in abyssu multa ÷
16. et eduxit aquam de petra
 et deduxit tamquam flumina aquas ÷
17. et adpossuerunt adhuc peccare ei
 in ira excitauerunt ex/celsu in inaquoso¹ ÷ ¹ o sec. written over erasure.
18. et temptauerunt deum in cordibus suis
 ut peterent escas animabus suis ÷
19. et male locuti sunt de deo . . . , + . . . , / to ÷
 dixerunt numquid poterit deus parare mensam in dese[r]
20. quoniam percussit petram et fluxerunt aquae
 et torrentes inundauerunt ÷
 numquid et panem potest dare
 aut parare mensam populo suo ÷
21. ideo audiuit dominus et * non : distulit
 [et] ignis accensus est in iacob / in deo
22. [et ir]a ascendit in israhel :[†] quia non credid[erunt]
 [nec sperauerunt in salutari eius
23. et m]and[a]uit [nubibus desuper et ianuas caeli aperuit f. 37v.
24. = pluit i]llis manna ad manducandum ² Apparently et is omitted.
 [et p]anem caeli dedit eis ÷
25. [p]anem angelorum manducauit homo f. 37v.
 Cybariam missit eis in abundantiam ÷
26. Transtulit austrum de caelo
 et induxit in uirtute sua affricum ÷
27. et pluit super eos sicut puluerem carnes
 et sicut arenam maris uolatilia pinnata ÷
28. et ceciderunt in medio castrorum eorum
 Circa tabernacula eorum . . . , + . . . , ÷
29. ET manducauerunt et saturati sunt nimis
 et desiderium eorum attulit eis / :³ ÷
30. non sunt fraudati a desiderio suo ÷
 adhuc esca eorum erat in ore ipsorum
31. et ira dei ascendit in eis ÷
 [e]t occidit pingues eorum : et electos israhel inpediuit
32. [in] omnibus his pecca//uerunt adhuc
 et non crediderunt mirabilibus eius ÷
33. et defecerunt in uanitate dies eorum
 et anni eorum cum festinatione ÷
34. [c]um occideret eos quaerebant eum
 [et re]uertebantur et diluculo ueniebant ad deum
35. [et rememo]rati sunt quia deus adiutor est eoru[m]
 et deus excelsus redemptor eorum est

³ s is corrected from another letter. It is followed by an erasure of two letters, over which is the punctuation mark (:).

Ps. lxxvii. 36–58.

36. et dilexerunt eum in ore suo : et lin]gua [s]ua men[titi sunt ei] f. 38.
 37. Cor autem ipsorum non erat rectum cum eo
 nec fideles habiti sunt in testamento eius ÷
 38. ipse autem est misericors
 et propitius fiet peccatis eorum et non perdet† eos
 et abundauit ut auertat iram suam
 et non accendit omnem iram suam ÷ / redens†
 39. et recordatus est quia caro sunt : spiritus uadens et non ÷
 40. quotiens exacerbauerunt eum in deserto
 in ira concitauerunt eum in inaquoso ÷
 41. et conuersi sunt et temptauerunt deum
 et sanctum israhel exacerbauerunt ÷
 42. non sunt recordati manus eius
 die qua redemit eos de manu tribulantis ÷
 43. sicut possuit in aegypto signa sua
 et prodigia sua in campo taneos . . . , + . . . ÷
 44. et conuertit in sanguine flumina eorum
 et ymbres eorum ne biberent ÷
 45. missit in eos cynomiam et comedit eos
 et ranam et disperdidit eos ÷
 46. et dedit erugini fructus eorum
 et labores eorum lucustae ÷
 47. et occidit in grandine uineam eorum
 [et] murus eorum in pruina
 48. [et tradidit grandini ium]en[ta eorum
 et possess]io[nem eorum igni] f. 38v.
 49. mis]sit in eos iram indignationis suae
 [in]dignationem et iram et tribulationem
 [in]missionem per angelos malos ÷
 50. uiam fecit semitae irae suae
 non pepercit a morte animarum eorum
 et iumenta eorum in morte ///// conclusit ÷
 51. et percussit omne primitium in aegypto
 primitias laborum eorum in tabernaculis cham : , + : ,
 52. Et abstulit sicut oues populum suum
 et perduxit eos tamquam gregem in deserto ÷
 53. et deduxit eos in spe et non timuerunt
 et inimicos eorum operuit mare ÷
 54. et induxit eos in motem† sanctificationis suae
 montem quem adquisiuit dextera eius ÷
 et eiecit a facie eorum gentes / tionis
 et sorte diuisit eis terram in funiculo distribu ÷
 55. et habitare f/ecit in tabernaculis eorum
 tribus israhel ÷ / excelsum
 56. et temptauerunt et exacerbauerunt deum
 [e]t testimonia eius non custodierunt ÷
 57. [e]t auerterunt se et non seruauerunt pa[ctum]
 quemamodum patres eorum
 [conuersi su]nt in arcum prauum ÷
 58. [in iram concita]ue[runt eum in collibus suis

Ps. lxxvii. 58–lxxviii. 9.

- et in sculptilibus] suis¹ [ad emula]t[i]o[n]e[m] [eum prouocauerunt] f. 39.
 59. audiuit deus et spraeuit ¹ This word is doubtful.
 et ad nihilum redegit ualde is/rahel ÷
 60. et repulit tabernaculum selo
 tabernaculum suum ubi habitauit in hominib[us]
 61. et tradidit in captiuitatem uirtutem eorum
 et pulchritudinem eorum in manus inimici ÷
 62. et conclusit in gladio populum suum
 et hereditatem² suam spraeuit . . . , + . . . , ² The letter *i* is written
 over an erasure (*e?*), as is
 possibly also the remainder
 of the line.
 63. iuuenes eorum comedit ignis
 et uirgines eorum non sunt lamentatae ÷
 64. sacerdotes eorum in gladio cicerunt
 et uiduae eorum non plorabántur³ ÷ ³ *l*corr. from another letter.
 65. et excitatus est tamquam dormiens dominus
 tamquam potens crapulatus a uino ÷
 66. et percusit inimicos suos in posteriora
 obprobrium sempeternum dedit illis ÷
 67. et repulit tabernaculum ioseph
 68. et tribum effrem non elegit :÷ et elegit tribum iuda
 montem sion quem dilexit⁴ ÷ ⁴ This word is written over
 an erasure.
 69. et aedificauit sicut unicornium sanctificium suum
 in terra quam fundauit in saecula ÷
 70. et elegit dauid seruum suum
 [et] sustulit eum de gregibus ouium
 [de post fetantes a]ccep[it eum
 71. pasce]re iacob seruum suum f. 39v.
 [et] israhel hereditatem suum ÷
 72. [et] pauit eos in inocentia† cordis sui
 [et] in intellectibus manuum suarum deduxit eos ;
 [LX]XVIII psalmus asaph uox apostolorum post pasi
Deus uenerunt gentes in hereditatem tuam ÷
 polluerunt templum sanctum tuum onem christi
 possauerunt hyerusalem in pomorum custodiam ÷
 2. possuerunt morticina seruorum tuorum escas uolatilibus caeli
 carnes sanctorum tuorum bestiis terrae ÷
 3. effuderunt sanguinem ipsorum tamquam aquam
 in circuitu hyerusalem et non erat qui saepeliret ÷
 4. [fa]eti sumus obprobrium uicinis nostris
 [s]ubsannatio et inlusio his qui circum nos sunt . . . , + . . . , ÷
 5. [u]squequo domine irasceris in finem
 [a]ccenditur uelut ignis zelus tuus ÷
 6. [ef]funde iram tuam in gentes quae te non nouerunt
 et in regna quae nomen tuum non inuocauerunt ÷
 7. quia comederunt iacob et locum eius desolauerunt
 8. ne memineris iniquitatem nostrarum antiquarum
 [ci]to anticiperunt† nos misericordiae⁵ tuae ⁵ *i* sec. apparently corr.
 [qui]a pauperes facti sumus nimis ÷ from another letter.
 9. [adiuu]a nos deus salutaris noster
 [et propter] gloriam nominis tui domine libera nos
 [et propitius esto pec]ca[ti]s nostris propter nomen tuum

Ps. lxxviii. 10–lxxix. 20.

10. ne forte dicant in gentibus ubi est deus [e]orum
et innotescat in nationibus coram oculis nostris
ultio sanguinis seruorum tuorum qui effusus est
11. introeat in conspectu tuo gemitus conpeditorum
secundum magnitudinem brachii tui
posside filios mortificatorum¹ ÷ ¹ *o* *sec.* corr. from another letter.
12. et redde uicinis nostris septuplum² in synu eorum
improperium ipsorum quod exprobrauerunt tibi domine
from another letter. ² *p* *pr.* apparently corr. from another letter.
13. nos autem populus tuus et oues pascuae tuae
confite//bimur³ tibi in saeculum ÷ / tuam
in generationem et generationem : adnuntiabimus laudem ³ *b* corr. from *i*; *r* from *s*.

LXXUIII in finem pro his qui commotabuntur testimonium
asap[h] uox apostolorum de ecclesia ad dominum . .

2. **Q**UI RÆgis irahel† intende
qui deducis tamquam oues ioseph ÷ ⁴ *bin* written over an erasure.
qui sedes super cherubin⁴ manifestare
3. coram effraim et benimint† et manuasses ÷
excita potentiam tuam et ueni ut saluos facias nos ÷
4. deus conuerite nos et ostende faciem tuam et salui erimus : + :
5. domine deus uirtutum quousque irasceris
super orationem serui tui ÷
6. [c]ybabis nos panem lacrimarum
[et p]otum dabis nobis in lacrimis in mensura
7. [po]ssuisti nos in contradictionem uicinis nost[r]is
et inimici nostri subsannaueru[n]t nos
8. deus] uirtutum conuerte nos f. 40v.
[et] ostende faciem tuam et salui erimus . . . , + . . . ,
9. UINeam de aegypto transtulisti
[e]iecisti gentes et plantasti eam ÷
10. dux iteneris fuisti in conspectu eius
et plantasti radices eius et implebit terram ÷
11. operuit montes umbra eius : et arbusta eius caedros dei ÷
12. extendit palmites suos usque ad mare
et usque ad flumen propagines eius ÷
13. ut quid destruxisti macheriam eius
et uendemeant eam omnes qui praetergrediuntur uiam ÷
14. exteminauit† eam aper de silua
et singularis ferus depastus est eam . . . , + . . . ,
15. deus uirtutum conuertere
respice de caelo et uide et uisita uineam istam ÷
16. et perface eam quam plantauit dextera tua
et in filium quem confirmasti tibi ÷
17. INCensa igni et suffosa
ab increpatione uultus tui peribunt ÷
18. fiat manus tua super uirum dexteræ tuæ
[et] super filium hominis quem confirmasti tibi ÷
19. [et] non discaedimus a te
[uiui]cabis⁵ nos et nomen tuum inuocabimus ÷
20. [domine deus uir]tutum conuerte nos
[et ostende faciem tuam] et [salui erimus

⁵ There does not seem to be sufficient space for this word. Probably the scribe omitted two letters: *ui* or *fi*.

Ps. lxxx. 1-lxxxii. 8.

- LX]XX [in] fi[nem pr]o tor[quolar]ibus psalmus as[aph ad] f. 41.
 p[e]n[te]cusde† uox apostolorum
2. **EX** sultate deo adiutori nostro
 iubilate deo iacob ÷
3. sumite psalmum et date tympanum
 psalterium iucundum cum cythara ÷
4. bucinatē in neominia tuba
 in insigni die sollempnitatis nostrae ÷
5. quia praeceptum israhel est et iudicium dei iacob
6. testimonium in io/seph possuit ÷ illud :
 //¹ cum exiret de terra aegypti
 linguam quam non nouerat audiuit ÷ ¹ The erased word is probably *et*.
7. deuertit ab oneribus dorsum eius
 manus eius in coffino seruierunt . . . , + . . . , ÷
8. IN tribulatione inuocasti me et liberaui te
 exaudiui te in abscondito tempestatis
 probaui te apud aquam contradictionis diabsalmus
9. audi populus meus et contestificabor te
10. israhel si audias me : non erit in te deus recens
 nec adorabis deum alienum ÷ / ti
11. ego enim sum dominus deus tuus qui eduxi te de terra aegy[p]
 dilata os tuum et inplebo illud ÷
12. et non audiuit populus meus uocem meam
 [et] israhel non intendit mihi . . . , + [. . . ,]
13. [et dimissi] illo[s secund]um d[esideria] cordis eorum
 ibun]t in adinventionibus suis f. 41v.
14. [si] populus meus audisset me
 [i]srahel si in uis† meis ambulasset
15. [p]ro nihilo forsitan inimicos eorum humiliasem
 et super tribulantes² mississem manum meam ² eos added in margin.
16. inimici domini // menti†³ sunt ei
 et erit tempus eorum in saeculo ÷ ³ ti added in margin, m. sec.
17. et cybauit illos ex audipe† frumenti
 et de petra mellis salurauit⁴ illos . . . , ⁴ l corrected to t, m. sec.

LXXXI in finem psalmus asaph uox ecclesiae de iudaeis.

- D**^{eu}S Stetit in synagoga deorum
 IN medio autem deus deiudicat ÷
2. usquequo iudicatis iniquitatem
 et facies peccatorum simitist† ÷ diabsalmus
3. iudicate aegenum et pupillum
 [h]umilem et pauperem iustificate ÷
4. eripite pauperem et aegenum
 de manu peccatoris liberate . . . , + . . . , ÷
5. [nes]c,erunt⁵ neque intellexerunt in tenebris ambulantes
 mouebuntur omnia fundamenta terrae ÷ ⁵ i is written below, and to the left of the erasure, and is obviously intended to take the place of the erased letter.
6. [e]go dixi dii estis et filii excelsi omnes ÷
7. [uo]s autem sicut homines moriemini
 [et sic]ut unus de principib† caditis ÷
8. [surge d]eus iudica terram
 [quoniam tu heredita]bis [in omnibu]s ge[n]t[ibus]

Ps. lxxxii 1–lxxxiii. 8.

[L]XXXII ca[nticum psalmus asap]h uox eccles[iae]
ad¹ de iudeis et de uitiiis hominum

f. 42.

2. **D**^{eu}S Quis similis erit tibi
Ne taceas neque conpiscaris *deus* ÷
3. **D** quoniam ecce inimici tui sonauerunt
ET qui oderunt te extulerunt² capud ÷
4. super populum tuum malignauerunt consilium
et cogitauerunt aduersus *sanctos* tuos ÷
5. dixerunt uenite et disperdamus eos de gente
et non memoretur nomen israhel ultra ÷
6. quoniam cogitauerunt unianimiter† simul
aduersum testamentum dispossuerunt
7. tabernaculum idumeorum et israhelita³ ÷
8. moab et aggareni . gebal . et ammon . et amalech
et alienigenae cum habitantibus tyrum ÷
9. etenim asur uenit cum illis
Facti sunt in adiutorium filiis loth . . . , + . . . , *diabsalmus*
10. Fac illis sicut madiam et sisarrae
et sicut iabin in torrentem cyson ÷
11. disperierunt in endor : facti sunt ut stercus terr[ae]
12. pone principes eorum sicut oreb
et zeb et zebec et salmina ÷
omnes principes eorum
13. qui dixerunt hereditate possideamus *san[ctuarium dei]*
14. *deus m*eus pone illo[s ut] rotam
[et si]cut stipulam ante faciem [uenti]
15. sicut ignis qui conburit siluam
sicut flamma conburens montes
16. ita persaequeris illos in tempestate tua
17. et in ira tua turbabis eos : imple facies illorum ignominia
et quaerent nomen tuum *domine* ÷
18. erubescant et conturbentur in saeculum saeculi
et confundantur et pereant ÷
19. et co/gnoscant⁴ quoniam nomen tibi *dominus*
tu solus altissimus in omni terra . . . , . . . ,

¹ The word *dominum* is omitted.² *u. pr.* written over an erasure.³ *a sec.* is written over an erasure.

f. 42v.

LXXXIII in finem pro torquolarib^{us} psalmus filiis chore legendus

:· ad euangelium mathei ad eos qui fidem sun[t]

:· consaecuti uox christi ad patrem de iud[a]eis

2. **Q**UA m dilecta tabernacula tua *domine* uirtutum ÷
3. **Q** Concupiscit et defecit anima mea in atria *domini*
Cor meum et caro mea exsultauit in *deum* uiuum ÷
4. etenim⁵ passer inuenit sibi domum ÷
et⁶ turtur nidum sibi ubi ponat pullos suos ÷
altaria tua *domine* uirtutum rex meus et *deus* meus
5. beati qui habitant in domu tua ÷
[in] saecula saeculorum laudabunt te ÷ *diabsalmus*
6. [be]atus uir cui est auxilium abs te.
[asc]ensiones in corde suo dis/possuit⁷
7. [in ualle] lacrimarum in loco quem possuit ÷
8. [etenim benedictio]nes dabit l[egislator]

⁴ The erased letter seems to be *g*.⁵ The letters *et* are written to the left of the tail of *Q*.⁶ Written to the left of the tail of *Q*.⁷ The erased letter seems to be *s*.

Ps. lxxxiii. 8-lxxxv. 8.

- ibunt de [uirtute in u]irtutem : uidebitur deus deorum in sio[n] f. 43.
9. domine deus uirtutum exaudi orationem meam
auribus percipe deus iacob diabsalmus ÷
10. protector noster aspice deus
et respice in faciem christi tui ÷
11. quia melior est dies una in atriis tuis super milia
elegi abiectus esse in domu dei mei
magis quam habitarem in tabernaculis peccatorum ÷
12. quia misericordiam et ueritatem dilegit deus
Gratiam et gloriam dabit dominus ÷
13. non priuabit bonis eos qui ambulant in innocentiam
domine uirtutum beatus uir qui sperat in te . . . ,
LXXXIIII in finem filiis chore psalmus uox apostolica ad nouel
2. **B**ENedixisti domine terram tuam lum populum
Auertisti captiuitatem iacob ÷ / rum
3. remisisti iniquitates plebis tuae : operuisti omnia peccata eo
4. mitigasti omuem¹ iram tuam ^{1 e corr. from i.}
auertisti ab ira indignationis tuae
5. conuerte nos deus salutem nostrarum
et auerte iram tuam a nobis ÷
6. numquid in aeternum irasceres nobis
aut extends iram tuam a generatione in generation[em]
7. deus tu conuersus uiuificabis nos : et plebs tua laetabitur i[n te]
8. [o]stende nobis domine misericordiam tuam
[et salutare] tuu[m d]a no[bis] . . . , [+ . . . ,]
9. a]udiam quid loquatur in me dominus deus f. 43v.
quoniam loquetur pace[m] in plebem suam et super sanctos suos
et in eos qui conuertuntur ad cor
10. uerumtamen prope timentes eum salutare ipsius
ut inhabitet gloria in terra nostra ÷
11. misericordia et ueritas obuiauerunt ÷ sibi :
iustitia et pax osculatae sunt se ÷
12. ÷ et : ueritas de terra orta est et iustitia de caelo prospexit ÷
13. etenim dominus dabit benignitatem
et terra nostra dabit fructum suum ÷
14. Iustitia ante eum ambulabit : et ponet in uia gresus suos : ,
LXXXV oratio per ieiunium uox christi ad patrem
1. **I**NCLINA domine aurem tuam ÷ et : exaudi me
quoniam inobs et pauper sum ego ÷
2. Custodi animam meam quoniam sanctus sum
Saluum fac seruum tuum deus meus sperantem in te ÷
3. miserere mei domine quoniam ad te clamabo tota die
4. Laetifica animam serui tui ÷
quoniam ad te domine animam * meam : leuauit
5. quoniam tu domine suauis et mitis
[et] multae misericordiae omnibus inuocantibus te : + ∴
6. [a]uribus percipe domine orationem meam
[et inte]nde uoci orationis meae ÷ / ti me
7. [in die tribu]lationis meae clamaui ad te quoniam exau[dis]
8. [non est simili]s tui [in diis domin]e [et non est secundum opera tua]

Ps. lxxxv. 9–lxxxvii. 9.

f. 44.

9. omnes gen[tes] qu[a]scumque fecisti uenient et adorabunt c[oram te domine]
et glorificabunt nomen tuum ÷
10. quoniam magnus es tu et facies mirabilia tu es deus solus : + [:]
11. deduc me domine in uia tua et ingrediar in ueritate tua
laetetur cor meum ut timeat nomen tuum ÷
12. confitebor tibi domine * deus meus¹ in toto corde meo
et glorificabo nomen tuum in aeternum ÷
13. quia misericordia tua magna est super me
et eruisti animam meam ex inferno inferiori ÷
14. deus iniqui insurrexerunt super me
et synagoga potentium quaesierunt animam meam
et non propossuerunt te in conspectu suo ÷
15. et tu domine deus miserator et misericors
patiens et multae misericordiae et uerax . . . , + . . . ,
16. Respice in me et miserere mei
da imperium tuum puero tuo
et saluum fac filium ancillae tuae ÷
17. fac mecum signum in bono
ut uideant qui oderunt me et confundantur
quoniam tu domine adiuuasti me et consulatus es me . . . ,

¹ The points (:) have been omitted after *meus*.

LXXXUI in finem filii chore psalmus cantici uox apostolica

2. **FUND**amenta eius in montibus sanctis
diligit dominus portas sion
super omnia /// tabernacula iacob
3. [gloriosa] dic[ta su]n[t] de te c[uius] de[us] dei
4. memor ero rab[et] et babilonis scientium me / illic : + :- f. 44v.
ecce alienigenae et tyru[s] et populus aethyopum hii fuerunt
5. Numquid sion dicit homo et homo natus est in ea
et ipse fundauit eam altissimus ÷
6. dominus narrauit in scriptura populorum
et principum horum qui fuerunt in ea ÷ diabsalmus
7. sicut laetantium omnium habitatio in te . . . ,

LXXXUII cantici psalmi filii chore in finem pro melech ad
respondendum eman israhelitae uox christi de passi

- one sua dicit ad patrem te coram te
2. **DOMI**NE Deus salutis meae in die clamaui et noc
3. **DI**ntret in conspectu tuo oratio mea
INelina aurem tuam ad praecem meam ÷
4. Quia repleta est malis anima mea
et uita mea in inferno adpropinquauit ÷
5. aestimatus sum cum discendentibus in lacum
6. factus sum sicut homo sine adiutorio inter mortuos liber : + :
sicut uulnerati dormientes in saepulchris
quorum non es memor amplius
et ipsi de manu tua repulsi sunt ÷ / bra mortis
7. possuerunt me in lacu inferiori in tenebrosis et in um
8. [su]per me confirmatus est furor tuus
[et o]mnes fluctus tuos induxisti super me ÷ diabsalmus
9. [longe fec]isti notos meos a me
[possuerunt me ab]homi[nationem sibi]

Ps. lxxxvii. 9–lxxxviii. 14.

- traditus sum et non egrediebar f. 45.
10. oculi mei languerunt prae inopia . . . , + [...,]
Clamaui ad te domine tota die extendi ad te manus me[as]
11. Numquid snortuist facies mirabilia / diabsalmus
aut medici resuscitabunt et confitebuntur tibi ÷
12. numquid narrabit aliquis in saepulchro
misericordiam tuam
et ueritatem tuam in perditione/ ÷
13. numquid cognoscentur in tenebris mirabilia tua
et iustitia/ tua in terra obliuionis . . . , + . . . , ÷
14. ET ego ad te domine clamaui
et mane oratio mea praeueniet te ÷
15. ut quid domine repellis orationem meam
auertis faciem tuam a me / te[?] mea
16. pauper sum ego et in laboribus á iuuuentu¹
exaltatus autem humiliatus sum et conturbatu[s]
17. in me transierunt irae tuae
et terrores tui conturbauerunt me
18. Circuierunt me sicut aqua
tota die circumdederunt me simul ÷
19. elongasti a me amicum et proximum
et notos meos a miseria,

¹ The erased letter is s.

de iudaeis

LXXXVIII intellectus deneman israhelitae uox christi [ad patrem]

2. **M**isericordias domini in aeternum c[antabo]
IN Gener[ati]o[n]e[m] et g[ener]ationem
adnuntia]bo ueritatem tuam in ore meo f. 45v.
3. [quoni]am dixisti in aeternum misericordia aedificabitur
[in c]aelis praeparabitur ueritas tua * in eis : ÷
1. dispossui testamentum electis meis
iuravi danti[?] seruo meo
5. usque in aeternum praeparabo semen tuum / diabsalmus ÷
et aedificabo in generationem et generationem sedem tuam
6. Confitebuntur caeli mirabilia tua domine
etenim ueritatem tuam in ecclesia sanctorum ÷
7. quoniam quis in nubibus aequabitur domino
similis erit domino in filiis dei ÷
8. deus qui gloriatur[?] in consilio sanctorum / sunt ÷
magnus et horrendus super omnes qui in circuitu eius
9. domine deus uirtutum quis similis tibi
potens es domine et ueritas tua in circuitu tuo . . . , + . . . ,
10. tu dominaris potestatis[?] maris
motum autem fluctuum eius tu mitigas ÷
11. tu humiliasti sicut² uulneratum superbum
[÷] et : in brachio uirtutis tuae disper/sisti inimicos tuos ² sic written over an erasure.
12. tui sunt caeli et tua est terra
[o]rbeu[?] terrae : et plenitudinem eius tu fundasti ÷
13. [a]quilonem et mare tu creasti ÷
[thabo]r et hermon in nomine tuo exsultabunt
14. [tuum brac]chium cum potentia ÷
[firmetur manus t]ua [et exaltet]ur de[x]te[ra tua]

Ps. lxxxviii. 15-42.

15. iustitia et iudicium praepa[r]atio sedis t[ua]e
misericordia et ueritas praecedent faciem tuam f. 46.
16. beatus populus qui scit iubilationem ÷
domine in lumine uultus tui ambulabunt
17. et in nomine tuo exsultabunt tota die ÷
et in tua iustitia exsultabuntur† ÷
18. quoniam gloria uirtutis eorum tu es
et in beneplacito tuo exaltabitur cornu nostrum ÷
19. quia domini est adsumptio * nostra :
et sancti israhel regis nostri . . . , † . . . ,
20. Tunc locutus¹ in uissione sanctis tuis et dixisti ^{1 es added in margin.}
posui adiutorium in potentem
21. et exaltaui electum de plebe mea : ÷ inueni dauid seruum meum
in oleo sancto meo linui eum ÷
22. manus enim mea auxiliabitur ei / in eo
23. et brachium meum confirmabit eum : ÷ nihil proficiet inimicus
et filius iniquitatis non adponet nocere eum ÷
24. et concedam a facie ipsius inimicos eius
et odientes eum in fugam conuertam ÷
25. et ueritas mea et misericordia mea cum ipso
et in nomine meo exaltabitur cornu eius ÷ .
26. et ponam in mari manum eius : et in fluminibus dexteram ei[us]
27. [i]pse inuocabit me pater meus es tu
[deus] meus et susceptor salutis meae ÷ [/terrae]
28. [et ego pr]imogenitum [pon]a[m i]llu[m] excelsum prae regibus
29. in aete[r]num seruabo i[lli] misericordiam [me]a[m]
et testamentum meum fidele ipsi f. 46v.
30. et ponam in saeculum saeculi semen eius
et thronum eius sicut dies caeli . . . , † . . . ,
31. Si direliquerint filii eius legem meam
et in iudiciis meis non ambulauerint ÷
32. si iustitias meas profanauerint
et mandata mea non custodierint
33. uisitabo in uirga iniquitates eorum
et in uerberibus peccata eorum ÷
34. misericordiam autem meam non dispergam ab eo ÷
neque nocebo in ueritate mea
35. neque profanabo testamentum meum
et quae procedunt de labiis meis non faciam inrita ÷
36. seme/l iuravi in sancto meo si dauid mentiar
37. semen eius in aeternum manebit ÷
38. et thronus eius sicut sol in conspectu meo
et sicut luna perfecta in aeternum
et testis in caelo fidelis . . . , † . . . , diabsalmus
39. tu uero repulisti et destruxisti distulisti christum tuum ÷
40. euertisti testamentum serui tui
[profa]nasti in terra sanctuarium eius ÷
41. [dest]ruxisti omnes saepes eius
[possuisti] firmamentum eius formidinem
42. [diripuerunt eum omne]s [transe]untes [uiam]

Ps. lxxxviii. 42-lxxxix. 14.

- factus est obprobrium uicinis suis f. 47.
43. exaltasti dexteram deprimentium eum
laetificasti omnes inimicos eius ÷
44. auertisti adiutorium gladii eius
et non es auxiliatus ei in bello ÷
45. destruxisti eum ab emundatione
* et : sedem eius in terra conlisisti ÷ ¹ s abnormally large, written
over an erasure, apparently of
two letters.
46. minorasti dies temporum eius diabsalmus
perfudisti eum confusione¹ . . . , + . . . , diabsalmus
47. usquequo domine auertis in finem .. / tia
48. exardescet sicut ignis ira tua : memorare quae mea substan
numquid enim uane constituisti ÷ omnes : filios hominum ÷
49. quis est homo qui uiuet et non uidebit mortem
eruet animam suam de manu inferi ÷ diabsalmus
50. ubi sunt misericordiae tuae antiquae domine
sicut iurasti dauid in ueritate tua
51. memor esto domine obprobrii seruorum tuorum
quod contenui in sinu meo multarum gentium ÷
52. quod exprobrauerunt inimici tui domine
quod exprobrauerunt commotationem christi tui
53. benedictus dominus in aeternum fiat fiat . . . ,
LXXXVIII [or]atio moysi famuli dei uox apostolica ad dominum
- D**omiNe refugium tu factus es nobis
in generatione et generation[e]
2. priusquam] monte[s fi]erent et [for]m[aretur terra et orbis
a sae]culo et usque in saeculum tu es deus f. 47v.
3. Ne auertas hominem in humilitatem
et dixisti conuertemini filii hominum ÷ ² hes written over an erasure.
4. quoniam mille anni ante oculos tuos
tamquam dies hesternae² quae praeteriit ÷ / erunt
5. et custodia in nocte quae pro nihilo habentur eorum anni ÷
6. mane sicut herba transeat : mane floreat et transeat
uespere decedat induret et arescat ÷ . . . , + . . . ,
7. quia defecimus in ira tua : et in furore tuo turbati sumus ÷
8. possuisti iniquitates nostras in conspectu tuo
saeculum nostrum in inluminacione uultus tui ÷ / cimus
9. quoniam omnes dies nostri defecerunt : in ira tua defe ÷
anni nostri sicut haranea meditabantur
10. dies annorum nostrorum in ipsis lxx anni ÷
si autem in potentatibus lxxx anni
et amplius eorum labor et dolor . . . , + . . . ,
Quoniam superuenit mansuetudo et corripiemur
11. quis nouit potestatem irae tuae
12. et prae timore tuo iram tuam dinumerare ÷
dexteram tuam sic notam fac et conpeditos
corde in sapientia ÷ / super seruos tuos
13. conuertere domine usquequo et depraecabilis esto
14. [rep]leti sumus mane misericordia tua
[et exsultau]imus et delectati sumus
[omnibus dieb]us no[st]ris

Ps. lxxxix. 15-xci. 6.

15. laetati sumus pro diebus quibus nos hu[miliasti] f. 48.
annis quibus uidimus mala ÷
16. et respice in seruos tuos et in opera tua
et direge filios eorum ÷
17. et sit splendor *domini* dei nostri super nos
÷ et opera manuum nostrarum direge super nos :
et opus manuum nostrarum direge . . . , . . . ,

XC laus cantici dauid uox aecclesiae ad christum legendus

[a]d euangelium marci ubi temptatur christus ∴ ∴

- QUI HABITAT in adiutorio altissimi
IN protectione dei caeli commorabitur ÷
2. Q DICET *domino* susceptor meus es tu
et refugium meum deus meus sperabo in eum ÷
3. quoniam ipse liberauit me de laqueo
uenantium et a uerbo aspero ÷
4. in scapulis suis obumbravit te
et sub pinnis eius sperabis . . . , + . . . ,
5. scuto circumdabit te ueritas eius
non timebis a timore nocturno ÷
6. a sagitta uolante in die
[a] negotio perambulante in tenebris / mille
7. ab incursu et demonio meridiano ∴ cadent a latere tuo
et decem milia a dextris tuis
[ad] te autem non adpropinquabit ÷
8. [ueruntame]n ocul[is t]uis c[onsiderabis]
et retrib[utionem] peccatorum uidebis . . . , + . . . , f. 48v.
9. quoniam tu *domine* spes mea / mala
10. altissimum possuisti refugium tuum ∴ non accedent ad te
et flagillam† non adpropinquabit¹ tabernaculo tuo ÷ ¹ The erased letter is
apparently o.
11. quoniam angelis suis mandauit de te / te ÷
12. ut custodiant te in omnibus uis tuis ∴ in manibus portabunt
ne forte offendas ad lapidem pedem tuam
13. super aspidem et basiliscum ambulabis
et conculcabis leonem et draconem . . . , + . . . ,
14. quoniam in me sperauit et liberabo eum
protegam eum quoniam cognouit nomen meum ÷
15. [c]lamauit ad me et exaudiam eum
Cum ipso sum in tribulatione
eripiam eum et clarificabo eum
16. Longitudine dierum replebo eum
et ostendam illi salutare meum . . . , . . . ,

XCI laus cantici dauid uox aecclesiae

2. B ONUM est confiteri *domino*
ET psallere nomini tuo altissime ÷
3. ad adnuntiandum mane misericordiam tuam
et ueritatem tuam per noctem ÷
4. [in] decachordo psalterio cum cantico in cythara
5. [quia d]electasti me *domine* in factura tua
[et in oper]ibus manuum tuarum exsultabo . . [.] + [. . .]
6. [quam magnificata sun]t [opera tua *domine*]

² In a good many cases in the last ten lines of this page letters with upright strokes (*m*, *u*, &c.) have been re-touched, the strokes being lengthened.

Ps. xci. 6-xciii. 10.

- ni[ⁿmis p]rofundae factae su[ⁿ]t cog[ⁱ]tationes tu[^{ae}] f. 49.
 7. uir insipiens non cognoscet: et stultus non intelleget ha[^{ec}]
 8. cum exorti fuerint peccatores sicut fenum
 et apparuerint omnes qui operantur iniquitate[m]
 ut intereant in saeculum saeculi
 9. tu autem altissimus in aeternum *domine* . . . , + . . . ,
 10. ÷ quoniam : ecce inimici tui *domine*
 ÷ quoniam : ecce inimici tui peribunt
 et dispergentur omnes qui operantur iniquitatem ÷
 11. et exaltabitur sicut unicornis cornu meum
 et senectus mea in misericordia uberi ÷
 12. et dispexit oculus meus inimicos meos
 et in insur[^g]entibus in me ma/lignantibus audiet auris tua , + [,]
 13. iust[us] ut palma florebit
 14. ut caedrus lybani multiplabitur† : plantati in domo *domini*
 in atriis dei nostri florebut ÷
 15. adhuc multiplicabuntur in senecta uberi
 16. et bene patientes erunt ut adnuntient ÷
 quoniam rectus *dominus deus* noster : et non est iniquitas in eo

[XCII laus cantici da]uid die ante sabbatum quando i[nha]b[ita]ta]

1. **D**omiNuS regnauit decorem indutus est [est terra eiu]s ÷
 indutus est *dominus* fortitudine et praecinxit se
 [et]enim firmavit orbem terrae qui non commoueb[itur]
 2. par]ata sedis tua ex tunc a saeculo tu e[st]
 3. eleuauerunt flumina *domine*
 eleuauerunt flumina uocem suam f. 49v.
 [* el]euauerunt flumina fluctus suos :
 4. a uocibus aquarum multarum ÷
 mirabiles eleuationes maris mirabiles in altis *dominus* ÷
 5. testimonia tua credibilia facta sunt nimis ÷
 domum tuam decet *sanctitudo domine* in longitudinem dierum

XCIII psalmus dauid quarta sabbati uox ecclesiae ad dominum

1. **D**eus u[er]itatum *dominus deus* ultionum libere egit ÷
 2. **D** Exaltare qui iudicas terram dei† de iudeis
 Redde retributionem superbis ÷
 3. usquequo peccatores *domine*
 usquequo peccatores gloriabuntur ÷
 4. effabuntur et loquentur iniquitatem
 loquentur omnes qui operantur iniustitiam ÷
 5. populum tuum *domine* humiliauerunt
 et hereditatem tuam uexauerunt ÷
 6. uiduam et aduenam interfecerunt
 7. et pupillos occiderunt :† et dixerunt
 non uidebit *dominus* nec intelleget *deus* iacob . . . , + . . . ,
 8. INtellegite qui insipientes estis in populo
 et stulti aliquando sapite ÷
 9. [q]ui plantauit aurem non audiet
 [aut] qui finxit oculum non considerat
 10. [qui corri]pit gentes non arguet
 [qui docet hominem] s[cientiam]

Ps. xciii. 11—xciv. 11.

11. *dominus* scit cogitationes homin[um] quoniam uanae sun[t] f. 50.
 12. beatus homo quem tu erudies *domine*
 13. et de lege tua docueris eum :[†] ut mitiges ei a diebus malis
 donec fodeatur peccatori fouea . . . , + . . . ,
 14. quia non repellet *dominus* plebem suam
 et hereditatem suam non direlinquet ÷
 15. quoadusque iustitia conuertatur in iudicium
 et qui iuxta illa sunt omnes qui recto sunt corde *diabalsamus* ÷
 16. quis consurget mecum aduersus malignantes/tatem
 aut quis stabit mecum aduersus operantes iniqui ÷
 17. nisi quia *dominus* adiuuit me
paulominus habitauit in inferno anima mea ÷
 18. si dicebam motus est pes meus
 misericordia tua *domine* adiuuabat me . . . , + . . . ,
 19. saecundum multitudinem dolorum meorum in corde meo
 consolationes tuae laetificauerunt animam meam ÷
 20. numquid adhaeret tibi sedis iniquitatis
 qui fingis dolorem in praecepto ÷
 21. captabunt in animam iusti
 et sanguinem innocentem condemnabunt ÷
 22. et factus est *dominus* mihi in refugium
 [et] *deus* meus in adiutorem spei meae ÷
 23. [et] reddet illis iniquitatem ipsorum
 [et] in malitia eorum disperdet eos
 [disperdet illos *dominus deus*] nost[er]

[XCI]III [laus] cantici [d]auid uox christi ad apostolos

f. 50v.

1. **U**ENite exsultemus *domino*
 Iubilemus deo salutari nostro ÷
 2. **U**praeoccupemus faciem eius in confesione
 3. et in psalmis iubilemus ei :[†] quoniam *deus* magnus *dominus*
 et rex magnus super omnes deos
 quoniam non repellet *dominus* plebem suam ÷
 4. quia in manu eius fines terrae
 et altitudines montium ipsius sunt ÷
 5. quoniam ipsius est mare : et ipse fecit illud
 et siccam manus eius firmauerunt . . . , + . . . ,
 6. Uenite adoremus et procedamus
 et ploremus ante *dominum* qui fecit nos ÷
 7. quia ipse est *deus* noster
 et nos populus pascuae eius et oues manus eius ÷
 8. hodie si uocem eius audieritis
 Nolite obdurare corda uestra ÷ / deserto ÷
 9. sicut in iritatione secundum diem temptationis in
 ubi temptauerunt me patres uestri
 probauerunt :[†] me : et uiderunt opera mea ÷
 10. XL annis offensus fui generationi illi
 [et] dixi semper errant corde ÷
 11. [et] isti non cognouerunt uias meas
 [ut iurau] in ira mea : si intrabunt in requiem [meam]¹

¹ This page seems to have had only twenty-four lines of writing.

Ps. xev. 1.-xevi. 9.

[XCU cant]icum hnic dauid [uo]ꝛ eccle[siae uo]can[tis ad fide]m¹ f. 51.

- C**ANTate domino canticum nouum ¹ The letters *can* and *m* are doubtful.
2. **C**antate domino omnis terra ÷
- adnuntiate diem de die salutare eius ÷
3. adnuntiate inter gentes gloriam eius
in omnibus populis mirabilia eius ÷
4. quoniam magnus dominus et laudabilis nimis
terribilis est super omnes deos ÷
5. quoniam omnes dii gentium demonia
at uero dominus caelos fecit . . . , + . . . , ² Apparently *sp* was originally written after *tu*: *s* was erased, and *p* altered to *d*.
6. confesio et pulchritudo² in conspectu eius
sanctimonia et magnificentia in sanctificatione eius ÷
7. adferte domino patriae genti/um
adferte domino gloriam et honorem
8. adferte domino gloriam nomini eius ÷
tollite hostias et introite in atria eius
9. adorete dominum in atrio sancto eius ÷
Commoueatur a facie eius uniuersa terra
10. dicite in gentibus quia dominus regnabit ÷ /tur . . . , +,
etenim correxit orbem terrae qui/ non commouebit
Iudicabit populos in aequitate ÷
11. laetentur caeli et exsultet terra
Commoueatur mare et plenitudo eius
12. [gaudebunt campi et omn]ia q[uae in eis sunt]
tunc exsultabunt omnia ligna siluarum
13. a facie domini quia uenit
quoniam uenit iudicare terram ÷
[i]udicabit orbem terrae in aequitate
et populos in ueritate sua . . . , . . . , . . . ,

f. 51v.

XCUI psalmus dauid quando terra eius restituta est ad con

- D**omiNus regnabit exsultet terra **f**esionem profetia]
- Laetentur insulae multae **u**ox ecclesi[ae] ÷
2. **n**ubes et caligo in circuitu eius **[ad] aduentum christi**
iustitia et iudicium correctio sedis eius
3. **i**gnis ante ipsum procedet
et inflammabit in circuitu inimicos eius
4. **a**dluxerunt fulgora eius orbi terrae
uidit et commota est terra
5. **m**ontes sicut caera fluxerunt a facie domini
a faci/e domini omnis terrae ÷
6. **a**dnuntiauerunt caeli iustitiam eius
et uiderunt omnes populi gloriam eius ÷
7. **c**onfundantur omnes qui adorant sculptilia
qui gloriantur in simulacris suis . . . , + . . . ,
[a]dorate eum omnes angeli eius
8. **[a]u**d[i]uit et laetata est sion /tua domine ³ e pr. written over an erasure?
[et exsulta]uerunt filiae iudeae³ propter iudicia
9. [quoniam tu domi]nus altissimus super omnem terram
[nimis exaltatu]s e[st] super omnes deos

Ps. xevi. 10—xcix. 3.

10. qui dilegitis *dominum* odite malum / rabis eos f. 52.
custodit animas *sanctorum* suorum : de manu peccatoris libe ÷
11. lux orta est iusto : et rectis corde laetitia ÷
12. laetamini iusti in *domino*
et confitemini memoriae *sanctificationis* eius . . . , . . . ,

XCUII psalmus dauid uox ecclesiae ad *dominum* et ad apustolos

- C**ANTate *domino* canticum nouum
Quoniam mirabilia fecit ÷
Saluabit sibi dextera eius : et brachium *sanctum* eius ÷
2. Notum fecit *dominus* salutare suum
IN conspectu gentium reuelauit iustitiam suam ÷
3. Recordatus est misericordiae suae
et ueritatem suam† domui israhel ÷
uiderunt omnes termini terrae salutare dei nostri
4. Iubilate *domino* omnis terra
cantate et exsultate et psallite . . . , + . . . , ÷
5. psallite *domino* in cythara ÷ in cythara : et uoce psalmi
6. in tubis ductilibus et uoce tubae cornae† ÷
Iubilate in conspectu regis *domino*
7. moueatur mare et plenitudo eius
orbis terrarum et qui habitant in eo ÷
8. flumina plaudent manu simul / care terr[am]
9. montes exsultabunt a conspectu *domini* quoniam uenit i[udi]
[iu]dicabit orbem terrarum in iustiti[a]
et populos in aequi]tate
[X]CUIII [psalmus d]auid [uo]x [apostolorum ad populum] f. 52 v.

- D**omiNuS regnauit irascantur populi
qui sedes super cherubin moueatur terra
2. *dominus* in sion magnus et excelsus est super omnes populos ÷
3. Confiteantur nomini tuo magno
Quoniam terribile et *sanctum* est / ones
4. et honor regis iudicium dilegit :† tu parasti directi
Iudicium et iustitiam in iacob tu fecisti ÷
5. exaltate *dominum deum* nostrum
et adorate scabillum pedum eius quoniam *sanctum* est ÷
6. moyses et aaron in sacerdotibus eius
et samuel inter eos qui inuocant nomen eius . . . , + . . . ,
INuocabant *dominum* et ipse exaudiebat eos ÷
7. IN columna nubis loquebatur ad eos ÷
custodiebant testimonia eius
et praeceptum quod dedit illis ÷
8. *domine deus* noster tu exaudiebas eos
deus tu propitius fuisti eis
et ulciscens in omnes adinuationes eorum ÷
9. exaltate *dominum deum* nostrum / ter
et adorate in monte *sancto* eius : quoniam *sanctus dominus deus* nos
[XCU]IIII psalmus dauid uox [a]p[ostol]oru[m] ad populum]
2. [I]U]Bilate deo omnis terra : seruite *domino* in laetitia
[int]roite in conspectu eius in exsultatione
3. [scitote quonia]m *dominus* [ipse est deus]

Ps. xcix. 3–ci. 13.

- ipse fecit nos et non ipsi nos . . . , + . . . ,
 populus eius et oues pascu/ae eius
4. introite portas eius in confesione
 atria eius in ymnis : confitemini illi ÷
5. Laudate nomen eius quoniam suauis dominus
 in aeternum misericordia eius / eius
 et usque in generationem et generationem ueritas

f. 53.

C psalmus dauid uox christi ad patrem de requie sanctorum

- M**isericordiam et iudicium cantabo tibi domine
 2. Psallam et intellegam in uia immaculata
 Quando uenies ad me / domus meae ÷
 perambulabam in innocentiam cordis mei in medio
3. non proponebam ante oculos meos rem iniustam
 facientes praeuaricationes odiui ÷
4. non adhaesit mihi cor prauum
 declinantem a me malignum non cognoscebam ÷
5. Detrahentem saecreto proximo suo hunc persaequabar† ¹ h pr. expuncted.
 Superbo oculo et insatiabili corde
 Cum ///// hoc non aedebam . . . , + . . . ,
6. Oculi mei ad fideles terrae ut sederent mecum ÷
 ambulans in uia immaculata hic mihi ministrabat
7. non habitat in medio domus meae
 qui facit superbiam / rum meorum
 [q]ui loquitur iniqua non direxit in consp[ectu oculo]
8. [in matutino interficie]ba[m o]mne[s peccatores terrae
 [/ tem]²

f. 53v.

CI oratio pau[peris] cum anxietus fuerit et coram domino effuderit
 praecem suam constanter uox chris/i et ecclesiae cum ascendisset

- D**omiNE exaudi orationem meam ad patrem
 et clamor meus ad te ueniat ÷
3. Non auertas faciem tuam a me ÷
 in quacumque die tribulor inclina ad me aurem tuam
 in quacumque die inuocauero te uelociter exaudi me ÷
4. quia defecerunt sicut fenum dies mei
 et ossa mea sicut gremia† aruerunt ÷
5. percusum est ut fenum et aruit cor meum
 quia oblitus sum comedere panem meum ÷
6. a uoce gemitus mei adhaesit os meum carni meae : + :
7. Similis factus sum pelicano solitudinis
 factus sum sicut nycitorax in domicilio ÷ / to ÷
8. uigilauit et factus sum sicut passer solitarius in teco
9. tota die exprobrabant mihi inimici mei
 et qui laudabant me aduersum me iurabant ÷
10. quia cinerem tamquam panem manducabam
 et populum† meum cum fetu miscebam
11. a facie irae et indignationis tuae
 [q]uia eleuans adlisisisti me ÷
12. [dies] mei sicut umbra declinauerunt
 [et ego sic]ut fenum arui . . . , + . . . ,
13. [tu autem domine in] aete[rn]u[m] permanes]

² This syllable was certainly not in the line of writing. It is possible that the scribe omitted it.

Ps. ci. 13–cii. 10.

- et memoriale tuum in generationem et gen[erationem] f. 54.
14. tu exurgens misereberis sion
quia tempus miserandi[us] eius quia uenit tempus
15. quoniam placuerunt seruis tuis lapides eius
16. et terre eius miserebuntur :† et timebunt gentes nomen domini
et omnes reges terrae gloriam tuam ÷
17. quia aedificabit dominus sion : et uidebitur in gloria sua : + :
18. Respexit in orationem humilium
et non spraeuit praecem eorum ÷
19. scribantur haec in generatione altera
et populus qui creabitur laudabit dominum ÷
20. quia prospexit de excelso sancto suo
dominus de caelo in terram aspexit ÷
21. ut audiret gemitum compeditorum
ut soluat filios interemptorum ÷
22. ut adnuntiet in sion nomen domini
et laudem suam in hyerusalem . . . , + . . . , ÷
23. In conueniendo populos in unum
et reges ut seruiant domino ÷
24. Respondit ei in uia uirtutis suae
paucitatem dierum meorum nuntia mihi ÷
25. ne reuoces me in dimedio dierum meorum
in generatione et generatione anni tui
26. initio tu domine terram fundasti
[et opera manuum tuaru]m s[unt] caeli
27. ipsi perib]unt tu autem permanes f. 54v.
[et om]nes sicut uestimentum ueterescent[ur] ÷
[et] sicut opertorium motabis eos et motabuntur
28. tu autem idem ipse es et anni tui non deficient ÷
29. filii seruorum tuorum habitabitabunt[ur]
et semen eorum in saeculum diregetur . . . , . . . ,

CII ipsi dauid uox ecclesiae ad populum suum

- B**ENEDic anima mea domino
et omnia quae intra me sunt nomini sancto eius ÷
2. Bene dic anima mea domino
et noli obliuisci omnes retributiones eius ÷
3. qui propitiabitur omnibus iniquitatibus tuis
qui sanat omnes infirmitates tuas : ÷
4. qui redemit de interitu uitam tuam
qui coronat te in misericordia et miserationibus ÷
5. qui replet in bonis desiderium tuum
Renouabitur ut aquilae iuuentus tua . . . , + . . . , ¹The first stroke of *u sec.* is
written over an erasure.
6. Faciens misericordias dominus ²Some traces of the word
et iudicium omnibus iniuriarum patientibus ÷ *iniquitates* remain.
7. notas fecit uias suas moysi / dominus
8. filiis israhel uoluntates suas :† miserator et misericor[s]
longanimis et multum misericors ÷ / nabitur
9. [non in p]erpetuum¹ irascetur : neque in aeternum commi
10. [non secundum] peccata nostra fecit nobis
[neque secundum iniquitates nostras retribuit nobis]²

Ps. cii. 11–ciii. 12.

11. quoniam secundum altitudinem caeli a terra
corroborauit misericordiam suam super timentes se : + :
12. quantum distat ortus ab occidente
longe fecit a nobis iniquitates nostras ÷
13. quomodo miseretur pater fili/orum
misertus est *dominus* timentibus se
14. quoniam ipse cognouit figmentum nostrum ÷
recordatus est quoniam puluis sumus
15. homo sicut fenum dies eius : tamquam flos agri sic florebit ÷
16. quoniam *spiritus* pertransiuit in illo et non subsistet
et non cognoscet amplius locum suum ÷ . . . , + . . . ,
17. Misericordia autem *domini* ab aeterno
et usque in aeternum super timentes eum ÷
et iustitia illius in filios filiorum
18. his qui seruant testamentum eius
et memores sunt mandatorum ipsius ad faciendum ea ÷
19. *dominus* in caelo parauit sedem suam
et regnum ipsius omnibus dominabitur ÷
20. Benedicite *domino* angeli eius
potentes uirtute facientes uerbum illius
[a]d audiendam uocem sermonum eius ÷
21. benedicite *domino* omnes uirtutes eius
mi/nistri eius qui facitis uoluntatem ejus ÷
22. [be]nedicite *domino* omnia opera eius
[in omni loco dominationis e]ius : ben[edi]c an[ima mea *domino*]
CIII ip[si] dauid uox ecclesiae laudat¹ *dominum* [opera eius] f. 55v.

BENEDic anima mea *domino* narrans fideli
DomiNe deus meus magnificatus es uehementer ÷
Confesionem et decorem induisti popul[o suo]

2. Amictus lumine sicut uestimento ÷ ¹ The letter *t* is uncertain.
3. EXtendens caelum sicut pellem : qui tegis in aquis superiora eius ÷
qui pones nubem ascensum tuum
qui ambulas super pinnas² uentorum ÷ / tem ÷
4. qui facis angelos tuos *spiritus* : et ministros tuos ignem uren
5. qui fundasti terram super stabilitatem suam ² a written over an erasure.
non inclinabitur in saeculum saeculi ÷
6. abysus sicut uestimentum amictus eius . . . , + . . . ,
super montes stabunt aquae ÷
7. ab increpatione tua fugient
a uoce tonitruī * tui ; formidabunt ÷
8. ascendunt montes et discendunt campi
IN locum quem fundasti eis ÷
9. terminum posuisti quem non transgredientur
neque conuertentur operire terram ÷
10. qui inmittis fontes in conuallibus
inter medium montium pertransibunt aquae
11. potabunt omnes bestiae agri
exspectabunt onagri in siti sua
12. [su]per ea uolucres caeli habitabunt
[de medio pet.]ra[ru]m dabunt u[oces]

Ps. ciii. 13–civ. 3.

13. rigans montes de superiorib[us] suis f. 56.
de fructu operum tuorum sa/tiabitur terra
14. producens fenum iumentis / terra
et herbam seruituti hominum :[†] ut educas panem de
15. et uinum laetificat cor hominis ÷
ut exhilaret faciem in oleo / ca/mpi
16. et panis cor hominis confirmat :[†] saturabuntur ligna
et caedri lybani quas plantauit
17. illic paseres nidificabunt ÷
18. erodi domus dux est eorum : montes excelsi ceruis
pe¹ tra refugium erenaciis . . . , + . . . , ÷ ¹ Here there is a hole in the
vellum, extending through
three lines of the text.
19. fe cit lunam in tempora
sol cognouit occassum suum ÷
20. posuisti tenebras et facta est nox
in ipsa pertransibunt omnes bestiae siluae ÷
21. catuli leonum rugientes ut rapiant
et quaerant a deo escam sibi ÷
22. ortus est sol et congregati sunt / suum
23. et in cubilibus suis collocabuntur :[†] exhibit homo ad opus
et ad operationem suam usque ad uesperum ÷
24. quam magnificata sunt opera tua domine
omnia in sapientia fecisti
[inp]leta est terra possessione tua . . . , + . . . ,
25. hoc mare magnum et spatiosum * manibu[s] :
illic reptili]a qu[or]um non [est numerus
26. ani]mal[i]a pusilla cum magnis : illic naues pertransibunt f. 56v.
[d]raco iste quem formasti ad inludendum ei
27. [o]mnia a te exspectant ut des illis escam in tempore
28. dante te illis colligent / nitate
aperiente te manum tuam omnia inplebuntur bo
29. Auertente autem te faciem turbabuntur
Auferes spiritum eorum et deficient
et in puluerem suum reuertentur ÷
30. emittes spiritum tuum et creabuntur
et Renouabis faciem terrae ÷ . . . , + . . . ,
31. sit gloria domini in saeculum
Laetabitur¹ in operibus suis ÷ ¹ dominus added in margin.
32. qui respicit terram et facit eam treme² re ² Space due to hole in vellum.
qui tangit montes et fumigant ÷ / sum ÷
33. Cantabo domino in uita mea : psallam deo meo quamdiu
34. Iucundum sit ei eloquium meum / a terra
35. ego uero dilectabor in domino :[†] deficient peccatores
et INiqui ita ut non sint
benedic anima mea domino . . . , . . . , . . . ,
CIIII alleluia uox christi ad apustolos de iu[deis]
1. **CON** FItemini domino et inuocate nomen eius
Adnuntiate inter gentes opera eius
2. cantate ei et psallite ei
[narr]ate omnia mirabilia eius
3. [laudamini in no]mine sancto [eius]

Ps. civ. 3-32.

- laetetur cor qua[e]rentium dominum / eius sem[per] f. 57.
4. quaerite dominum et confirmani†; quaerite facie[m]
5. mementote mirabilium eius quae fecit
prodigia eius et iudicia oris eius ÷
6. semen abraam serui eius: filii iacob electi eius
7. ipse dominus deus noster in uniuersa terra iudicia eius : + :
8. memor fuit in saeculum testamenti sui
uerbi quod mandauit in mille generationes ÷
9. quod disposuit ad abraam et iuramenti sui ad isaac
10. et statuit illud iacob in praeceptum
et israhel in testamentum aeternum ÷
11. dicens tibi dabo terram¹ chanaam ¹ Space due to hole in vellum.
funiculum hereditatis uestrae ÷
12. Cum essent numero breues: paucissimi et incolae eius ÷
13. et pertransierunt de gente in gentem
et de regno ad populum alterum ÷
14. non reliquit hominem nocere eis
et corripuit pro eis reges ÷
15. nolite tangere christos meos
et in profetas meos nolite malignari : + : ÷
16. et uocauit famem super terram
²omne firmamentum panis contriuit ÷ ² Apparently *et* is omitted
before *omne*.
17. missit ante eos uirum ³ This line has been cut
away by the binder.
[in s]eruum uenundatus est ioseph f. 57v.
18. [humiliauerunt in conpedibus pedes eius³
19. ferru]m [pe]rtransiit animam eiu[s] donec [ueniret uerbum eius
20. eloqui]um domini inflammauit eum: missit rex et soluit eum
princeps populorum et dimissit eum ÷
21. Constituit eum dominum domus suae
et principem omnis possessionis suae ÷
22. ut erudiret principes eius sicut semetipsum
et senes eius prudentiam doceret ÷
23. et intrauit israhel in aegyptum
et iacob accola⁴ fuit in terra cham . . . , + . . . , ⁴ a sec. corr. from o.
24. et auxit populum eius uehementer
et firmauit eum super inimicos eius ÷
25. conuertit cor⁵ eorum ut odirent populum eius
ut dolum⁶ facerent in seruos eius ÷
26. missit moysen seruum suum: aaron quem elegit ipsum ÷
27. possuit in eis uerba signorum suorum ⁵ Space due to hole in vellum.
et prodigiorum in terra cham ÷ ⁶ l written over an erasure.
28. missit tenebras et obscurauit
et non exacerbauit sermones suos ÷
29. conuertit aquas eorum in sanguinem
30. et occidit pisces eorum :† dedit terram† eorum ranas
in penetrabilibus† regum ipsorum . . . , + . . . ,
31. dixit et uenit cynomia
et scnyfes† in omnibus finibus eorum ÷
32. [possuit] pluias eorum grandinem ⁷ This line has been cut
away by the binder.
[ignem conburentem in terra ipsorum]⁷

Ps. civ. 33-cv. 14.

33. et percussit uineas eorum et ficulneas eorum f. 58.
 34. et contriuit lignum finium eorum:† dixit et uenit lucus[ta]
 et bruchus cuius non erat numerus ÷
 35. et comedit¹ omne fenum in terra eorum¹ ¹ e corr. from i.
 et com/edit² omnem fructum terrae eorum ÷ ² The erased letter is m.
 36. et percussit omne primogenitum in³ terra eorum ³ Written over an erasure.
 primitias omnes laboris eorum ÷
 37. et eduxit eos⁴ in argento et auro ⁴ e corr. from i.
 et non erat in tribus† eorum infirmus . . . , + . . . ,
 38. Laetata est aegyptus in protectione⁵ eorum ⁵ o sec. written over an erasure.
 quia incubuit timor eorum super eos ÷
 39. expandit nubem in protectionem eorum
 et ignem ut luceret eis per noctem ÷
 40. petierunt et uenit coturni/x : et pane caeli saturauit eos ÷
 41. dirupit petram et fluxerunt aquae
 abierunt in sicco flumina ÷
 42. quoniam memor fuit uerbi *sancti* sui
 quod habuit ad abraam puerum suum ÷
 43. et eduxit populum suum in exultatione
 44. et electos suos in laetitia:† et dedit illis regiones gentium
 et labores populorum possiderunt ÷
 45. ut custodiant iustificationes eius : et legem eius requirant . ,

[CU a]lleluia uox ecclesiae ad apustolo[s] legendus

1. **C**ONfitemini domino quoniam bonus **ad exodum**
 [quoniam in saeculum misericordi]a ei[us]⁶
 2. quis loqu[etur] potentias domini f. 58v.
 3. [audita]s faciet omnes laudes eius† beati qui e[ust]odiunt iudicium
 [et] faciunt iust[itiam] in omni tempor[e] ÷
 4. memento nostri [domine⁷ in b]eneplacito populi tui
 uisita nos in salutari tuo ÷ ⁶ Most of this line has been cut off by the binder.
 5. ad uidendum in bonitate electorum tuorum ⁷ Perhaps written in full.
 ad laetandum in laetitia gentis tuae
 ut [laud]eris cum hereditate tua ÷ . . . , + . . . ,
 6. Peccaui cum patribus nostris
 INiuste aegy[mus] iniquitatem fecimus ÷
 7. patres nostri in aegyp[to non] intellexerunt mirabilia tua
 non fueru[nt] memores multitudi[nis] misericordiae tuae
 et inrita[u]eru[nt] as[ce]nde[n]tes in mare * mare: rubrum: ÷
 8. et s[alu]auit e[os] propter nomen suum
 ut [n]ot[am] faceret potentiam suam ÷
 9. et in[cr]epauit mare rubrum et exsi^catum est
 et ded[uxit] eos in abyssis sicut in deserto ÷
 10. et saluau[it] e[os] de [man]u odientium / tes eos
 11. et redemit eos de [manu ini]mici:† et operuit aqua tribulan
 unus ex eis non remansit . . . , + . . . , ÷
 12. et crediderunt in uerbis [eiu]s
 et laudauerunt laudem [eius]
 13. cito fecerunt obliti sunt operum eius
 [et non sus]tenuerunt consilium eius ÷
 14. [et concupierunt concupiscentiam in deserto]⁸ ⁸ Cut off by the binder.

Ps. civ. 3-32.

- laetetur cor qua[e]rentium dominum / eius sem[per] f. 57.
4. quaerite dominum et confirmani†; quaerite facie[m]
 5. mementote mirabilium eius quae fecit
prodigia eius et iudicia oris eius ÷
 6. semen abraam serui eius: filii iacob electi eius
 7. ipse dominus deus noster in uniuersa terra iudicia eius : + :
 8. memor fuit in saeculum testamenti sui
uerbi quod mandauit in mille generationes ÷
 9. quod dispossuit ad abraam et iuramenti sui ad isaac
 10. et statuit illud iacob in praeceptum
et israhel in testamentum aeternum ÷
 11. dicens tibi dabo terram¹ chanaam ¹ Space due to hole in vellum.
funiculum hereditatis uestrae ÷
 12. Cum essent numero breues: paucissimi et incolae eius ÷
 13. et pertransierunt de gente in gentem
et de regno ad populum alterum ÷
 14. non reliquit hominem nocere eis
et corripuit pro eis reges ÷
 15. nolite tangere christos meos
et: in profetas meos nolite malignari : + : ÷
 16. et uocauit famem super terram
²omne firmamentum panis contriuit ÷ ² Apparently *et* is omitted
before *omne*.
 17. missit ante eos uirum
[in s]eruum uenundatus est ioseph ³ This line has been cut
away by the binder.
 18. [humiliauerunt in conpedibus eius³
 19. ferru]m [pe]rtransiit animam eiu[s] donec [ueniret uerbum eius f. 57v.
 20. eloqui]um domini inflammauit eum: missit rex et soluit eum
princeps populorum et dimissit eum ÷
 21. Constituit eum dominum domus suae
et principem omnis possessionis suae ÷
 22. ut erudiret principes eius sicut semetipsum
et senes eius prudentiam doceret ÷
 23. et intrauit israhel in aegyptum
et iacob accola⁴ fuit in terra cham . . . , + . . . , ⁴ a sec. corr. from o.
 24. et auxit populum eius uehementer
et firmauit eum super inimicos eius ÷
 25. conuertit cor⁵ eorum ut odirent populum eius
ut dolum⁶ facerent in seruos eius ÷
 26. missit moysen seruum suum: aaron quem elegit ipsum ÷
 27. possuit in eis uerba signorum suorum ⁵ Space due to hole in vellum.
et prodigiorum in terra cham ÷ ⁶ l written over an erasure.
 28. missit tenebras et obscurauit
et non exacerbauit sermones suos ÷
 29. conuertit aquas eorum in sanguinem
 30. et occidit pisces eorum: ⁷dedit terram† eorum ranas
in penetrabilibus† regum ipsorum . . . , + . . . ,
 31. dixit et uenit cynomia
et scnyfes† in omnibus finibus eorum ÷
 32. [possuit] pluuias eorum grandinem ⁷ This line has been cut
away by the binder.
[ignem conburentem in terra ipsorum]⁷

Ps. civ. 33—cv. 14.

33. et percussit uineas eorum et ficulneas eorum f. 58.
 34. et contriuit lignum finium eorum :[†] dixit et uenit lucus[ta]
 et bruchus cuius non erat numerus ÷
 35. et comedit¹ omne fenum in terra eorum¹ ¹ e corr. from i.
 et com/edit² omnem fructum terrae eorum ÷ ² The erased letter is m.
 36. et percussit omne primogenitum in³ terra eorum ³ Written over an erasure.
 primitias omnes laboris eorum ÷
 37. et eduxit eos⁴ in argento et auro ⁴ e corr. from i.
 et non erat in tribus† eorum infirmus . . . , + . . . ,
 38. Laetata est aegyptus in profectio⁵ eorum ⁵ o sec. written over an erasure.
 quia incubuit timor eorum super eos ÷
 39. expandit nubem in protectionem eorum
 et ignem ut luceret eis per noctem ÷
 40. petierunt et uenit coturni/x : et pane caeli saturauit eos ÷
 41. dirupit petram et fluxerunt aquae
 abierunt in sicco flumina ÷
 42. quoniam memor fuit uerbi *sancti* sui
 quod habuit ad abraam puerum suum ÷
 43. et eduxit populum suum in exultatione
 44. et electos suos in laetitia :[†] et dedit illis regiones gentium
 et labores populorum possiderunt ÷
 45. ut custodiant iustificationes eius : et legem eius requirant . ,

[CU a]lleluia uox ecclesiae ad apustolo[s] legendus

1. **C**ONfitemini domino quoniam bonus ad exodum
 [quoniam in saeculum misericordi]a ei[us]⁶ f. 58v.
 2. quis loqu]etur potentias domini
 3. [audita]s faciet omnes laudes eius[†] beati qui c[ust]odiunt iudicium
 [et] faciunt iust[itiam] in omni tempor[e] ÷
 4. memento nostri [domine⁷ in b]eneplacito populi tui
 uisita nos in salutari tuo ÷ ⁶ Most of this line has been
cut off by the binder.
 5. ad uidendum in bonitate electorum tuorum ⁷ Perhaps written in full.
 ad laetandum in laetitia gentis tuae
 ut [laud]eris cum hereditate tua ÷ . . . , + . . . ,
 6. Peccauimus cum patribus nostris
 INiuste aegy/mus iniquitatem fecimus ÷
 7. patres nostri in aegyp[to non] intellexerunt mirabilia tua
 non fueru[nt] memores multitudi]nis misericordiae tuae
 et inrita[u]eru[nt] as]cende[n]tes in mare * mare : rubrum : ÷
 8. et s[alu]auit e]os propter nomen suum
 ut [n]ot[am] faceret potentiam suam ÷
 9. et in[cr]epauit mare rubrum et exsi^ccatum est
 et ded[uxit] eos in abyssis sicut in deserto ÷
 10. et saluau[it] e]os de [man]u odientium / tes eos
 11. et redemit eos de [manu ini]mici :[†] et operuit aqua tribulan
 unus ex eis non remansit . . . , + . . . , ÷
 12. et crediderunt in uerbis [eiu]s
 et laudauerunt laudem [eius]
 13. cito fecerunt obliti sunt operum eius
 [et non sus]tenuerunt consilium eius ÷
 14. [et concupierunt concupiscentiam in deserto]⁸ ⁸ Cut off by the binder.

APPENDIX I.

THE SHRINE OF THE CATHACH.

BY E. C. R. ARMSTRONG, M.R.I.A.

Dr. Lawlor has dealt with the early history and romantic adventures of the Shrine in his account of the *Cathach*; this appendix is confined to a description of the ornamental features of the *Cumdach*.

The shrine of the *Cathach* is one of the six early Irish book-shrines which still survive (the others being the Shrine of St. Molaise's Gospels (1001-1025 A.D.); the Shrine of the Stowe Missal (1023-1052 A.D.); the *Domnach Airgid* (Shrine of St. Patrick's Gospels) (eleventh century); the Shrine of the Book of Dimma (1150 A.D.); and the Shrine of the Book of Mulling (at least as old as the fourteenth century¹). It has been noticed by various writers, but only two of the previous accounts need be here mentioned. The first is by Sir William Betham, in "Irish Antiquarian Researches," 1827, vol. i, p. 109. He described the shrine and gave an illustration (not quite correct in all details) of the lid. The second is by Dr. Reeves in his edition of "Adamnan's Life of St. Columba," 1857. Dr. Reeves did not describe the shrine, but recorded the inscription and identified the persons mentioned in it, thus enabling the date when the shrine was made to be ascertained. The sides, ends, and base of the *Cumdach* do not appear to have been previously illustrated; on the present occasion the opportunity has been taken to do this by means of photography.²

The shrine is an oblong box made up of the following parts:—

1. The base: this is a silver plate cut into a pierced cruciform diaper pattern measuring 172 mm. in breadth, and 239 mm. in length, attached by rivets to a brass plate which measures 184 mm. in breadth and 245 mm. in length.
2. The sides: these measure 240 mm. by 35 mm., and 242 mm. by 37 mm. respectively.
3. The ends: which measure respectively 183 mm. by 60 mm., and 182 mm. by 60 mm.
4. The lid: which measures 192 mm. in breadth, and 252 mm. in length.

The shrine contains a wooden box, apparently of recent construction.

The inside measurement of the case *without* this box is 241 mm. by 183 mm.; the inside measurement of the box is 220 mm. by 165 mm., and 27 mm. in depth.

¹ "Hermathena," vol. viii, p. 89.

² The National Museum supplied the photographs by the Director's permission.

At each corner of the case is a small hollow pillar to contain the pins which fastened the lid to the box.

The base (Plate XXXVI) is the most important part of the *Cumdach*, as the inscription upon it enables us to determine, within narrow limits, the date at which the shrine was made. As mentioned above, it is a silver plate cut into a pierced cruciform diaper pattern resembling the back of the shrine of St. Patrick's bell (1091–1105 A.D.), of the shrine of St. Molaise's Gospels (early eleventh century), and the base of St. Moedoc's shrine (probably eleventh century). On the two sides and one end (the other being incised with a fret and a chevron pattern) of the edge of the plate the following inscription is engraved in Irish characters: it was recorded by Dr. Reeves,¹ and later by Dr. Petrie.²

[OR]OIT DO CHATHBARR UA DOMNAILL LASINDERNAD IN CUMTADH S³A |
 7 DO SITTRIUC MAC MEIC AEDA DO RIGNE 7 DO DOMNAILL MAC ROBA |
 RTAIG DO COMARBA CENANSA LASINDERNAD

Professor O. J. Bergin, who kindly examined the inscription on the shrine for the purposes of this appendix, has pointed out, what neither Dr. Reeves nor Dr. Petrie had noticed, the presence of the letter *h* between the letters *C* and *A* in the name CHATHBARR, also that the engraver had cut an *O* instead of the letter *C* before the *h* in the word CUMTADHSA. Both these words are in the first line. The upper portions of some of the letters in the first and second lines are broken, but, except in the first word of the first line, the letters can be identified.

The inscription may be translated thus:—

“A prayer for Cathbarr Ua Domnaill by whom this Reliquary was made and for Sitric son of Mac Aedha who made it, and for Domnall Mac Robartaigh coarb of Kells by whom it was made.”

Dr. Reeves identified the persons named as follows⁴:—

Cathbarr O'Donnell was the son of Gillachrist who died in 1038 A.D. He died in 1106 A.D. Sitric was the son of Mac Aedha who is called *Cerd*, that is “Artificer” in the Irish charters in the Book of Kells.⁵ Domnall Mac Robartaigh was the successor of Columba at Kells; he followed Gillachrist Ua

¹ Reeves, p. 319.

² “Christian Inscriptions in the Irish Language,” vol. ii, pl. xlii, fig. 90.

³ A rivet has been driven through the letter *S*; but portions of it can still be seen. (This is correctly represented by Dr. Petrie, *op. cit. supra*.)

⁴ P. 320.

⁵ Miscellany of the Irish Archaeological Society, vol. i, p. 141.

Maeldoraidh in that office in or after 1062 A.D.,¹ and died in 1098 A.D. As Domnall Mac Robartaigh was doubtless alive when the shrine was made, its date would fall between 1062 and 1098 A.D.

To avoid confusion, when following the description of the various parts, the reader examining the *Cumdach* is supposed to hold it with the hinged side away from him. "Right-hand end" means the end to the spectator's right.

The decoration of the sides consisted of small oblong panels of bronze, ornamented with interlaced, conventionalized leaf, and zoomorphic patterns, which were covered with very finely rolled gold plates pressed into the design cut into the bronze. This can be clearly observed on the hinged side; on the front side the bronze panels do not appear to have been engraved before the gold plates were applied. These panels were set into a rectangular framework of bronze coated with silver and ornamented with studs. On the front side (Plate XXXVII) only four partly perfect, and portions of two empty panels of the earlier work, are visible, the centre of the side being occupied by the large semi-circular ornament and its attached panels; this ornament is made of silver, formerly gilt, being vertically divided by twisted wire-work into sections decorated with niello; its upper portion is ornamented with small bosses surrounded by twisted wire spirals, and on its lower face are engraved the letters I H C in Gothic characters (Plate XXXVI). The panels attached to this ornament, which are apparently made of bronze, coated with silver, gilt, are decorated with a leaf-pattern; they are framed in borders ornamented with niello-work. The corners of the shrine have been repaired, the side described being covered at each end by one vertical and two horizontal panels of bronze, gilt; those to the right are decorated with a species of combined quatrefoil and saltire pattern, and of those to the left the upper one contains three quatrefoils, and the lower, interlaced work. The vertical panel at each end is incised with a linear pattern; all are framed in borders of niello-work.

On the hinged side (Plate XXXVII) ten complete panels and small portions of two others of the earlier work can be observed; from two of these the gold plates have disappeared, in two others they are much worn. When the corners were repaired, panels of later workmanship were placed at each end covering portions of the older work. In both cases these consist of one vertical panel of bronze, gilt, and two horizontal ones probably of bronze, coated with silver, apparently originally gilt, decorated with a leaf-pattern; the right-hand vertical panel is slightly ornamented with a species of leaf-design; all are enclosed in borders of niello. The panels ornamented with zoomorphic

¹ Annals of Ulster, vol. ii, p. 11. See also Reeves, p. 400.

ornament resemble those on certain tenth-century brooches of the Viking period, decorated with bosses and strap-work enclosing panels of interlaced zoomorphs, of which several examples have been found in Ireland, and are in the Royal Irish Academy's collection.

The ends consisted in each case of a single panel of bronze, gilt, decorated with bold interlaced zoomorphic ornament, much of the design being wrought in niello-work. The repairing of the corners has led to the extremities of these panels being covered by one vertical and two horizontal sections of later workmanship. On the right-hand end (Plate XXXVIII) the vertical panels are bronze, gilt; both are engraved with different linear patterns; the horizontal, towards the hinged side, appear to be bronze, coated with silver, decorated with leaf-ornament, and towards the front of bronze, gilt, the top one being engraved with two quatrefoils, the lower with a rectilinear design. On the left-hand end (Plate XXXVIII) the added horizontal panels towards the hinged side are similar to the ones described above in the same position on the right-hand end. Those towards the front are of bronze, gilt, and contain a floral design. The vertical panel to the hinged side is ornamented with a leaf-pattern, and that to the front side with a linear design; all are contained in niello-work borders. The fine bold design of the interlaced zoomorphs, which resembles, in some degree, the decoration of the head of the crozier of Clonmacnois, makes the addition of the later and inferior panels a matter of regret.

The lid of the box (Plate XXXV) is formed of a plate of silver, gilt, with a tubular rim which has corners ornamented with small knobs and twisted wire-work; it was riveted to a brass plate, to which the wooden cover of the box at present inside the shrine is attached. The ornamental features of the lid show it to be later in date than the back and older portions of the sides and ends; it is decorated in the following manner:—In the centre, in a round-headed niche, is seated a figure with waving hair, wearing a full robe; his right hand is raised in benediction, he holds a book in his left; the arms of the chair upon which he is seated terminate in animal heads. On the dexter, in a similar but smaller niche, is the effigy of a bishop wearing a mitre, amice, dalmatic, and an orphreyed chasuble, having his right hand raised in benediction, and holding his crozier in his left; below his right hand is engraved a bird (a dove); underneath this is the head of an ecclesiastic whose body is covered by one of the six settings that enrich the lid. In a similar niche on the sinister side, is a representation of the Crucifixion, with the Virgin standing on the dexter, and St. John on the sinister; above the Saviour's head are engraved two birds (eagles). On each side of the central figure, outside the niche, and above the side niches, is the figure of an angel swinging a

censer: the background is engraved on the dexter with a human-headed wyvern possibly meant for a manticora, and a priest holding a chalice, and on the sinister with a similar human-headed beast or manticora, and a griffin. The design is framed in an ornamental border containing, on the top and base, pairs of confronting creatures, probably intended for lions and wyverns, and at the sides, a freehand design of oak-leaves. Six ornamental settings, five of which still contain crystals, are fastened to the plate, one at each corner, and one at the head and one at the feet of the principal figure. The upper setting on the dexter side is oval, ornamented with a kind of beading, and twisted-wire chain-work; it has claws to retain the crystal, which is ridged; the lower is octagonal, with a species of frilled ornament at the base; it has teeth and clamps to retain the faceted stone. On the sinister side the upper setting is oval, its base is decorated with a herring-bone pattern, formerly ornamented with niello, it has serrated teeth to retain its ridged gem; the lower setting is also oval, with a beaded border, chain-work, and serrated teeth. The settings at the head and feet of the principal figure are very elaborate: the upper one is circular and ornamented with small bosses and double-twisted chain and single-twisted wire-work; it has ten settings containing uncut sapphires and pearls. The lower, which is rectangular, is ornamented with plaited wire, and with scrolls in single-twisted wire enclosing small knobs; its four small corner settings contain coloured glass. This setting is now empty: but in Sir William Betham's reply to Lady O'Donel's Bill of Complaint in the Chancery action which was commenced in 1814, it is stated (in a description of the shrine therein inserted), that at the foot of the Saint's figure is a setting with a piece of glass covering some small bits of cloth supposed to be a relic of the Saint's garment. In the illustration of the shrine in Betham's "*Irish Antiquarian Researches*" (1827), previously referred to, this setting appears to be represented as filled; but in the Fourth Report of the Historical Manuscripts Commission (1874), p. 587, it is stated by Sir John T. Gilbert, who there described the shrine, that "At the feet of the figure is a now vacant square setting for a large gem"; so its contents seem to have disappeared between the years 1827 and 1874. The practice of enshrining pieces of cloth, presumably portions of a Saint's garment, was not infrequent in Ireland; the *Fincail Phádraig* (Shrine of St. Patrick's tooth) has a piece of linen, doubtless a relic, inserted beneath the lower portion of the silver plate on the front of the shrine,¹ while the head of the crozier of St. Blathmac contains the remains of the Saint's wooden staff wrapped in some kind of coarse cloth.²

¹ Sir W. R. Wilde. "Lough Corrib," 1872, p. 189.

² "Journal Royal Society of Antiquaries of Ireland," vol. xxiv, p. 338.

Attached to the rim on the dexter side by a silver chain of trichinopoly work, is a small silver censer or bell engraved with Gothic lettering, now so much defaced that only the following can be read, doubtfully: ME FECIT (?).

The earlier portions of the *Cumdach* may be compared with other book-shrines in the Royal Irish Academy's Collection, such as the *Soiscél Molaise* and the earlier parts of the *Domnach Airgid*; the former appears from an inscription engraved upon it to have been made between the years 1001 and 1025 A.D.;¹ the earlier portion of the latter is known to have existed in the eleventh century.² Like the *Cathach* Shrine, the *Domnach Airgid* was repaired in later times; its present outer case was the work of John O'Barrdan; it was made for John O'Karbri, abbot of Clones, whose death is recorded in the Annals of the Four Masters at the year 1353 A.D. The lid of the *Cathach* shrine resembles the outer case of the *Domnach Airgid*, while the style of its decoration is also like that of the shrine known as the *Fiacail Phádraig*, which was made in the fourteenth century.³ The *cumdach* of the Stowe Missal,⁴ which has had a very similar history to the *Cathach* shrine, having been made in the eleventh century, and having had a front added to it in the fourteenth century, should also be examined for points of comparison.

The Shrine of the *Cathach* appears to have been repaired on several occasions; but, in the writer's opinion, it seems possible broadly to separate its existing parts into two well-defined periods, to the first of which belong the base, known from the inscription to have been made in the eleventh century, and the older portions of the sides and ends; to the second belongs the lid, which is almost certainly of fourteenth-century date; the additions to the sides and ends being possibly contemporary with it.

In 1723, Brigadier-General Daniel O'Donel caused a silver case to be made to support the sides and ends of the shrine, the lid and base being left uncovered. This case is a simple oblong frame, with a small ledge on the under side to hold up the shrine. It measures 252 mm. by 195 mm., and is 45 mm. in height. The sides and ends are engraved on the outside with interlaced scrolls, of Renaissance type, containing panels forming diaper-work and conventional flowers. On the projecting portion that covers the

¹ "Archaeologia," vol. xliii, p. 144; "R.I.A. Celtic Christian Guide," pp. 44 and 45.

² For descriptions of this shrine and the ms. it contained see the memoirs by Petrie and Bernard, Transactions Royal Irish Academy, vol. xviii, p. 14, and vol. xxx, p. 303.

³ "R.I.A. Celtic Christian Guide," p. 95.

⁴ See Sir George F. Warner's description of this casket in his edition of the Stowe Missal, Henry Bradshaw Society, vol. xxxii, 1906, p. xliv.

semi-circular ornament on the front side of the shrine, are engraved on a round shield, the arms of O'Donel, a forearm sleeved and cuffed issuing from the dexter side holding a cross crosslet fitchy, supported on the dexter side by a lion, and on the sinister by a bull. Above the shield is a coronet surmounted by a helmet and crest—two arms in armour bent and crossed, the dexter holding a sword transfixing (a boar's head) (?), the sinister a heart. Below is the motto *IN HOC SIGNO VINCES*, and depending from the shield is the cross of some order of chivalry; the achievement is placed upon an ermine-lined mantle. On the base of the ornament the crest is repeated; the following inscription is engraved round the ledge:—

IACOBO · 3 · M · B · REGE EXULANTE, DANIEL O DONEL, INXTIANISS.°IMP.° PRÆFECTUS
REI BELLICÆ, HUSUSCE HÆRADITARI S^{TI} COLUMBANI
PIGNORIS, VULGÓ CAAH DICTI, TEGMEN ARGENTEUM VETUSTATE
CONSUMPTVM RESTAURAVIT ANNO SALUTIS 1723 ·

The engraver evidently cut the last letter of the name O DONEL as a T, subsequently altering it to an L; the cross-stroke of the T still remains.

The Brigadier, who died without issue in 1735, left directions in his will that the shrine should be given to the person who should prove himself to be the head of the O'Donels. It was discovered at Paris in a Monastery in which, apparently, it had been deposited by Brigadier Daniel O'Donel: it was brought back to Ireland by Sir Capel Molyneux, Bt., and delivered by him to Sir Neale O'Donel, Bt., in 1802.¹

Accounts of the discovery of the shrine differing in some particulars from the above are given by O'Donovan, *Annals of the Four Masters*, vol. vi, Appendix, p. 2400; and by O'Curry, *MS. Materials*, 1861, p. 331.

¹ Bill of Complaint of Lady O'Donel, filed in Chancery on the 30th April, 1814: Pedigree of the O'Donels, compiled by Sir William Betham.

APPENDIX II.

PALAEOGRAPHICAL NOTES.

BY PROFESSOR W. M. LINDSAY.

I. THE SCRIPT OF THE CATHACH.

DR. Lawlor has asked for a palaeographical note on the Cathach, and has sent me photographs of ten of its pages. My own inspection of the MS. was made in very cursory fashion some twenty or thirty years ago. Henry Bradshaw's way of keeping a MS. beside him for a month or more, and poring over each line, each word, each letter, is unfortunately impracticable; although it is the only way to wrest from these old documents all their secrets. I must be content with stating what can be gleaned from an inspection of the ten photographs.

The gist of the following remarks is that, in our present state of knowledge of early Irish palaeography, there seems to be no valid reason why we should refuse to the script of the Cathach the early date which Dr. Lawlor's theory assigns to it. Further, that the nature of the script is in keeping with the theory; for it is a half-uncial script reduced in size and made more flowing. In other words, the formal book-hand of the time seems to have been modified so as to enable the writer to get through his task more quickly and to use less parchment. It might be objected that the theory would lead us to expect St. Columba to have discarded any form of book-hand, and to have used instead the cursive hand of every-day correspondence, of memoranda, hasty jottings, and the like; or at least to have shortened his task by a free employment of abbreviation-symbols. All our MSS. of the grammarian Marius Victorinus (edited in vol. vi of Keil's "Grammatici Latini") come from an ancient (fifth or sixth century) copy which swarmed with symbols, many of which had become obsolete by the time of the Carolingian transcribers. The younger contemporary of Columba, Columban, the founder of Bobbio, left in the monastery-library a MS. of his (?) Commentary on the Psalms, whose old-fashioned abbreviation-symbols puzzled the Bobbio transcribers in the eighth century. Why should not Columba, too, it may be objected, if he were pressed for time, have used abbreviation? This objection does not seem to be fatal to the theory. We need not suppose the Saint to have been so terribly pressed for time. We may believe that he wished to keep his transcript as near to the formal book-hand as he conveniently could, and to make it fairly reproduce the character of the original (with its "cola et commata," Jerome's "notae criticae," etc.). Besides, a very hasty copy would

have to be re-transcribed later in more calligraphic form, and this would perhaps require a larger stock of parchment than was available. Of course our knowledge of the early (Latin) script of Ireland is as limited as our knowledge of the early (Greek) script of Egypt used to be, before Messrs. Grenfell and Hunt unearthed all these papyri from the Fayoum. It may be that, if we had a sufficient number of early specimens preserved, we should find the script of the Cathach to be a common type. As things are, it seems to be unique. It gives the impression of a script which would not often be used for books, a half-uncial which, under the necessity for haste, has been forced to discard some of its characteristics. Since there is no specimen of this type¹ to which one can appeal, my note will have to keep to general remarks, and cannot come at all near a satisfactory decision of the question. Perhaps the best way of trying to convince a reader will be to ask him to look at a photograph of the last page of the famous Hilary codex in the Biblioteca Basilicana at Rome, the page containing the corrector's subscription. A photograph will be found in Steffens' "Lateinische Palaeographie" (first edition), plate 17, or in Ehrle and Liebaert's "Specimina Codicum Latinorum," plate 6*a*. The Hilary text is in half-uncial script, the subscription in everyday cursive. Both text and subscription belong to 509 or 510 A.D. Let the reader try to imagine for himself how the half-uncial of the text would be altered if it were slightly modified in the direction of the cursive of the subscription. Would not something like the script of the Cathach be the result?

A palaeographer of last century would probably assign the script to "about 700 A.D." If induced (not always an easy thing) to state his reasons, they would perhaps take a shape like this: "From the MSS. I have seen in the British Museum and the Bodleian, and from the Palaeographical Society's photographs of various MSS. of Continental libraries, I have been led to associate formed minuscule script with the ninth and following centuries, uncial with the fifth to the eighth, half-uncial with the sixth to the eighth. The script of the Cathach is a small-sized half-uncial on the way to minuscule. If the minuscule element were more pronounced, I would assign it to the middle of the eighth century; as it is, I assign it to the very beginning."

The evidence on which a palaeographer has to frame a verdict consists (unless he has visited foreign libraries) mainly of the publications of our own and other Palaeographical Societies. These are, as a rule, taken from calligraphic specimens, partly because the subscribers like to see beautiful

¹ The "quarter-uncial" of the Bobbio Juvenal fragments found by Mons. Ratti is not quite the same thing. (See the photographs, in natural size, which accompany his article in "Rendiconti R. Ist. Lombard. di Sc. e Lett.," Serie II, vol. xlii, 1909.)

script, partly because specimens of unformed script are, in the case of the older MSS., not so easy to find. When the neat, clear, and convenient minuscule of the ninth and tenth centuries became universal, the non-calligraphic productions of the early copyists were transcribed in the new type, and the originals were destroyed. In most quarters only those which had some revered associations would escape destruction—an Evangel of St. John penned by St. Moling¹ (d. 696 A.D.); a Gospels text owned, if not actually written,² by St. Boniface (680–755), and—shall we add?—a Psalter traced by St. Columba's own hand. It is mainly the calligraphic specimens of the pre-Carolingian ages which have survived. And if one of these should happen to exhibit here and there, where a scribe was pressed for room or for time, a less calligraphic type, such a page has not been selected for photography, since editors (and subscribers, too) preferred to ignore these departures from the normal form. This tended, I think, somewhat to warp the judgement of palaeographers. It made them prone to believe that only regular uncial and

¹Thanks to Dr. Lawlor's researches, it has been possible to make certain that the fourth Gospel in the Book of Mulling was actually written by the Saint himself, and thus to gain a landmark for the early pointed minuscule of Ireland. Now that so many photographs of the earliest Irish minuscule of Bobbio (founded in the year 614) have been published (in Cipolla's "Codici Bobbiesi," vol. i, and those of Vienna 16 in the "Monumenta Palaeographica Vindobonensia"), anyone can assure himself that the script of this Gospel (if not also of the other three) is of a very early type.

²In my "Early Irish Minuscule Script" it is stated (p. 5) that the tradition that Boniface himself wrote the volume cannot be true, since the writer's name, Cadmug (an Irish word, literally "battle-slave"), appears at the end ("Cadmug scripsit," written as if part of the text), and there are Irish glosses by the scribe's hand here and there throughout the volume. But experts (in ZCP, viii, 174) now declare these glosses to have been transcribed unintelligently (*i.e.*, not by an Irishman) from the original. Boniface was born at Crediton, and passed his noviciate at Adescancastre (= Exeter?), both places in a district where Cornish, Irish, and Anglo-Saxon elements commingled. If he made a transcript from an Irish friend's ms. during his noviciate, its use of the un-Irish abbreviation-symbols *v* (with suprascript apostrophe) "ut" and *quō* "quoniam" (see my "Notae Latinae," pp. 267, 321) is explained; and it is conceivable that Boniface included his friend's subscription in his transcript as a souvenir. There is a great contrast between the cursive scrawl of the Boniface Gospels and the neat Anglo-Saxon minuscule of the (probably) Boniface marginalia in the uncial Codex Fuldensis of the New Testament (and, I would add, in the Cassel Hegesippus). But Boniface's writing would be improved by his subsequent education at Nutshalling (between Winchester and Southampton) under the famous scribe, Abbot Wynbert. Besides, the cursive suitable for a pocket-copy of the Gospels would have to be replaced by the neatest possible script for marginalia in so valuable a ms. as the Codex Fuldensis (or the Cassel ms.). One of the Irish glosses has been transcribed in a late form (*sodain* for *sodin*), just as in a ms. (Paris, B. N. lat. 7530) of Bede's Orthography, written at Monte Cassino between 779 and 797, the German gloss *forbotan* "forbidden" of the Fulda (?) original has been miscopied by the Italian scribe in the form *forboten*, a form much later, I am told, than the eighth century.

regular half-uncial could be old, and kept them from recognizing that a great variety of script was current at the same period in the same scriptorium.

Now that the excellent practice has begun of devoting a whole volume of plates or even a series of volumes to the MSS. of a single centre, this variety of current script is revealed, and un-calligraphic script is getting some recognition; for an editor, finding himself able to offer more than one photograph from the same MS., is able to let us see the writing at its worst as well as at its best. The Bobbio MSS. at Turin have been exhibited in Cipolla's "*Codici Bobbiesi*," vol. i (1907). One of them, Turin Bibl. Nat. G v. 26, Augustine's Letters to Pascentius, is written in good half-uncial script, which Chatelain and Cipolla both assign to the sixth century. On fol. 5^v (see Plate 21 of Cipolla) the scribe, in order to finish the Epistle at the foot of the page, and perhaps also through hurry, has contracted the last eight lines into a kind of cursive minuscule. No palaeographer of last century would have dated these eight lines, if he were shown a separate photograph of them, as early as the half-uncial of the other pages. Vol. ii of the "*Codici Bobbiesi*" is to exhibit the Bobbio MSS. at the Ambrosian Library, Milan, and will give plenty of examples of the variety of scripts of which a single scribe was capable, and of the contemporaneousness of formed and unformed types of a "more majuscule" and a "more minuscule" appearance. A similar collection from Veronese MSS. was announced for 1911, but has not yet appeared: "*Atlante paleografico artistico della Capitolare di Verona*." Its editor, Canon Spagnolo, the Verona librarian, writing recently of one of the earliest¹ dated specimens of half-uncial, no. xxxviii in his library (Sulpicius Severus, written in 517 by Ursicinus at Verona), assigns to the Ursicinus school no. xxxiii Augustinus de Agone Christiano. No palaeographer of last century would have dated the rude "minuscule" found in no. xxxiii as early as the beautiful half-uncial of no. xxxviii. But when the "*Atlante paleografico*" appears, we shall probably all agree with Canon Spagnolo.

It is wrong, therefore, to lay too much stress on palaeographical verdicts of a time when all this evidence had not been produced. The eminent palaeographers who pronounced them would now be the first to retract them. Each fresh issue of our New Palaeographical Society's publications may bring reason for a re-casting of old formulas. For instance, the last part exhibited the Cambrai half-uncial Philippus' commentary on Job, a MS. which the Society's editors assign (conjecturally, it is true, but by no means unreasonably) to "the end of the sixth or the beginning of the seventh century." It

¹ The earliest is a Verona palimpsest (no. lv) of the *Fasti Consulares*, or rather the last part of them, continuing the list from 486 to 494, and therefore written about 494.

has a number of abbreviation-symbols.¹ What has become of the time-honoured formula: "Absence of abbreviation is a criterion of the older MSS.?"

And now to leave generalities, and see what can be gleaned from these ten photographs of the Cathach. There is no "late symptom" to be detected. The abbreviations (besides *b*: "bus," *q*: "que") are confined to the "nomina sacra," with the exception of *n̄* "non," which Dr. Lawlor tells me the scribe has used in a correction. This symbol almost forced its way (like the "que" and "bus" symbols) into recognition in ancient book-hand. It is employed freely in the Turin Cicero palimpsest, and appears in the Aulus Gellius palimpsest (see Hertz' edition, II, p. xvi). The "nomina sacra" symbols are used generally in the strict fashion of the earliest² times, "Deus," "Dominus," etc., being expressed by *d̄s*, *d̄ns*, etc., while "deus," "dom(i)nus" are written in full. Thus, on fol. 51^r: *terribilis est super omnes deos (not d̄os) quoniam omnes dii (not di) gentium, etc.*; in Ps. lxxx. 1, *d̄s stetit in synagoga deorum*. But in Ps. lxxx. 10, *d̄s*, *d̄m* are used for "strange god." Besides *s̄s* "sanctus" we find *sc̄uarium* "sanctuarium," *sc̄itudo* "sanctitudo," *sc̄ifico* "sanctifico," etc., but these derivative symbols are allowed in quite early times, and are no evidence of lateness. "Israel," "Hierusalem," "David," etc., are always written in full. Final *m* at the end of a line, I am told, but not *n*, is often indicated by a horizontal stroke (with a dot above and below) over the preceding letter (or rather letters).

The lettering is of sturdy, squat appearance, with no high shafts, and with bold triangular tags (or beaks) of *b*, *d*, *l*, etc. The most noticeable form is the three-stroked uncial *s*. The round of *d*, *q*, *p* is oblate (broader than it is high). The letter *c* is rather higher than most shaftless letters. The *d* is often open. Only in "in" (and only when written with half-uncial *n*) do we find *i* longa (or rather "i longior"), patently to avoid confusion with *m*. Dropped *i* is found in "*fi*," "*ci*," "*li*." The *r* is broad, so that a word like *terrores* (fol. 45^r) occupies a good deal of space. The *y* occasionally shows that Insular variety³ in which the left-hand branch is curved to the right, instead

¹ I am not referring to those seen in the two plates, most of which come partly from the ninth-century Anglo-Saxon script corrector, but chiefly, I think, from a twelfth-century corrector who has sadly marred the original form of the greater part of this ms. It is, perhaps, unfortunate that a page was not shown us from the untouched portion, foll. 155-205, where this Mar-text has not been at work.

² Traube denied the right of the Codex Romanus of Virgil to an earlier date than the sixth century, because it twice used *d̄s* of a pagan god.

³ Discussed in ZCP ix, 307, where it is suggested that "the detection of this form on the Continent [i.e. on ancient inscriptions] might give us a clue to the locality from which writing was first introduced into Ireland." Probably, however, it is a scribe's, not a sculptor's invention, due to the practice of not lifting the pen when the dot of the *y* was

of to the left, and hangs over the right-hand branch. The uncouth *z* of, e.g., fol. 43^r (*zeb, zebee*) appears also in the half-uncial Gospels, Brit. Mus. Royal 1 B vii. It is merely an ugly variety of the type found in all the older Irish majuscule (e.g. the Book of Kells), the Insular type in which the lower angle of the letter is projected downwards to the left like a spear. Ligatures are very few, and, we may say, confined to the letter *e* (e.g. "et," "*saeculum*"), a letter prone to ligature from the earliest times. For example, even the calligraphic half-uncial of the Basilican Hilary (of 509–510 A.D.), and even in the middle of a line (on fol. 63^r), offers "*intelleges*," with only the upper half of the middle *e* expressed. Both uncial and half-uncial forms of *d*, *n*, *s* appear, but are not utilized for variety in repetitions like "*dedit*," "*non*," "*missa*."

For the diphthong *ae* we do not find *e* with cedilla or loop below to the left (as in the Book of Kells¹ and the Lindisfarne Gospels), but the *a* is open and very short, in comparison with the *e*, in such a ligature as "*saeculum*," where the second stroke of the *a* is also the lower curve of the *e*.

These are the only details which seem to bear on the question of date. And what can be deduced from them? That the script is earlier than the eighth century? Well, that is perhaps a fair deduction, for an eighth-century hand would probably offer some "late symptom" or other. That it is earlier than the seventh century? No, we could hardly venture upon that deduction. Our knowledge of the distinction between seventh- and sixth-century script in Ireland is all too meagre. All we can say is: "There is no known reason to prevent the script of the Cathach from being as old as St. Columba's time."

A plate² accompanying this paper (Pl. XXXIV) shows a page (fol. 129^r) of a sixth-century half-uncial Bobbio ms. already mentioned, G v. 26 in the Biblioteca Nazionale, Turin. On another page (fol. 5^r) of this ms. the last eight lines are written by the scribe himself in a kind of cursive minuscule (see plate 21 of Cipolla's "*Codici Bobbiesi*," vol. i.). Our page, too, shows at the end of line 5 a slight deviation by the scribe from formal half-uncial, the "es" ligature. In the second last line a passage has been omitted by the scribe,

added. This form seems to have been current (an Insular importation?) at Corbie in the abbacy of Leutchar (c. 750). It is the form used in the script "between French half-uncial and minuscule" of St. Petersburg F v. 1, 6 (written for Leutchar) and its twin-ms. (also from Corbie), F v. 1, 5; also in Berlin lat. theol. F 354, which must have come to Werden monastery (founded c. 800) from the Corbie scriptorium, for its script is quite of the same type as these two. And it appears in other Corbie mss.

¹ Mr. Alfred de Burgh has kindly given me a very full list of the abbreviation-symbols and ligatures of this ms.

² This plate is in natural size.

and the omission has been supplied by another hand. It seemed to me, when I saw the ms., to be a contemporary hand. The script of this supplement is of much the same type as the cursive minuscule of the last eight lines of fol. 5^v, the difference being mainly due to the fact that this supplement was more restricted for space. A line had to be squeezed in between the third and second last lines of the text, and other four lines had to be squeezed into the lower margin. So the size of the script had to be reduced. Most palaeographers would, I fancy, date this supplement later than the Cathach. And probably, after comparing the Cathach script with the script on this plate and on Cipolla, C. B., pl. 21, all would allow that Palaeography offers no reason for disbelief of the tradition which assigns the Cathach to the pen of St. Columba.

II. THE COLOPHON OF THE DURROW BOOK.

From Dr. Lawlor's account,¹ from Prof. Abbott's final description in "Hermath.," viii, 199 (1893), and from my own notes of a very hasty inspection, the following seems to be a true representation of the colophon:—

Rogo beatitudinem
 tuam sc̄e praesbiter
 patrici ut quicumque
 hunc libellum manu te
 nuerit meminerit colum
 bae scriptoris. qui hoc scripsi
 himet² euangelium. per xii
 dierum spatium. ^agtia³ dñi nři s.s

Then, *after an interval of seven lines*, by the same hand:

Ora pro me fra
 ter mi dñs tecum
 sit.

The greater part of the first subscription has been retraced at a later time.

That the Columba mentioned is St. Columba himself seems certain. Durrow was founded by the Saint, his chief foundation in Ireland. **A**

¹ He tells me he no longer adheres to the statement in "Book of Mulling," p. 16, that it does not seem probable that St. Columba could have made use of a direct invocation of a departed Saint, "rogo beatitudinem tuam, sancte praesbiter Patrici."

² [himet (scarcely mmet) is a mistake for mihimet.]

³ [^agtia (possibly grā) "gratia." The s.s is an early symbol of subscripsi.]

sumptuous *cumdach* was made for the MS. by Flann, King of Ireland (d. 916), with an inscription addressed to *Columb Chille*. And the whole appearance of the page itself, with the Columba entry followed, at a respectful distance, by another entry, an invocation of this "Columba scriptor"—all this in a MS. of Durrow—shows us that the tradition of King Flann's time was also the tradition of at least two centuries earlier. To a palaeographer the page tells its own tale. The significance of the phrase *frater mi* "my brother" in the second entry does not seem to have been generally recognized. This is not the mode of addressing any reader.¹ It is clearly an address to Columba. And no ordinary scribe could use the phrase with decorum. If this second entry actually comes (as seems to be agreed) from the hand of the scribe of the MS., then the MS. must have been penned by some high dignitary, presumably by the abbot of the monastery himself. Just as Dorbbene, abbot of Iona, wrote with his own hand a MS. of Adamnan's Life of St. Columba, the founder of Iona (the MS. is now at Schaffhausen), so our MS. would seem to have been transcribed by an abbot of Durrow (if the MS. was written there) from an original written by the hand of the founder of Durrow.

Mediaeval Latin subscriptions have, as everyone who has handled many MSS. knows, not merely a phraseology, but also a form of their own; and any departure from the normal form throws light on the history of the MS. The mention of the time in which the scribe performed his task is unusual, at least until the period of the professional scribe, who was paid either by time or by the piece. It implies that St. Columba had achieved a remarkable feat in completing the transcription within² twelve days. The scribe of (nearly the whole of) the Book of Armagh, Ferdornach, writes at the close of St. Matthew's Gospel: explicit . . . scriptum, atque finitum in feria Mattei (with a full stop³ after "scriptum"), but does not state when he began

¹ The stock phrases are: *O tu quicumque leges*, or *qui legis(-it)*, or *lector(-res)*, or merely *ora(-ate)*, or the like.

² *Intra* would be better Latin than *per*. It would probably be too fanciful to ascribe the use of *per* for *intra*, and of *evangelium* (as in the subscription of the MacRegol Gospels, etc.) for *evangelia* to the exigencies of a rhyming couplet:

qui hoc scripsi mihimet evangelium
per duodecim dierum spatium;

although such couplets often terminate a subscription, e.g.:

qui legit, oret pro scriptore,
sic (or si) Deum habeat protectorem).

³ So correct "Hermath.," xviii, 45. My deduction, that the Book of Durrow itself might have been the book written in twelve days, was made under the idea that in the Columba entry the symbol *n̄i* "nostri" was changed from *n̄i* by the re-tracer of the entry, and that the second entry was by a later hand.

his task. Two Ratisbon scribes wrote in seven days a minuscule ms. (of St. Augustine's Commentary on the First Epistle of St. John) in the year 823, during their stay at Frankfort. Their bishop was evidently proud of the feat, for he has recorded it in a subscription. The ms. (Munich lat. 14437) now contains 109 leaves of 10 × 8 inches, with twenty lines to the page, but how much has been lost I do not know. A photograph of one page, published by the Palaeographical Society (I, pl. 123), gives a good idea of its neat, careful writing. That calligraphy had not been sacrificed to speed was evidently part of the good bishop's boast.

Another thing that is significant to a palaeographer is the number of abbreviations¹ in the last line of the first subscription. It suggests limitation of space. Words which would naturally occupy two lines or a line and a half have been crowded into one line with the help of abbreviation-symbols. Now, there is no lack of space on the Book of Durrow's page. It must have been in the original ms. that the space for this subscription was limited. The scribe of the Durrow Book has not merely transferred the subscription from the original (a thing unusual, but by no means unparalleled), but has transferred it with scrupulous respect for the form of the original. We have ground for belief that each line in the copy retains the exact contents of each line of Columba's subscription; and we find here (if it be needed) fresh confirmation of the view that the "Columba scriptor" is St. Columba himself.

Now, this subscription, transferred from the original into the Book of Durrow, connects that original very definitely with the story of St. Columba and St. Finnian. Not merely by Columba's mention of his hurry ("I wrote it in twelve days' space by the grace of our Lord"), but also by the phrase *scripsi mihi met*; for that remark, "I wrote it for my own use," has something of an unusual ring.

Further, it seems important for the history of St. Patrick. If Patrick was a bishop, Columba's addressing him as "presbyter" requires some explanation. But the evidence of the Durrow colophon seems not to have been noticed in the recent controversy excited by the late Professor Zimmer's writings. To his theory it is absolutely fatal. For it shows that St. Patrick figured as the great saint of Ireland as early as Columba's time. Nor could the German iconoclast venture to pronounce the subscription (or this part of it) to be a mere concoction of the Durrow scribe,² for any forgery of this

¹ Dñi "Domini" is hardly an abbreviation. The word was not so written for the sake of saving space. It was the correct expression of the "nomen sacrum," just as our correct expression is with a capital letter. Thus dñs means "Lord," but *dominus* "lord."

² Nor of any later scribe. It is true that most of the Columba entry has been re-traced in blacker ink. But that need not arouse suspicion. The kisses of devotees would make it necessary.

kind would (according to his own theory) be sure to designate St. Patrick "episcopus," and not merely "presbyter."

And now to discuss the date of the ms. In the dating of Insular half-uncial, about which learned doctors so greatly differ, abbreviation-symbols (excluding "nomina sacra"), if the ms. contains any, may often give the best clue. The first subscription luckily offers (in the crowded final line) the symbol $\bar{n}\bar{i}$, "nostri," a form which prevents us from putting the ms. much before 700. For the earlier form was $\bar{n}\bar{i}$, and (still earlier) \bar{n} . The first appearances of $\bar{n}\bar{i}$ in Insular script seem to be: in the half uncial Lindisfarne Gospels (probably before 698), once (usually $\bar{n}\bar{i}$); in the uncial Codex Amiatinus (c. 700), once (usually $\bar{n}\bar{i}$); in St. Gall 908, pp. 79 ff., a palimpsest half-uncial fragment, often; in the Synoptic Gospels of the Book of Mulling (if these were written at the same time as the Fourth Gospel, before 696), usually but sometimes $\bar{n}\bar{i}$); in the Bobbio script (not properly Insular) of Milan C 105 inf. Hegecippus (in the part assigned to 686-700), sometimes (but usually $\bar{n}\bar{i}$). The Durrow scribe cannot have reproduced the original entry's form with perfect exactness here. Columba, in a crowded line, must have used \bar{n} , which in the transcriber's time would mean only "non," or n. or $\bar{n}\bar{i}$, and not $\bar{n}\bar{i}$. On the other hand, the symbol s.s "subscripsi" is redolent of antiquity, and it is strange that the transcriber resisted the impulse to make it $\bar{s}\bar{s}$ (with a suprascript stroke¹ substituted for the dot).

Apropos of abbreviation, let me mention that the symbol $q\bar{d}$ "quod" on fol. 116^r of the Book of Durrow ("Fasec transitus *quod* nos dicimus pascha") tells a tale. It is not an Irish symbol, but an Anglo-Saxon (and Continental). It appears here in a Glossary of Hebrew names which is written in a script of (or nearly of) minuscule size, a script that must be taken into account in any estimate of the date of the ms. I would guess that this Glossary was copied from some English (or Continental) ms., and that the transcriber left the "quod" symbol unaltered because he was not sure that it was not designed for "quidem" (or "quondam").

Whether the long, illegible Irish entry on fol. 13^v offers any evidence for the history of the ms. is impossible to determine until it has been deciphered. I am told that it rather has the appearance of some sort of charter or covenant (like the charters entered in the Book of Kells or the covenant entered in the Hereford Gospels: see New Pal. Soc. i, pl. 234). The other historical evidence, now available, will be found in the preface

¹ As in Bishop Liudger's jotting in a Berlin ms., theol. lat. F 366. If I rightly understand Dr. Rose's account in the Berlin Catalogue, this ms. was written for (not "by") the Bishop, who presented it to his new foundation, Werden Abbey, and scribbled on the first leaf: $m(\text{anu}) p(\text{ropria}) \bar{s}\bar{s}$ liudgerus.

to Part I of the "National MSS. of Ireland," the most important item being "an ancient tradition" according to which "Columba gave a copy of the New Testament [*sic*, not "Gospels"], in his own handwriting, to each of the churches which he founded in Ireland. A compiler of his native district, in the early part of the sixteenth century, stated that some of these were then extant in rich shrines, piously venerated as sacred relics." Obviously the whole tradition may have arisen out of the Book of Durrow alone. Still, it is never wise to be too sceptical towards tradition, if it is really ancient.¹ Assuming the truth of this one, we may note that, if the original of our MS. passed in this way from Iona to Durrow, it was certainly not written as a present for Durrow. The phrase *scripsi mihimet*, "I wrote (or 'have written') it for my own use," is sufficient proof.

Dr. Lawlor tells me that the true arrangement of the leaves makes the original order of contents :

- I. Gospels.
 - Breves Causae of St. Luke and St. John.
 - The two subscriptions.
- II. Breves Causae and Argumentum of St. Matthew.
 - Breves Causae of St. Mark.
 - Argumenta of Mark, Luke, and John.

And he points out that this suggests that the original contained I, while II was an addition from some other MS.

It would be interesting to know whether *scripsi* in the colophon means "I wrote" (some years ago), or "I have (just) written." In the latter case, the original subscription would certainly occupy the proper place of a subscription, the conclusion of the MS. Let us hope that Dr. Lawlor will submit the Durrow Book to the same minute analysis as the Cathach has now received from him, and settle all our doubts.

¹Dr. Lawlor refers me to p. 95 of "Annals of Clonmacnoise," translated into English in 1627 by Counsellor Mageoghegan, ed. D. Murphy, Dublin, 1896.

APPENDIX III.

THE TRACT "DE CAUSA PEREGRINATIONIS S. COLUMBAE."

THE Bodleian MS., Rawlinson, B. 485, and its daughter MS., Rawlinson, B. 505, contain, amongst other Lives of Irish Saints, one which is only a slightly divergent recension of the "Vita Secunda" of St. Columba printed by Colgan ("Trias Thaumaturga," p. 325ff.) from the Codex Salmanticensis (de Smedt and de Backer, col. 845). In this recension the latter part of § 18 ("verum quia," &c.), together with § 19, is transferred to the middle of § 39 (after "resurrectionem cum glorie claritate"). For §§ 20-39 the text is complete, the long gap between §§ 20, 21 in the Codex Salmanticensis, due to the loss of a leaf of the MS., being filled. Moreover, in the position occupied in the Codex Salmanticensis by the displaced portion, it has an interesting passage, which is probably not an original part of the Life. Its purpose is to explain the cause of St. Columba's departure from Ireland. The earlier portion of the passage was printed by Ussher in his "Antiquities," chap. 17 (Works, vi, 466ff.), having been communicated to him by Stephen White. Reeves, for reasons which he does not state, believed that it was composed by that scholar (Adamnan, pp. ix, 196). That is, of course, impossible; and there seems to be no improbability in the supposition that White copied it from one of the Rawlinson MSS. There was a copy of the passage in the Codex Salmanticensis, not, apparently, as part of the Life of St. Columba, but as a separate article. Of this, owing to the loss of a leaf, only the latter part now remains (col. 221 ff.). Its first few lines are identical with the conclusion of the Ussher fragment. The text here printed is taken from Rawlinson, B. 485 (R¹), a few corrections being made from Ussher (U) and Cod. Sal. (S). Contractions have been expanded, and capitals and punctuation marks have been used in accordance with modern convention. The variants are recorded in the foot-notes. Since Mr. Charles Plummer has shown that Rawlinson, B. 505 (R²) was copied from R¹ (ZCP, v. 429; Vitae Sanctorum Hiberniae, vol. i, p. xvii, f.), I have not thought it necessary to collate its text. For convenience I have divided the passage into sections.

[DE CAUSA PEREGRINATIONIS SANCTI COLUMBE.]

1. *Causa enim¹ peregrinacionis sancti Columbe in insulis maris, secundum sanctum² Adampnanum qui compilauit uitam eius,³ est hec.⁴ Cum enim Dermicius filius Kerbayll regnaret in tota Hibernia⁵ et communium negotiorum atque causarum determinacio⁶ ad iudicium regis deuolueretur, accidit ut sanctus Columba ad presenciam regis pro quodam libero† repetendo accessisset. Cumque rex Dermicius inique in causa liberi iudicaret, commotus uir Dei pro iniquitate sentencie, ilico coram omnibus astantibus surrexit, ac dixit, Scito rex inique quia amodo faciem meam in tua prouintia non uidebis donec Deus iudex iustus regnum tuum superbum inclinauerit; et addidit, Sicut enim me hodie coram senioribus tuis iniquo iudicio despexisti sic te Deus eternus in conspectu inimicorum tuorum despiciet in die belli.

2. Cumque hec diceret equum ascendens flagello percussit, et statim sanguis in copia emanauit, quod uidens senatus astantium ualde miratus tanquam de re insolita, regi dixerunt ut uoluntatem sancti compleret⁷ ac per omnia ei obediret, ne regnum eius a Domino Deo dissiparetur. Set rex, furore repletus indignacionis, noluit intelligere ut bene ageret, set, uindictam de genere sancti Columbe capere uolens, iurauit ut plebem eius tanquam proprium mansipium sibi subiugaret. Cumque rex iuramentum suum opere uellet complere, collecto grandi exercitu in curribus et equitibus et pedestribus plusquam xx^{ti} tribus milibus⁸ prope fines terre eorum peruenit ut eos penitus extirparet.

3. Cumque plebs Conalleorum aduentum regis cum suo exercitu audiret collecta multitudine circiter tria milia, affuerunt uiriliter pro sua patria pugnare cupientes. Quibus, in tanto periculo positis atque in deo solo spem habentibus, consurgens sanctus Columba diluculo noctis in spiritu uirtutis Dei confortando eos ait, Si ego aliquando bellum⁹ contra inimicos meos commissem nunc in nomine Domini Dei altissimi contra eos surrexissem. Et uox eius sic terribilis facta est in auribus suorum commilitonum ut etiam omnes de sompno excitaret. Et addidit dicens, Sicut enim Dominus cum Moyse contra Egyptios in Mari Rubro fuit, sic hodie pro uobis pugnabit in bello. Nichil ergo timeatis, quia nichil passuri estis. Scitote enim quod Dominus ualde iratus est super castra superbi regis huius; et si unus uestrum tantum fiducialiter contra illos in nomine Domini configere surrexerit solus eos in fugam per Dei uirtutem conuertet. Constantes ergo estote, quia nullus

* f. 38^r, col. 2.¹ U igitur.² U om.

† f. 39.

³ U eius uitam.

§ f. 39, col. 2.

⁴ U talis est.⁵ U Hibernia tota.⁶ R¹ deteriacio⁷ R¹ compellet.⁸ U emends to 2300.⁹ U om.

vestrum hodie in acie¹ cadat. Tunc pauci milites hec verba audientes, et tanquam Dei altissimi testimonium credentes, constanti animo in hostes eadem hora licet improuidos irruerunt; sancti enim uerbum omnem metum ac pauorem mortis de cordibus eorum abstulit.

4. Tunc angelus Domini, in forma uiri maximi, ueste militari indutus in castris regis Dermicii terribilis apparuit, inter cuius femora hostes celum uidebant; qui scuto et gladio accinctus,² paratus ad prelium paucos milites fiducialiter antecedeat. In huius uiri conspectu terribili corda multitudinis aduerse partis uiribus defecerunt, et facti sunt omnes quasi femine inbecilles, et antequam arma in hostes conuerterent semetipsos pre nimio impetu curruum et equitum propriis armis occidebant. Sicut enim Dominus currus et equites Pharaonis deiecit in mare et filios Israel illesos permisit transire, sic populum hunc humilem inter hostes custodiuit, ut nullus ex eo in bello caderet et obsides inimicorum optineret.

5. Cumque uictores leti post tropheum ad uirum Dei redissent uir Dei prophetica uoce ad puerum suum Scandalum³ ait, Dies ista fili mi longam peregrinationem a cognatis carnalibus in terra aliena michi preparauit. Set ne dixeris donec res ipsa ostenderet.

6. Post hec sanctus Columba ad sanctum Finnianum⁴ episcopum accessit, ut ab eo penitentiam condignam causa prefati belli acciperet. Angelus uero Domini comitator eius apparuit, qui pre nimio splendore obtutibus humanis non uidebatur, nisi tantum a sancto uiro episcopo⁵ Finniano, qui Finnbarrus nominatur. Cumque a uiro Dei penitentiam condignam sanctus Columba quereret respondit, Oportet ut quot in strage⁶ belli ad infernum deiecti sunt tot per exemplum tuum ad celum uehantur.⁷ Cui sanctus Columba gaudens dixit, Iudicium rectum iudicasti de me.

7. In illo uero tempore quo hec fiebant⁸ seniores Hibernie miserunt per nuncios fideles epistolam ad sanctum Gildam de genere Saxonum *ut caritatem mutuam nutrent. Cumque literas per ordinem legeret, et epistolam a Columba scriptam in manibus teneret, statim illam osculatus est †dicens, Homo qui scripsit hanc Spiritu sancto plenus est. Et ait vnus de⁹ nunciis, Ut dixisti ita est, set tamen a synodo Hibernie reprehenditur eo quod cognatos suos in periculo mortis constitutos belligerare¹⁰ iusserit. Tunc sanctus Gildas reprehencionem hanc de Columba audiens, respondit, O quam stultum est genus vestrum nichil prudenter intelligens.‡ Non tamen¹¹ uos scitis tria dona

* f. 39^r.

† S begins.

‡ U ends.

¹ R¹ ascie. ² R¹ accinctus.

³ U Scandalanum.

⁴ U Finianum.

⁵ U om.

⁶ U instigatione (om. in).

⁷ R¹ uehant.

⁸ U fieret.

⁹ S ex.

¹⁰ R¹ belligere.

¹¹ S enim.]

quibus pre omnibus aliis ipse¹ ditatus est, que nullus Hibernensium sicut nec ante ipsum² ita nec post illum accipiet: Primo,³ quod dominium⁴ Hibernie ac Britannie Dominus⁵ in potestatem illius dedit; quemcumque enim in regni solium sub lege⁶ ordinare⁷ decreuerit ac benedixerit, a Domino sublimatur⁸ et benedicitur in eternum.⁹ Cuicumque¹⁰ uero restiterit, a Domino inclinabitur et ad nichilum redigetur. Secundum, quod donum est¹¹ a uertice suo usque ad extremas unguilas digitorum Spiritu sancto ipse plenus est.¹² Tertium quod non obiturus erit donec uoluerit. Nouit enim, Domino sibi reuelante, horam qua sarcina carnis abiecta inter sanctos choros angelorum de mundo ad Christum cum gaudio ascensus est.

8. Hiis quoque addendum est¹³ testimonium sancti Brandani de eo quod in loco qui dicitur Taltin, in quadam congregacione sanctorum inibi facta, dixit. Cum enim sanctus Columba quadam uice esset laboribus itineris cum suis uexatus, et a¹⁴ quodam diuite refectionem corporis expeteret, is a quo petebatur penitus negauit, quod et tribus uicibus ante fecit. Vir uero Dei, omnia tempore necessitatis communia fore diiudicans, iussit¹⁵ ut epulas paratas de domo auari tollerent et pro necessitatibus fratrum indigentium ministrarent. Et cum fama facti huius aduentum sancti Columbe in sinodo sanctorum antecederet, eum pro tanta transgressione excommunicandum fore senserunt.

9. Puer uero Baythinus, a puericia habens teneritudinem consciencie, ceteris cum Columba prandentibus, solus ipse custodiens equos eorum, ab hoc *eibo tanquam ab illicite acquisito abstinebat. Quod aduertens sanctus Columba subridendo ait, Ecce cui similis est Baythinus¹⁶ puer meus, scilicet Saulo vestes lapidantium Stephanum custodienti et consentienti in mortem eius.¹⁷ Ipse enim nobis¹⁸ pro tanto consentit quod¹⁹ habenas equorum nostrorum tenet.

10. Post hec sanctus Columba uersus locum ubi seniores erant congregati deueniens²⁰ sanctus Brandanus qui erat quasi columpna huius consilii cum magna humilitate, licet aliis renitentibus, uenit obuiam ei et osculatus est eum. Sanctus uero Columba, per salubria consilia Brandani, se sinado humiliter iunxit ac se excusando dixit, Scitote fratres quod non penitet me fecisse hoc factum pro quo me dampnastis. Nequam enim illa familia, cuius

* f. 39*, col. 2.

¹ S a Domino for aliis ipse. *Spaces were left in R¹, where the words aliis ipse, ipsum, ordinare, in eternum now appear. These words were afterwards inserted by the original scribe in paler ink.* ² S eum. *See note 5.* ³ S Primum. ⁴ S dominationem,

⁵ S Deus. ⁶ S om. sub lege. ⁷ S sublimare. *See note 5.* ⁸ R¹ om. ⁹ S om. in eternum. *See note 5.* ¹⁰ R¹ cuique. ¹¹ S donum est quod. ¹² R¹ om. ¹³ R¹ om.

¹⁴ S* om. a. ¹⁵ S adds suis. ¹⁶ S Baytinus. ¹⁷ R¹ om. ¹⁸ S* om.

¹⁹ R¹ quia. ²⁰ R¹ deuenies.

Deus uenter est, que, misericordiam et hospitalitatem denegans, suam gulam et auariciam pro Deo uero adorans, seruis Christi egentibus uictum negauit. Set quia vnitatem dilectionis vestre contristari nolo et hoc maxime ob merita sancti abbatis uestri Querani,¹ qui iam ad regna celestia migravit, quod² uultis faciam.

11. Cum uero sanctus Brandanus a senioribus increparetur quare Columbam antequam esset eis reconciliatus oscularetur respondit, Si uos fratres uideretis id³ quod michi a Domino de illo reuelatum est nunquam illum condempnare⁴ presumeretis. Ecce enim uidi columpnam igneam de celo missam que hunc hominem Dei antecedeat et angelos Dei per totum campum circa illum uolantes. Hec ergo⁵ uidens iudicia Spiritum sanctum in illo ueneratus sum, ne scilicet Dei ordinationi resisterem. Tunc sanctus Brandanus Columbam seorsum assumens ait ei, Fili mi audi consilium meum. Tempus enim hoc tempus constantie tibi est, ut scilicet vitam teoricam in loco remoto a tuis⁶ peragas.⁷ Sic enim gracia Spiritus sancti in omni loco te⁸ comitabitur⁹ sicut uacca amatrix uestigia uituli obseruat. Hec uero dicta significabant eum futurum peregrinum in terra aliena. Sicut euentus rei probauit.

¹ S Querani. ² S quodeumque. ³ S* illud. ⁴ S dampnare.
⁵ R¹ enim. ⁶ R¹ suis. ⁷ R¹ peragam ; S* pergas. ⁸ S* om.
⁹ R¹ communicabitur.

APPENDIX IV.

PSALM HEADINGS.

The following collection of Psalm Headings makes no claim to be even approximately complete. About many manuscripts in Continental, and some in English, libraries, it has proved impossible to get information during the war¹; and even under happier conditions the difficulty of compiling a full list of Psalters containing headings, and of obtaining reliable transcripts of their rubrics, would have been very great. The manuscripts and printed texts of which I have made use, with the symbols by which they are cited, are enumerated above on p. 242 f. I must here make some explanatory remarks.

For the second Bible of Charles the Bald (P) and for the le Puy Bible (Q), the more important mss. of the Bibliothèque Nationale being at present inaccessible, I have had to depend on Ferrand, of whose accuracy I have no means of judging. Q, as it seems, was copied from the Bible of Mesmes (Paris, B.N., lat. 9380).² It would, therefore, have been of advantage to consult the latter ms.; but for the reason just mentioned this could not be done. I have not succeeded in ascertaining whether it has psalm headings similar to those of Q, or indeed whether it has any.³

Permission had been very kindly given me to have the rubrics of the Blickling Psalter (K) transcribed. But an accident prevented this design from being carried out. Consequently I have been obliged to content myself with a few notes (partly gathered from the New Palaeographical Society's Facsimiles, ser. i, pls. 231, 232), which do little more than prove how great my loss has been.

Another manuscript of which I could wish to know more is the

¹ The Psalter cited by Ferrand as Memm. 2, which I have not succeeded in identifying, would seem to have a few headings (*e.g.* for Ps. vi), but not a series as complete as those of P and Q. This remark applies also to B.N., lat. 1152, a Psalter of Charles the Bald, cited by Ferrand as Colb. 1339. The Boulogne Psalter, Bibl. Municip. 26 (St. Omer, c. 1000), also has headings, but I know of it only what can be gathered from Pal. Soc., ser. i, pl. 97. There are headings in the ninth-century Psalters, Zürich Stadtbibl. C. 12 and St. Gall Stadtbibl. 292; but the information about them supplied by the facsimiles in A. Merton's *Die Buchmalerei in St. Gallen von neunten bis elften Jahrhundert*, Leipzig, 1912, Taf. 1, 2, 7, is too meagre to be of use. That there are some headings in the Salaberga Psalter (Berlin, Königliche Bibl., Hamilton ms. 553: Roman, North of England, cent. viii early) the New Palaeographical Society Facsimiles, ser. ii, pls. 33-35, prove. But the information given is not sufficient to determine their general character.

² Berger, p. 171 ff.

³ It is cited as Memm. 1 by Ferrand, who does not seem to quote any headings from it.

Golden Psalter of Dagulf (G), which was presented by Charlemagne to Pope Hadrian I, and was, therefore, written not later than 795. The published facsimiles¹ exhibit six headings, which are included in the following table, and prove that Ps. i had no heading.

The headings (or *argumenta*) of the MSS. which I designate as DNO differ greatly from each other and from those of my other authorities, and they are of considerable length. I have, therefore, not referred to them except where they display likeness in matter or form to those of other manuscripts; and frequently quotations from them have been restricted to a few words, the omitted portions being indicated by dots or by the symbol "&c." N, as Mr. K. Sisam tells me, is the best representative of a group of three, of which the other members are the Salisbury Psalter (Salisbury Cathedral 150, written for Reading, c. 975) and the Bodleian MS., Ashm. 1525 (c. 1200, St. Augustine's, Canterbury, rubrics much corrupted). I have not considered it necessary to collate the latter two.

The Southampton Psalter (Σ) has only been cited where it differs from B. And here it may be observed that the symbol B in the tables indicates only the clauses of the printed text of Bede's *Argumenta* which contain mystical interpretations (those marked *b* in Bright-Ramsay). Thus it often happens that a heading of L¹ or S is quoted, which is derived from the *Argumenta*, though B is recorded as having nothing.

The reader must be warned that, owing to the difficulty under which I have worked, I cannot always be sure that where I have printed the word *nil* after the symbol of a MS. it had no heading. Its rubric may be mutilated or illegible at the place. This applies especially to P and Q.

For the sake of clearness I have given the liturgical notes—or what seem to be such—and the headings proper in separate tables. The spelling of the MSS. has not been rigidly adhered to.

TABLE I.—HEADINGS.

Ps. i. ARS : de (*om.* S) ioseph dicit qui corpus christi (domini S) sepeliuit. D : psalmus ad christi personam pertinet ipse est enim perfectus qui numquam abiit in consilio. BEFGHLMNOPQTZ *nil.* CK *hiant.*

Ps. ii. A : u. patris et apostolorum et christi ad caput scribendum. R : u. p. ad christum et a. et ch. ad c. s. increpatio potestatum. B : christus de passione

¹ Chroust, *Monumenta Palaeographica*, ser. i, Bd. ii, Lief. xi, Taf. 4; R. Beer, *Monumenta Palaeographica Vindobonensia*, vol. i; Silvestre, *Paléographie Universelle*, ed. Sir F. Madden, London, 1850, pl. 122. Berger (p. 276) has rejected, and Silvestre, Chroust, Beer, and Lindsay (*Notae Latinae*, p. 492) have thought unworthy of mention, the view once held by the custodians of the MS., that it was sent by Charles the Bald to Pope Hadrian II. (See A. C. Swainson, *The Nicene and Apostles' Creeds*, pp. 199, 373.)

et (+ de Σ) potestate sua dicit. L¹: christus de passi[one] sua et potesta[te]. S: u. ch. de pas. H: de pas. F: de conuentu iniq[uorum et de] pas. D: ad nauitate[m] christi pertinet. EMOPQTZ *nil.* CK *hiant.*

Ps. iii. AR: u. christi ad patrem de iudeis dicit. BL¹S: u. ch. ad p. de iudeis. EF: u. ch. ad p. M: u. ch. D: ad passionem domini nostri ihesu christi pertinet. N: ad personam ch. competenter aptatur. HOPQTZ *nil.* CK *hiant.*

Ps. iv. Σ : profeta increpat iudeos et exponit quia deus iustitiae exaudiuit in cruce positum filium suum et quod irascentes iudei peccant usque hodie. ABHL¹R: p. inc. iud. L²: deus[iusti]cie exaudiuit[in cru]ce positum[filium] suum. S: u. christi in cruce quando positus fuit. M: u. ch. E: u. ch. post resurrectionem. N: uerba sunt sauctae matris ecclesiae (*marg.*: uox sanctae eccl.). O: . . . et est dauid id est eccl. manufortis scilicet in finem tendentis id est christum qui est finis non consumens set consummans. DFPQTZ *nil.* CK *hiant.*

Ps. v. BL¹: u. christi ad patrem. S: u. ch. ad p. et [ezechias post infirmitatem] adorat in templum. A: christus ad p. R: christus ad p. dicit. FHN*marg.*: u. ecclesiae. N: totus psalmus iste prophertur ac persona catholice ecclesiae. O: u. precedentes[ecclesie informantis secuturam &c. D: ad ecclesiam quae hereditatem noui testamenti consequitur ut ipse titulus probat. EMPQTZ *nil.* CK *hiant.*

Ps. vi. ABHL¹MPQRS: u. christi ad patrem. E: u. ecclesiae penitentis. O: u. est anime penitentis &c. D: ad hominem penitentem pertinet. N: psalmi istius origo oratio est penitentis. FTZ *nil.* CK *hiant.*

Ps. vii. AR: propheta dicit ad christum de inimicis iudeis et de diabulo. H: p. dixit ad ch. M: p. loquitur ad ch. S: u. christi ad patrem de iudeis et ezechias ab hostibus[. . .]. E: u. ch. D: ad christum et synagogam pertinet &c. N: postulat propheta ab inimicis diuersis liberari. O: uox est . . . perfecte anime perfectionem suam humiliter confitentis deo &c. L¹: u. cap[itis] uel perfecte [anime] propheta[. . .]. BFPQTZ *nil.* CK *hiant.*

Ps. viii. AMR: u. ecclesiae (+ quae M) laudem dicit christo de fide omnium credentium. BS: ecclesia l. d. ch. de f. o. c. F: u. ecclesiae ueteris de christo et de fide dei. HPQ: u. ecclesiae. L²: [eccl]esia laudem [dicit] christo. N: ecclesia decantat laudes domino. O: u. prophete christum preconantis &c. D: de ascensu saluatoris et laude infantium qui dicebant ei osanna in excelsis. ETZ *nil.* CK *hiant.*

Ps. ix. ABRs: ecclesia laudem dicit christo de iudeis et de principe demoniorum. H: propheta l. d. de ch. et de iud. ad christum. M: p. d. de ch. l. et de iud. F: de ch. et de iud. D: de perditione idolorum . . . et de aduentum[us] christi qui uenit &c. O: pro occultis operibus humilis aduentus christi uox est . . . ecclesie &c. N: a persona prophetae deprimitur. EPQTZ *nil.* L² *ras.* CK *hiant.*

Ps. x. HP Σ : u. christi ad patrem. Q: u. ch. ad p. de fixa fide. BS: u. ch. est. L³M: u. ecclesiae contra hereticos. E: aeclesia contra iudeos. O: . . . aduersus quos . . . loquitur uera ecclesia in finem id est in christum &c. D: de passione domini nostri ihesu christi. N: ad personam prophetae referendus est. AFRTZ *nil.* CK *hiant.*

Ps. xi. AR : christus pro passione sanctorum suorum dicit de iudeis. BS : ch. pro p. suorum d. de iud. FHP : ch. pro p. sanctorum s. (sancto suo F) d. ad patrem. Σ : ch. d. pro p. de iud. M : u. christi in passione ad patrem prophetans. L³ : u. ch. ad p. pro parti locutus. D : de morte et resurrectione christi et de fallacia iudeorum. N : saluum se uel ecclesiam petit propheta per deum. O : u. fidelis anime est . . . tendentis in finem id est christum &c. E : propheta uel fidelis. QTZ *nil.* CK *hiant.*

Ps. xii. ABRS : u. christi ad patrem de diabolo dicit. FH : u. ch. ad p. de diab. L²M : u. ch. ad p. D : u. ecclesie expectantes† aduentum christi. L³ : u. aeccliesiae est. O : u. est . . . fidelis anime &c. EPQTZ *nil.* CK *hiant.*

Ps. xiii. ABHPQRS : uerba (uox S) christi ad diuitem interrogantem se (*om.* H ; se int. BS ; + in matthaeo B) et (*om.* AHPQR) de populo iudaico. Σ : uerba ch. de p. iud. L² : uerba ch. F : dixit [. . .] interrogans se de p. suo. O : uox ch. inuitans nos ad fidem uox ch. . . . perfidiam iudeorum increpantis &c. M : ecclesia iudeos increpat quia uiso deo minime credant. N : inc. e. iud. qui uiso christo m. crediderunt. L³ : psalmus iste pop[ulum] iudaicum signifi[cat] qui dicunt non [est deus] et ideo corrupt[i sunt]. D : de iudeorum et gentilium populo qui dicunt de saluatore nostro non est deus. ETZ *nil.* CK *hiant.*

Ps. xiv. AR : u. christi quam dicit fidelibus interpellat patrem. M : u. ch. quando d. f. D : de exemplo et magisterio ch. et de apostolis et sanctis qui illius sequitur exemplum. HPQ : de e. et (+ de H) m. ch. de a. (-lorum Q) et de (*om.* H) s. F : de e. et de m. ch. L³ : u. prophete interrogantis est deum. O : u. p. . . . intendentis nobis premonstrare uiam regiam &c. S : uerba populi in captiuitate babilonis [optantis] redditum ad patriam. B : quia lex tota decalogo concluditur decem exempli (-plis Σ) christi formas expressit quibus ea docuisse quae fecisse monstratur. ETZ *nil.* CK *hiant.*

Ps. xv. ABL²R : u. christi ad patrem. S : u. ch. ad p. ezechias orauit dominum in egritudine. M : u. ch. ad p. in passione ex persona hominis assumpti. N *margin.* oratio ch. loquentis per humanitatem. N : introducitur persona domini. DFHQ : u. ecclesiae. EOPTZ *nil.* CK *hiant.*

Ps. xvi. ABHL²PQRS : christus de (*om.* A) iudeis dicit ad patrem. Σ : ch. ad p. de iud. d. D : u. christi ad p. querula de iud. &c. M : u. christi in passione siue aeccliesiae in persecutione. N *margin.* : uox ista ad p. pertinet. N : trifonia oratio de humanitate christi . . . deprimitur. EFOTZ *nil.* CK *hiant.*

Ps. xvii. BS : dauid dicit (dic. dau. Σ) in similitudinem christi in passione in inferno constituti ad patrem. AR : dau. in s. ch. dic. N : psalmus iste tres ordines habet primus prophete secundus ecclesiae in tertio est uox saluatoris inlapsa. L³ : u. christi est ad diuinitatem et aeccliesiae ad christum. D : ad baptismum christi cum . . . u. patris de caelo intonuit &c. EFHMOPQTZ *nil.* CK *hiant.*

Ps. xviii. B : propheta de aduentu christi dicit. S : dauid d. de ad. ch. R : de ad. ch. per quem reseratur psalmus cxviii ibi coniungitur nouum et uetus testamenti†. MP : de ad. ch. et de praedicatione apostolorum. HQ : de p. (predacione H) ap. de ad. ch. D : de ap. praedicationem†. O : u. prophete referentis in finem id est christum ea que dicturus est de laude praedicationis ap. N : uerba prophete sunt.

L³: hic psalmus in persona christi cantatur et in persona aecclesiae. A: propheta operantem hortatur.* EFTZ *nil.* CK *hiant.*

Ps. xix. ABHPQR: propheta operantem hortatur (ortatur op. Q). L²S: christo eunti ad crucem dicit ecclesia (*u. verb. ult. illeg. in L²*). D: de passionis liberationem†. M: propheta dicit de christo seu de aecclesia. N: deprecatur p. pro ingressu sanctae ecclesiae. O: uox est prophete . . . in christum &c. EFTZ *nil.* CK *hiant.*

Ps. xx. AR: propheta de christo rege dicit ad patrem. FHMPQ: p. de ch. d. ad p. L¹: ch. r. ad p. D: de regno christi et deiectione iudeorum. N: narrationes iii sunt uerba prophetae ad deum p. L²S: de ezechia canitur cesis assyriis et infirmitate curata. BEOTZ *nil.* CK *hiant.*

Ps. xxi. AFHMPQR: uerba (-bum M) christi cum pateretur. S: uox ch. ad patrem in cruce eleuati. D: de passione ch. N: loquitur dominus. L³: hic humanitas loquitur christi. BEOTZ *nil.* CK *hiant.*

Ps. xxii. ABEFHMPQR: u. ecclesiae. L³: u. e. loquitur de christo. Z: uox. D: de baptismatis sanctificatione. OST *nil.* CK *hiant.*

Ps. xxiii. AR: confirmatio populi credentis portae quas dicit peccata uel inferni u. christi diligentibus se. L¹ u. ch. [de] gentibus. HMPQ: u. ecclesiae § D: de inchoatione e. in qua excluduntur principes idolorum &c. N: post resurrectionem domini propheta &c. O: u. prophete agentis de resurrectione . . . u. e. diuinum auxilium implorantis &c. S: u. populi ad captiuitate† babilonis. L²: [. . . im]mo praecipitur [quibus uit]e suffragiis [ualeat d]e [captiuitat]e baby[lonica] laxari. BEFTZ *nil.* CK *hiant.*

Ps. xxiv. S: u. dauid de aduentu cristi. M: hic psalmus in persona aecclesiae canitur conuersa ad deum. D: u. ecclesiae &c. N: hic supplicat ecclesia ne appareat contemptibilis coram deo. PQ: quum (*om. Q*) canticum misit electis. H: de predacio† dauid misit moysi† electis. L³: uox adsumpti hominis ad diuinita[tem]. ABEFORTZ *nil.* CK *hiant.*

Ps. xxv. ABHL²PQRS: propheta de (pro Q) se testatur. E: u. ecclesiae. M: u. e. iam perfectae et christo stabilite†. O: u. prophete . . . in persona ecclesie uel perfecte anime uox est . . . perfecte ecclesie &c. N: psalmus iste de innocentia prophetae uel maxime christi sonum reddit. D: u. populi recedentes† ab idolis et uenientes† ad baptisma inter innocentes benedicentes deum. FTZ *nil.* CK *hiant.*

Ps. xxvi. D: u. baptizatorum. O: u. est fidelis anime . . . se ipsam exhortantis &c. L¹: u. f. a. L²: hic loquitur propheta. N: loquitur propheta &c. S: ezechias assiriorum morte letior [. . .]. ABEFHMPQTZ *nil.* CK *hiant.*

Ps. xxvii. H: de iudeis christus dicit ad patrem. B: ch. de iud. d. ad p. AFPQR: de iud. ch. (-to AR) d. S: u. christi ad p. de iud. M: u. ch. ad p. in conflictu. D: u. martyrum. O: . . . ipsi significato id est christo in passione posito sunt huius psalmi uoces attribuende. L³: [u. adsum]pti hominis ad diuinitatem. ETZ *nil.* CK *hiant.*

* From Ps. xix.

§ From Ps. xxii.

Ps. xxviii. AR: postquam consummata est ecclesia christi. S: consummatio tabernaculi. HL³Q: post passionem et resurrectionem et consummationem ecclesiae christi. F: propter p. et r. e. ch. P: post p. et r. D: u. ecclesiae flentes† in passione domini et gaudentes† in resurrectione ch. BEMOTZ *nil.* CK *hiant.*

Ps. xxix. AR: propheta ad patrem et ad filium dicit de pascha christi futura ecclesia orat cum laude. Q: p. ad p. et ad christum d. de crudelitate oratione in homine. FH: p. ad p. et ad f. (+ d. H). D: u. christi ad patre†. BL²S: ecclesia orat cum laude. N: dominus post resurrectionem patri gratias egit. EMOPTZ *nil.* CK *hiant.*

Ps. xxx. AR: fidei confessio credentium deum . . . u. christi in passione de iudeis dicit.* BS: e. est er. d. M: u. christi in passione. DFHPQ: u. ch. positi in cruce. O: u. est ch. &c. N: uerba domini saluatoris. N *marg.*: orat christus patrem ex natura humanitatis. L³: hec u. aecclesiae est orantis ad deum. ETZ *nil.* CK *hiant.*

Ps. xxxi. AGHMPQR: u. paenitentium. D: u. penitentis. O . . . remissio appetenda que in se erant ante baptismum psalmus iste uocem continet penitentis anime &c. N: competenter aptatur penitentibus. L¹: u. prophete de christi resurrectionis†. S: oratio ezechie post languorem. BEFTZ *nil.* CK *hiant.*

Ps. xxxii. FHPQ: propheta (-tae Q) cum laude dei (domini P; *om.* Q) populum adhortatur (-tus F). AR: p. cum l. dei pop. hortatur. N: p. loquitur. O: u. perfecte anime exhortantis ad dei laudes consortes suos. L³: hic sancti exhortantur ut exultent in domino. D: u. ecclesiae consulantes† martyres. E: u. e. M: u. apostolorum credentes ad dei pronocans laudem. L¹: u. ca[pi]tis. BSTZ *nil.* C *hiat.*

Ps. xxxiii. ABCR: uox fidei. HPQT: u. cuiusdam iusti. F: u. quidem iussit. D: u. ecclesiae inuitantes† populum. L³: u. e. in prosperis et in aduersis. N: uerba prophetae sunt. O: uox christi uel christiani de hoc negocio agens &c. S: ezechias uicto assirio semper dominum benedicere [. . .]. EMZ *nil.*

Ps. xxxiv. ACR: uox christi in passione de iudeis dicit. M: u. ch. in p. de iud. ad patrem. FHPQ: christus de iud. et de pas. sua (*om.* FH) dicit ad pat. L³: u. ch. in pas. et u. ecclesie in tribulatione. E: psalmus secundus de pas. D: u. ch. ad pat. contra iudeos. N: uerba sunt domini a dispensatione qua passus est. B: totus psalmus ex persona christi est et per christum ad omnes psalmos (sanctos Σ) referri potest. S: t. p. est ex pers. ch. OTZ *nil.*

Ps. xxxv. ABRS: propheta cum laude (+ dei R) opera ipsius iudae (-deae R) dicit. FHPQ: p. (-cia H; -tae Q) cum l. dei (di[ci]t F; de et H) o. i. iudae. D: u. accusationis prophetae de populo iudaic†. N: a persona prophetae loquitur et contemptores legis accusat. O: u. huius psalmi attribuenda est cuilibet seruo dei &c. L³: uerbum domini ad dauid. EMTZ *nil.* C *hiat.*

Ps. xxxvi. AR: hortatur omnes admonstrans (ad fidem demonstrans R) salutem ecclesiae credentem monet ad fidei firmamentum. C: h. moysem ad f. dem. s. e. [credentem] m. ad f. f. HPQ: h. moysem (-en H) ad f. dem. et s. e. (-sia Q) m. credentes. F: h. uox ecclesiae introduc[itur]. DM: u. e. ad populum

* From Ps. xxxiv.

christianum. N: e. u. introducitur ad populum corrigendum. O: u. christi uel fidelis anime admonens operarios &c. L²: [p]salmista [ho]rtat quem [...] a malis [...] sare. BEFSTZ *nil.**

Ps. xxxvii. BL²: confessio patientiae et uirtus (-tutis L²) ad salutem. AR: c. in sapientiae u. ad s. Q: c. insapientiae u. salutis. P: c. insipientiae. H: c. in sapientia u. salutis. F: confessionis sapientiae uirt[us] salutis. C: confesio sapientiae uirtus ad salutem. Σ: c. poenitentiae et uirtutis ad s. D: u. penitentiam agentis in languore positi. N: psalmus iste penitentis quadrifaria distinctione diuisus est &c. M: u. ecclesiae in tribulatione gementis. O: psalmus iste attribuendus dauid id est christo &c. S: ezechias egrotans domino supplicat. ETZ *nil.*

Ps. xxxviii. ABCHL²MPQR: propheta increpat iudeos (eos BC(?)L²M) qui diuitias (-ia Q) habent et nesciunt cui dimittant (-tunt AHQR; -t[...].]CL²; amittunt H). D: u. apostolorum et martyrum in probatione positof. EFOTZ *nil.* KS *hiant.*

Ps. xxxix. AR: patientia populi est (e. pop. R). FL³PQ: pat. pop. BS: de pat. pauli ubi christum (-us S) prior adnuntiat. H: u. penitentis pop. DM: u. ecclesiae post resurrectionem (-nis D) domini. N: ecclesia gratias agit. L¹: ex persona christi. O: u. intendentis in finem &c. ETZ *nil.* C *hiat.*

Ps. xl. AFHL²PRS: u. christi de passione sua (*om.* H) et de iuda traditore. B: u. ch. de p. s. et de i. t. . . aliter quilibet christianus contra immundos spiritus et hominem pacis suae id est carnem profatur. Q: u. ch. de p. s. et de i. t. . . de communione cum omnibus hominibus ut pauperis†. M: u. ch. de p. s. et de iudeis. L²: hic iubetur impendi misericordiam pauperibus. D: u. ecclesiae docentis et christi patientia. EKOTZ *nil.* C *hiat.*

Ps. xli. BL²S: u. christi. AR: u. ch. est. C: u. ch. est [...]. F(?)HPQ: u. paenitentium et desiderantium ad fontem lacrymarum. D: u. p. et festinantium ad fontes aquarum. L¹: u. paenitentis. O: u. est martirum &c. EMTZ *nil.*

Ps. xlii. BS: u. ecclesiae. P: u. ecclesiae orantis ut diuidatur ab infidelibus. HQ: qui sequitur uocem (sequuntur uox Q) e. o. ut d. ab i. D: u. e. o. ut d. populo iniquo et doloso id est incredulo. L³: u. e. discernens malos et bonos. ACEFMORTZ *nil.*

Ps. xliii. ACR: propheta (pref. R) ad dominum de operibus eius paenitentiam gerens pro (*om.* R) populo iudaico. FQ: pr. (-tae Q) p. agens pro pop. iud. H: pr. p. a. populum iudaicum monet. P: pr. p. a. D: u. martyrum. O: u. est m. &c. N: . . . siue m. siue confessorum uerba &c. L²: propheta sanctorum pressuras [suppli]cationes [que] commemorat (?). S: machabeorum pressuros† [...] et u. apostoli. BEMTZ *nil.*

Ps. xlii. CR: propheta pro (ad C) patre de christo et ecclesia dicit. BL²S: proph. de ch. ad ecclesiam d. A: proph. L¹: u. prophetae de ch. [ad] e. D: u. martyris de filio ad ecclesiam. EFHKMOPQTZ *nil.*

Ps. xlv. CDR: u. apostolorum. S: u. apostoli in passione christi. L²: [ex per]sona canitur sanctorum [pro liber]atione sua gratias [agen]tium. N: haec uerba fidelium sunt qui profitentur se non perturbari a turbine saeculi. ABEFHMOPQTZ *nil.*

Ps. xlvii. CS : u. apostolorum (- li S) postquam ascendit christus ad patrem. Q : ch. ascendens ad p. [. . .] u. ap. est. H : ch. ascendit ad p. quia u. a. est. ABPR : postquam ascendit ch. (ch. a. Σ) ad p. M : u. a. ad gentes. O : u. est a. . . . admonencium &c. F : u. a. est (?). D : u. spiritus sancti ad gentes. L³ : hic s. sanctus omnes g. uocat ad fidem. EKTZ *nil.*

Ps. xlviii. ABPQRS : figura ecclesiae in (*om.* APQRΣ) hierusalem futurae. L² : u. apostolorum figurae [e.] h. f. FN : uerba huius psalmi piis sacerdotibus dantur. DM : u. sacerdotum ad populum de christo et (+ de D) ecclesia. EHOTZ *nil.* C *hiat.*

Ps. xlviii. ACR : diuites increpat qui ad inferna descendunt cum mortui fuerint u. ecclesiae. FPQ : d. inc. qui m. ad inf. d. H : propheta d. inc. qui uiuentes m. ad infena† d. BMS : u. ecclesiae. Σ : e. u. D : u. spiritus sancti de christo ad gentes. O : iste psalmus . . . est attribuendus† . . . apostolis &c. N : uerba sunt omnipotentis filii. L³ : u. predicatorum ad omnes gentes. ETZ *nil.*

Ps. xlix. AR : de aduentu christi propheta dicit et iudicio futuro increpatio iudeorum. F : de a. ch. p. d. et de i. f. et de increpatione iud. P : de a. ch. i. f. L¹ : u. asaph de a. ch. et i. f. N : loquitur de primo et secundo a. ch. D : u. spiritus sancti de patre et filio. O : u. est synagoge credentis &c. L² : ad iudeos lo[quitur] consternare uol[entes] et emendare pe[ccan]tes. S : dauid dicit ad increpandum peccatores. BEHMQ*TZ *nil.* C *hiat.*

Ps. l. AR : u. christi pro populo paenitentiae (-te R) et u. pauli ad paenitentiam. C (?) : u. pauli ad paenitentiam. B : u. pauli paenitentis. S : u. dauid ad poenitentiam. L¹L² : u. (+ prophetae uel L¹) p. apostoli [paenit]entis. P : u. p. ap. FH : u. penitentis. Q : u. paenitentiae. D : u. penitentiam agentis. E : confessio penitentis indulgentiam postulantis. N : . . . prophete oratio est et penitentibus aptatur. O : uocem prophete continet &c. MTZ *nil.*

Ps. li. ABCL²P : u. christi ad iudam traditorem. Q : u. ch. de iuda traditore. G : u. ch. de iuda. F : u. ch. de iudae[is]. E : u. ch. D : u. spiritus sancti aduersus diabolium. N : . . . propheta ante aduentum domini secundum respexit antichristi . . . aduentum &c. O : u. est prophete &c. HMTZ *nil.* KS *hiant.* R *ras.*

Ps. lii. ABCR : increpat iudeos incredulos operibus negantes deum. S : i. iud. incred. n. d. L² : propheta i. iud. incred. d. n. FG : p. i. iud. et infideles. HP : p. i. iud. Q : u. prophetae i. iud. et inf. N : ecclesia i. eos qui nolunt ad spiritalia bona corda conuertere. D : u. spiritus sancti aduersus iud. TZ : u. ezechie de rapsace. EMO *nil.* K *hiat.*

Ps. liii. ACL²RS : u. christi ad patrem. B : u. ch. ad p. uel cuiuslibet fidelis auxilium dei contra uitia flagitantis. HMQT : u. supplicantis ad christum. D : u. ecclesiae aduersus hereticos. EFOPZ *nil.*

Ps. liii. AFR : u. christi aduersus magnatos iudeorum et de (*om.* R) iuda traditore. H : u. ch. a. m. iud. Q : u. ch. a. mentitos iud. D : u. ch. a. iudeos et iuda†. EM : u. ch. C : u. [. . .]. BL² : fidelis quispiam contra uitia carnis et ipsam carnem (carmen L²) deprecatur. S : fidelis quispiam [contra] uitia carnis.

* Q here repeats the titulus and liturgical note of Ps. xlv.

N: loquitur dominus saluator ex forma serui. O: intellectus huius psalmi attribuendus est dauid id est christo &c. L¹: u. capitis de passione resurrectione et ascensione domini. PTZ *nil.*

Ps. lv. ABMRS: u. christi ad patrem. O: ostendit christus . . . perfectionem suam &c. L³(?)Q: u. ecclesiae ad christum*. E: u. e. in tribulationibus constitutae. D: u. e. in persecutionem†. N: orat ecclesia in fidelium congregatio†. FHPTZ *nil.* C *hiat.*

Ps. lvi. ABCR: u. pauli post resurrectionem (ins- R). DFQ: u. ecclesiae ad christum. M: u. e. contra persecutores suos. N: orat dominus sollicitus de sua passione. O: ostendit christus &c. EHLPSTZ *nil.*

P. lvii. ABCL²QRS: propheta (-tae Q) de senioribus (denioribus C) iudeorum dicit (*om.* L²). O: hec inuectio prophete est . . . iude cecitatem† &c. FN: dominus reprobatur nequitiam iud. D: u. christi ad iudeos. E: u. aeccliesiae ad iustitiae regulam. M: u. e. HPTZ *nil.*

Ps. lviii. ACR: u. christi de iudeis ad patrem. DHS: u. ch. ad p. de iud. M: u. ch. N: christus orat secundum humanitatem &c. L¹: [. . .] capitis [. . .] L²: hic etiam psalm[us] in persona sanctorum formatur. BEFOPQTZ *nil.* K *hiat.*

Ps. lix. ABCL²RS: u. apostolorum (-li S) quando christus passus est. FHTZ: u. a. in passione christi. M: u. a. in p. E: u. primitiue aeccliesiae. D: u. martyrum. OPQ *nil.*

Ps. lx. ACR: u. pauli apostoli de christo dicit. PQ: u. ecclesiae (populi Q) ad dominum de christo eius. F: u. ecclesiae ad christum. E: u. e. ex gentibus congregate. DHM: u. e. S: ex persona populi in babilonia. BLOTZ *nil.*

Ps. lxi. AFRM: u. ecclesiae. N: profitetur se ecclesiam† deo subditam. BL²S: u. christi de passione. O: u. est capitis &c. D: u. conuertentes† a malo in bonum. EHPQTZ *nil.* C *hiat.*

Ps. lxii. ACFL¹MR: u. ecclesiae de christo. O: uerba huius psalmi persone christi sunt attribuenda &c. N: per domini resurrectionem euigilasse ad deum. S: ex persona eorum canitur [. . .]. D: u. populi recedentes† a tenebris ignorantiae at desiderantis christum. BEHPQTZ *nil.*

Ps. lxiii. ACFHR: u. pauli de (*om.* R) passione (-nem R) christi. L¹: u. p. [aposto]li de p. Q: u. ecclesiae de p. ch. BL²S: u. martyrum ch. Σ: martirum. M: u. prophete ex persona ch. et in consequentibus de apostolis. E: u. p. ex persecutione ch. siue ecclesie. D: u. spiritus sancti de iudeis. N: orat dominus ut liberaretur a timore iudaici populi. KOPTZ *nil.*

Ps. lxiv. ABC(?)L²RS: u. ecclesiae. E: u. apostolorum de profectu aeccliesiae deum laudantium et baptismi gratiam predicantium. FH: u. a. cum laude christi. M: u. apostolica de christo. P: u. apostolica. D: u. spiritus sancti ad patrem de apostolis et populo. N: u. populi deserentis peccata et ad deum conuertentis. O: u. est reuertencium. QTZ *nil.*

* From Ps. lvi !

Ps. lxv. ABCRS : u. (+ cristi et S) apostolorum ad populum. F : u. a. ad p. ad [. . .]. HMQ : u. a. D : u. martyrurum. N : contra persuasionem iudeorum spem resurrectionis ecclesia leta decantat. ELOPTZ *nil.*

Ps. lxvi. AHMQR : propheta (-tae Q) monet (-ent H ; adm- M) credentes u. apostolorum (-lica AHR). FL¹ : u. a. (-lica F). D : u. a. ad patrem. E : u. a. promissum sibi christum postulantium. O : u. est a. de uocatione gentium &c. N : propheta deprecationem fecit. S : sacerdotes populo benedicebant ex [. . .]. BPTZ *nil.* C *hiat.*

Ps. lxvii. ACR : propheta aduentum christi adnuntiat. HQ : p. adu. adu. (uerbum Q) ch. et adsumptionem in caelis. E : p. de primo uel secundo ch. adventu et ascensionem† eius ad caelos ac spiritus sancti dono. B : p. resurrectionem (+ domini Σ) ch. et posteriores glorias adn. L²S : p. (-te S) res. ch. [adn.]. N : p. narrat quae contingant in futuro iudicio fidelibus. D : u. patris ad filium in sepulchro positum. F : u. pauli de passione cristi.* L¹ : u[ox] primitiuae [ecclesiae]. MOPTZ *nil.*

Ps. lxviii. ABCPRS : u. christi cum pateretur. FHMQ : u. ch. (+ in H) tempore passionis. E : u. ch. contra iudeos et de sua passione. D. u. ch. ad patrem in p. positus†. N : deprecatur dominus a patre ut saluus fiat a persecutionibus quas perpressus est a iudeis. KLOTZ *nil.*

Ps. lxix. ACQR : u. ecclesiae ad dominum. F : u. e. ad deum. N : ecclesia in labore oppressa uocat ad dom. BP : u. christi uel ecclesiae (e. u. uel ch. Σ) ad dom. S : u. ch. ad patrem. D : u. ch. in cruce positus†. EHLMOTZ *nil.* K *hiat.*

Ps. lxx. ABCFL²MPQRS : u. christi ad patrem. D : u. ch. ad p. resurgentis. N : hic ecclesia petit ab humanibus† iniquitatibus se iugiter debere liberari. EHOTZ *nil.*

Ps. lxxi. ABCFPRS : u. ecclesiae (-ia P) de christo ad dominum. HQ : u. e. de ch. E : u. e. de ch. ad patrem desiderantis eius aduentum. L¹ : u. e. de iu[dicio](?) christi ad d. M : u. ch. ad patrem de doctrina et de iudicio.§ D : u. spiritus sancti ad p. de filio. N : loquitur propheta de aduentu domini. OTZ *nil.*

Ps. lxxii. ABC(?)L²PRS : u. christi ad patrem de iudeis. H : u. prophete ad christum de iud. F : u. p. ad deum de iud. Q : u. prophetarum ad dominum de iud. D : u. apostolorum et ecclesiae ad p. O : . . . introducitur u. synagoge correpte. N : ex typo sinagogae asaph . . . loquitur. EMTZ *nil.*

Ps. lxxiii. H : u. christi ad patrem de iudeis. D : u. ch. ad p. de doctrina et iudicio. ACMR : u. ch. ad p. FQ : u. ch. de iud. L²S : machabeorum (sanctorum et L²) pericula narrantur et preces connectuntur. L¹P : u. ecclesiae de iud.† E : u. fidelium iudeorum. N : loquitur israheliticus populus &c. BOTZ *nil.*

Ps. lxxiv. ABCFHL¹MQRS : u. christi de iudicio futuro. P : u. ch. E : u. apostolorum ad christum et christus de se item aecclesia. D : u. spiritus sancti de natiuitate christi. O : u. est capitis adiungens† sibi membra &c. TZ *nil.*

* From Ps. lxiii.

§ Apparently from Ps. lxxiii : See D there.

† L has "propheta sanctorum et pericula narrantur et preces connectuntur. at. uox aecclesiae de iudeis," the italicized words in green ink, the remainder in blue.

Ps. lxxv. ABCFL⁴PQRS : u. (+ christi R) ecclesiae ad christum. H : u. e. de resurrectione christi. D : u. populi conuertentis ad deum. EMOTZ *nil.*

Ps. lxxvi. ABCFHL⁴MPQRS : u. christi ad patrem. E : u. ecclesie ad deum clamantis. N : u. synagoge fidelis ad dominum de tribulatione erumne presentis. D : u. dei ad populum monentis ne mentiretur. OTZ *nil.*

Ps. lxxvii. ABCL⁴PRS : u. christi (ch. u. Σ) de iudeis. M : u. ch. ad patrem de iud. F : u. ch. ad iudaeos. E : u. ch. ad credentes et rursum u. apostolorum de incredulitate iudeorum. D : u. de iudeorum impietate. HQTZ : u. prophetae (-ta TZ) ad (a Z) iudeos. O *nil.*

Ps. lxxviii. CKL⁴S : u. apostolorum post passionem christi. P : u. a. in passione ch. post p. ch. B : u. a. post passionem ch. aliter anima poenitens contra pessimos uicinos id est demones deo supplicat. E : u. a. contra persecutores siue contra aduersarias potestates pro aeclesia supplicantium. DFHQT : u. martyrum de (*om.* H) eorum (*om.* D) effusione sanguinis. M : u. m. AR : u. pauli post resurrectionem.* OZ *nil.*

Ps. lxxix. ABCL⁴R : u. apostolorum (-los R; plorum† Σ) de ecclesia ad dominum. SP : u. a. pro e. et christo ad patrem. DH : u. sacerdotum dei (*om.* D) pro e. de (*om.* D) christo. M : u. s. d. pro e. ad christum. Q : u. s. d. N : asaph deprecatur domini aduentum. EFOTZ *nil.*

Ps. lxxx. ABCFL⁴PRT : u. apostolorum. E : u. a. et christi de iudeis. D : u. spiritus sancti ad populum et responsum ch. abj spiritum sanctum. Q : u. s. s. ad p. de spiritu sancto. H : u. s. s. ad p. O : u. capitis. KMZ *nil.* S *hiat.*

Ps. lxxxii. ABCL⁴MR : u. ecclesiae de iudeis. FHPS : u. e. ad iudeos. Q : u. ch. ad iud. ad alienigenam. K : christi ad iud. O : u. ch. ad sinagogam. N : asaph loquitur contra iud. de ch. aduentu. E : propheta de christo et de apostolis. D : u. spiritus sancti ad populum. TZ *nil.*

Ps. lxxxiii. ABCR : u. ecclesiae ad dominum (*om.* C) de iudeis et de uitiiis (etiuitiis R) hominum. L⁴PS : u. e. ad d. de iud. Q : u. e. de iud. et persecutoribus. HKM : u. e. de iud. E : u. e. contra persecutores siue contra [iudeos]. F : loquitur de christi aduentu u. e. ad d. (?). N : asaph loquitur de a. ch. D : u. prophetae ad deum pro populo. O : u. illorum qui in occulto iudei sunt. TZ *nil.*

Ps. lxxxiiii. BCQR : u. christi ad patrem de ecclesia (-iae Σ ; iudaeis C). A : u. ch. KPS : u. ch. ad p. L⁴ : u. ch. de e. D : uox spiritus sancti ad deum pro e. N : inestimabile sibi desiderium demonstrat e. O : hic psalmus ascribendus est imitatoribus passionum ch. &c. EFHMTZ *nil.*

Ps. lxxxv. ABCFMR : u. apostolica (-los F) ad nouellum populum. S : u. a. de nouello populo ad dominum. Q : u. apostolorum de nouo p. ad d. L⁴P : u. apostolica (-lorum L⁴). L¹ : u. apostolorum de incarnatione. D : u. spiritus sancti ad filium. EHOTZ *nil.*

* From Ps. lvi.

Ps. lxxxv. ABCDFMPRS u. christi ad patrem. Q : u. ch. ad p. de onesta oratione. H : u. ad p. E : u. ch. siue populi christiani. N : orat dominus christus et oratio fidelium est. O : oratio capitis in passione uel corporis in tribulatione. LTZ *nil*.

Ps. lxxxvi. ABHL¹MPQRS : u. apostolica de ecclesia (+ dicit Q). C : u. a. FN : propheta loquitur de ciuitate caelesti. E : p. in spiritu de e. et de christo in carne uenturo dicit. D : u. spiritus sancti ad apostolos de e. OTZ *nil*.

Ps. lxxxvii. ACR : u. christi de passione sua dicit ad patrem. BPS : u. ch. de pas. s. ad pat. FHMQ : u. ch. de pas. ad pat. L⁴ : u. ch. de pas. s. E : u. ch. ad pat. D : u. ch. ad passionem. N : dominus loquitur a dispensatione qua passus est. OTZ *nil*.

Ps. lxxxviii. ABCFHPQRS : u. christi (*om.* H) ad patrem de iudeis. M : u. ch. ad p. de iud. dicit. E : u. aecclesiae ad p. D : u. spiritus sancti de christo ad p. LOTZ *nil*.

Ps. lxxxix. B : u. apostolorum (-lica Σ) ad dominum. L²P : u. a. ad patrem. HQ : u. a. ACRS : u. apostolica ad d. F : ecclesia [lau]dis gratias agit deo u. apostolorum. N : moyses uel e. l. g. a. d. D : u. orationis pro populo ad deum. E : u. christi ad patrem. MOTZ *nil*.

Ps. xc. BL²S : u. ecclesiae (-ia S) ad dominum. ACKR : u. e. ad christum. H : u. e. L¹ : u. prophetae uel e. dei ad d. O : . . . uictoria . . . attribuenda est christo et est u. proph. de temptatione christi. F : iste psalmus profitetur unumquemque diuina ual[lari] protectione. N : ps. iste prof. omnem fidelem diu. p. ual. E : propheta generaliter de omni uiro iusto. D : u. dei ad populum credentem. PQTZ *nil*. M *hiat*.

Ps. xci. ABCEFHLPQRS : u. ecclesiae. D : u. penitentis. O : u. est . . . prophete uel cuiuscumque perfecti &c. N : loquitur ecclesia bonum esse laudes deo dicere in confessione. MTZ *nil*.

Ps. xcii. HP : u. ecclesiae de regno christi. Q : u. e. de r. dei. F : de r. ch. L¹ : u. prophetae de resurrectione (?). N : prospexit propheta dominum regnaturum per incarnationem &c. D : u. credentium christo. O : . . . iocunda laus christi &c. S : u. populi redditum de babiloniae†. ABCEMRTZ *nil*.

Ps. xciii. CFRS : u. ecclesiae (-ia S) ad dominum de (+ de iu C) iudeis. AM : u. e. ad deum de iud. BL² : u. e. de iud. ad dom. (ad dom. de iud. Σ). P : u. e. de iud. ad christum. HQ : u. e. ad dom. E : u. e. aduersus philisteos. D : u. apostolorum ad deum de persecutoribus. OTZ *nil*.

Ps. xciv. ACR : u. christi ad apostolos. D : u. ecclesiae ad a. ut praedicent in gentibus. BL² : u. e. paenitentiam suadentis. M : u. e. ad deum. HPQ : u. e. ad dominum de (pro P) iudeis. S : u. e. E : u. apostolorum ad gentes. F : propheta inuitat populos ad psalmodiam. N : i. pop. proph. ad ps. OTZ *nil*.

Ps. xc v. ABR : u. ecclesiae uocantis (euoc- R). CP : u. e. uoc. ad fidem. S : u. ecclesia†. Q : u. apostolorum ad dominum de confusione idolorum. H : u. a. ad populum de confessione i. D : u. a. ad p. quia confusa est cultura i. E : u. a. F : commonet propheta fideles cantare domino. N : c. p. f. c. d. &c. MOTZ *nil*. L *illeg*. K *hiat*.

Ps. xevi. ABCL²(?)RS : u. ecclesiae ad aduentum christi. HPQ : u. e. de aduentu ch. M : u. e. de a. domini. FN : predicat propheta uirtutes domini post (per F) resurrectionem. E : u. prophetae de utroque ch. aduersario. D : u. apostolorum ad credentes de regno ch.* OTZ *nil.* K *hiat.*

Ps. xevii. ABCL²MR : u. ecclesiae ad (*om.* Σ) dominum (*om.* Σ) et (+ ad CL²MΣ) apostolos. F : u. e. ad deum et ad apsa [. . .]. E : u. apostolorum ad gentes de christo. D : u. a. laetantium de resurrectione christi. HOPQTZ *nil.* KS *hiant.*

Ps. xeviii. ABL²RS : uox apostolorum (a ecclesiae Σ) ad populum. P : a. ad dominum de aduentu christi. Q : u. a. ad d. M : u. a. ad deum. C : uox [. . .]. D : u. a. ad iudeos &c. Σ : u. ecclesiae ad populum. F : u. e. ad† aduentu domini. H : u. e. in a. christi. E : u. credentium in laude diuina loquitur et de populo iudeorum. OTZ *nil.* K *hiat.*

Ps. xcix. ABCFHL²MQR : u. apostolorum ad populum. E : u. a. ad gentes et ad diuinas laudes prouocantis. PS : u. a. D : u. ecclesiae ad populum. OTZ *nil.* K *hiat.*

Ps. c. ABCL²PR : u. christi ad patrem de requie (de reliquiis P ; de reliquiis BL²(?) ; deqⁱe Σ) sanctorum. FHQS : u. ch. ad p. E : propheta ex persona ch. siue ecclesie docens ac proloquens quales in futuro iudicio omnium sanctorum debeat. M : u. prophete ad christum de f. i. D : u. penitentiae ad gentes. N : ecclesia loquitur. OTZ *nil.* K *hiat.*

Ps. ci. ABL²PR : u. christi et ecclesiae cum ascendisset christus ad patrem. CΣ : u. ch. et e. cum a. ad p. Q : u. ch. et e. de paenitentia cum laude. FGH : u. ch. et (*om.* H) e. D : u. e. ad christum. S : u. ch. ad patrem. O : . . . totus christus loquitur. N : uidens profeta ante aduentum ch. humanos crescere errores &c. ETZ *nil.* KM *hiant.*

Ps. cii. ABCFMQRS : u. ecclesiae (-ia S) ad populum (patrem S) suum. K : u. e. ad p. et ad apostolos. E : u. e. per baptismum renouate. H : u. ecclesie†. D : u. credentis. N : profeta loquitur. O : non hic loquitur christus set ea que in hoc psalmo continentur ad laudem eius referuntur. PTZ *nil.* L *ras.* (?)

Ps. ciii. FM : u. aecclesiae laudantis deum et opera eius enarrantis. B : u. e. l. d. E : u. e. in operibus suis de profunda archanarum inspectione l. HQ : u. e. laudans d. (dominum Q) et opera eius (ipsius Q) narrans. C : u. e. laudat dominum o. eius narrans fidei populo suo. S : u. ecclesia†. AR : u. e. ad populum suum. § D : u. spiritus sancti de totius mundi fabricam†. N : loquitur propheta de diuinis misteriis. LOPTZ *nil.*

Ps. ciu. ABCFKMRS : u. christi ad apostolos de iudeis. HL²Q : u. apostolorum de iud. E : u. a. gentes ad cultum et ad laudem diuinam prouocantes† miracula facta in iudeis per desertum. OPTZ *nil.*

Ps. cv. ABCKRS : u. (+ christi R) ecclesiae (-ia S) ad apostolos. FHMQ : u. e. ad a. et ad populum (-los M). E : u. eadem quae supra. LOPTZ *nil.*

Ps. cvi. ABL³MPRS : u. christi de iudeis. FHQ : u. ch. de iud. qui in prosperitate deum (dominum Q) dereliquerunt et in aduersis (adu^b H) clamauerunt. E : u. apostolorum ad populos ex gentibus congregatos. OTZ *nil.* C *hiat.*

* From Ps. xcii ?

§ From Ps. cii.

Ps. cvii. ABR^S: u. ecclesiae. FHL³M: u. timentis deum. PQ: u. i. dominum. E: ecclesia ad dominum et christus de ea uaticinatur. N: loquitur dominus christus. OTZ *nil*. C *hiat*.

Ps. cviii. FHL²PQTZ: u. christi (*om*. H) de iudeis et de iuda traditore (-ris Z). ARS: u. ch. de iudeis. B: u. ch. ad patrem de iud. M: u. ch. de persecutione iudeorum et de confusione iude. D: maledictio iudae traditoris. E: psalmus iste prophetiam habet de christo prophetiam et de iuda et de inimicis christi iudeis. quorum personam hic sustinet iudas. N: loquitur dominus. O *nil*. C *hiat*.

Ps. cix. ABL¹MR: u. ecclesiae de patre et filio. GHPQ: u. e. et christi ad patrem. E: propheta in spiritu uerba patris introducit ad filium. N: sanctissimus profeta . . . refert inestimabilia uerba quae omnipotens pater filio coaeterno dixerit. D(?)FOTZ *nil*. CKS *hiant*.

Ps. cx. ABR^S: u. (*om*. A) ecclesiae (-ia A) de christo cum laude. M: u. e. de ch. S: u. e. ad laudem cristi. E: u. corporis christi ecclesia canit beneficia patris. HLOPQTZ *nil*. CK *hiant*.

Ps. cx. ABFL¹MRS: u. ecclesiae de christo. E: propheta de sancto uiro loquens christi uel sancti spiritus inserit mentionem. N: propheta loquitur. T: [uox] exortantium populum. HOPQZ *nil*. CK *hiant*.

Ps. cxii. AR: u. ecclesiae quam dicit de fidelibus suis. B: u. e. de f. s. PS: u. e. cum laude christi. FL³Q: u. e. cum l. M: u. e. de christo. H: u. e. E: propheta in spiritu ad apostolos loquitur pauperem uero gentium populum sterilem ecclesiam dicit. OTZ *nil*. C *hiat*.

Ps. cxiii. AMR: uox apostolica cum iudeis (-eorum M) increpat idola. FHL³S: u. a. cum iud. increpans i. Q: u. apostolorum cum iud. E: u. apostolorum miracula apud iudeos facta retexens ydola. D: . . . i. perhibet coli ab his qui cognouerunt deum. N: propheta loquitur. BOPTZ *nil*. C *hiat*.

Ps. cxiv. AHQRS: u. christi est. BL¹: u. ch. uel (et Σ) cuiuslibet fidelis de temptationibus erepti. F: u. ch. est [. . .]. M: u. ch. E: propheta uel fidelis. OPZ *nil*. CT *hiant*.

Ps. cxv. ABFHL¹MRS: u. pauli apostoli. E: u. martyrum et u. populi christiani flagrans ardore martyrii promerendi. N: inuictorum m. uerba referuntur. O: u. est omnium m. &c. PQZ *nil*. CT *hiant*.

Ps. cxvi. EFHL³MPS: u. apostolorum (-lica F) ad gentes. ABR: u. a. D: omnes g. inuitantur ad laudem dei &c. O: inuitat propheta omnes fideles de iudeis siue de gentibus ad l. d. QZ *nil*. CT *hiant*.

Ps. cxvii. ABR: u. christi de se dicentis. L¹: u. ch. S: ut ostendatur hominibus uia id est christus per quam ingreditur ad portam uite. F: ut o. h. u. i. e. ch. per quem ad p. [. . .] ingressus cum laude. Q: ut o. h. u. i. e. ch. postquam i. ad p. quam ingres. claudi non potest. H: p. tm̄ phi ut ostendit h. uiam i. e. christum per quam ingrediuntur ad p. qua ingres. claudi non possit. D: ut ostendatur uia hominis per quam incidens perueniat ad p. quam ingres. diem habeat et noctem excludi non possit. E: ecclesia de persecutionibus suis loquitur et de christo confidit. M: prophetia de christo. N: sacratus est magnifico honore martyrum. O: loquitur . . . collectio primitiuorum m. &c. PZ *nil*. CT *hiant*.

Ps. cxviii. L¹B: u. christi ad patrem de iudaeis et de passione sua (s. p. Σ). GHQS: u. ch. ad p. de iud. et de (om. S) p. s. et de aduentu suo et eius regno et (+ de Q) iudicio (+ de monendo Q). AR: u. ch. ad p. et apostolorum de aduersario et de iud. et de p. s. et de a. s. et (+ de R) iudicio eius et regno. E: aeclesia nunc ad deum nunc ad credentes nunc de incredulis loquitur. N: uniuersus sanctorum chorus eloquitur &c. FMOPZ *nil.* CT *hiant.*

The mss. AFGHL³NRS have headings for some of the sections* of Ps. cxviii as follows:—

Beth. A (corr.) R: u. nouelli populi et inuenum credentium (+ in deum R). FG: u. n. p. *Gimel.* FHS: u. confessorum. N: chorus fidelium loquitur. *Daleth.* FH: u. secularium. *He.* FHS: u. monachorum. L³: hic propheta cursum suum optat retineri freno sanctitatis. N: uerba plebis beatae *Zain.* F: u. uiri sancti. N: chorus sanctorum &c. S: u. uirginum. *Heth.* FH: u. doctorum. *Teth.* FHS: u. sanctorum. N: populus beatus gratias agit &c. *Iod.* FH: u. prepositorum (-tiurum F) et confessorum ac uirginum deum credentium. *Caph.* FS: u. penitentium hominum. N: cantat populus fidelis &c. *Lamed.* F: u. clericorum in gradu nouo [. . .]. *Mem.* N. populus beatus loquitur &c. *Samech.* N: hic dicit catholicam exam iniquos odio sibi fuisse. *Phe.* N: sancti populi intrauit oratio &c. *Coph.* N: fatetur chorus sanctorum &c. *Sin.* L³: hec u. christi est contrahereticos. N: chorus sanctorum loquitur.

Ps. cxix. S: u. christi ad patrem in passione de iudeis. B: u. ch. ad pat. de iud. FHL³Q: u. ch. in pas. (+ sua F). AR: u. ch. ecclesiae. N: loquitur propheta. EMOPZ *nil.* CT *hiant.*

Ps. cxx. ABFR: u. ecclesiae ad apostolos. S: u. e. ad a. uel ad christum. L³: u. e. de christo. N: propheta ad caelestem hierusalem conscendens dicit se oculos eleuasse ad sanctorum merita. EHMOPQZ *nil.* CT *hiant.*

Ps. cxxi. ABFRS: u. (+ christi et Σ) ecclesiae ad apostolos. L³: u. e. N: gaudet se profeta commonitum ad supernam hierusalem. EHMOPQZ *nil.* CT *hiant.*

Ps. cxxii. ABFRS: u. christi ad patrem. L³: hec u. ecclesie est et oculi eius apostoli. EHMOPQZ *nil.* CT *hiant.*

Ps. cxxiii. ABFL²RS: uox apostolorum. D: . . . a. et martyrum uoces pronuntiat. L³: iam euaserunt isti de tribulatione presenti. N: fatentur sancti confessiones se per dei misericordiam fuisse liberatos. EHMOPQZ *nil.* CT *hiant.*

Ps. cxxiv. ABFL²RS: uox ecclesiae. EHMOPQZ *nil.* CT *hiant.*

Ps. cxxv. FR: uox apostolorum de impiis iudeis et de infidelibus convertentibus se peccatis. S: u. a. de i. iud. ad deum. AB: u. a. de i. iud. (iud. i. Σ). L²: u. a. de iud. L³: u. a. EHMOPQZ *nil.* CT *hiant.*

Ps. cxxvi. ABFL²R: u. christi ad futuram ecclesiam. S: u. ch. de futura ecclesia ad populum dicit. L²Σ u. ch. N: loquitur propheta. EHMOPQZ *nil.* CT *hiant.*

Ps. cxxvii. AΣ: propheta de christo et de (om. Σ) ecclesia dicit. FR: de ch. et de e. d. propheta. BL²S: p. de ch. ad ecclesiam d. (om. L²). EHMOPQZ *nil.* CT *hiant.*

* The facsimiles of G do not in this psalm extend beyond v. 11.

Ps. cxxviii. ABFRS : uox ecclesiae. O : u. e. &c. L³ : u. e. hic ecclesia loquitur. N : profeta dicit . . . uel ecclesia loquitur. D : uocem christi ad patrem continet contra iudeos &c. EHMOPQZ *nil.* CT *hiant.*

Ps. cxxx. S : u. christi. D : uocem indicat sancti petri cum post tertiam negationem amare flebit†. L³ : haec u. penitentis et obsecrantis. ABEFHMOPQRZ *nil.* CT *hiant.*

Ps. cxxx. AR : u. ecclesiae rogantis (-atis R) : BL¹ : u. e. regnantis. S : u. e. regn. uel sancte mariae. L³ : u. s. m. F : u. s. m. et e. rogantis. D : u. s. m. uirginis est matris domini nostri ihesu christi. EHMOPQZ *nil.* CT *hiant.*

Ps. cxxxi. ABRS : propheta ad patrem de christo dicit. FL¹ : p. ad pat. de ch. E : p. de ch. et aecclesia promissum sibi loquitur. N : loquitur p. de incarnatione domini. D : u. sancti patris est ad dauid &c. HMOPQZ *nil.* CT *hiant.*

Ps. cxxxii. AR : u. ecclesiae orantis. S : u. e. regnantis. BL¹ : u. e. D : u. est e. ad filios ut conueniant in unum catholici. EFHMOPQZ *nil.* CT *hiant.*

Ps. cxxxiii. ABFL¹RS : u. ecclesiae in futuro. D : seruis dei clamat apostolus uolo uiros orare &c. EHMOPQZ *nil.* CT *hiant.*

Ps. cxxxiv. AFR : u. ecclesiae operantibus quae increpat idola gentium quod (non F) nulla sunt. L² : u. e. que inc. op. i. BM : u. e. op. quae inc. i. (idydgla (?) Σ). L¹ : u. e. E : propheta ad apostolos et ad aecclesiam loquitur. O : inuitat p. . . . omnes fideles ad laudandum deum &c. N : p. loquitur. HPQSZ *nil.* CT *hiant.*

Ps. cxxxv. ABFL¹RΣ : uox apostolorum ad sinagogam (-as BL¹ (-um Σ)). S : u. ecclesiae. E : ecclesia uel propheta. N : loquitur p. O : exhortatur p. eosdem quos in superiori laudare &c. HMPQZ *nil.* CT *hiant.*

Ps. cxxxvi. ABFL²MPRS : u. ecclesiae. E : propheta ex persona penitentium de aduersariis spiritibus loquens uel aecclesia desiderat reconciliari caelesti ierusalem. HOQZ *nil.* CT *hiant.*

Ps. cxxxvii. ABHL²RS : u. christi ad patrem. M : u. ch. E : u. aecclesiae. N : populus catholicus loquitur. FOPQZ *nil.* CT *hiant.*

Ps. cxxxviii. AFR : u. ecclesiae ad populum conlaudans deum (dominum R ; *non liqu.* F). M : u. e. D : u. christi confitentis omnipotentiam dei &c. E : u. ch. N : loquitur dominus christus. L³ : haec u. filii est ad patrem secundum humanitatem. BS : u. petri apostoli paenitentis. HOPQZ *nil.* CT *hiant.*

Ps. cxxxix. ABFL¹R : u. christi est. M : u. ch. E : ecclesia de detractoribus suis siue de malignis spiritibus dicit. N : e. loquitur. D : u. apostoli petri ad christum contra iudeos et gentiles persecutores et contra spiritus immundos. S : u. petri. HOPQZ *nil.* CT *hiant.*

Ps. cxl. BS : u. ecclesiae contra haereticos (+ sicut et supra B). D : u. e. ad christum contra h. &c. AFHL¹MR : u. e. E : u. christi siue e. OPQZ *nil.* CT *hiant.*

Ps. cxli. S : u. christi ad deum. H : u. ch. ad dominum. Q : u. ch. ad patrem. D : u. ch. ad p. &c. N : clamat dominus christus ad p. &c. F : u. christi ad [. . .]. EP : u. ch. L³ : haec u. corporis ch. et oratio dauid. ABMORZ *nil.* CT *hiant.*

Ps. cxlii. E: u. aeclesiae diuinam indulgentiam opemque flagitantis interpretationibus. S: u. christi ad deum.* D: u. apostoli pauli . . . dicit christo. N: uerba prophetae sunt . . . et penitentium est. L^{1,3}: haec u. et capitis et corporis est (+ et aeclesiae L¹). ABFHMOPQRZ *nil.* CT *hiant.*

Ps. cxliii. AMR: u. ecclesiae aduersus diabolum (-li M) cum satellitibus suis (eius M). B: u. e. a. d. et satellites (satiles Σ) eius. F: u. christi a. d. cum satellitis [. . .]. E: u. ch. siue e. contra malignos spiritus et contra omnes impios qui sola presentis uite felicitate letantur. H: u. ch. a. d. P: u. ch. N: propheta typum ch. gerens . . . gratias agit &c. OQSZ *nil.* CT *hiant.* L *ras* (?).

Ps. cxliv. ABDFL'MRS: u. ecclesiae ad christum. H: u. e. E: propheta uel aeclesia exultans in spiritu de apostolis dicit. N: laudatio christi a beato propheta posita est. L³: hic psalmista decorifice laudat dominum. OPQZ *nil.* CT *hiant.*

Ps. cxlv. ABFL'RS: u. christi ad populum. HL: u. ch. § D: u. apostolorum ad p. &c. L³: hic anima ipsam ortatur et ipsa sibi respondit. EMOPQZ *nil.* CT *hiant.*

Ps. cxlvi. ABFMRS: u. (+ christi uel Σ) ecclesiae et apostolorum ad nouellum populum. L³: u. ch. ad aeclesiam. D: u. spiritus sancti ad gentes &c. EHOPQZ *nil.* CT *hiant.*

Ps. cxlvii. ABFL'MRS: u. christi ad ecclesiam (-iae R). E: apostoli e. pro inducta sibi gratia diuina cohortant ad laudem. D: u. spiritus sancti ad e. ut laudet christum suum. N: uerba prophete &c. HOPQZ *nil.* CT *hiant.*

Ps. cxlviii. ABFL'MRS: u. apostolorum (-los FΣ) ad populum. D: u. ad laudem dei omnes creaturae utantur†. E: propheta uel aeclesia. N: hortatur pr. populos fideles ad laudes dei. O: inuitat pr. f. . . . deum laudare &c. HPQZ *nil.* CT *hiant.*

Ps. cxlix. ABFL²R: u. christi ad fideles de futuro et de (*om.* L²) resurrectione (*sur-* F). L¹: u. ch. ad f. S: u. ch. E: u. apostolorum credentes ad noui testamenti prouocans fidem loquitur de futuro. HMOPQZ *nil.* CT *hiant.*

Ps. cl. ABFRΣ: u. christi (ch. u. B) post saeculum deuictum in regno suo laetantis. L^{1,2}: u. ch. post s. d. in r. futuro (+ regnantis L¹). S: u. ch. post s. d. P: u. ch. E: apostoli uniuersalem aeclesiam de emulatione spiritualium gratiarum et ad fastidium prouocant laudes. HMOQZ *nil.* CT *hiant.*

TABLE II.—LITURGICAL NOTES.

Ps. ii. AR: legendus ad euangelium lucae. B: lege ad (*om.* Σ) lucam. S: ad lucam eugt.

Ps. iv. D: ad ministerium frumenti uinei.

Ps. vi. B: lege ad lazari resurrectionem (Σ *nil.*). S: quando resurrexit lazarus.

Ps. viii. BS: lege ad (*om.* Σ) euangelium marci.

* From Ps. cxli ?

§ In L this heading is written in red, as part of the title.

- Ps. x. BS : lege ad genesim perditio sodomae (Σ *nil*).
- Ps. xi. BS : lege ad lucan (Σ *nil*).
- Ps. xii. BS : in marco.
- Ps. xvii. B : in ioanne.
- Ps. xviii. B : in matthaeum. Σ : ut in mathio legit.
- Ps. xx. Q : benedictio super principem.
- Ps. xxii. B : post baptismum ad hester. AEFHM Σ : post baptismum.
Q : post b. et ante b.
- Ps. xxiii. HPQ : post baptismum.*
- Ps. xxvi. ABR : ad eos qui primum ingrediuntur in dominicum legendus ad isaïam (lectionem isaïae prophetae AR) ecce qui seruiunt tibi bona manducabunt (-bant Σ). L² : [quod] scriptum [est] in isaïam e. q. s. t. b. m. PQ : ad. eos qui p. ing.
- Ps. xxvii. B legendus (+ est Σ) ad daniellem. AR : l. ad lectionem danielis prophetae.
- Ps. xxviii. B : ad superstitionem (superstionem Σ) diei sabbati paschae (p. s. Σ) legendus ad noe diluuium. AR : ad superpositionem d. s. p.
- Ps. xxxi. AR : post baptismum. Q : ante b.
- Ps. xxxiii. ABCR : per ieiunium. Q : oratio ad altare.
- Ps. xxxvi. B : lege ad (*om.* Σ) sapientiam salomonis (sal. sap. Σ). S : de sapientia sal.
- Ps. xxxvii. B : lege iob.
- Ps. xxxix. BS : lege in actus apostolorum.
- Ps. xl. B : legendus ad isaïam. AR : l. ad lectionem esaïae prophetae.
- Ps. xli. B : ante baptismum ad eos qui fidem sunt (*om.* Σ) consecuturi lege ad isaïam. S : a. b. [. . .] L² : ad eos q. f. s. e. ACR : a. b.
- Ps. xlii. B : ad eos qui fidem sunt consecuti a christo (a cli. s. e. Σ). ACR : ad eos q. f. e. s. (s. e. C).
- Ps. xliii. ABCR : in (*om.* ACR Σ) exomologesim (ex imologesim A ; ex homolegessem C ; ex imolongensim R ; exemologesim Σ) legendus ad epistolam pauli ad romanos.
- Ps. xliv. ABCR : legendus ad euangelium matthaei de regina austri. F : legendum ad intellectum m. de r. a. Q : legendis† ad [. . .] matutini. S : [. . .] de r. auri.
- Ps. xlv. ABCR : legendus ad lectionem actus apostolorum, Q : lege ad l. a. a. et ad l. marci euangelistae. H : legendus ad l. apostolorum et martyrum.
- Ps. xlvi. ABCR : legendus (*om.* C) ad lectionem actus apostolorum.

* Repeated from Ps. xxii !

Ps. xlvii. ABRΣ: legendus (+ est B) ad apocalypsin ioannis. Q: l. ad a. H: legendum in a. iohannis apostoli.

Ps. xlviii. ABCRS: super lazaro et diuite (-tie S) purpurato.*

Ps. xlix. ABC(?)R: legendus ad euangelium matthaei. Q: lege ad lectionem actus apostolorum et ad lectionem marci euanglistae.||

Ps. l. AR: legendus ad lectionem esaiæ prophetæ et lectionem actus apostolorum ubi paulus elegitur. BC(?)Σ: leg. (*om.* B) in a. a. u. p. eligitur.

Ps. lii. ABCR: legendus ad euangelium matthaei.

Ps. lxiv. ACR: ante baptismum paschalismatum. BL²S: a. b.

Ps. lxviii. ABCR: legendus ad lectionem ionæ prophetæ et (*om.* R) ad euangelium ioannis. M: leg. ad l. ionæ p.

Ps. lxxviii. K: legendus ad euangelii† matthei.

Ps. lxxx. ABCF(?)L⁴R: ad pentecosten.

Ps. lxxxiii. ACMR: legendus ad euangelium matthaei ad eos (eis *pro* ad eos M) qui fidem sunt consecuti. FHQS: de his (de eis H; is Q) q. f. s. c.

Ps. lxxxiv. Q: de oratione super agrum.

Ps. lxxxv. ACPR: per ieiunium. Q: per i. . . . de onesta oratione.

Ps. xc. ABCRΣ: legendus (-dum B) ad euangelium marci (+ uel mathi Σ) ubi temptatur christus. K: eugenius† ad e. ubi t. S: u. t. ch. Q: oratio nocturno tempore.

Ps. xcvi. ACR: ad confessionem (-io R) prophetia.

Ps. cv. ABCR: legendus ad exodum (odum Σ).

Ps. cvi. AR: legendus ad iudicium et numeri libros. B: l. ad lectionem n. et i.

Ps. cvii. ABR: ad superpositionem.

Ps. cix. Q: de natale domini. D: natiuitas d. nostri ihesu christi.‡

Ps. cxxix. ABR: legendus (*om.* Σ) ad lectionem ionæ prophetæ.

In the first of these two tables we find two series of headings which are complete—D and N. AR and S are nearly complete; as is also C as far as it is available. The manuscript L, too, has an almost complete set. But its headings are divided into four groups, according to the colour of the ink in which they are written. Moreover, this external division corresponds, as we shall see, to difference of type among the headings§; and the four groups apparently represent four stages of work. We may infer that they were derived from three or

* It is doubtful whether this is a lectionary note or a heading. || From Ps. xlv

‡ This should perhaps be regarded as a heading.

§ L¹ L² L³ have completely distinct characteristics. The 13 headings of L⁴ might belong to the L² series, though they do not show its special features.

four different exemplars.* Each of these may have had headings which were not transferred to L; but it is certain that they were all far from complete. The number derived from each source is approximately as follows: L¹49, L²57, L³47, L⁴13. For the rest, B has 124 headings, F123, H107, M99, Q98, P82, E77, T9, Z5. K was probably not well supplied with headings; for of the eleven psalms in regard of which its evidence is available (xl, xlvi, lxiii, lxviii, lxxviii, lxxx, lxxxi, lxxxii, lxxxiii, cii, cv), only six have them. The Salaberga Psalter,|| which is of somewhat earlier date, is probably in like case. The published facsimiles show the beginnings of ten psalms, of which no more than four (probably only three) have headings. It is clear therefore that complete sets were comparatively rare, and that headings tended to disappear in the course of transmission. There was also a tendency to abbreviate headings, which becomes more evident when the various series are classified according to their affinities.§

Table I reveals a remarkable variety among the different sets of headings. Five sets stand so far apart from one another and from the rest that they may be regarded as representing different types—DEL³NO; and a sixth has marked characteristics of its own—L¹. The remaining sixteen—ABCFGHK L²L⁴MPQRSTZ—have a general resemblance to each other, and over against those just mentioned may be regarded as a class conforming to a single type. But even among them there are clearly defined groups. It has been shown already that AR are derived from a single, not remote ancestor, *a*; and C is obviously akin to them. FHQ form another group. They are in agreement, exact or approximate, against all others (except G) nine times: Pss. xxiv, xxxvii (*salutis*), xliii, xlvi (*u. apostolorum est*), l, lxxii, cv, cvi, cxvii. FH agree against the rest ten times (in six of which Q gives no evidence): Pss. ii, ix, xii, xxix, lxiv, xcviii, ci, cxviii, *daleth*, *heth*, *iod*. FQ twice (H giving no evidence in one case): Pss. li, lii. HQ nine times (in one of which F fails us): Pss. xviii, xlii, liv, lxvii, lxxi, lxxxix, xciii, xcv, ciii. This suggests that FHQ are descended from a common ancestor, which we may call ϕ . And the hypothesis is confirmed by a consideration of the relation between the mss. in other cases. All the facts are explicable by derivation from ϕ except the following: once HQ seem to have been

* Headings in green ink are corrected in blue: Pss. l, xcv, cl. Headings in black ink are corrected in blue (Ps. cxlii) or green (Ps. cxxvi). Thus the order of date seems to be black (L³), green (L²), blue (L¹). But, on the other hand, some blue headings seem to be corrected in green: Pss. cxxvi, cxxxiv, cxlix. This apparent conflict of evidence might be removed by a careful study of the ms., which I have not been able to undertake. It seems impossible to fix the place of the violet headings (L⁴) among the rest, though once violet (L⁴) is corrected in blue (L¹). || See p. 413, note ¹.

§ *E.g.* Table I shows that HFQ often abbreviate the readings of ϕ .

influenced by a manuscript of the D type (Ps. lxxx), and ten times F deserts ϕ to follow the N type (Pss. xxxvi, xlvii, lvii, lxxxii, lxxxvi, lxxxix, xc, xciv, xcv, xcvi).^{*} Another descendant of ϕ seems to be G. This is sufficiently clear from an examination of the headings of Pss. xxxi, li, lii, ci, cix, cxviii, and cxviii *beth* recorded in Table I.

If the existence of this ϕ group be admitted, it is easy to show that P is closely related to ϕ . In the majority of cases in which they can be compared they appear to be identical or nearly so (about 50 times); in 22 readings either ϕ (Pss. xviii, lxxxii, lxxxvii, lxxxix, c, ci, cxii) or P (Pss. xxviii, xxxvii, xliii, xlvi, xlix, lii, lxiv, lxxiv, lxxxiii, lxxxiv, xcix, cvi, cxli, cxliii, cl) seems to have abridged a common source. In several headings (Pss. lxxviii, lxxix, xcv, and perhaps l) ϕ is in company with D.

It has been shown (see p. 272) that S is, in the main, derived from the Bedan *Argumenta*; and a similar argument leads to the same conclusion in the case of L². There is some evidence in each of indebtedness to other sources. S occasionally sides with ϕ against B (Pss. lxxxi, lxxxiv, cxii, cxvii, cxviii, cxxx) and once or twice with D (Ps. cxxxix; cp. Pss. cxvii, cxxx). L² is once with N (Ps. xxvi).

It is impossible to assign TZ to any group, though they seem to be akin to ϕ (Pss. xxxiii, liii, lix, lxxvii, lxxviii, lxxx, cviii). But that they are allied to each other and indebted to Bede seems to be proved by their heading for Ps. lii, *u. ezechiae de rapsace*. This must have come from the Theodorean tradition on which the Bedan *Argumenta* are based. No such clause, it is true, occurs in them. But in the arguments of Pss. li, lii, liii, we find respectively *contra uerba rapsacis cantatum intelligi, et hic psalmus rapsacen percudit*, and *ex persona ezechiae obsessi potest intelligi*. These phrases no doubt suggested the heading of Ps. lii in TZ. The obvious conclusion is that, at least in this place, T and Z borrowed from Bede through the same channel.

In addition, then, to certain sets of headings in whole or in part derived from Bede—viz. LSTZ—we have discovered some groups which have no such indication of later date: α (AR); ϕ (FGHQ) P; B. The first and third of these are clearly Northumbrian. What can be said as to the *provenance* of the second? I do not know that FH make any direct contribution to the solution of this problem. But there seems to be no doubt that P and Q show marks of a Northumbrian strain in their ancestry. M. Berger writes that

^{*} All these headings are found substantially in the *divisio psalorum* of Cassiodorus, and all but one (xlvi) in the *explanationes* of Bede. But a comparison of these with F and N shows clearly that F borrowed them from Cassiodorus through a text similar to that of N.

the text of P "hovers between the Codex Vallicellianus,* to which it comes nearest, and the manuscripts of Tours. Speaking generally, it seems to belong to the same tradition as all the texts which come, more or less directly, from Alcuin . . . It is a late Alcuinian text (un texte alcuinien de basse époque)." He excepts from this remark only the text of the Gospels.† It will not be forgotten that through Alcuin, the Northumbrian scholar, who in later life became Abbot of Tours, English learning made its entry into France under Charlemagne. Both Q and its exemplar, the Mesme Bible, were written under the eye of Theodulf, Bishop of Orleans, but both bear traces of the influence of Alcuin, Theodulf's contemporary.‡ There is therefore no improbability in supposing that the psalm headings of Q were imported from Northumbria. The fact that similar headings occur in F seems to show that they are English; and it is not easy to explain how the Spanish Bishop of Orleans should have acquired a knowledge of English psalm headings except through Alcuin, of whose work he certainly made use. If the Mesmes Bible is destitute of headings (see p. 413), the argument is yet stronger. For the most important variation of Q from its exemplar is its chapter divisions, which for the most part follow those of the Codex Amiatinus,§ and are therefore presumably of Northumbrian origin. We should expect that other embellishments, not found in the Mesmes Bible, if there are any, came from the same source. In G also, the earliest manuscript of the group, there is a presumption of Northumbrian influence. This Codex, written in minuscules of gold, is one of the most beautiful of those which survive from the eighth century. It cannot have emanated from Alcuin's school at Tours, which was not established till 796, at least a year after it was penned. But that it was, nevertheless, produced under the supervision of Alcuin himself is far from unlikely. As M. Berger says, "It is probable that the greater number of the manuscripts in letters of gold came from the Palatine School. The Palatine School was, in fact, from 782 presided over by Alcuin, who had not yet founded the School of Tours. All the dates and all the other indications agree with this hypothesis, which we may accept as not far from the truth."¶ G is one of the golden manuscripts to which these words directly refer.

It may be assumed, then, that the groups *aC*, *φP*, *BL²S*, *TZ*, together with *K* and *L⁴*, represent slightly variant forms of the Northumbrian

* This Ms., according to Berger (p. 193) was probably in part copied from a Bible presented by Alcuin to Charles the Great at Christmas, 801. I am informed that it has no headings.

† Berger, p. 290. See also p. 289.

‡ Berger, p. 148.

§ *Ibid.*, p. 172.

¶ Berger, p. 190.

¶ Berger, p. 277.

tradition. On the other hand, the very different traditions embodied in D, N, and O, and perhaps those of E and L³, seem to belong to the south of England. D is a Canterbury manuscript; O was written at Reading; and the companions of N, Salisbury 150 and Ashm. 1525, are connected respectively with Reading and Canterbury.* We have already had examples of the way in which the northern tradition, as exhibited in some of its representatives, has been modified by southern texts: S, ϕ ,† and the MSS. H, Q have been assimilated to D; F often, and L² once to N; L² once to E.

Now, what is the relation of the series in the Beneventan MS. M to the rest? As we might expect, in many headings (about 20) it agrees with none of them. Nevertheless its resemblance to the Northumbrian authorities is striking. It supports ϕ in 40 readings, α in 36, B in 26.‡ On the other hand, it is with D only nine times, with E thrice, with L³ four times, with N once, with O never. But it is remarkable how often it is the only supporter, among our authorities, of those dissident traditions. MD are in agreement against the rest in Pss. xxxvi, xxxix, xlvi (*ad gentes*), xlvii, lx; ME in Ps. liv (ep. lvii); ML³ in Ps. x; MN in Ps. xiii, the only place in which M and N come together. This may seem to indicate that not only in Northumbria, but all over England, psalm headings were in use in the seventh and later centuries which were ultimately derived from Italy.§ The inference must, of course, remain precarious till more evidence is available. For M is a comparatively late manuscript; and we must allow for the possibility that the English traditions found their way to Italy and exerted an influence on Italian texts. At least two MSS. supplied with Northumbrian psalm headings, A and G, were sent to Rome as gifts to Popes.

The Liturgical Notes, collected in Table II, are, with two exceptions (Pss. iv, cix), confined to documents of the Northumbrian tradition (including M). It will suffice for our purpose to deal very briefly with those that appear to refer to the lectionary. It has been pointed out above (p. 275 f.) that B derived its lectionary notes from two sources, one of which resembled A, while the other did not. Of those borrowed from the latter source no trace remains in any of our MSS. except S and Σ . Setting aside this second series, we find between α , B, and C a close agreement. But the other Northumbrian authorities have very few such notes, and those that survive,

* Palaeographical Society, ii, pls. 188, 189, and above, pp. 243, 414.

† To the instances given above add Ps. lvi.

‡ These figures may be taken as the lowest possible. A more liberal interpretation of the word "support" would raise the number by about ten in each case.

§ That the N headings are of Italian origin is, of course, certain. They are, in the main, extracts from the *Divisio Psalmorum* of Cassiodorus (Migne, P.L., lxx).

though in almost all cases evidently derived from the series common to α and B, are often corrupt. L¹PTZ have none. F has one (Ps. xliv, corrupt), H two (Pss. xlv, xlvii), of which one is corrupt (Ps. xlv), L² one (Ps. xxvi, corrupt), Q four (Pss. xliv, xlv, xlvii, xlix, all more or less corrupt), S eleven* (Pss. ii, i, viii, x, xi, xii, xxxvi, xxxix, xliv, xlviii, xc), of which four are corrupt (vi, xxxvi, xliv, xc). K seems to have been more fully furnished with lectionary notes than most other MSS. I have been able to record three (Pss. lxxviii, xc, cv), two of which are corrupt (Pss. lxxviii, xc). These facts corroborate conclusions already reached. They show how readily the lectionary notes were omitted, or misunderstood and corrupted, by later scribes. They bring into prominence the very close connexion which subsists between C, the archetype of AR (α), and the primary source of B (β). They supply a strong argument for the early date of those three authorities. And, taken with the facts set forth in Table I, they justify the procedure, which was adopted in the Introduction, of considering $\alpha\beta C$ apart, and deducing from a comparison of their readings the exact nature of their relation to each other.

There is some ground for believing that the headings and the liturgical notes are not descended from a common original (see above, p. 267). But if, on the authority of M, we conclude that the headings came from Italy, that must hold good of the lectionary notes also; for M has two of them (Pss. lxviii, lxxxiii). It would follow that the direction to the scribe embodied in the rubric of Ps. ii in AR (above, p. 267), was derived from an Italian ms.—the first which combined headings and notes in a single series.

* All of which, except xliv, xlviii, and xc, and perhaps ii, come from B's second source.

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Et dicit dominus ad remanentem

Cum dicit anima dōnum suum: De manu peccatorum

Uxor est iusto: et rector de laetitia

Laetum iusto in dōno

Et dicit dominus in memoria et in gloria eius

XIII

Quoniam dicit dominus in canone

Quoniam in mirabilia fecit

Saluabit sibi dextera eius: et dicit dominus in meo

Notum fecit dominus salutem suam

In conspectu gentium ne elant iustitiam suam

Recondatus est in misericordia sua

Et uenit ad suam domum in israel

Uiderunt omnes terrae salutem dī nos

Jubilat dominus omnis terra

Cantate et exultate in psalms

Psallite dominum in cythara: in cythara: et uoce psalmi

In tubis ducatur uoce tubae organae

Jubilat in conspectu regis dō

Mouetur mare et plenitudo eius

Orbit terrarum et qui habitant in eis

Et uocant manus simul

Et uocant manus simul a conspectu dī quoniam

Uocant benedictionem in iustitia

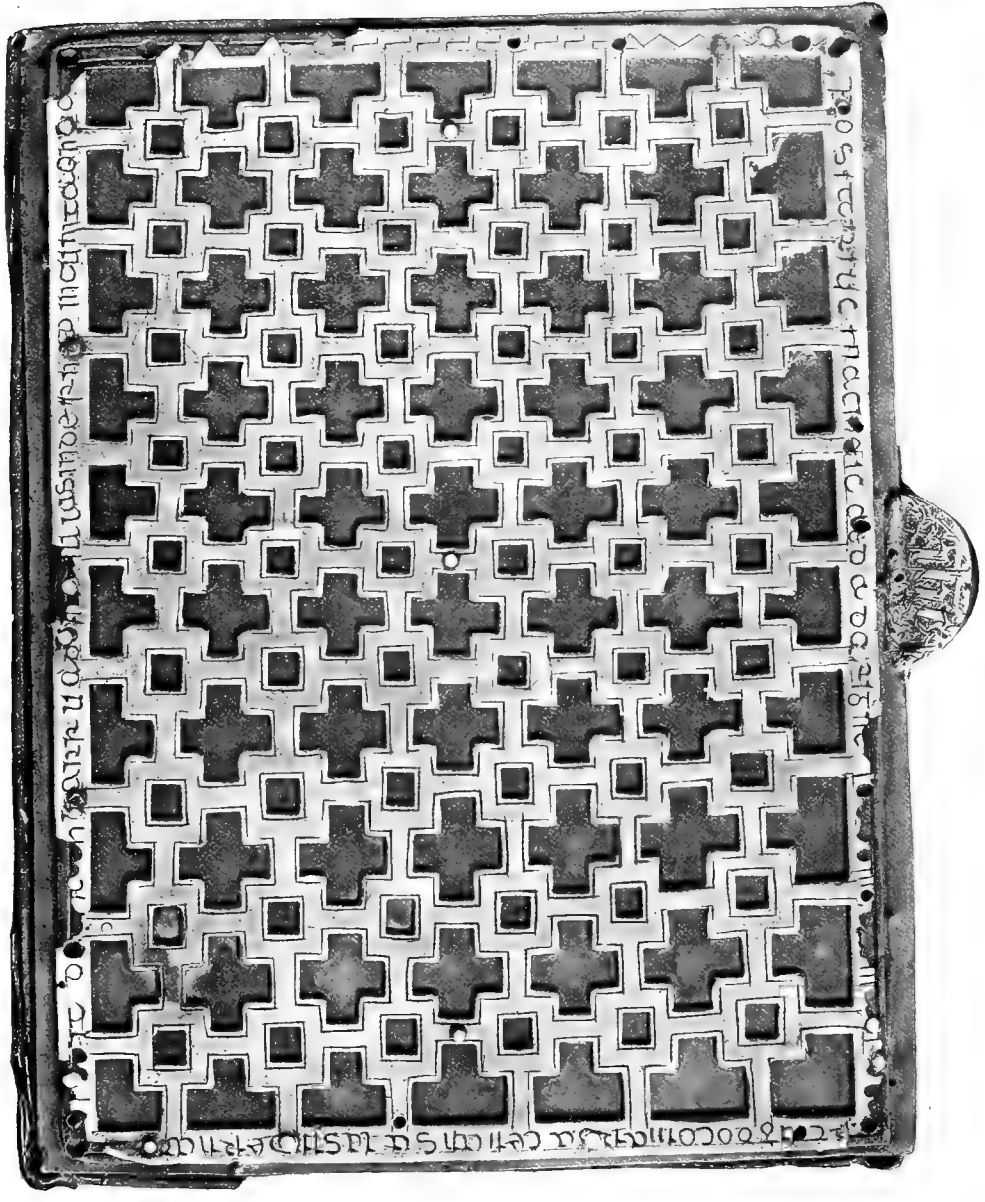
bibent uinum in zuentur
 uinzuent in monte isto.
 tradent haec omnia zenti
 bus hoc enim dicit omnipotens
 consilium super omnes zent
 sed dicent fortasse illi nobis
 qui relactant scientia desir
 blasphemantes quid dicunt
 dnm corruptione mortis
 et passionis crucis surresub
 lectum in lesceerzo quod scrib
 tum habet in plamentatio
 nibus hieremiae ubi dicit
 spruultum nostrum xpi dnr
 conpraesertim in corrup
 tionibus nostris in quodix
 imur sub umbrae iustitiae
 mur in zentibus audis
 quomodo profeta xpi indm
 conpraehensum est se pro
 nobis ^{et} _{pro peccatis nostris corrup}
 non uidetur quia possumus
 corradia in quibus sumus xpi in quibus
 quoniam populus ille qui ipse manet in crealibus
 ab ipse se dicit aliam ubi uolunt in uult

Turin Bibl. Naz. G v 26, Augustini Epistolae, fol. 129r.



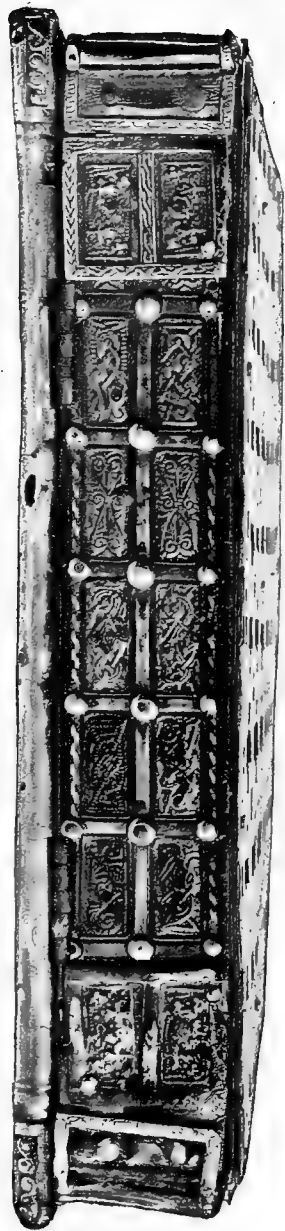
Lid of the Shrine of the Cathach.

LAWLOR.—THE CATHACH OF ST. COLUMBA.



Base of the Shrine of the Cathach.

LAWLOR.—THE CATHACH OF ST. COLUMBA.



Hinged side.



Front side.

Sides of the Shrine of the Cathach.

LAWLOR.—THE CATHACH OF ST. COLUMBA.



Front side.

Hinged side.

Right-hand end.



Hinged side.

Front side.

Left-hand end.

Ends of the Shrine of the Cathach.

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XII.

ON CERTAIN TYPICAL EARTHWORKS AND RING-WALLS
IN THE COUNTY LIMERICK.

PART II. THE ROYAL FORTS IN COSHLEA.

Continued from Vol. xxxiii (C), p. 42.

BY THOMAS JOHNSON WESTROPP, M.A.

[PLATES XXXIX-XLII.]

[Read NOVEMBER 30, 1916. Published FEBRUARY 16, 1917.]

HISTORICALLY the most interesting forts in the Co. Limerick are those round the flank of Sliabhriach and the remains at Bruree and Dunrileague. These were the royal residences of the local princes of the Dal Cais, and as such they are endowed with a mass of early legend, some evidently non-Christian, and perhaps in its origin prehistoric. The legends were principally collected no doubt from the tradition of the hereditary guild of bardic historians at Cashel by the good and learned Cormac mac Cuileanan, king-bishop of Cashel, in about A.D. 890. Unfortunately his valuable compilation, the *Saltair* of Cashel, has long disappeared, possibly in the civil wars of the mid seventeenth century; and though many extracts from it remain, there is no certain evidence that any entire copy survived to the eighteenth century. The confident allegation that there was a copy in the Library of Trinity College, Dublin, in 1719 may be classed with the present-day assertions that King Brian's actual harp is preserved there, or that his sceptre exists in the collection of the Royal Irish Academy. Of course we have many other corroborative (or contradictory) legends in other tales, and we have great need of an impartial study, linguistic as well as critical, of these sources.

The period referred to may possibly (as many facts tend to prove) give the beginnings of natural tradition (as distinct from artificial fictions) known to the bardic historians before the fatal ambition sprang up to carry Irish

¹ A copy or abstract of part of it, dated 1454, is cited by O'Curry from Laud MS. 610. Extracts from it are not infrequent, as in the Tract on the Dal gCais. False citations are not unknown, e.g. Hely Dutton's, from Miss Beaufort, from an obscure local history of no authority, as to the sacred fire being kept in the Round Towers.

quasi-history back till it joined the earliest history of our race known to the Christian clerics. Warped and interpolated the genuine tradition must probably have been, but it may equally well contain most valuable facts of an unexpectedly remote past, and the Red Branch mythos shows genuine connexion with La Tène civilization at the very beginning of our era.¹

In the Munster legends we reach back to the middle of the second century after Christ, back to the period to which our earliest detailed contemporary record, the Atlas of Ptolemy, refers, i.e. not earlier than A.D. 150.² We accordingly look for equations between the two, and are at once met by the discouraging want of any point of contact; save the Iouernoi of South Munster, the Earna of the legends, and a few place-names, none (unless Rígia, or Makolikon, lie at Bruree and Kilmallock) in the cradle of the Dal Cais. There is, however, a possible allusion (as some hold) to the tribes with which we deal, the Deirghthine and the Dairfhine,³ which we must consider at some length.

I approach the study with the utmost diffidence, and with no expectation of setting it on an unassailable basis; indeed, whether this could ever be done I more than doubt. In the most mythical tales of the great Mediterranean civilizations there is always the hope that the spade may clear up and establish the truth as a history, or at least as a true picture, of the life of the people. This has been done in the case of the people of Ilium before the egg of Leda hatched, of the Egyptians before Menes, and of the bull-masked priests of the Labyrinth; nay, even in Gaul we can obtain confirmatory evidence of the chariots, the weapons and ornaments, the customs and the skull trophies,⁴ of the heroes of Medbh's great foray. But what can we expect in southern Co. Limerick? Suppose we could excavate an undisturbed fort site of the third century at the foot of the Galtees or Ballyhoura Mountains, what might we find? Certainly no inscriptions, or carvings of men and chariots,

¹ See Zimmer's notes, *Zeitschrift für deutsches Alterthum*, vol. xxxii, p. 196; xxxiii, p. 129; xxxv, p. 9. This is well brought out by W. Ridgeway, *Proc. British Academy* 1905-6): see also *New Ireland Review*, vol. xx, p. 292; xxvi, p. 84; *Celtic Review*, vol. iii, p. 68. For a contrary view see J. V. Pflugk-Harttung, *Rev. Celt.*, vol. xiii, p. 171; but many of his arguments, such as Ptolemy's sixteen nations, the scarcity of gold in ancient Ireland (!), and the "low position" of women in the Red Branch Cycle (one of whose protagonists is Medbh), are most mistaken ones.

² Ptolemy uses astronomical data down to A.D. 148: none are said to be later.

³ As to the Darinói, see J. MacNeill in *New Ireland Review*, vol. xxvi, p. 15. It seems impossible to regard the Dergthine and Dairfhine as of the same race.

⁴ For head trophies see *Celtic Review*, vol. iii, pp. 68-81; *Rev. Celt.*, vol. xxxiv, pp. 38 sqq., 276-295 (note Plate III of head trophy hung on horse's neck); O'Curry, "Manners and Customs" (O'Sullivan, Introduction), vol. i, p. cccxxxviii; "Le rite des têtes coupées chez les Celtiques" (*Revue de l'Histoire des Religions*, lxxviii, pp. 41-48). I must thank Mr. Alfred Lea for last reference.

possibly no carved stones, at best undated hearths and the sites of timber houses; perhaps a few more ornaments and weapons, nothing by which we could test the tales of Ailill Olam or Cormac Cass. Were such objects found, could the spectral line of princes in our legends become more tangible than the forms shown in the mirror of Banquo?

We are thrown back on the legends themselves, at best mere skeletons of traditional sagas,¹ and these probably altered and expurgated to an unknown extent. "Shadows! would ye question darkness?" might be quoted against us, yet the subject is well worth the quest, and many problems apparently as hopeless have been set on firm ground in the last half century. At least, as in my corresponding study of the later royal forts of the Dal Cais² in Co. Clare, the later "Thomond," I hope to bring together the chief legendary material for abler workers, and to bring it into touch with the existing remains, which has never been attempted heretofore.

I wish to guard against any mistake as to the standpoint of this paper. Irish antiquaries are frequently accused by their English brethren of holding as certain historic truth these early legends—nay, we can hardly use the term "royal forts" without being sneered at, though we only imply the residence of a local king, not anything architecturally magnificent.³ We use, very properly, that early tradition, so entirely lost elsewhere; for a legend is not necessarily a lie, but usually contains an instructive fragment of truth in its foundations.⁴ We are not always bound to discuss every time what degree of truth is embedded, unless where it is evidently a pure myth, and even in that case it may preserve valuable mythology, folk-lore, and topography. Thus we may use it without (as our critics at times seem to believe, or at least state) asserting it in the least degree to be an absolute record of fact. Very different are the natural legends preserved by a guild whose importance and support depended on their elaborate mnemonic training,⁵ and such fictions as tell of Brute and Lud or of the knights of Arthur. Our critics

¹ Compare the dry bones of the Book of Leinster (Ulster) version of the Táin Bó Flidhais with the life and motion and local topography of the Glenmassan MS. (Mayo version, possibly as old as A. D. 900) in a MS. of 1238.

² *Supra*, vol. xxix, pp. 186–212.

³ It is amusing to read articles, even in the daily press, where English antiquaries claim that the discovery of wooden huts (e.g. at Rathcroghan) is a triumphant overthrow of the position of present-day Irish students! Much of this unhappy misunderstanding may be laid to the blame of O'Curry's works (so credulous, and yet so valuable when used critically). An elementary acquaintance with more scientific Irish publications could correct it.

⁴ Very old forms of legends are sometimes found in late manuscripts, evidently copied from some early source now lost. For example, Elcmair (not the Dagda) inhabits the Brugh in the oldest, and in one very late, manuscript.

⁵ The "branch" of druids near Kilfinnan and the bards of Cashel and the Dal Cais.

seem instinctively to fix on modern Irish scientific archæology the stigma well earned by the school of Vallancey, or by the contemporary dabbler in early Irish history. There are some few obscure writers (it is true) who seem even yet to believe that the early colonists of Ireland "came here clad in purple and gold, direct from Phœnicia, in brazen-prowed triremes." But why select these as representative? Fortunately, as a rule, foreign antiquaries, less prejudiced, can understand our position better, and see that it is no reproach to us to give what we have, as we find it, without waiting till our rich mass of material can be dated and brought to a condition critically satisfactory and with some appearance of finality.

THE EARLY LEGENDS.

The present form of the legends is evidently early, though much corrupted and mutilated in parts.¹ This was done to bring them somewhat into unison with later political, religious, and moral ideas.² These factors reacted in markedly different lines. The religious varnishing seems most transparent. The connexion of the sons of men with the daughters of the gods, like the tale of Ailill and Aine, had to be changed, and the *sidh*-folk made less divine; even so, the tales are recognizably pre-Christian. Aine and Aife,³ of Knockainey and Gleneefy (Gleann Aoife) in our district, were possibly originally the same as their namesakes in some myths, daughters of Manannan mac Lir, the sea god. The first has affinities with Ana, Mother of the Gods, who was the Morrighu⁴ (whose "two breasts" are seen in the "Paps," *Cich dha Morrighain*, in Kerry); they were both dwellers in the *sidh*-mounds, and connected with Samhain Eve.⁵ The Christian redactors reduced

¹ The "Lives" of St. Patrick and St. Columba illustrate this very well, but the versions of the pre-Christian tales are equally instructive.

² See a study of the gradual elimination of immoral episodes in the tales of Cairbre Musc (*Journal R. Soc. Antt., Ir.*, vol. xl., pp. 183-5), or in the legends of Nes and her son Concobhair mac Nessa (*Rev. Celt.*, vol. xxi, p. 317) and later writer's accounts.

³ The name is not uncommon, and may even apply to part of a hill, "Bai Aife, cows of Aife," white stones on a mountain: "they stand on the *Aife* of a mountain" (*Fingal Ronain*, the action, *circa* A.D. 610-650, *Rev. Celt.*, vol. xiii, p. 378). Aife is an alias of the Bodbh, the hideous lone woman in "Da Derga's Hostel," *Rev. Celt.*, vol. xxii, p. 58. "Aoife weeps in the *Sidh* of Feidhlim," Slievephelim (*O'Rahilly's Poems*, 1650, *Ir. Texts Soc.*, p. 203). The weeping of the banshee is no new myth; we find in *Táin Bó Fraich* "wailing of women of the *Sidh*" (*Rev. Celt.*, vol. xxiv, p. 137).

⁴ The Morrighu has still a place in modern folk-lore, the large cooking hearths being called *Fulacht na Morrigna*, as the lesser are *Fulacht Fian*. The *Agallamh* mentions a *Fulacht na Morrigna* near *Sidh Airfemhin* mound. The Morrighu was Bodbh, the war goddess, equated with the *Cata Bodva* of a Gaulish altar, but Ana was perhaps identical, and is also a "Morrighu." See *Revue Celtique*, vol. i, pp. 37-54.

⁵ Cf. *Book of Leinster*, f. 54; *Revue Celtique*, vol. i, p. 54, and vol. xxvii, p. 330, where the *Dagda* alludes to it. *Eriu*, vol. i, p. 84.

Aine to be the daughter of the mortal King Eogabal, a dweller in a *sidh*, like her brother and herself (perhaps the three low conjoined "forts," traceable on Knockainey Hill, were once devoted to their worship); all three had to be reduced to mortality.¹ So the once divine Tuatha De Danann had to be changed to mere mortal heroes. Uncritical sixteenth-century writers² even pointed out their descendants, and laid down the colour of their hair and complexion; a nineteenth-century doctor-antiquary imagined he could identify their skulls and their forts.³ Gods who were claimed as tribal ancestors could be maintained in their latter form when their divinity was lost in the brightness of the coming of the new faith, if indeed their repute had not been on the wane earlier, as several early legends imply. The sun god Lugh, son of Eithliu (the daughter of Balor, "baneful eye") is ancestor of the Corca Laighde in south-west Co. Cork.⁴ To obliterate the divine descent Eithliu was changed to a man, Ethniu. Lugh is also an ancestor of Breogan, father of Mile, from whom in twenty-one generations derived Fergus mac Roigh, ancestor of the Corca Modruadh in north-west Co. Clare. Breogan's race figures as "Brigantes" in Ptolemy's Atlas. The Ciarraighe in north Kerry derived from King Flan, who was sixteen generations from Oirbsen and Manannan mac Lir, the sea god, from whose descendant Eilidh also are derived the Oillealys. Deiche is probably a divinity; he gave his name to a lake, a mountain, and a glen, to the tribes the Fear Dechet and the Ui maic Deichead (the Maqi Decedda in ogham inscriptions), a sept of the Ciarraighe. Was Cian, ancestor of the Cianachta, Cian, son of the god Lugh? Conmac, ancestor of the Conmaicne, was son of Manannan mac Lir. Ciar (it is true) was given by others as son of Fergus and Medbh, but this only shows an uneasy anxiety to "write off" a divine descent,⁵ though, as we saw, Fergus was reputed to be descended from Lugh in any case. In fact, were the subject well worked out, we could find numbers of tribes whose pedigree is derived from the divinities of the "Gaulish pantheon." The Eoghanachta and Dal Cais claimed

¹ Slain *Sidh* folk are not uncommon in legends, e.g., The Dindsenchas of Sna da en; Oilíoll and Eogabal; the fairy King Sigmall of *Sidh Nennta*, "A. M. 5084," &c. I hope to set out more fully this aspect of the case when describing Knockainey.

² Like Mac Firbis.

³ Sir W. Wilde, "Boyne and Blackwater" (2nd ed.), p. 239. Lady Wilde repeats this, "Ancient Legends, Mystic Charms, and Superstitions" (ed. 1887), vol. ii, pp. 355-7. They had globular heads, and built the stone forts; their predecessors built the earthen ones. Some have identified them with the Scandinavians.

⁴ New Ireland Review, vol. xxvi, pp. 132 sqq., and Proc. R. I. Acad., vol. xxvii, pp. 334-339.

⁵ The chipping away of the "maqi mucoi" termination of some ogmic epitaphs, while leaving the name of the dead man and his father, most probably was a Christian attempt to obliterate the divine tribal ancestor's name.

close connexion with the Corca Laighde. On the whole, however, the clerics of Cashel, Emly, and Cluoncoraha only effaced the divine character of the heroes,¹ and the myths seem otherwise but little blurred. Christian hearers of the tales in early days found less discord with their ideas than many of us do when we read the grim sagas of the Book of Judges along with the Gospels, the vindictive song of Deborah with the Magnificat.

I incline to believe that the political editing was far more likely to be misleading. A number of tribelets rose to importance from time to time, and had to be "written in," till the tribal pedigree became as unreliable as the Roll of Battle Abbey. The Dalcassian pedigree² gives clear evidence of such interpolation. Either two generations of eponymi of a group of tribes had to be forced in between Eanna Airigthech, A.D. 410, and Cairthenn Fionn, about A.D. 430, or the pre-Christian King-line had to be joined clumsily on to an overlapping pedigree.³ At least the genealogy, credible (at least externally) down to the fifth century, is badly confused at that period. The Dal Cais were of little note in the period A.D. 450-850; the Annals are silent about them till the time of Cenedid in the tenth century. The very valuable and evidently historic material in the Book of Munster hardly takes us behind A.D. 840. The chief source before that time is the tribal pedigree; and this, though full and good for the line of Dioma of Brughrigh, from A.D. 620, is evidently badly defective both in the fifth and sixth centuries, and for the Cragliath line.⁴

In the tenth century a claim was advanced by the Cragliath princes to an alternative succession to Cashel with the Eoghanacht princes. It is first

¹ "Cormac's Glossary," however, speaks plainly, and is rich in notes on gods and druids.

² I cannot on present evidence accept the view that the Northern Deis, i.e., the Dal Cais (on the analogy of "Aire Deasa"), were *tributary*: see Book of Rights, pp. 55-6; Book of Munster, "Story of Fedlimidh and Lachtna," and Wars G. G., pp. 55, 56. Everywhere the Dal Cais and the Uaithne are free from tribute. Crimthann is said in the last-cited source to have vainly claimed tribute.

³ Professor MacNeill points out the incredibility of the Nan Desi legend, and regards it as an attempt to affiliate an Ivornian tribe to the Tara kings. He suggests elsewhere that the identification of the Dal Cais with the Northern Desi may prove the need of a similar attempt on their behalf. Had we no Eoghanacht recognition (*ante* A.D. 900) of the relationship, this might be maintained. The tribes of Corca Muicheat and Corca Oiche are included in the Dalcassian pedigree by the Saltair of Cashel, but among the Aiteach Tuatha, or servile races, in another tract (Rev. Celt., vol. xx, p. 336).

⁴ Two generations at least are missing at Anluan; the period A.D. 680 to 810 is covered by one generation, and in the "Tract on the Dal gCais" the generations between Tadhg son of Brian and Domhnall (1014-1180) are omitted. There is probably a break at Eanna Airigthech and another at Aedh. If Cassin lived about A.D. 400, his descendant Forannan in the fifth generation could not have been brother-in-law of Guaire Aidhne, two centuries and a-quarter (or more) later.

recorded, as made by Cenedid, father of Brian Boromhe, at the election of Cellachan of Caisil,¹ but, though theoretically allowed by the Eoghanachts, it was never conceded as a reality till Mathgamhain was strong enough to enforce his election, after which the Dal Cais equally ignored it in practice. There was consequently no little temptation to foist it into the tribal records, but it favours their general reliability that it was never done on any large scale. I only find two interpolations, and those late in insertion—one, perhaps, honest enough. Aedh of Cragliath is stated to have been King of Cashel (before Forannan² and Dioma were Kings of Thomond) about A.D. 573. This is, perhaps, a mere mistake. He had a contemporary, Aedh of Cashel, who, with him, is alluded to, A.D. 570, by St. Brendan, of Birrha—"both are my friends"—and there is evident confusion (perhaps of both of these) with Aedh, son of Flann Cathrach, son of Cairbre Crom,³ who was actually King of Thomond (and present as such in the Synod of Dromceatt), A.D. 575. The second and later statement is evidently dishonest.⁴ It says that Lorcan, son of Lachtua (of the Cragliath line), was King of Cashel; this was really Lorcan, son of Conligan. The other attempted interpolations are too late and too notorious to mislead. I will study the whole question of the alleged alternate succession in pre-Christian times later on.⁵ Certainly there was none in historic times; but the fact that Cormac of Cashel and the Eoghanacht acknowledged such a fact (though the latter are found opposing its action) implies that it was no mere fiction⁶ of the ambitious Dal Cais of the tenth century, but a legendary, lapsed claim. The destruction of the Bruree Kings and their records by the Norse, before A.D. 830, deprives us of any good source for our traditions outside the Saltair of Cashel. The other line of chiefs, at Cragliath, knew of their half mythic ancestors, Lughaidh Meann

¹ Cathreim Cellachain Caisil (ed. Bügge), p. 59. Mac Neill, in *New Ireland Review*, vol. xxvi, p. 140, rejects the alternate succession; it is at least certain that it never took place in the historic period from A.D. 430-960, till Mathgamhain forced his claim on the throne of Cashel, but of this more hereafter. See alleged poem of St. Benen, A.D. 460, on alternate succession of Cashel (*Book of Rights*, p. 8).

² Brother-in-law of Guaire Aidne, and opponent of St. Mochulla of Tulla. *circa* A.D. 620-50.

³ *Revue Celtique*, vol. xx, p. 139.

⁴ No attempt was made, however (as could have been done), to forge an entire alternate succession from Eanna to Mathgamhain.

⁵ There was a variant tradition that the alternate succession was established (not by Oilioll Olom, but) by arrangement between the descendants of Eoghan Mór and Cormac Cass, which seems not so improbable (*Caithreim Ceallachain Caisil*, pp. 59, 60). Compare the "*Book of Rights*," p. 81.

⁶ Equivalents seem to occur in the alternate succession of the Deisi lines of Ui Faolain and Ui Bhric—1014, Ua Faolain; 1057, Ua Bric; 1059, Ua Faelain; 1068, Ua Bric; 1167, Ua Feolain. There were two Kings of Corca Bhaiscoinn in the naval battle with the Danes (*Cath Ceallachain*, p. 97).

and his son Connall, and of the latter's foster-father, Crimthann macFidhe, A.D. 377. There is no evidence that they knew the subsequent period. To Prince Brian, about A.D. 960, Core (four generations back) was the first of the Dal Cais of his line to figure in history, about A.D. 810.¹ The tribe had very full, evidently authentic, sagas about Core's successors, Lachtna, Lorcan, and Cenedid.²

In this Paper the term "Thomond" (Tuad Mumhain) means Co Limerick, south from Carnarry, not Co. Clare, as in my other papers.³

One more point I must explain. When we quote an early story for a place-name, we know as well as our critics that it is a "folk etymology"; and when we speak of an eponymus of an early tribe, we only mark its position in the table of races, and recognize that its founder may be absolutely mythic; or, if the shadow of a real chief, certainly not an exclusive ancestor; as (even in late history) some regard all the "O'Briens" as descended from the victor of Clontarf alone.

The silence of Ptolemy as to the "Celtic tribes"⁴ has been, perhaps, over-emphasized, even by most capable scholars. It is not unlikely that, like the authorities for the Italian portolan maps, after 1330, and for the same reason, his information was better for the seaboard than for the interior. Just as Dulcert had heard of Laymerick and Ross, so Ptolemy knew of Makolikon, Regia, and Dunum, and of the Ousdioi of Ossory and other "pre-Milesian" tribes; but both geographers were relying on men who personally knew better the islands, the river-mouths, and headlands past which they traded. The ancients heard of the Southern Ernai, Iouernoi, but hardly of the Deirgthine, from whom the Eoghanacht and Dal Cas had not yet sprung.⁵

The great king Eoghan Mór, from whom nearly all the Munster Princes claimed descent, was living (if legend errs not) at the time when Ptolemy's Atlas was being compiled, for its astronomical data end A.D. 148, and Eoghan is placed in A.D. 160. "The Deirgthine, the men of Munster, buried

¹ "Wars of the Gaedhil with the Gaill" (ed. Todd), p. 67.

² Book of Munster, *Caithreim Ceallachain Caisil*, Wars G. G. The only "earlier" source (in its present recension about 1140) is the Life of St. Flannan.

³ It centred in the northern section early in the Norse wars, and only kept up a feeble tie by violence till 1194. After that "Thomond" was Co. Clare plus North Tipperary, and perhaps Sliabh Eibhlinn and Athairlach, or the Silver Mines and Galtees.

⁴ Need I warn readers against taking too literally conventional terms like "Celtic" and "Milesian"? The fault is not confined to Irish archæology.

⁵ The later Dal Cais were yellow-haired (Book of Rights, p. 81), or golden-brown, or red-haired; blue, or greeny-blue eyed; rosy and hot-flushing, with dark brows and long lashes (*Caithreim Toirdhealbhagh*).

at Aenach Culi¹ (where long afterwards the Abbey of Manisteranenagh was built, which reckoned "Enaculi" among its lands. The identity of the Deirgthine with the Dairfhiné is disputed (the latter were, perhaps, *non-Milesian*); but Darera of the Dairfhiné fought for the sons of Ailill Olam at the battle of Magh Muchrime.² The Deirgthine were allied to the Clanna (or Ui) mac Deichead, the Maqi Deceddas, of the ogmic inscriptions,³ and a Deirgthine and Duach Dallta Deaghaidh were among Ailill Olam's ancestors. They were also related to and aided by the Ernai, and had a vague tradition of northern origin; and we may note, without any assertion, the names of the Erdinói and Darinói, in northern Ireland, on Ptolemy's map. The Ernai, or Earna, dwelt in Co. Cork, and the Muscraidhe of Muskerry there and the Corca Bhascoinn of Corcavaskin, in Co. Clare, claimed descent from a northerner, Oilioll Earann. They fought against the sons of Oilioll Olom⁴ at Cenn Feabrat, and Nemidh, son of Sroibheum, their King, was slain in "A.D. 186."

The Corcavaskin, even in prehistoric times, had replaced the Gann Genann tribes at the Shannon mouth—the Ganganói of Ptolemy.⁵ As we shall see, while the Deirgthine moved from Corcaguiny in Kerry eastward through Co. Cork, the race of Cashel moved into the present Co. Limerick from Co. Tipperary westward. The frequent meaningless statement that certain lakes, rivers, residences, and even roads, were "found" in later times is told of Cashel too,⁶ but the conspicuous rocky outcrop, visible in every direction for many miles away, and its old name, *Sidh' Druim*, "fairy mound ridge," mark it as a place of ancient note. At least the legends of the third and fourth centuries show its future rulers on the march, and gradually winning their royal seats and territories, Aine, Glenbroghan, Duntrileague, Claire, Knock-

¹ "Senchas na relec," the Tract on the Cemeteries, in *Leabhar na hUidhre*, f. 51, given in Petrie's "Round Towers" (ed. ii), pp. 97-101; O'Curry, "Manners and Customs," vol. i, p. 71. The Agallamh identifies Enach Culi with Enach Colmain (*Silva Gadelica*, vol. ii, p. 118): cf. Book of Lismore, f. 206 a, for a race from Oenach Clochair to Loch Gair (Gur).

² Rev. Celt., "Battle of Magh Muchrime," vol. xiii, p. 430.

³ See Professor Rhys, *Journal Roy. Soc. Antt. Ir.*, vol. xxxii, p. 30, and the very valuable paper on Oghams by Professor MacNeill, *Proc. R. I. Acad.*, vol. xxvii, p. 339.

⁴ I will henceforth use this familiar form.

⁵ See "Eriu," vol. viii, p. 13. Gann landed at Inbher near Lehinch.

⁶ For example, the five principal roads leading to Tara "were never observed" till one night. Cashel, however, does not seem to figure as a residence in early legend. Fiacha Muillethan resided at Badamar near Caher, Co. Tipperary, and the neighbouring Knockgraffan, and others at Dun Claire and Bruree.

⁷ As will be seen, I regard the *sidh* as a "holy place," in a certain sense a "temple mound," of the pagan Irish. I shall treat the question in connexion with Knockainey in Part III of this paper.

souna, and Brughrigh. The apparently earlier legends are possibly misplaced, for the makers of our prehistoric chronology are beyond measure unreliable, sticking together contemporary pedigrees to form a ladder, like Milton's bridge over chaos, to "over-lay the dark abyss" back to an intangible past. One tells of a battle at Bealgadán (the fine mote of Rathbaun, at Bulgadine) where a "Milesian" king Fiach Labraind, fell A.M. 3751 (about B.C. 449), and names a battle at Cliu (probably Aine Cliach or Knockainey) where his slayer, Eochaidh Mumho, "from whom Mumhan or Munster was named," fell fighting twenty-one years later,¹ but these have no place in the main cycle of legend.

EOGHAN "MOGH NUADAT."

As we "traverse the gray dawn's path" along what purports to be the history of these princes we meet among the descendants of Corb Olum the first legitimatist King of Munster,² an outstanding mythological personage "A.D. 177," Eoghan Taidleach, or Mogh Nuadat. He was probably called as a "slave of Nuada," the silver-handed god, whom Christian writers changed to a foster-father, from whom Maynooth, Magh Nuadat, is named.³ The great king looms large in early legend as more than a match for Conn. of the Hundred Fights, the formidable King of Tara. The rivals for a short period divided Erin between them, into "Conn's half" and "Mogh's half"⁴ along the gravel ridge of Escar riadha, between the bays of Galway and Dublin. Omitting Eoghan's legendary achievements, we pass to his more famous son.

AILILL OLAM AND HIS RACE.

Ailill or, as he was more usually named, "Oilíoll," was surnamed "Olom," the earless (we shall study the cause of the sobriquet in describing Knockainey), for his victim, the fairy princess Aine, bit it off. From him sprang the Eoghanacht,⁵ the Dal Cais, and many other tribes. He may be the shadow of a real prince,⁶ but the late and perhaps Bowdlerized form of his legend leaves all doubtful.

¹ Annals Four Masters. Todd Lecture Ser. III, R.I.A., p. 187, in poem on the High Kings.

² Restored after the rebellion of Cairbre Cinn Cait, perhaps a duplicate of Oilíoll Olom.

³ Cf. "Cambrensis Eversus," vol. i, p. 473, note.

⁴ These have been rendered "Freeman's half" and "Slave's half" (New Ireland Review, vol. xxvi, p. 144). No one (save Israel) insisted on former slavery, and the "Mogh" in Eoghan's name is an honourable dedicatory particle, like Celi de, Mael Isu, and Paul's "Slave of Christ." For the division see Rev. Celt., vol. xxx, p. 392.

⁵ In this paper we hardly touch the Eoghanacht of Cashel. The Eoghanacht of Loch Leine (Killarney), of Ninuis and Aran, and that of Gleann Omnach, south of the Ballyhoura Mountains, do not concern us.

⁶ Book of Leinster (Silva Gadelica, vol. ii, p. 347). J. MacNeill regards Conn of Tara,

THE TRIBAL PEDIGREE.

The Deirgthine off-shoots do not appear as having tribal names till later centuries; their princes possibly ruled over subjects of very mixed blood, as interest or violence brought the local tribes under the hegemony of one house.¹ The pedigrees are very baffling; differences of twenty to thirty generations separate contemporary princes from a common ancestor, and the tribal scheme is probably as artificial.²

The pedigrees are probably intended to mark the friendly relations of the tribes and the succession of their rulers rather than to flatter the chiefs. Artificial as they are, in the frantic attempt to derive everyone from a common ancestor, there are probably many patches of genuine descent, increasing, till, after the year A.D. 600, the bulk are probably reliable.³ As briefly as possible I will abstract the descent.

Eoghan Mogh Nuadat, "A.D. 164," had a son Oilioll Olom, who, having been exiled to Spain, married Beara, a Spanish princess, from whom on his return he named Beare Haven. He then married Sabia, daughter of his father's rival Conn Caedcathach, "A.D. 174-234."⁴ Oilioll's sons were—(1) Eoghan, slain at Magh Mueramha; (2) Cormac Cass, ancestor of the Dal Cais; (3) Cian, ancestor of the Cianachta. of Coolkeenaght, in Co. Londonderry, and Ard Cianachta Feara, or Feara Ard, Co. Louth. Eoghan had a posthumous son, Fiacha Muillethan, who resided at Knockgraffon, where a great mote (claimed to be Norman) rises, a conspicuous landmark, as seen east of the railway, between Tipperary and Cahir. He defeated King Cormac mac Airt at Drom

Cathair mór of Nas, and Ailill Olam of Cashel, as possibly shadows of historic chiefs (New Ireland Review, vol. xxvi, p. 7). Those who state that Oilioll or Cormac mac Airt were gods do not advance inquiry, as they may have been rulers and heroes first, and gods later on. Borlase's comparison of the description of Cormac mac Airt with Swantovit is most superficial and unconvincing ("Dolmens of Ireland," pp. 1087-92).

¹ Perhaps the Ui Fidhgeinte were only affiliated as a free tribe that had preceded the Dal Cais, and checked their advance past Bruree. The only service of the Dal Cais to Cashel was most honourable—to form the vanguard when the King of Cashel invaded a district, and to cover his retreat (Book of Rights, p. 71).

² The continuity of the bardic schools (congresses of which were held at Bruree at least to 1746, and at Dunaha, Co. Clare, till after 1820) favoured preservation of fact, though uncritically mixed with myths. Irish legend is very persistent; the wonderful accuracy of the Armada traditions (gathered by me before the Calendars were published) nearly three centuries later wins confidence.

³ Chiefly in "Tract on the Dal gCais" (Book of Ui Maini), ed. R. Twigge in North Munster Archæological Society, vol. i, p. 160, p. 236, vol. ii, p. 94, taken mainly in the early portion from Psalter of Cashel, circa A.D. 890. "Hoc usque de psalterio Caisil scriptum est."

⁴ O'Curry regards Oilioll's alleged poems as genuine! ("Manners and Customs," pp. 57, 58).

Daimhgaire,¹ or Knocklong, where three lesser motes remain. His son, Oilíoll Flannbeg, was King of Munster, after Mogh Corb, son of Cormac Cass, and had several sons. I need only note Lughaidh, ancestor of the Mac Carthys, and Daire. The latter had two sons, Fídhach (father of the semi-historic King Crimthann, poisoned in A.D. 377), and Fiacha Fidgeinti, ancestor of the Uí Fídhgeinte, the Uí Sedna, and others. Fiacha's son Brian (brother of Sedna) had a son Cairbre, whose sons were Cairbre Aobhdha, ancestor of the Uí Cairbre, near Croom and Bruree; Erc, ancestor of the O'Donovans; Ecca, of the Fir Tamhnaighe, of Magh Tamhnaighe or Mahoonagh; Sedna, of the Corca Muicheat of Corcamohide, and Cormac, of the Mac Caechluinge. Some writers give him another son Cairbre, ancestor of Connal, of the Uí Chonaill, who are elsewhere a branch of the Uí Fídhgeinti; evidently there was some doubt as to the nearness of relationship of these tribes.

The line with which we are more concerned were descendants of the second son, Cormac Cass, and his wife, a daughter of the poet Oisín (from whom Glenosheen, under Seefin, near Castle Oliver, is named), "A.D. 234–260."² His son, Mogh Corb, King of Munster,³ was of the great fort of Claire; he succeeded "A.D. 315," fought at the deadly field of Gabhra, "A.D. 285"; slew Melge, King of Ireland (if he be the Mogcorb of one poet, *circa* B.C. 530), and died "A.D. 334." His son Fercorb slew Irereo at Brughrigh,³ and took his fort, "B.C. 495 to 487," *recte* about A.D. 300.⁴ His son Aengus Tíreach, "the land-taker," had a son Lughaidh Meann.

¹ "Forbais Droma Damhgaire": see *Revue Celt.*, vol. xl, p. 44. Mogh Ruith, a magician from Oilean Dairbhre (Valencia), aided King Fiacha by his spells and counsel. An extant poem by King Fedlimid, son of Crimthann (about A.D. 840), says that Fiacha Muillethan took hostages from Laoi to Crai, from Tara to Fafainn Rath Nai. "To the King of Tech Duinn (the Bull Rock off Bantry Bay) knelt Cormac, Conn's grandson." Tech Duinn seems a curious title for a prince of Central Munster. Fiacha was called "The man of two sorrows," from the tragic death of his parents before and at his birth, *Rev. Celt.*, vol. xiii, p. 453.

² Fiacha Muillethan and Cormac Cass, the two Kings of Munster, are named in an extract from the very ancient lost Book of UaConghbhaile in Book of Ballymote: see O'Curry, "Manuscript Materials," Appendix, p. 510.

³ Knowing the extremely artificial character of the "received" list of High Kings, I have dared to suggest that Mogcorb and his son Fercorb, mythical High Kings, being connected with Claire and Brugh(righ), are more than probably the Dal Cais kings set back into the remoter past to fill up an entirely unhistorical list concocted "for the greater glory of Ireland," and still followed by credulous compilers. In less sophisticated legends King Mogh Corb (of the Dal Cais) pledged the security of Fermoy to Mogh Ruith: this has verisimilitude, and favours that of the "alternate succession," as the grantor, Fiacha, was of the senior branch, and Mogh Corb confirmed the grant on behalf of the junior, the line of Cormac Cass. Irereo Fathach, "Iron Fighter the Wary," is evidently as purely mythic as "Giant Despair."

⁴ Giolla Coemhain (*ante* 1072), "Book of Leinster" (Todd Lect. Ser., R. I. Acad., No. iii., p. 143; for Fercorb see p. 187). To take one example of contradictory

Lughaidh stands out so clearly after these misty princes, on the edge of history, that, despite some fabulous details, he is probably the actual conqueror of Co. Clare, the later Thomond; earlier Thomond lay in Co. Limerick, its northern point being Carn Fhearadhaigh, Carnarry.¹ He extended his realm in "seven" fierce battles from Carn Fhearadhaigh to Luchid,² still on the north boundary of Co. Clare. One of the venerable tabus of the "Book of Rights" alludes to this event, enjoining on the King of Connacht "in a spotted cloak let him not go to the heath of Luchaidh in Dal Chais"; the prose adds "on a speckled horse";³ very definite tradition must lie behind this allusion. "He never even yielded a leveret to the tribe of Tlaman Tuathbil, through contempt of the three great battalions of Connacht, until he had gained seven battles over them and killed their king, and until he pursued them from Carn Feradaich to Ath Lucait," writes another early historian.⁴ The great tract torn from Connacht was the object of many a counter-attack by its former owners, but even Fiachra Foltsnatach, the great King of Irros Domhnonn,⁵ failed to wrench "Lughaidh Red Hand's rough swordland" from the Dal Cais. The last attempt of Connacht was so late as about A.D. 622 in the battle of Carnarry.

Conall Eachluath,⁶ son of Lughaidh, an able prince, on the boundary-

chronology, the prehistoric Munster King, Nia Segamain (his descendants, Maqi Mucoi Neta Segamonos appear on several ogham stones in Co. Waterford) is dated B.C. 316 and 97. How anyone can take our early chronology seriously passes imagination. Rev. Dr. MacCarthy collects the contradictory dates of the Milesian landing as B.C. 1509, 1229, 1071, 554, and 331; and, as we see here, and in the Battle of Bealgadan, the same person and event may be duplicated in annals and pedigrees.

¹ Carn Fhearadaigh, not where the Ordnance Maps (following the strange oversight of O'Donovan) place it, at Seefin, the extreme *southern* border, instead of the *northern*. It is Carn Fhearadaigh (or Carnarry) in the Burke Rental, 1545; Kar(n)uerthy, 1182, in Charter of Abbey De Magio. The Rolls series edition of *Chronicum Scotorum* strangely places it at Knockainey, pp. 81, 117, 143. See also *Trans. Ossianic Soc.*, 1857, p. 114, and *North Munster Archæol. Soc. Journal*, vol. i, p. 168, by Mr. P. J. Lynch.

² Connacht extended from Liac eassa Lomanaig (Limerick, Curragower fall) to Ess Ruaidh (Assaroe fall): see "Irische Texte," Stokes and Windisch, iv, p. 268.

³ "Book of Rights," pp. 5-21. Poem by Cuan O'Lochain, *ante* 1022. The tabus are evidently pagan.

⁴ "Wars of the Gaedhil with the Gaill," p. 67. For Lughaidh see, *inter alia*, *Rev. Celt.*, vol. xxiv, p. 185. The Metrical Dindsenchas under Mag Femen (ed. Gwynn, Todd Lecture Ser., R. I. Acad., vol. x, p. 201). He made a cairn at Lotan (Ludden), Co. Limerick, to keep tally of his troops (cf. *Rev. Celt.* xxii, p. 169), on his way to battle, and made Northern Munster the south part of his territory.

⁵ For Dun Fiachrach see *supra*, vol. xxix, p. 79; *Journal R. Soc. Antt. Ir.*, vol. xlii, p. 199. For Fiachra as a fairy king of forts and ancient thorn trees, see "Ancient Cures," p. 148. For his death and the burial alive of his hostages round his tomb, see "Silva Gadelica," vol. ii, p. 377.

⁶ Conall evidently figured as an important chief outside the tribal pedigree, and King Cormac of Cashel, in an extant poem (*circa* A.D. 900), represents him and King Crimthann

line of history, after the poisoning of his foster-father, Crimthann, had the "swordland" granted to him as an *eric* for his bereavement, the foster tie being dearer to the early Irish even than relationship. This legitimated his conquest in the eyes of all save the expelled tribes. This was in A.D. 377, the first approximately authentic date in Munster history.¹ Old warriors of Conall in the retinue of his descendant, King Carthann, or at least their sons, may have met St. Patrick at Singland about A.D. 434.

The non-appearance of any Dalcassian King of Cashel after Eanna, A.D. 420, may mark the exhaustion of the tribe by its conquest and colonization of central Co. Clare,² while the adoption of Singland (beside Limerick) as Carthann's residence evidently resulted from the extension of the territory, the old palaces being on the extreme south edge of Co. Limerick. So far the legend is probable, coherent, and supported by all subsequent events; the tribal pedigree is the opposite. A second redundant eponymus of the Dal Cais, Cass, son of Conall, appears³; he had thirteen sons, ancestors of the tribes in Co. Clare—Blad, of Ui Bloid, Omullod deanery; Caisin, of Ui Caisin, Ogashin deanery (the later MacNamaras); Aenghus Cenn Nathrach, of the Cinel Fermaic (at Cenn Nathrach, or Inchiquin), the Cenel Baith, the Cenel Cuallachta, and the Cenel Failbhi; he may be the same as another son Aenghus Cenn Aitinn,⁴ ancestor of the Clann Ifernain, the later O'Quins. Blad's son was Cairthenn, the first Christian prince of the race.⁵ The legends of Oilioll Olom place him at Claire and Bruree, but the latter place only appears so in very late documents like the *Agallamh na Senorach*. The other

as holding the distant Dun Cearmna, on the Old Head of Kinsale, about A.D. 370 (Keating's History, vol. i, p. 148). For him see also "Yellow Book of Lecan," Tract on the Dal gCais, Rev. Celt., vol. xxi (4), pp. 177, 201, and Wars of the G. and G., p. 67. O'Curry denies that Connall was King of Munster, but the legends imply influence outside Thomond and Co. Clare. Aedfrith, son of Oswy (A.D. 685), names the race of Aulom, Lughaidh, and Conall ("Leab. na H Uachongbala," in "Eriu," vol. viii, p. 73).

¹ If (as has been suggested) he and Lughaidh were princes of the "Non-Milesians," Ui Catbar and Ui Corra, in Co. Clare, it is as inexplicable that the Eoghanachta should have recognized the Dal Cais as their close kindred and free from tribute as that the Dal Cais should have claimed descent from such obscure tribes. All Munster and Connacht tradition regards Lughaidh as a dangerous and victorious *Munster* chief.

² The Dal Cais do not appear in the standard Annals till the reign of Cenedid, son of Lorcan. For the suggestion that they are the northern Deis, see *supra*, vol. xxix (4), pp. 188-199.

³ Psalter of Cashel, extract in Rawlinson, B. 502, f. 82a, "ut inventus in Psalterio Caissil."

⁴ "Furze Head," an appropriate equivalent name for Cenn Nathrach or Inchiquin Hill.

⁵ "Tripartite Life of St. Patrick" (ed. Todd), p. 206; "Cairthenn, son of Blatt, senior" (not king) "of Clann Tairdelbaigh" (the last has a late ring, suggesting the Cragliath line); "Echu Baildearg, son of Carthenn" (*ibid.*).

legends hang well together, marking a gradual advance. Oilioll Olom slays the King of Aine. Cormac Cass fights a desperate battle at Samhain, west of Kilmallock, between it and Bruree. Mog Corb resides at Claire, on Sliabh riach; Fercorb takes Bruree; Aengus is called "the land-taker"; Lughaidh conquers northward from Carnarary; Connall "of the swift steed" consolidates his father's gains; a group of colonists settle on them under Eanna Airgthech after A.D. 400. In later days, about A.D. 570, the Dal Cais princes established themselves in the Shannon Valley under Cragliath, about Killaloe and the later Ui Toirdhealbhagh. They subsequently got suzerainty over the other tribes, the Corca Modruadh, Tradraighe, Corca Bhaiscoinn, and Tuath Echtghe. The princes of the Dal Cais were all of the line of Dioma from about A.D. 620 till about A.D. 820; then the Norsemen ravaged all Eastern Limerick, and the line disappears. About 840, the Cragliath chief, Lachtna, got recognized by King Felimidh of Cashel.¹ His race beat the foreigners, by water and by land, getting ever more powerful. At last their obscure line claimed,² and, a generation later, won, the throne of Cashel, about A.D. 951; then that same generation and its successors usurped the High Kingship of Ireland. In later days they checked the power of the Normans, and, after a hundred years of war, swept them out of Lughaidh's swordland, by 1334. They defeated the Lord of Desmond, sacked Limerick, became the flattered allies of the Tudors and Stuarts, and loomed large in all subsequent history as the "O'Briens."

LEGENDS OF THE FORTS.

As the legends of Oilioll Olom may be dealt with better in connexion with the forts of Dun gClaire, Aine, and Brughrigh, and that of Cormac Cass with Dunrileague. I will not give them here in detail. Some are from a late mediaeval work. *Agallamh na Senorach*,³ but it has the merit of giving early material with little alteration, and showing the minute interest in topography and folk-lore of the Dind Senchas itself. The "Battle of Magh Mucramha" gives us the legend of Oilioll's violence to Aine, and the vengeance of her brother Ferfi, through Oilioll's stepson, Lughaidh MacCon. The *Agallamh* tells us of Oilioll's connexion with Bruree, and his death and burial on the summit above Dun gClaire.⁴ The early poet Giolla Coemhain mentions

¹ "Book of Munster" ms. R. I. Acad., see Journal R. S. A. Ir., vol. xxiii, pp. 192-3. "Story of an Irish Sept" (Dr. N. C. MacNamara), pp. 71, 72.

² "Cathreim Ceallachain Caisil" (ed. Bugge), p. 59.

³ "The Colloquy of the Ancients" in "Silva Gadelica" (transl. S. H. O'Grady), vol. ii, pp. 373-378, from "Book of Ballymote," and addenda "Irische Texte" (Stokes and Windisch) iv.

⁴ *Loc. cit.*, p. 127.

Mogh Corb as residing at Claire, and Fer Corb as taking Bruree from King Irereo; but their legends do not appear in the local stories, and the "dates" in the poem are most erroneous. The Book of Lismore tells us of the druid-aided battle of King Cormac Mac Airt, at Knocklong.¹ The very strange and archaic story of Duntrileague (as archaic and pagan as the tale of Knockainey) is also in the *Agallamh*, and the allusions to Knocksouna and the battle of Bealgadane are in the Annals, the legends of Dun gCroit in the *Agallamh*. Kilfinnan is named in the "Book of Rights" and in the "Book of Fermoy."

DUN CLAIRE (O. S. 49).

The Dun of Claire, Dun g(Claire, locally "Doonglaura," or "Glenbroghan Mote," was one of the earliest residences of the Dalcassian princes, and the largest, and in a sense most impressive, of the forts in Eastern Limerick. It is connected with Oilioll Olom, in the third, and Fercorb in the fourth, century, from "A.D. 230" down to "A.D. 364." It lies on the gentle green slope under the great brown ridge of Sliabh riach² (or Sliabh Cain), sheltered from the north-west by low rising grounds, sun-steeped from the dawn till late in the afternoon, and with a beautiful view over Glenbroghaun and Ballylanders to the rugged peaks and fluted slopes of the Galtees, the brown Deer Park Hill of Duntrileague and the mouth of Aherloe Glen at Galbally fading off into blue distance. Unlike most of the other forts, it has but little view northward. The name Claire probably attached at first to the mountain peak alone. We find in the early documents Mullach-, Sliab-, Lios-dun-, and Dun-gClaire. Oilioll died "on the summit of Sliabh Claire," in the eighth year of King Cormac, "A.D. 234." Unless the word "summit" is used very vaguely, this implies an early belief that the ring-wall above the "Benches" was residential. The King and, possibly, his wife Sabia are said to have been buried on top of the mountain. Caeilte, in the *Agallamh*, says, "Pleasant assuredly is that *Dun* in the east which men call Dun Eochaidh; more pleasant still, when once the daylight comes, are Sabia's lying-place and Oilioll's." "Where was Oilioll Olom, son of Mogh Nuadat, *slain*?" Caeilte is asked. "On the summit of Sliabh Claire," he answers; "he died of apoplexy brought on by grief"³ for the loss of his sons at Magh Mucramha. Fiacha Muillethan, posthumous son of Eoghan (Oilioll's eldest son) by the daughter of the Druid Dill, gave away, literally "for a song," the land from Dun Claire to Loch Derg, over 30 miles to the north, to Cairbre Musc, ancestor of the Corca

¹ Given below in the article on that place.

² Riach, or Riabhach, is *brown* rather than gray. O'Sullivan Beare (*Hist. Irish Catholics*, ed. Lisbon 1621) renders the title "Reagh" by *fuscus*.

³ *Agallamh*, p. 130.

Dhuibhne by his own child Duben,¹ whose tribe appears on several ogham stones in the Corcaiguiny peninsula as "Maqi mucoi Dovinnias." Cairbre had sung a poem before the liberal prince at Aine Cliach, or Knockainey. There were certainly settlements of the Muscraige among the Ui Fidgeinte and at Kilpeacon. We touch the most mythical of myths when we deal with Cairbre Muse. There is another possible clue in the names of Rathcoirpre and Tuad Claire Coirpre, named with Rath Broccan (or Glenbroghaun) in the "Tripartite Life," about A.D. 434. The Dind Shenchas mentions Dun Claire along with Luimnech, Drumcain, and Grene as royal forts about A.D. 980, in the time of King Maelsechlainn,² and the Book of Rights corroborates the status of Aine, Bruree, and Kilfinnan among the king-forts of Cashel. Claire does not figure otherwise during the historic period.

The remains consist of a great oval earthwork, 332 feet east and west, 198 feet inside, and 200 feet over all, north and south. The fosse is, as usual, 12 feet to 15 feet wide below, and rarely a yard deep below the field, "ditched and walled with turf." The outer ring is 5 feet to 6 feet wide on top and 15 feet thick. The inner rampart is nearly 40 feet thick below, and is 9 feet to 12 feet high above the fosse, and 5 feet to 6 feet over the garth. I found no sign of stone facing on these works or of house sites in the gently sloped grassy garth. The rings are sheeted with bracken, with here and there a few old hawthorns or sparse furze. There is a ledge round the outer face of the inner ring, a set-back 6 feet to 8 feet thick, perhaps (as in the Cork promontory forts, like Doonah and Carrigillihy) for a dry-stone wall, but if so all has been removed. The ring of the inner rampart is 582 feet round inside. There are no built gateways, but the gap to the south has a gangway, and was originally the sole entrance; other gaps to the W.N.W. and the S.S.E. are evidently accidental.³

SLIABH RIACH (O. S. 48, 49).

The ancient track of the *Red Road* evidently ran from the Dun to the summit of Sliabh riach,⁴ which was also reached by a more gradual ascent from Cush, up the steep north slope. The great hill (lying, like a sleeping

¹ See *supra*, vol. xxx. p. 417, note 1, as to the Cow and Bull Rocks and their legend from L. na hUidhre, Journal Royal Society of Antiquaries of Ireland, vol. xl, pp. 184, 185 for Duben and Cairbre Muse.

² Metrical Dind Shenchas, Part I (ed. Edw. Gwynn), Todd Lect. ser. R. I. Acad., vol. viii, pp. 39-41.

³ See plan, Plate XL.

⁴ "Slievreagh Mountain in Comon," "Slave Reagh Mountaine, mountainous, and coarse, furzy pasture," Down Survey 1627, (A) No. 59. The connexion of the summit "fort" with Dun Claire is proved by the fact.

lion, at right angles to the rest of the range) commands the passes of Ballylanders and Kilfinnan, leading into the Fermoy district, in Co. Cork. It has three outstanding heads, presumably corresponding to the Cend Febrat (or Abhrat), Cend Cain, and Cend Claire. The last is, undoubtedly, the north-east summit, 1530 feet above the sea. The Dindshenchas tells of Cenn Febra and Cenn Cain that they were named from an ancient tragedy. Febra, son of Sen, and brother of Deda, was killed by Cain, son of Derg Dualacht, and his head was brought to the mountain. Deda's son, Garban (from whom Dungarvan is named), revenged the crime by slaying the slayer on Sliabh Cain, and brought his head to Cenn Febrat. Many a hero and heroine were buried there. Garb of Sliabh Claire was one of the watchmen before the battle of Ventry began. Another was from Sliabh Crot, in the Galtees. Oilioll Olom's three sons gained a battle over their step-brother, Lughaidh Mac Con, at Cenn Abrat, probably at the end of the great pass of Bealach Febhrat, or Ballyhoura, near Kilfinnan, in "A.D. 186." They were reinforced by the three Cairbres, while their foe was helped by the druid Dadera, of the Dairini, and the forces of the Ernai of Southern Ireland.¹ "Dodera" is elsewhere the jester and friend of Lughaidh. Cend Febrat, "the beautiful mountain, enduring home of the royal men," as Macraith, son of Flann (a poet, living *circa* A.D. 980-1020), sang. It was then famous for its fairy mounds and sepulchral monuments, some of which we must now study.² The bard continues:—

"I came on a day of early morning over Cend Febrat of the cool flowers.
The sound of the wind set me sleeping with vacant mind . . .
There was shown me truly and in full every *sidh* mound that is at Cend Febrat."

He then names the "strong *dun* on hazel-set Mullach Cuillen,³ wherein abides the stern, smiting, thick-set hero." He met one who told him the order of "the graves in the well-remembered stronghold, set in due order on Cend Febrat." The grave of Cain,⁴ son of Derg, was to the right; then the lonely grave of Erc, from Ir luachair, lay on the north side of the hill (perhaps the motes of Ballinvreena and Cush, the only great mounds on that flank);

¹ Ann. Four Masters, under A.D. 186.

² Metrical Dind Shenchas (ed. Gwynn), Todd Lect. ser. R. I. Acad., vol. x, p. 247, and notes, pp. 517, 518. See Book of Lecan, p. 237. *Revue Celtique*, vol. xv, pp. 441, 442.

³ Probably the "Mullach Sleibhe Claire in Munster" Onomasticon Goedelicum. Was there any sanctity (as there is reputed magic) in the hazel? Knockainey and Tara itself were once covered with it.

⁴ Whence "Sliabh Riach, alias Sliabh Cain" (Onomasticon). Cain is called "Mac Deirce dualagh" by the Four Masters. There was a clan named Ibh (Ui) Cain. Could they be the later Ui Caiomh or O'Keeffe family. See R. I. Acad. MS., 1217 (Windele, Irish Topog. 1840) for poem on the two Fermoy's from Book of Lismore. Cormac's Glossary (ed. Stokes, 1868), p. 35, gives Claire as "Clu Aire."

the grave of Garban, son of Dedad, on the hill-side, to the east (i.e. up the slope), not far from the tomb of Dubthach's wife. The grave of Dubthach was on the south side of the slope, near the grave of Lugaid Laigde. To the north-east was an unfailing well, above the grave, and near the Dun of Dubthach. It was famed "for its virtues and solemn spells." (This is perhaps the watercourse to the north-east of the group of rings, tumuli, and pillar-stones, at Glounnacrogghery, or else, possibly, the mote and well a little farther north, in Cush.) Then there were "the tombs of three (four) women"—the wife of Daire, Eithne, Mair, and Mugain—side by side, on the great hill (perhaps the conjoined rings in Cooloughtragh, on the south-west slope). East of these was the grave of Dodera (the jester and friend of Lughaidh Mac Con)¹ "on the mount" (i.e. up the slope, perhaps at the two stones of Gatabaun). The poem then names Cend Febrat, Cend Cuirrig (evidently not the mountain of that name far out of his horizon in Co. Waterford),² Cend Claire, and Cend Aife. Cend Febrat and Cend Claire are unmistakably the heads of this mountain mass; Cend Aife probably the Deerpark Hill, with its fine dolmen, over Glen Aife or Gleneefy. Nearly all the persons named were of the Clan Dedad, or Erainn, of Munster; Lughaidh Laighde being ancestor of the Dairfine, and thereby of the Corca Laighde. It is evident that we had here a veritable sanctuary of the Ernai of Clann Dedad. A *sidh* mound was more than probably a "haunted holy ground" of the old religion, if not a temple. I dare not dogmatize, but will simply show that on the north and west slopes of Cenn Febrat, all capable of being taken in at one view as one looked eastward to the mountain,³ as the poem implies, is a group of earthworks and ceremonial places, coinciding remarkably well with the monuments therein described. It is especially notable that we have three conjoined rings of the sepulchral or ceremonial type, with another of the same period conjoined to the side (the fifth being a manifest afterthought, of different type), where we might expect to find the graves of "the three women," and a fourth; also there is a group of graves and forts to the south-west of the "unfailing" well (either at Cush mote or Glenacrogghera) on the side of the mountain.

Going round the old hill road, round Sliabh riach, we pass near the wind-swept little graveyard of Laraghlaw or Templenalaw, Lathrachlauii, in the Charter of Magio, 1182,⁴ a few lonely pine-trees and the bare foundations of

¹ Battle of Magh Mucramha, "*Silva Gadelica*," vol. ii, p. 349, *Revue Celtique*.

² *Met. Dind.*, x, p. 234.

³ Certainly not on the east side, for the all-important Dun Claire on that slope is never mentioned, nor Rathbroccan, or Glenbroghaun.

⁴ See *Proc. R. I. Acad.*, vol. xxv, p. 453. Laythyrathlau claimed from Peter le Botiller by Alicia Roche in 1396.

the church are seen among the graves. We cross a watercourse, up which, not far from Dun Claire, at the junction of two stream gullies, stands an earthen fort, with a fosse and two rings. I think it is not a true spur-fort, but a defaced *liss*, in the angle of the gorges.¹ Several other small featureless ring-forts lie round the slope.

BALLINVREENA (O. S. 48).

In this townland,² farther round the north flank, is another mote, possibly the *brugh* of the name, in a rich green field. The flat top is 87 feet across; it is 24 feet high at the north, and 7 feet at the south up the slope.³ There are slight traces of a rampart to the south, of a fosse, 9 feet wide and a couple of feet deep to the west; and an outer ring, levelled, but 12 feet wide.⁴

CUSH (O. S. 48).

This most interesting group, probably that noted by Macraith, about A.D. 1000, lies along the steep slope, just under the barren district of Sliabh riach. The remains lie in steep grassy fields, sprinkled with furze and large blocks of conglomerate, with the usual magnificent outlook across all the plains of East Limerick, on to Knockfirena, the Co. Clare mountains, and Slievephelim. I will begin at the south, with the most important monument, called "the Mote of Cooloughtragh," two fields bearing that name.

The "mote"⁵ consists of five earthworks conjoined, three in a row, lying

¹ See plan, "spur-fort," Plate XL.

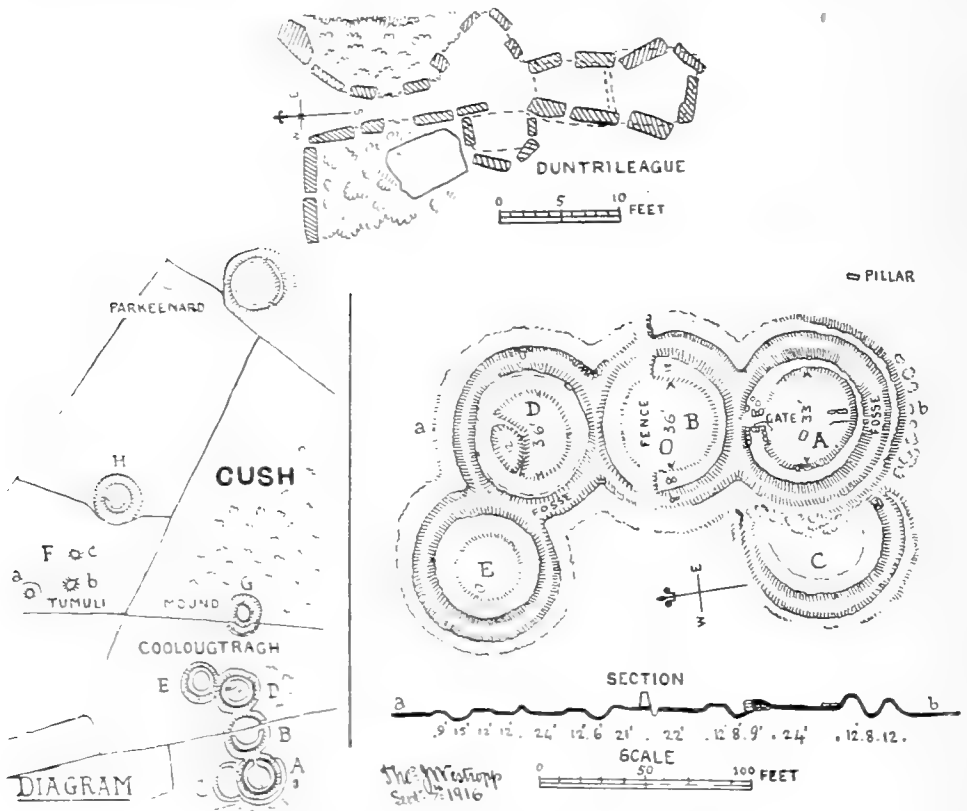
² Baile an bhruighne. Was the "mote," the *brugh*, or a *hostel*? O'Donovan identifies the well on the border next Glenbroghaun as the well of Cean More where Magh Ruith, by a blow of his javelin, made a current break out at Tobar Ceann Mór, and Sruth Cheaunmór in Imleach Grianan, "and performed his spells against the army of King Cormac at Knocklong," A.D. 260 (Book of Lecan, p. 138 b, see O.S. Letters I, p. 209). The name is not unknown elsewhere; another Ballinvreena is found in Co. Tipperary, &c., and Ballybronogue in Co. Limerick is in earlier documents given as Ballybreenoge.

³ These notes on slopes are level-topped; we often find this phenomenon. The chief fort at Bruree varies from 10 feet to 18 feet in height, Cush Mote 7 feet to 16 feet, and Ballygarry Down 8 feet to 18 feet high.

⁴ Section, Plate XL.

⁵ Save at Knockainey (three conjoined slight rings) I have rarely found any equivalent so evidently ceremonial or sepulchral. The type is common in large (and possibly residential) forts in many parts of Ireland. A close equivalent, probably for the former uses, but far larger than Cush, is the Dumha Brosna at Boyle, Roscommon, described by Mr. Hubert T. Knox, in his most valuable survey of the Connacht earthworks (Journal Royal Society of Antiquaries of Ireland, vol. xlv, p. 348). See also his notes on two low ringed mounds near Rathcroghan (*ibid.*, xli, pp. 232-234); Mr. E. W. L. Holt's important survey on the forts in Dunkellin Barony (Journal Galway Archæological and Historical Society, vols. vii, ix); and papers by Mr. Knox on Coogue Mound and boss, throwing light, perhaps, on the "Shield of Cuchullin" earthwork, formerly at Tara (*ibid.*, vol. ix, p. 66).

north and south, and two others, the southern of different type to the rest. a mere afterthought, looped on to the south ring (C on plan). The southern (A) is well preserved, save that its stone wall is nearly removed. It has a garth 24 feet across, north and south, 33 feet east and west, an inner ring 4 feet high and 10 feet to 12 feet thick; 57 feet over all. In the garth to the south are two set slabs and a narrow grave-like hollow. To the north side, opposite to the slabs, is the foundation of the dry-stone gate, 6 feet wide, 7 feet through. The fosse (part of that which runs in common round



DUNTRILEAGUE DOLMEN AND THE MOUNDS OF CUSH.

the four northern and eastern rings, with its outer mound) is wet, and is usually 2 feet or 3 feet deep, and 8 feet wide; the outer ring, rarely over a foot high where it remains, is 12 feet thick. At 26 feet distant, to the S. S. E., is a large block, a leaning pillar, 5 feet 6 inches high by 3 feet by 18 inches. Within the common fosse and mound to the north is the second ring (B). It is 36 feet east and west, about 32 feet north and south; its ring 8 feet to 12 feet thick. A large block lies to the west side, nearly

5 feet by 3 feet. Adjoining "A" to the west, down the slope, is a later annexe, crescent-shaped in plan (C), 30 feet across, with a fosse 6 feet wide; and another ring, 4 feet wide. A block, 3 feet 6 inches long, lies in the ditch at its south junction with the main fosse. The field-fence cuts across the middle ring, almost exactly 100 feet north from the extreme south edge of the work, and 45 feet from the junction of "A" and "B." The part of "B" to the north of it is 21 feet across, much levelled. The fosse between it and (D) is 6 feet wide. "D" has an inner ring, 12 feet thick, and hardly 3 feet high, 36 feet across the garth each way; 60 feet over all.¹ In it, to the north-west, is a loop, 12 feet across, like a hut-ring, but perhaps late. To the N. N. W. lies "E," similar to the three eastern rings. The fosse between is 8 feet wide, and marshy; the ring, 12 feet; the garth, 33 feet across; with another block, 3 feet 6 inches long. The common fosse is 9 feet wide and 2 feet deep here. From this field a low double fence, like an old road, runs westward down the slope. I found a small, flat, rounded stone, perhaps intended for a quern, set in the fence crossing "B." There may have been another ring, without a fosse, down the road westward; but the mound is much defaced, and may be natural. The actual group of conjoined rings measures, over all, about 200 feet to 218 feet, north and south.²

In the field, east of that with the tumuli (F), in the north fence of Cooloughtragh, is a ring-mound, probably sepulchral (G); its fosse is 8 feet wide and in parts 4 feet deep. The south part of the outerring to the south is 5 feet to 7 feet thick. The central mound is about 7 feet high, with no rampart: it is 37 yards round, and thickly covered with furze.

In the field to the west were three tumuli (F), and possible traces of another road down the slope. The south-east mound (*a*) is from 5 feet to 8 feet high, 62 feet round the base, with no fosse but a sort of spur to the north. At 27 feet from it, to the south-west, is a second tumulus (*b*) with a shallow fosse to the north and east, dry and rarely a foot deep, 9 feet wide. The mound is little over 5 feet high, and is 90 feet round, thickly covered with furze like its neighbour. At 54 feet N. N. E. from the last is a third, a levelled mound (*c*), only a few feet high, 12 feet across, with a block of conglomerate about 4 feet long on its base.

At the north edge of the same field, and crossed by its fence, is a ring-mound (H); its outer ring is 2 feet high and 12 feet thick, its shallow fosse

¹One recalls the literary coincidence that Queen Tephí's *mur*, or rath, at Tara made for her burial-place was 60 feet across (Metrical Dind Shenchas (ed. Gwynn), Todd Lect. Ser., vol. viii, p. 5).

²For clearness the *diagram* slightly exaggerates its extent, following the Ordnance Survey Maps (of 25 inches to the mile) therein.

10 feet wide; only the south segment of the inner ring is well preserved, 5 feet to 6 feet high, and capped with furze; it is 12 feet thick, the garth 72 feet across; the north side is nearly levelled; another block, under 4 feet long, lies beside the fosse.

The next earthwork (I) farther to the north is called "the mote of Parkeenard"; the outer ring is 9 feet thick, the fosse 10 feet wide, the garth 42 feet across; the ring to the north-east is fairly perfect.

There are two more featureless rings to either side of the stream gully of Glounacroghera or "Hangman's Glen."

Mr. Michael Duggan, who lives in Cush, below this ridge, says that many have seen lights in the motes. He heard of finds of silver coins, some in a fort and fourteen under the root of an old tree; but the actual names of the forts or any story of their inhabitants have been long forgotten, even before the oldest people remember. Further up the slope are two low pillar-stones, like a gate leading into nothing, called "Gatabawn."

Along the road and to the north of it, still in Cush, is a neat mote 7 feet high to the south (up hill), 16 feet to the north, its summit 54 feet across, its fosse 15 feet wide and 4 feet deep, once fed by a spring of sweet water to the south-west.

I am not going to assert anything about this group. Similar clusters of tumuli, pillars, house-rings, and cairns occur not infrequently. I will only note of the conjoined forts that most of those which I have seen outside Co. Limerick, in Tipperary, Clare, and Kerry, are unmistakably house-rings, such, I may note, as those east of Killaloe (earth and stone), Killulla (earth), and Teernea (stone). Rarely do more than two conjoin. Closely similar to these last is the type in Co. Clare, with a ring-fort and a shield-like annexe, like Ayleacotty, Creevaghmore, and Drumbaun.¹ The Cush rings may, perhaps, be classed as "disc barrows" or "bowl barrows." Professor Boyd Dawkins points out² one with a well-defined track "made by human feet circling round the burial mound"; inside was a low ring 75 feet across, another ditch, and a slight mound encircled by oaken posts. The ditch was paved with logs to make a processional way. In Co. Clare we have two such low rings on George's Head, Kilkee, outside the great promontory fort, but, though very close together, they are not conjoined, and may only be hut-sites. The oft-quoted poem in the "Book of Lecan" lays down small raths of the *claide* "for men of science and women and

¹ *Supra*, vol. xxvii, p. 379. Creevaghmore; vol. xxxii, plate iv, p. 379. Drumbaun and Ayleacotty.

² Proc. Lancashire and Cheshire Antiquarian Society, vol. xviii. A. H. Allcroft's "Earthwork of England," pp. 528-530.

children not to have a *liag* or *leacht* over them." "Fert of one door for a man of science, Fert of two doors on a woman: cnoes (mounds) on distinguished foreigners."¹ So the suggestion that these may be women's graves in origin, and, perhaps, used for ceremonial rites, gets some support from our old literature. The poem adds "a token of pillars on a widower," but it were going too far to claim this character for the pillar at Cush. The nearest equivalent to the Cooloughtragh "mote" is at Knockainey, where three low conjoined forts remain, not far to the north-west of the well-known cairn. There can be little question that these were ceremonial and connected with pagan traditions of Aine, Eogabal, and Ferfi (or Uainidh) the people of the *sidh*. The Cooloughtragh mote is most unlike the conjoined house-rings in other parts of Munster, or the ring-forts beside them. Two have slabs, near one is a low pillar, and one has a slab structure. If they represent the graves of the four heroines in the poem, as I think most probable, we may regard the group, like that of Knockainey, as ceremonial.² So consistent is the plan of this complicated structure that, save in the south-west annexe, the whole might have been the work of one period. When we look at their narrow, low works and shallow fosses, and then at the deep and high works of their neighbours, Mortellstown Caher, Kilfinnan, and Dun Claire, they seem of an older age and a different tradition, and most probably were for some purpose connected with ceremony or religion, being quite unlike the other burial mounds of the same group.

"CIRCLE" and "DOLMEN."—The very curious remains on the lofty summit above Dun Claire must now be noted. I was unable to visit them, but, thanks to long discussion with my friend, the late Dr. George J. Fogerty, R.N., aided by the careful plan and lucid notes made by him and his nephew, Mr. J. N. Wallace, and his excellent photographs,³ I will venture diffidently

¹ Book of Lecan, f. 258, familiar through its citation in Keating's "Three Bitter Shafts of Death."

² Ceremonial and sepulchral, perhaps; the sons of Eochaidh Feidledh were buried in a *Mur* (ring-wall) at Croaghan; Aengus in a *Cashel* at Brugh na Boinn. *Tlachtgha* was buried in a *dun*; Carmen had seven mounds where the dead were lamented. Adamnan (*circa* A.D. 680) mentions a cairn within a wall. The Agallamh names a fort, within it a colossal sepulchre. Tephi was buried between the two conjoined forts at Tara, (Dindshenchas). Keating alleges that tumulus burial was abolished by Eochaidh Aireamh, B.C. 80, for grave burial. We hear of a group of three *tulachs* (Silva Gadel., vol. ii, pp. 121-124), connected with the Tuatha De Danann on Cenn Febrat, perhaps the tumuli or rings of Cush itself, while Tirechan names a burial "fossam rotundam."

G. Keating ("Three Bitter Shafts of Death") says of pagan burials that a small rath was raised round the corpse with a *leacht*, or a cairn, or an earthen rath without a monument. Sir Richard Colt Hoare regarded the disc barrows as women's graves. See also "British Barrows" (W. Greenwell, ed. 1877, pp. 3, 4); *Archæologia* (xliii, p. 293), "South Wiltshire," p. 21.

³ *Journal North Munster Archæol. Soc.*, vol. ii, p. 6.

to give the conclusions on which we came to agree. Ascending the *Red Road* up the flank of Sliabh riach, and climbing up a gully, the great plateau of the mountain is reached with its outlook, magnificent in spaciousness, across three counties. On the brow fenced to the north by the low sandstone cliffs called the "Benches," and abutting on their edge, is the monument. From the analogy of the structures abutting on the unchanging inland cliffs of Burren it is probable that the "circle" was not a ring-wall, but was built of a purpose to abut on the cliff, and this is supported by the fact that, instead of being a true curve, it runs straight to the edge at the eastern horn. The "circle" is from 45 feet to 47 feet across. The garth is raised a few feet; its wall has seventeen large blocks, from 2 feet to 4 feet high, and packed tilling behind: so that, whether it was designed for sepulture or residence, it was a dry-stone wall, not a *circle* like those west of Loch Gur. Dozens of stone forts have blocks as large in their foundation-course, and when the lighter masonry of the wall is removed they remain. There is an inner loop, by no means unprecedented in rings, even in Co. Limerick; I may cite the Cooloughtragh north ring, and one near Old Abbey, given earlier in this paper. Its blocks are barely 2 feet high, and its ends abut against the outer wall, and are 37 feet across.

Its size and its stormy position (1530 feet above the sea) do not disprove its being residential. I need only refer to Caherconree in Kerry, Aghaglinny and Caherdooneerish in Clare, and Mac Art's fort near Belfast, standing respectively 2,050 feet, 1,044 feet, 647 feet, and 1,181 feet above the sea.¹ I incline, however, to regard it as sepulchral, and as the place rightly or wrongly believed to be the grave of Oilioll Olom by the author or authors of the *Agallamh na Senorach*.²

East from it, not far away on the plateau, is a reputed dolmen, probably what is called Labbanabiertha on the maps, from a reputed witch "Bheurtha," supposed to be the cairn building Cailleach Bheara. Undoubtedly this latter person is traditionally remembered on the plain below at the *casán* of Knockainey. It seems to be a large block, placed over a cleft in an outcrop of the rock and wedged underneath with small stones.

BALLINGARRY DOWN (O. S. 49).

For better completion of my notes on the northern part of Sliabh riach, I must allude to a dolmen and a few more earthworks round its base; two conjoined forts at Griston opposite the Glen of Glenaree; a square

¹ Dr. Christison gives several forts of Scotland on equally high ground; four are about 1500, one 1851, feet above the sea. Treceiri, in Wales, is about 1500.

² "Silva Gadelica," vol. ii, pp. 129, 130; also p. 540.

low fort behind Glenlara house, which I did not visit;¹ the "Down" of Ballingarry; and the dolmen of Ballyfroota. The last is in the fence of a by-road, and is utterly defaced; it consists of three stones, the cover cracked and partly supported by a pier. It is 7 feet by 2 feet 8 inches by 7 inches thick, the whole 3 feet high. Persons suffering from pains in the back are believed to be cured by stooping or creeping under its shelter, and this belief alone secured its preservation.

The "Down"² is called "the mote of Glenbruachain"³ in the Ordnance Survey letters; but the term, I am told, is applied, at least in Glenbroghaun village, to Dun Claire. It is a neat, regular, low mote, not far from the graveyard of Ballingarry Down, with a fine view of Sliabhriach, Dun Claire, the Galtees, and the endless branches of their stream channels. It is on a slope, and is 18 feet high to the west, and 8 feet to the east. On the west and north it has a deep, dry fosse, 9 feet wide below, 23 feet at the field, and 9 feet deep. The flat summit is 53 feet east and west and 42 feet north and south; on it is an oblong late house foundation, 21 feet by 27 feet, an unusual object on such forts.⁴ One recalls here, in 1387, Niall O'Neill built a house in Emania. "There had not been a house within it for a long time till then."

KILFINNAN (O. S. 56).

The name Kilfinnan is explained in the "Book of Fermoy."⁵ It tells how, on Samhain night, Fingin mac Luchta, king of Munster, was at Drum Fingin. A fairy, Bacht, from Sith Cliath (Cnoc Aine Cliach, a mound of the Tuatha De Danann) came and told him of the wonders on the night when Conn Cead Cathach was born. From its connexion with the Sidh of Cliu, Kilfinan and Dromfinghin are evidently intended.

Somewhere near it was the spot where St. Patrick sat on "the three tulachs," to watch the hunting of the mighty stags, roes, and boars at Osmetal Hill. People (as at Croaghateeaun, Co. Clare)⁶ feared to sit there because of the Tuatha Dé. Three glens met below Cenn Febrat of Sliabh riach, at a

¹ Its plan from O. S. map is given, Plate XL. I only saw it from a distance; it seems of little interest, and featureless.

² Besides "Ballingarry Down," we have a townland "Mitchellstown Down," not far distant.

³ Perhaps the Rath Corbre, "beside Clar, at the Rath of Corbre and Broccan," "Silva Gadelica," ii, p. 201. Cairbre Musc was connected with Claire: he, his brother Cairbre bhasCoinn (ancestor of the Corcavaskin), and Cairbre Riada were sons of the High King, Conaire II, "A.D. 234" (*ibid.*, p. 540).

⁴ View, Plate XLII, No. 2, plan and section Plate XL.

⁵ Irish Texts (R. I. Acad., vol. i, part i), p. 9.

⁶ Journal R.S.A.I., vol. xxxv, p. 345.

lake, Loch bo (evidently the marshy ground below Kilfinnan where the glens abut); the three mounds were probably those of Cush. To the east of the lake was Fininis, to the west Cnoc na haeire; to Patrick's left was a fort on a mountain (Mortellstown), which he passed later going to Finntulach or Ardpatrick. The topography is most exact.¹

The Dind Shenchas of Cend Febrat² says there was a "branch" of druids of the Tuatha De Danann established on that mountain. This is an important statement, as it possibly accounts for the unusual mass of legend preserved there from the third to the early fifth century, none seeming later than the reign of Eanna Airigthech, *circa* A.D. 410.

No legends attach to the Kilfinnan fort;³ it very possibly was never the residence of the Kings of the Dal Cais, and owes its shadow of "royalty" to a claim never enforced. In the well-known list of royal forts in the Book of Rights⁴ we have embodied a poem attributed to St. Benean in the fifth century, but far more probably of the period nearly five centuries later when the claims of the Kings of Cashel became prominent, but before the Kings of the Dal Cais were making their revolutionary claims to the Kingship of Cashel. In this venerable mnemonic poem we read of Dun Eochair Maighe, at Bruree, and "Drumfinghin of the wood, with it Treada na riogh," the triple-mounded fort of the Kings. This is unmistakably Kilfinnan.⁵ The early English records call it Keilfinny and Keilfinane, and imply an earlier form, Coill finghin, Finghin's *wood* (not *cil* or "church"); name-groups are not uncommon with the same terminal (as we saw at Sliabh and Dun Claire), so there may have been a Drum-, Coill-, and Cil Finghin here. The epithet "of the wood" is most appropriate; the place was hemmed in by forests, even after 1655. The barely penetrable oakwood in the *Mesca Ulad* between it and Knockainey, the "Great wood" of Coill more, Killmore or Killecuaiige, Coillcuaiige, Kilquoige, and Kileruaign lay near it in 1657. Cloghnottoy, or Castle Oliver, and Ballyurigane, near it, were at that time "well supplied with firing and other

¹ Agallamh, Silva Gadel., vol. ii, p. 123.

² Metrical Dindshenchas (Todd Lecture Series, vol. x), p. 231, line 69.

³ However, the Coir Anmann, and other early documents, purporting to copy from the Saltair of Cashel, say that an ancestor of the Eoghanacht tribe of Cashel, Imlech or Inflagh, of Imlech fir Aendairti in Clu Mhaill Mic Ugaine (Emlygrennan, near Kilmallock and Kilfinnan) "there first was his fort dwelling" (reputedly *circa* 550 B.C.), "first made trenches of forts" (Classa duine). Miss Dobbs collects the corresponding entries, Journal R. Soc. Antt. Ir., vol. xlv. Imlech descended from the god Nuada Argetlamh.

⁴ Leabhar na gCeart, "The Book of Rights," ed. O'Donovan, p. 93.

⁵ O'Donovan, O. S. Letters (14 E 9), vol. i, p. 207, regards Kilfinnan Mote as Dun Cinn Abhrat, erected by King Brian. The "Treada," however, speaks for itself. We have an equivalent in "Treduma," but this is more probably three conjoined mounds, not concentric rings.

necessary boates (bordes?) from the woods which those Mountaines affords." Rev. Canon J. O'Hanlon¹ derives its terminal from Fintan of Dun Bleise, who, he notes, died at the age of 260 (!), and was a disciple of Congall, A.D. 550; but the constituent is Finghin, not Fintan, and the derivation as reliable as the "record" on which it depends. There was an obscure saint Finghin, patron of Quin, in the more northern Dalcassian territory; but nothing connects Quin with Kilfinnan. The English records help us little; we hear of a certain Richard Tancard (*cf.* Tankardstown, near Kilmallock), and the free tenants of Kylfynan in 1252. In 1350, Walter Purcell held it from John fitzPeter Le Poer, Baron of Donuyl (the picturesque rock-fort and castle in Co. Waterford); his heirs were under age. Its castle is first named in 1657, but may date from the late fifteenth century. In 1588, after the Desmond Rebellion, Kylfynan belonged to Garrett mac Thomas, who granted it to Henry Billingsley. Two years later its head-rent was given to Edmund FitzGibbon, "the White Knight," who figures in the tragic capture of the Sungan Earl. Capt. Aylmer left Kilfinian without garrison or provision in the rebellion of that hapless nobleman.² In 1600 Essex marched past "Cenn Feabrat Slebbe Caoin mic Deircdualagh" on his way from Kilmallock to Fermoy. The church appears as Kylfynan and Kilfennan in the Papal Taxations, 1291-1302, "Keilfinny or Keilfinnan, dedicated to St. Andrew," 1410; its rectory was held by the Abbot of Insula Molanfyd, 1418.

The Civil Survey,³ 1655-7, mentions there "a castle with an iron grate thereunto, 50 tatch houses and cabins, a grist mill, a tucking mill, a millseate, Court Leet and Court Baron, a faire twice a yeare, and a market once a week." The Down Survey adds, "It is accommodated with good trouts and eeles by ye River Garath . . . it hath also the convenience of a markt at Kilfinane, where is a good castle, and the walls of a church, and an Irish *Downe*."⁴ The last word, having an important bearing, in view of the "Down" of Ballingarry, has unfortunately been touched by a pen-stroke, so it may be taken as "town." In favour of the last form we have Downmoone in the same survey (where is also a fort) "with an Irish town" (D. S. map 55). On the other hand, the phrase "Irish town" only occurs here; the more usual form is "Irish cabins" (D. S. maps, 54, 56, and 59); and we have "a castle and *rath*" at Bulgadin nan doe (map 34), and in the Civil Survey (xxxii, p. 7) and Glynogrey, "where stand two castles and a *kearne*." Evidently the English copyist hesitated over

¹ "Lives of the Irish Saints," vol. i, p. 45.

² Pipe Rolls; Plea Roll, 1252, m. 5. 75; Carew Calendar, vol. i, p. 450; Fiantis Eliz. No. 5171, 5537; Cal. Doc. Ir. and Cal. State Papers Ir., under dates.

³ Civil Survey, Aug. 2nd, 1655, vol. xxv (IB 11), p. 21, p. 25.

⁴ P. Rec. Off. Ir. (A series), No. 59.

the unfamiliar word *Downe* in his exemplar, and decided to render it "town."¹ Of later mention FitzGerald,² in 1827, calls it "one of the most perfect Danish mounts in Ireland, surrounded with three strong ramparts and deep fosses." The Ordnance Survey Letters, 1840, have—"a conspicuous green moat, surrounded by three circumvallations, 16 paces on top." The writer adds that "the works are effaced to the north and east, about 14 feet high and 30 feet asunder." Lewis,³ with his usual gross inaccuracy, in 1836, describes "the Dane's fort, a mound about 130 feet high, 50 feet at the base, and 20 feet at the summit, encircled by *seven* earthen ramparts, about 20 feet apart . . . the outermost, which is about 10 feet high and 2000 feet in circuit"; nearly every item is wrong! John Windele,⁴ though he sketched the "moat" with three rings, let himself be misled into quoting Lewis. As usual, we cannot fix the exact date of his visit—perhaps 1833 to 1841: he combines notes of both years on the district. He calls it "a large rath" . . . "encircled by seven earthen ramparts," 30 feet high, the rings 10 feet to 13 feet high.

Nothing is implied by usage of the term "mote" in Co. Limerick, Clare, and elsewhere: it is used for any sort of fort, high or low, earth or stone; so in France the equivalent *butte* is used as loosely, and, despite all assertion to the contrary, there is no special height or form of fort implied by the name. I have never heard it used by the peasantry for the high mote of Shanid; I have heard a modern heap in the corner of a field called "a small mote," and "mote" is used for fences, stone-forts, and low ring-forts.

The little town stands boldly at the end of the long ridge, the woods and gorge of Cloghnoilfoy running behind it towards Mitchellstown, under Seefin.⁵ Over the houses rises the dark cone of the earthwork. It is not the typical smooth green mound, but rough with a network of boldly marked cattle-tracks. From the top is the usual noble view of the great brown and pink Sliabh riach and the wide plains, the rounded hill of Mortellstown with its fort, the green ridge of Ardpatrick with its ragged ruins of the church and round tower overlooking the old district of Fontymychil,⁶ now Coshlea, "the Mountain's foot." On one visit we even caught the silver flash of the Shannon

¹ The local names "Ballingarry Down" and "Mitchellstown Down" support the probability that there was a "Kilfinnan Down" in 1655. Note "t" substituted for "d" in "bordes" in Down Survey map 59, and in other manuscripts, *ante* 1700.

² History of Limerick, vol. i, p. 390.

³ Topographical Dictionary, vol. ii, p. 94.

⁴ Kerry Topography, &c. (MSS. R. I. Acad., 12, C, 5), p. 370, and MSS. 12, C, 3, p. 918; view and section, p. 926.

⁵ Seefin and Glennosheen tell a tale of the great warriors of the later cycle of romance. The district round Kilfinnan and Kilmallock recalls all the chief period of early legends, and even of the altered gods like Aine and Eogabal.

⁶ For its identification see *supra*, vol. xxx, pp. 36, 37.

ere a dark rain-storm blotted it out, and, in the strong light and shade, all the plain and its ridges Dromasail, Rathcannon, and Knockainey started out like an embossed map.

The great gap between Seefin and Sliabhriach, up which we see the H-shaped "Oliver's Folly"¹ and the rich woods, has a curious legend.² St. Patrick desired a site for a monastery at Ardpatrik, but the local dynast opposed him, unless the saint "would remove the mountain in that place so that he might see Loch Lungae³ over it to the south"; only then would he believe. In a moment the mountain of Cenn Febrat began to melt into the pass of Belach Legtha, "the melting pass." The legend fails in local knowledge, if the lake lies in Co. Cork, and Ardpatrik does not look down Clonodfoy pass, but across that behind Cenn Febrath or Sliabh Riach. There are several marshy places marking old lakes in the plain below.

The mote (as Mr. P. J. Lynch⁴ correctly states) is 34 feet 6 inches high. It is 39 feet across the summit, nearly 50 feet, if we include the ledge; but the edges are broken by cattle. The fosses and mounds are regular. The outer ones at the south-east are 18 feet across, the inner fosse 22 feet: all are levelled to the north-east. The rings vary where best preserved from 14 feet to nearly 17 feet high, rarely under 12 feet; they are 8 feet to 10 feet wide on top, and 15 feet to 20 feet below, the sides very steep and in parts furzy. The outer fosse is wet to the north-west; a small brook runs along that and the west side. The mote has a core of stones under the thick clay cover; it was dug into many years ago, near the fair green to the north-west, but the hole is now closed up. The field to the south is level on the ridge, but there is no trace of an annexe or baily.⁵

Without excavation and full weighing of the results it were foolish and idle to lay down any hard and "final" theory as to the origin of such an earthwork. It may have been a burial mound,⁶ but the great fosses and rings tell against the view; or a residential fort, or feudal castle, but the small storm-swept summit, barely 41 feet across, is too small. The "Book of Rights," *circa* A.D. 900, regards it as a fort. I venture to suggest that it

¹ Built 1760 (census of 1821). The old name of Castle Oliver was "Castle na Doon."

² *Tripertite Life* (ed. Stokes), vol. i, p. 209.

³ The poem on the Two Fermoy's in the *Book of Lismore* gives their northern bound as Glaisi Muilin Mairtel, in Sliabh Caoin, and "Loch Loinge on the plain."

⁴ Mr. P. J. Lynch and Dr. G. Fogerty, *Journal R. Soc. Antt. Ir.*, vol. xxxiv, p. 325. For other views and notes see Dr. Joyce's "Social History of Ancient Ireland," vol. ii, p. 55; "Ancient Forts of Ireland," p. 147; and Lenihan's "Limerick," pp. 731, 732.

⁵ See plan and view, Plates XL, XLI, No. 1.

⁶ *Journal R. Soc. Antt.*, vol. ii, ser. ii, p. 123, for primitive burials in apparent high motes, some with bailies; also *ibid.*, 1882, pp. 152, 158.

was connected with some ceremonial; oh that Mac Raith had not confined his lay to Cenn Febrat! The fair-green at its foot, the fair at least older than 1655, may be the representative of an early *oenach*. The connexion of the *oenach* with the *sidh* mound is common.¹ We know nothing of any inauguration place of the southern Dal Cais; it may have been at Oenach Culi; if not, do we find it at Kilfinnan? The northern Dal Cais, as all know, inaugurated their princes at Magh Adhair, near Quin. There a flat-topped mound, like one of the Sliabh riach motes, with a large fosse and outer ring, 28 feet high, 6 feet lower than Kilfinnan, was used in the ceremonial; but the platform was far larger, and the evidence for it having been a residential fort on occasion is strong, as it was "besieged" and taken in A.D. 887.² The more one studies the Irish high motes, the more certain it becomes that no theory can be based on their plan and shape; their resemblance to the great *Hausbergs* of central Europe of remote date,³ to the supposed "feudal motes" in France, now proved to be Gaulish and pre-Roman, and to the great temple mounds of the valleys of the Ohio and Mississippi, is shirked or put aside by the exponents of the exclusive theory of feudal origin. Whether, therefore, Kilfinnan Mote was a *sidh* or a residential fort I shall not decide. The Irish certainly erected residential mounds,⁴ like Duma Selga. Of this last we are told "Duma Selga, where the sons of Muredach used to dwell, now they are gone, the King-mound (*rig-duma*) remains." I can readily accept the view, though unrecorded, that the Norman colonists may have crowned it with a very small *bretasche*⁵ to command the pass into Fermoy, but see no reason to doubt its earlier origin, for whatever purpose it was at first designed.

¹ See account of Oenach of Carman; it had twenty-one raths, a cemetery, and three markets (Book of Ballymote). Cashel was a *sidh*, "Sid Druim" (Book of Rights, p. 29); Knockainey, "Sid Cliach" (Book of Fermoy, Ir. Texts, R. I. Acad., p. 9). Cruachan had a *sid* (Tain bo Fraich, Ir. Texts, R. I. Acad., p. 167). The existing great fair of Cahirmee was held at a mound containing a cist. Races were held near Mallow, at Cnockan liss, a barrow, till the last century. The mound also contained a cist, with a skeleton and a bronze sword (Rev. T. Olden).

² Proc. R. I. Acad., vol. xxxii, p. 60; cf. vol. xxvii, p. 382, and Handbook VII of Roy. Soc. Antt. Ir. The Cashel kings were also elected, and no doubt inaugurated, on a *duma* (Cathreim Cellachain Caisel, p. 59).

³ Dolmens of Ireland (Borlase), vol. iii, pp. 1127-8. Hoernes' "Primitive Man" (ed. J. H. Loewe), p. 40; "Smithsonian Contributions," vol. i (1848), p. 82.

⁴ Cf. "Scel baili binnberlaig" (Rev. Celt., vol. xiii, p. 225). "They raised his tomb, his rath, and his pillar-stone, and established funeral games."

⁵ The *bretagium* of Carkenlys, in the same county, was guarded at a cost of £10 (Pipe Roll, xvii Edw. I, No. 20, Exchequer Accounts). There is a "Brittas" near the place. Attempts to establish a type of *bretasche* earthwork have failed; no rule was observed at such works.

FORTS BETWEEN KILFINNAN AND KILMALLOCK.

MORTELLSTOWN (O. S. 48).

On a conspicuous rounded hill, scarred by a great red quarry and guarding the mouth of the pass between Kilfinnan and Ardpatrik, stands the fort of Cahir Mortell.¹ This "mote" is a strong, well-preserved ring-fort, and was an actual *cathair* or ring-wall, but based on a mound or earthen platform. Little of the stonework remains save some of blocks 18 inches square, and large ones 2 feet 6 inches by 3 feet, near the gateway. The fort has an outer ring once mainly of stone, 3 feet to 4 feet 6 inches high over the field, 14 feet to 10 feet wide. The fosse is usually 12 feet wide below and 18 feet to 20 feet at the field. It is 8 feet deep, the central ring rising over it 18 feet to 20 feet high to the west and north. The crowning wall was 12 feet to 18 feet thick; the garth measures 68 feet east and west, 81 feet north and south inside, or 96 feet to 105 feet over the wall. It has a noble view up the pass, and of Seefin and Sliabh riach, Kilfinnan with its mote, and the endless plains below. The gateway was to the east, with a gangway 6 feet high, 25 feet long, and 10 feet wide, built of very large blocks, perhaps taken from the wall in later days; many are over 4 feet long. The gate was about 5 feet wide; portions of the old piers are traceable.² If Windele be not speaking of Kilfinnan, in his confused notes on it and Mortellstown, he says that "passages led to it"—the conventional legend. As he copies the note as referring also to Kilfinnan, he probably heard that the forts were connected by passages. The records give us no help; they begin (so far as I have noted) in the Plea Roll (No. 119) of 10 Ed. II and a Memoranda Roll (m 81), where in 1317 Martellstown juxta Gosiston is named; it is Martes or Mortallstown in 1410, and Capell Mortell in Bishop O'Dea's Taxatio Procuracionum, 1418.

BALLYGILLANE (O. S. 48).

I take this as a fine and typical "square fort," several others being of little interest; it lies between Ardpatrik and Kilmallock. It is called the "mote of Ballygillane," and is very probably of Norman origin. Popular legend near it tells of strange lights seen in it at night, flashing and forming into a ball, flying up into the air, and the sound of crying in the mote. It is slightly irregular; the entrance is to the east, and the fosse is deep and full of water to the south-east; but nearly obliterated, and marked by yellow "flaggers" (iris) to the north, though fairly preserved to the west. It is

¹ Windele MSS. (12 C 3) 918.

² Plan and section, Plate XL.

5 feet deep at the last point, and the mound 12 feet high; the bank steep and perfect, 12 feet thick and 8 feet high; the corners very sharp; evidently, therefore, the stone facing was removed in comparatively recent times. The sides measure from corner to corner—the east 105 feet, north 135 feet, west 126 feet, south 153 feet, diagonally north-west and south-east 150 feet;¹ they are a garden of hartstongues and other great ferns, and are set with ash trees and hawthorns. The place is held in more awe than the neighbouring forts.

BALLINGADDY (O. S. 48).

This lies near the churchyard of Ballingaddy, or “thievestown,” between Kilmallock and Kilfinnane. It is a steep-sided fort, terraced up 10 feet over the field to the south and south-east, but only 5 feet to north. It is 123 feet across the ring, which was 12 feet thick. The stone facing is entirely removed, and there is no trace of a fosse. A few forts, low and as a rule more or less levelled, lie between it and Ardpatrick, like Gotoon and the Lisheen, and two forts in a marsh, over which they rise barely 2 feet. They lie to the west of the road.

RIAN BO (O. S. 56).

The “Slug of St. Patrick’s Cow,” made when the unruly beast ran away from Ardpatrick, was called by Irish speakers *Rian bo Phadhruig*, as I was told on my visit in 1877. The long fenced road from Ardmore through Co. Waterford bears the same name, and similar long entrenchments, even the huge works so well described by Mr. De Vismes Kane in Ulster, are attributed to supernatural animals like the Black Pig, or monsters like the Mata or the Bull of Cualnge, the Glasgeivnagh cow’s tail, and the serpent of the “Worm Ditch.” Early literature attributed them to gods and heroes like the “Track of the Daghdha’s fork” in the “Second Battle of Moytura,” and the track of Cuchullin—“like a mearing were the two dykes the wheels of Cuchullin made.”² It is an old roadway, leading from the utterly defaced church and round tower of Ardpatrick,³ slightly to the west, north-west. Part of it has been cut, by nature or man, into the rock for a depth of over 8 feet, and 16 feet to 20 feet wide; part is only fenced.

¹ Plan, Plate XL.

² See “Ancient Forts of Ireland,” sects. 21-149, seqq. *Revue Celtique*, vol. xii, p. 87, vol. xiv, p. 417. “Fled Bricrend,” p. 45, and “Táin Bó Cualnge” (ed. Faraday), p. 141. *Senchas Mór*, vol. iv, p. 145. Even the Boyne Valley was made by the monster Mata.

³ For Ardpatrick excavations, see Windele MSS. 12 C 5, pp. 293, 363, 413; *Topog. of Kerry, &c.* (12, C 3), pp. 371, 161 to 902, Sept. 10, 1841; M. Lenihan’s “Limerick,” pp. 731-2; this gives Windele’s notes without acknowledgment, unless the reference “Wakeman” be intended for “Windele.”

DUNTRILEAGUE (O. S. 49).

A very familiar and apparently very early myth is connected with this fort. Cormac Cass, son of Oilioll Olom, was badly wounded in the head at the battle of Knocksouna (Samhain), west of Kilmallock,¹ against Eochaidh Abhraruadh. Cormac's "brain kept leaking away from him," so "they built him a good *Cathair* at Dun ar sliabh." "The fort on the Hill"² at Duntriliac, whence its name, "the fort of the three pillar-stones" (a fort with a closely equivalent name, Lissauntrelick, remains in the district, in Angleborough, O. S. 57), for they enclosed a spring in the midst, and built over it a house, with three great pillar-stones. Between these the king was placed, with his head to the east, for, as in India so in Ireland, the position of the invalid helped or hindered the cure. A confidential warrior constantly poured water on Cormac's head, but, after a long illness, the monarch died, and was "buried in a subterranean excavation in the fort."³ I incline to think that the original redactor confused the fort below the hill and the great dolmen on the top with its conspicuous trilithon. Duntrileague has no hill-fort, for there is no trace round the dolmen, but so wild a legend may have easily confused the minute topography, though this rarely happens. Of course its author knew nothing of the Bronze Age, and in the remote past a legend of the strange treatment of the wounded prince arose, and may have reached him, in which Duntrileague was named, leaving him to add his confused recollection of the fort and *leaba* there. Even late in the last century conservative antiquaries maintained that the Cloghogle dolmen at Ballina was erected in the sixth century of our era, though it was not mentioned even in the late and most unreliable Life of St. Cellach, on which they and O'Donovan based this anachronistic assertion.⁴

Little else is told of Duntrileague. The fort was repaired by King Brian about A.D. 1002-12; it was burned in 1054 by Gillaphadraig, Lord of Ossory, son of Maelnambo, and the foreigners, and again named in 1088. A deed in the Gormanston Register⁵ calls it Dundirleke in 1346. The Bourke Rental of 1546 claims the small quarter of Duntriliag. In 1655 it belonged to the Cantwells, who sold it to Hugh Massy.⁶ No trace remains of the castle and fortified yards held by the Massys between the sieges of Limerick, in 1690-91. A farmhouse in the valley marks the site.

¹ Near Tankardstown, an earthwork remains there, Cnoc Samhna, Knocksouna, or Knocksawney in 1583, and Knockesawny, 1655.

² Duntrileague is certainly on the hill, but not on a *summit*, as one might expect from the name.

³ Agallamh (*Silva Gadolica*), vol. ii, p. 129.

⁴ See *supra*, vol. xxvii, p. 430.

⁵ p. 145 d.

⁶ Book of Distribution, p. 90.

On the foot-slopes of the hill an old road brings us to a wind-torn clump of trees and the ruined tower of an eighteenth-century church; beside it is the hideous large vault of the Massys, but no old monuments. Behind the church to the north-east (but not in the graveyard, as stated by O'Donovan)¹ is the almost obliterated trace of an earthen fort of small dimensions, on a slight knoll, and overgrown with docks. As near as I could measure its spread mounds and filled fosses, it is 81 feet north and south and 87 feet east and west inside the fosse, which is 15 feet wide, as so usual. The faint outer ring is about the same width. There is no spring, or wet patch, in the ring, or even in the fosse; but I am told there is one under the road near it on the north.

Ascending the bold Deerpark Hill, we pass a slight rise, on the slope defined by a curved path. It may mark a second fort, but I am more than doubtful. Leaving the green fields and ascending the western knoll, covered with crisp heather, we see the fine dolmen between us and the higher eastern summit.

The monument is still (as in 1840) called "Leaba Dhiarmada agus Ghrainne" by old people. In 1840 the vain tradition (most probably based on some leading question of the surveyors) said that "it was the tomb of several persons." It has been well described, planned, and photographed (for Mr. P. J. Lynch's survey of the dolmens) by Dr. George Fogerty,² whose plan I repeat,³ it being nearly inaccessible to students outside Ireland. The dolmen differs much from the simple cists elsewhere in Northern Munster. The axis lies nearly north and south, with the entrance to the north. This is flanked on either side by two slabs, forming a funnel-like passage into a polygonal chamber with apparently two divisions. The lesser cell to the west retains its massive cover. South of all is a narrow apartment, with three slabs to either side, two to the south, and two covers. It is 6 feet high; the dolmen, seen from the side, rises southward, like a flight of great steps. The west chamber is 3 feet high: the north passage 15 feet long and only 1 foot wide at the narrowest point. The largest or south cover is 6 feet 9 inches by 6 feet by 19 inches thick, of reddish conglomerate, evidently brought from the surrounding moorland, where many suitable blocks still lie loose. The other covers are 14 inches or 19 inches thick. The whole is 30 feet long north and south, each wing being 12 feet long; the central chamber 6 feet long.

From the east knoll we get a magnificent view down the vale of Aherloe

¹ Ordnance Survey Letters, Co. Limerick, vol. i, p. 222.

² Limerick Field Club Journal, vol. iii, pp. 217-224.

³ Plan, p. 464; view, Plate XLI, No. 2, XLII, No. 1.

to Slievenaman, with its endless legends of Finn and the hunting parties of his army; far over central Tipperary, with the spire marking its town, and northward over the whole of eastern and central Co. Limerick, and across Clare to the border of Galway, where Lughaidh Meann's "red hand" triumphed. Southward are the noble flanks of the Galtees, scored with their dark branching watercourses, and the great russet slopes rising up to the crown of Galteemore, 3000 feet above the sea, the long valley (past the dark tower of Ballylanders) and Sliabh riach crouching in advance of the peaks of Ballyhoura.

BRUREE.

LEGENDS OF OILIOLL OLOM.

Oilioll Olom in the later legends is especially connected with the forts of Bruree. It is evident that this was an afterthought, for the older myths mention him along with Knockainey and Dun Claire, where he died and was buried in it, or in the ring-wall on the summit above it. So also we have his son, Cormac Cass, dying and being buried at Dunrileague; Oilioll's counsellor, Ferchis, dying near Dungrot; and, most illuminative of all legends, how Cormac Cass was mortally wounded, presumably defeated, near Kilmallock at Knocksouna, on the way to Bruree apparently. Again, if the supposed "High Kings" be Dal Cais, we see that Mogh Corb was "of Claire" (died "A.D. 334"), and his son Ferorb attacked and slew Ireero, King of Brugh (Bruree). All this shows that the older legends did not claim Bruree for their heroes, but put its capture late down the generations after Oilioll Olom. Nevertheless, in most existing later literature, he is to be thought of at it and Knockainey, and so we give his legend here rather than with Dun Claire. As we saw, Oilioll is said to have been son of Eoghan "Mogh Nuadat," with whom the tangible tradition of the Munster Kings commences. He went on Samhain Eve with his friend and not too wise counsellor, Ferchis mac Comain, the poet, to tend his horses on the hill of Drom Colchaili, the hazelridge,¹ where the group of tribes of his Firbolg predecessors used to meet. It was a *sidh* or fairy residence (we shall study its legend later), and, it being known that such places opened on Samhain Eve,² Ferchis bade him wait and attack

¹ The hazel had magic significance. The five tribes of the Mairtínigh cut firewood from the hazel thickets at Drum Colchoilli. The king of the *Sidh* of Cruachan demanded a tribute of a bundle of firewood each day (Echtra Nerai, Rev. Celt. vol. x, p. 219). In the mansion of the god Elcmair at the Brugh (of the Boyne), "a fork of white hazel" is brought instead of arms (Tochmarc Etaine, Rev. Celt., vol. xxvii, p. 330). Tara itself was a "Collchail" (Metrical Dindshenchas).

² Echtra Nerai, Rev. Celt., vol. x, pp. 221-5. The Morrigan takes a cow from a *sidh*; the host could do nothing for a year till the next Samhain, "for the fairy mounds of

the "mortal immortals" who dwelt there. As a result Oilíoll speared the King, Eogabal, son of Durgabal, and violated his daughter Aine, and she, mad with horror, bit off¹ his ear, whence his epithet *Olam*, "bare-ear" or "the earless."² Her brother, Ferfi, escaped and devoted himself to vengeance. Disguised as a wandering minstrel, he sat in a yew tree near the waterfall of the Maigue,³ playing on a brass *timpan*, or lyre, so sweetly that Oilíoll's son and stepson pursued and captured him. Eoghan, the King's eldest son, and Oilíoll's wife's son, Lughaidh mac Con, both claimed the prize, and called on the King to decide between them. Oilíoll decided for Eoghan. Lughaidh appealed frantically against his prejudiced judgment, and, getting no redress, fled through the hills southwards.⁴ The Ernai aided him, and he challenged his stepfather to battle, marched up the great pass of Ballyhoura to Cenn Febrat (or Sliabh riach) there, near Kilfinnan. The hosts joined in battle: Mac Con had disguised himself as his friend and jester,⁵ Dodera, whom he closely resembled, save in the superior whiteness of his legs. Eoghan, noting these, flew at his kinsman and just missed him with his spear. Mac Con fled, his counterpart Dodera, wearing the prince's diadem, was slain, and (as we saw) buried on the mountain side, and the southerners were routed down the long pass. Lughaid no longer dared to stay in Ireland; he fled to the King of Scotland, and concealed his identity for some years.

Oilíoll, broken with the cares of state and advancing years, abdicated in favour of Eoghan, and the news reached Scotland. The fugitive, now withheld by no scruple of having to attack his stepfather, got restive. The Scottish Monarch suspected the refugees, and after some curious tests, such as making them eat raw mice,⁶ discovered the identity of his guest.

MacCon won his friendship and aid, and, with his foreign auxiliaries landed in Ireland, marching so far into the bowels of the land without impediment that he reached "Magh Mucramha Muchrime) north of Ath Cliath, in O gBethra," near Clarinbridge and Galway Bay, "A.D. 195." The

Erin always opened about Samhain." See curious note on "women and rabble" praying to the witch Mongfiun, who poisoned King Crimthann (A.D. 377) on the eve of Samhain (*Revue Celtique*, vol. xxiv, p. 179).

¹ "Struck off" says edition in *Book of Leinster* (*Rev. Celt.*, vol. xiii, p. 437).

² *Agallamh, Silva Gadelica*, vol. ii, p. 127.

³ "Ess mage" waterfall of Maigue, named in mss. *Laud.*, 610, f. 95a. The yew was a phantom tree. The place intended was possibly above the forts at the mill weir of Bruree. O'Curry locates the waterfall at Caherass.

⁴ "Battle of Magh Mucramha" from *Book of Leinster* (*Revue Celtique*, vol. xiii, p. 441). *Silva Gadelica*, vol. ii, pp. 347-349; also *Annals of Tighernach fragments* (*Revue Celtique*, vol. xvii, p. 102). O'Curry, "Manners and Customs," vol. iii, p. 259.

⁵ "Druth," more probably *druid*.

⁶ On this curious matter, and its proverb, "eating the mouse with its tail," see *Revue Celtique*, vol. xvii, p. 432.

King of Tara, Art Aeinfr, who had done nothing so far, joined Eoghan and marched after the enemy. They, too, reached Magh Mucramha, where Medbh, two centuries before, had tried to reckon the fairy swine from the *sidh* of Croghan.¹ The royal armies were in high spirits in their march from the Shannon. Each side brought its druids, to use their heaviest artillery of magic. The blind druid, Dil, from Ossory, son of Creaga (or Treith, son of Dacrega, at Carn Feradaich),² was with King Eoghan, and gave that prince his daughter and chariot-driver, Moncha, the day before the battle; she became mother of the future King Fiacha Muillethan.³ So also Art left his wife, mother of the great King Cormac. In vain Dil, like Balaam, was brought to curse the foe. Mac Con gained an overwhelming victory, and among the countless slain were the two Kings⁴ and the younger sons of Oilioll Olam—Ferfi was avenged.

Lughaidh seized the throne of Tara; he eventually most humanely adopted Art's posthumous son Cormac, and reigned thirty years till he, too, was driven from the throne. In his distress he turned to his aged step-father, Oilioll, at Dun Claire, where he still dragged on life, mourning for his dead sons. Lughaidh overestimated his claim: his offence was beyond atonement; he attempted to embrace Oilioll, who bit him on the cheek, and called on Ferchis to slay him. Mac Con set his back against a pillar; his few retainers

¹ The ancient poem on the cemetery "by Torna Eigeas" is edited in *Revue Celtique*, vol. xvii, p. 28; see also the ancient Tract on the Cemeteries; see Petrie's "Round Towers" (ed. ii), pp. 100, 107. The host of slaughterers from Croghan were pursued by Nera into it (Echtra Nerai).

The mound was a receptacle of strange beasts—Wer-wolves (three daughters of Airitech) who came to Bricriu Cairn and were slain (*Irische Texte*, iv. 1, p. 264); the King Cat who gave oracles out of the mound at Cruachan (as another keeps his court in the cave at Cnogba) until the mission of St. Patrick; the three-headed bird and the fiery birds which waste Ireland (*Revue Celtique*, vol. xiii, p. 449. Feis tige chonain, pp. 35-6), and the famous swine (Dindsenchas, *Revue Celtique*, vol. xvi, pp. 470-472).

This was true of similar mounds. Three hares, the sons of Conchobar mac Nessa, came out of the *sidh* of Eman Macha (*Eriu*, vol. vii, p. 243, from MS. T.C.D. H 4. 22, p. 45). Elf kings in the form of stags issue from a mound (Dinds., *Rev. Celt.*, vol. xv, p. 273), and a dragon, a disguised woman (p. 44).

The lovely fairy prophetess Feithlinn is mentioned by Lady Wilde as appearing to Medbh out of the same mound (*Ancient Legends, &c.*, ed. 1902, p. 137). The remains are described by Mr. Hubert T. Knox (*Journal R.S.A.I.*, vol. xli, p. 93).

² *Revue Celtique*, vol. xi, p. 41, from Book of Lecan, p. 377.

³ Legend tells of her iron will in postponing the birth of her son to a propitious day (*Rev. Celt.*, vol. xiii, p. 453). For the *eric* for Art's death, claimed by Cormac (aided by Oilioll Olom, Cormac Cass, and Fiacha Muillethan)—the head of Lughaidh Lagna—see "Battle of Crinna" (*Silv. Gadel.*, vol. ii, p. 361 sqq.).

⁴ Art was buried in the *dumha* at Trevet, his head being cut off (*Senchas na relec*). His son Cormac claimed Lughaidh Lagna's head as an *eric* for the deed in later years (Battle of Crinna). Art, like his son, was a reputed Christian.

ringed him round, all prepared for a death fight, when Ferchis "hurled" over their heads and smote Mac Con full on the forehead;¹ thus the sons of Oilioll were avenged. Oilioll died on the summit of Dun Claire, from a seizure brought on by grief,² in A.D. 234. The five-fold division of Munster, attributed to him, was only made by his successors.³ His chief fort, we are told, was at Bruree (Brughrigh) on the Maig, a great water which, though muddy, was sweet and wholesome to drink, because it flowed past the side of the *Liss* of the poet, Aedan, the son of Mellan.⁴

As to the name *brugh* the meaning is doubtful. In the Brehon Laws it means "plain" or "farmers' land"; O'Clery's Glossary and the Four Masters render it a "place" or "town." It may have been a *sidh brugh*, like Brugh of the Boyne (the great *Brugh* of the god Aenghus, now Newgrange). If so, it may have been a centre of pagan worship, like the *sidh* of Aine, that of Cragliath, or the more famous *sidh* of Cruachan in Roscommon. These usually occurred along with a residential fort. Tara itself is an outstanding example, consisting of palaces, a great dining-hall, lesser forts, an inauguration mound and pillar, and places for religious rites like the *Deisiol*, "the shield of Cuchullin," the "Head and neck of Cuchullin," and the "Three-ringed mound of Nesi." The fact that the latter have been effaced, while the residential and ceremonial works remain, is eloquent of their pagan character. The human sacrifices at Emania, Tara, and Taiti⁵ suggest similar usage. As to the *deisiol*, it was usual to perform this ceremony at such spots—"the hosts which proceed round the cairns," "round the *brugh*, let him walk *deisiol*," say old poems in the Annals.⁶ It is more than probable that this meaning is involved in Brugh riogh; but even if it only means a residence, then it asserts itself to be the pre-eminent "palace" of the Dal Cais, above Dun Claire, Duntrileague, or the Treada na righ. Some have supposed it (rather than Limerick or Athenry) to be the *Regia hetera* of Ptolemy, but this is as pure conjecture as the identification of Kilmallock with *Makolikon* or variant identifications of various forts with his *Dounon*. As to the Bruree forts, the "Book of Rights" (perhaps *circa* A.D. 900) mentions Dun Eochair

¹ See also "Poem on Deaths of Nobles," *Revue Celtique*, vol. xxiii, p. 311.

² Agallamh (Silva Gadel, ii, p. 130). He was ninety years old.

³ I omit other traditions of him, such as his reception of the fugitive Nan Deisi, &c. See, however, Keating's History of Ireland (ed. Irish Texts Society), vol. ii, pp. 270-296, 313. The mearing Oilean Ui Bhric marks the partition tale in its present form as not older than the eleventh century; see *ibid.*, vol. i, p. 127, and *supra*, vol. xxxii (A), p. 220, for that place.

⁴ Silva Gadelica, ii, p. 348, *Revue Celtique*, vol. xiii, pp. 435-437.

⁵ Cormac's Glossary (ed. W. Stokes), "Four Ancient Glossaries." "Eriu," vol. iii, p. 155.

⁶ Four Masters and those in Silva Gadelica.

Maige there, presumably on the brink of the Maigue. O'Huidhrin (a very conservative writer) names Dun Cathair Chuire. In the *Agallamh* we have Aedan's fort on the stream and Oilioll's below it. Thus the one up the river may be that attributed to Aedan, the second fort to Oilioll; the ring-wall preceding the castle, if it be "Cathair Chuire," to Core, son of Cass, son of Oilioll, the King of Munster¹ named in some versions of the pedigree; perhaps the last is named from a later prince, Core, who is said to have been on the committee for revising the ancient law code after the introduction of Christianity. The Eagle Mount, or the upper fort, may have been the *brugh*, but I think the first is too far from the Brugh riogh group to be probably such.

HISTORY OF BRUREE.

In history, Bruree appears as the seat of the Dalcassian kings of the line of Dioma, from about A.D. 630 for two centuries. In later years it was the chief fort of the Ui Fidhgeinte. It is not mentioned in St. Patrick's itinerary as of importance,² and hardly figures even in the *Agallamh na Senorach*. Dioma, whose date is only roughly fixed, was a successor of Aed, A.D. 575, and Forannán, A.D. 620. Both these appear in the lists of kings of Thomond, but the first more probably ruled the Shannon valley from Doonass up to Loch Derg, the later Ui Thoirdhealbhaigh territory, and the second, eastern and central Clare round Tulla. Forannan was a brother-in-law and creature of King Guaire Aidhne, and seems to have been a pagan, or at least strongly opposed to the Bishop Mochulla; indeed, we find a prayer for the rescue from idolatry of the people about that time, and the "Battle of Magh rath" (a fanciful semi-history) presupposes a similar pagan survival, or reaction, several centuries after St. Patrick. Dioma "the haughty," as we learn rather from allusions than from any definite record, had to withstand the last great attempt of Connacht to regain "Lughaidh Red Hand's rough swordland" as won in the later fourth century. Possibly Forannán, as King of Ui gCaisin, gave free passage to his brother-in-law King Guaire, and, as always in those days (as in recent warfare), the invaders at first rush got into the heart of the land and were then held up. Dioma marshalled his forces on Carnarry Hill. The Connachtmen were disastrously beaten, so severely³ that they never again (even under the powerful Guaire, in the height of his influence, in the middle of that century) sought for their *revanche*. It may account for the subsequent

¹ If "Wars of the Gaedhil with the Gaill" be correct, p. 67, cf. note 11.

² The Tripartite Life calling Caerthan (A.D. 434) "the senior of Clann Tairdelbaigh" betrays its late tradition, for the eponymus Toirdhealbach was father of St. Flannan, and lived about A.D. 650.

³ Keating's "History of Ireland" (Irish Texts Soc.), vol. iii, p. 70, A.D. 622.

feebleness of Forannán, who had even to beg a few soldiers from Guaire to try and dislodge Mochulla and his monks from the hill of Tulla, beside his own fort.¹

After Dioma "the haughty" we have a full pedigree, but no history, of the Dal Cais of Brugh riogh. His sons were Dubhdiun, Aindlid, and Ferdornach. Cernach, son of Aindlid, follows and his son Torpa and two brothers, Donall and Finachta, descendants of Ferdornach, through Oilioll and Eachtighern. These are stated to have reigned successively; no doubt the Dal Cais were strong and long-lived (witness the two centuries A.D. 810-1014 covered by only five generations at Cragliath), so it is possible that these princes covered two centuries with five generations.

The pedigree² seems full for the Dioma line, but other parts are evidently faulty. To bring out the difficulty, still to be elucidated, three generations are crowded between A.D. 420 and 434; three spread from that to 573. The five generations from Cassin, son of Connall Eachluath, *circa* 400, to Forannan, *circa* 620, cover 220 years. These examples seem to show that all the lines are broken behind the year A.D. 600; but, if so, it is evidently such a break as we find in the records of the Norman families in the same district from 1370 to 1580, where the same families hold the same lands, and nothing important or at least subversive seems to have taken place in the interim. After 620 the generations have a probable stretch, about twenty-four years each. The Psalter of Cashel gives consistent descents of about twelve generations each, down to 900, in several of the lines from Dioma. The annals are very defective; perhaps the monks only began to write the bardic traditions about A.D. 600; few places and secular persons are named before it. Dun Blese first appears, A.D. 580; Rath Ui Druaid, 597; Cathair cinn chonn, 637; Aine, 666; the Ui Fidhgeinte chiefs, 642; Aedan, founder of Cluain Chlaidech, 625; and Kilmallock Monastery, 610. Evidently secular and monastic events were being recorded from the last quarter of the sixth century, so all cannot have perished in the early Norse attacks.

The "king lists" are most defective, and in their *later* part grossly wrong in some statements; let it suffice that they have given Rebechan, son of

¹ *Analecta Bollandiana*, vol. xvii, p. 135, Vita S. Mochullei episcopi. The scene is laid not long before Forannan's death, which is (of course) miraculous, and by the curse of the saint. It is quite possible that Forannan and Dioma, in that ill-cemented realm of Thomond, were contemporaries, ruling in North and South (new and old) Thomond at the same time.

² Chiefly from the tract on the Dal gCais in "Book of Ua Maine," from Saltair of Cashel, and older sources, copied for Muircheartach Ua Ceallagh, Bishop of Clonfert (1378-94), by Faolan mac an Gobhan. Also in "Book of Ballymote," and abstracts Rawlinson B 502, and "Book of Leinster."

Mhothla (whose death is recorded A.D. 918 in the Annals of Inisfallen), as successor of Finaghta, *circa* A.D. 630, and predecessor of Lorcan, who won the battle of Magh Adhair against the High King Flann in A.D. 877. Some of the gaps may spring from "legitimatist" views, as certain annals ignore the high kingship of Brian, as the Corca Laighde ignored Mathgamhain as king of Cashel, and as OHuidhrin omitted allusion to the great Norman colonies in Munster.

Now the closing at about the same time of so many lines of the dynasty of Dioma, and the fact that no other kings of that race are recorded after A.D. 830, bring us to an interesting inference. The Norsemen sailed up the Shannon in great numbers, and established a strong colony at Limerick on Inis Sibthonn. They made frightfully destructive raids inland, reduced eastern Co. Limerick, attacked the Cragliath Dal Cais (who beat them back, again and again, about A.D. 810-830, and defeated their fleet on Loch Derg), and finally invaded western Co. Limerick in force. At Shanid they were met by the kindred tribes of the Ui Fidgeinte and the Ui Chonaill, A.D. 834, and were overthrown with terrific slaughter and driven out of Ui Chonaill. They had in these raids practically wiped out the Maintinigh, Firbolgic tribes, on the Shannon, and at Imleach Iubhair. About ten years later King Fedlimidh of Cashel recognized Lachtna of Cragliath as Chief of Thomond.¹ We can only draw the conclusion that the Brughrigh princes were exterminated, their relatives driven away, and that no efficient rival withstood the kingship of the line of Cragliath. Indeed, the succession of that remote line to the chieftaincy of Thomond is eloquent of how the old chief line and settlements had been bled to death. The date of the poem in the "Book of Rights," giving the gifts to the subordinate princes, has not been definitely fixed. In it the King of Brughrigh receives from the King of Erin ten brown-red tunics and ten foreign slaves.²

A century later we find the Ui Fidhgeinte chiefs reigning in Bruree; they had held their own against the foreigners. Mathgamhain, King of Cashel, was betrayed by their chief Donnabhan at Dun Gaif³ in A.D. 976. His brother Brian avenged his murder on the betrayer. Little love can have existed between the races. The Ui Fidhgeinte regarded their eponymus Fiacha as of the elder line of Oilioll Olom; they had held their land by the sword; the Dalcassian line of Dioma (which alone they had known as their over-kings for over 300 years) was exterminated. What right had the half-

¹ *Supra*, vol. xxix (C), p. 196.

² The King of Bruree (of Ui Cairbre Aebhdha) is named in the "Book of Rights," p. 85.

³ "Wars of the Gaedhil," p. cxxxiv, note 8, and p. 97.

forgotten princes of Cragliath to lord it over them? One may blame Donnabhan's perjury, but not his hostility. The strong hand of King Brian was on them now; he repaired Dun Eochair Maighe at Brughrigh about A.D. 1002 and other forts in their neighbourhood, a tangible proof of his position over them. Little more is to be told of them; Cairbre, son of Cleir, Donnabhan's successor, died in 1013; Ruadhri Ua Conchobhair, King of Connacht, in 1084, plundered Emly, Loch Gur fort, Dromin, Luimneach, and Brughrigh before he destroyed Kincora.¹ In 1178 Domhnall mór, the last Dalcassian King of Munster, very foolishly cleared a road for the Normans by expelling the Ui Donnabhain and Ui Chonaill² from Bruree to Shanid, and they fled into Kerry for protection to MacCarthy, who planted them round Mangerton and Killarney. Domhnall's fatal act bore fruit after his death in 1194, when the Normans took possession of his kingdom south of the Shannon.

Hamo de Valoignes granted Brughrigh to John and Mabella de Mareys before 1200. Norman ecclesiastics recorded Brugrighursi among their churches in that year, and the Marsh family resided there (probably in the Castle of Lotteragh) during the thirteenth century. There seems no reason to accept the late family tale that the Lacys built and held the castle; it probably arose from some stupid confusion of the name "de Lacy" with the "de Lees" family which succeeded the de Mariscos by 1289. I will not repeat its late history. O'Huidhrin calls it Dun Chuire about 1418. The Lords of Desmond held and lost the place, the de Lacys being their tenants in at least 1580, and holding it till the confiscation of 1655. The church was dedicated to St. Mainchin of Limerick, a cleric reputed as a disciple of Patrick, but a contemporary of King Dioma's son about A.D. 650.³ The rectory had been granted to Keynsham Abbey in England by 1237.⁴

FORTS AT BRUREE (O. S. 39).

LOTTERAGH UPPER FORT.—Just below the church and Ballynoe Castle lie two interesting earthworks. The upper one, nearest to Bruree, is evidently the earlier and more important; there is, as we saw, some reason for regarding it as the fort of Aedan, son of Mellan, a sweet singer whose lay has perished, though his name remains. It is situated just below

¹ *Chronicum Scotorum*.

² Dublin Old Annals, called "of Inisfallen."

³ Dioma's son Ferdomhnach granted him Inis Sibthond, where the older Limerick and St. Mainchin's church stand, "and Mainchin gave an honourable blessing to the man Ferdomhnach" (Tract on the Dal gCais, N. Munster Arch. Soc., vol. i, p. 166).

⁴ For fuller notes see *supra*, vol. xxv, p. 230.

the little town on the steep bank of the Mague, near the weirs and mills, and has a pleasant view over the loops of the river to the tall towers of the Lower Castle and the blue spurs of Knockfirena. The road has cut into its southern edge, but otherwise it is little injured, and, indeed, is perfect to the north and east. The fosse runs down the slope so boldly that the central mound is 18 feet high to the north, and 10 to 12 feet high elsewhere. The mound is 104 feet across, with steep sides, the top being slightly rounded. Some regard this as evidence of sepulchral, non-residential character; but (like most of the tests asserted so positively, yet with so very little evidence, by strong theorists) this is most doubtful. The rounding may easily have been effected by the trampling of cattle and by the weather; many undoubted tumuli have flat summits. The top is 63 feet across. The inner fosse is 12 feet to 18 feet wide below; the ring outside is 10 feet high, and from 24 feet to 18 feet thick. The outer fosse is 10 feet to 12 feet wide, and 4 feet deep, the outer ring being rarely over a foot high and 24 feet thick in its present state; it most probably was once capped by a dry-stone wall, like so many other forts in the county. There seems to be a slight trace of a third fosse to the east. The whole earthwork measures from 190 feet to 211 feet over all, and is about 500 feet round.¹

LOTTERAGH LOWER FORT.—If the last be the fort of Aedan, the Lower Fort may be regarded as the traditional *Brugh* of Oilioll Olom. It lies at the bend of the river to the north-west of the east fort, beside the laneway to the Lower Castle. It is a fort of the ordinary type, and also lies on a steep slope. It is strange that such sites had such an attraction for early fort-makers, whether on account of drainage, or for what other reason is hard to assert. No doubt the ancient folk understood the advantage of keeping the source of drinking-water undefiled by not putting a fort too near the spring, but marshy land certainly had little terror for them, and was selected even when dry and more commanding sites lay near.

The garth is 84 feet across inside, its rampart 9 feet thick, and now merely 2 feet over the garth, though probably once stone-walled. The garth is 18 feet above the fosse to the north and south, but 30 feet over it on the river side. The central mounds have a base 22 feet to 25 feet thick. The fort is hard to measure accurately over all; it is about 150 feet across at the level of the west side. Outside is a second fosse 12 feet wide and 6 feet deep, an outer ring 18 feet wide, and another shallow hollow like a third fosse, but probably a mere source for the earth used in the second ring.

LISWILLIAM.—To the north-west of the Lower Castle is a fort bearing the

¹ See plan and view, Plates XL, XLI, No. 3.

modern name of Liswilliam. It is a rather large fort, 78 feet north and west, and 100 feet east and west over the garth, being about 300 feet over all, with a fosse and low outer ring. It is lost in a thicket of thorn bushes and brambles.

THE LOWER CASTLE.—The bawn of this castle is evidently early. It is made of great sandstone blocks, and is D-shaped in plan, which makes it not improbably a fine early cathair, which, to meet later ideas of fortification, was rebuilt with mortar, probably in the thirteenth century; the towers are probably of the fifteenth century. Believing it to be an ancient site, I describe fully even its later features, though this has exposed me to frequent criticism, even when describing the fortifications added at promontory forts and other undoubtedly early works. It seems inexplicable why certain antiquaries take so narrow a view of archæology as to resent any description of later additions to the older strongholds. The castle stands, like the forts, on the edge of the table-land, on the steep old bank of the Maigne, which was evidently once a wider and far deeper river when it was fed by the huge oak forests along the Ballyhoura Mountains, and the plains of Coshlea at their feet. If we could regard the “Mesca Ulad” as authoritative in topography, the plains of south-east Co. Limerick were almost impassable from giant oak trees. Only hill-tops, like Knockainey, were clear and afforded any prospect of the distant mountain-ranges. The house of Mr. Callaghan, whom I have to thank for permission to explore the ruins, occupies the courtyard. As we saw, in 1655 the Castle of Brury consisted of “three small unrepaired castles and a bawn.”¹ FitzGerald, in his *History of Limerick*, in 1827, tells us that the third tower was ruined—“three strong castles on the river, one entirely dilapidated,” and that the gateway tower was called “O’Donovan’s prison.”² O’Donovan also notes, in the Ordnance Survey Letters, when he visited the ruins at the chief residence of his ancestors, in 1840, that the third or southern tower was levelled.

The castle³ is a picturesque building, its tall turrets and ivied ramparts being well seen from the railway and roads as we approach Bruree from the north (as Ballynoe Castle is well seen from the station), standing on its high bank in a bold loop of the river. The Gate Tower, or “O’Donovan’s prison”—the last probably a rather modern name, as the place was attributed to the De Lacys—is still in fair preservation, about 60 feet high, and 19 feet by 24 feet wide. The outer gate is chamfered and recessed; it has a pointed arch, with shot-holes in the left (south) and top blocks. The stone work is

¹ *Book of Distribution and Survey*, p. 12; *Civil Survey*, p. 84.

² *History*, vol. i, p. 371.

³ See Plate XLII, No 3.

well and smoothly chiselled, the arch of five stones, with a rather flat relieving arch above it in the substance of the wall, and a second one much higher up the tower—a very unusual feature. The gateway is 8 feet high and 5 feet wide; there is a porter's lodge to the right (north) as one enters, and over the porch, instead of a vault, are traces of two floors resting on corbels, an arrangement far inferior for defence to the more usual vaulted porch. The outer face of the door has rounded buttresses; the north jamb has a sunken panel carved with a little spray of mid-fifteenth century foliage, such as we see at Askeaton Friary: the left outer jamb is destroyed. The inner main (western) arch is rude, slightly pointed, and made with many stones.

The east windows are all reduced to ragged gaps; the western slits are mostly better preserved, but are quite plain (save one pointed and simply moulded), three being in the west and five in the north wall. The top room over the vault has large defaced windows under relieving arches to either face. The staircase is spiral, and broken above the stone floor; it is in the north-west angle, and ran up to a slight turret on the battlements; forty steps are entire; they are reached from a small side building to the north of the porch; a weather ledge shows that another little building adjoined the west face. The two floors over the porch are under a vault, turned over wicker; the little rooms over the porter's lodge and beside the staircase are perfect; a small garderobe is in the north wall.

The masonry of the ring-wall is (as we noted) far larger, better, and more primitive than that of the towers. The north-west turret abuts against and partly rests upon the ring-wall, which is there 5 feet thick and 10 feet to 14 feet high, of large gritstone blocks. The turret is 24 feet 6 inches by 16 feet 6 inches, and is of comparatively little interest. It is lower than the east tower. The defaced door is to the south-east, the wall being boldly battered on that side. A broken stair is in the north wall; the top has a late window and chamfered oblong slits; only the arch of the north light remains. There is a small bartizan at the north-west corner; the top story is over a large vault, and there are small vaulted cells in the basement. Of the third turret and the adjoining rampart, the very foundations have been removed from the rock. The Lower Castle is one of the most unusual plan and probably (so far as the rampart is considered) is one of the oldest castles in southern Co. Limerick.

BALLYNOE. THE UPPER CASTLE.—O'Donovan, in the Ordnance Survey, alleges that "the original fort" was round the church.¹ This is, I think, one of

¹ O. S. Letters, Co. Limerick, vol. i, p. 275.

his many unfounded statements in these otherwise valuable notes. I do not find the very slightest trace of a fort there such as we so often find round churches. The oldest records (as we see) say that the forts (at least two) were on the river bank. To complete these notes (for full accounts have not hitherto been published) I must very briefly give a description. The foundations and a few feet of the east and side walls and one jamb stone with a slight mounding (now set near the stile) alone remain to mark St. Mainchin's Church; the remains are rather late.

Ballynoe Castle in the churchyard is late and of little interest, evidently somewhat later than the towers of the Lower Castle. The east side is much wrecked, probably by lightning. The spiral stair of fifty-eight steps is in the north-east angle; beside it were several stories, all small rooms. The west, or main, section has three stories under a pointed vault, and a large upper room over it. The floors rested on large beams, the ends set in the walls. There are curious recesses for beams, wood panels, and a ceiling in the vaulting. The windows are of the plainest pattern. Tradition says that O'Donovan's¹ daughter threw two of her father's officers into the river, one escaping alive. Probably, like the other O'Donovan legend, it is late, and certainly valueless. In some cases John O'Donovan's inquiries evidently suggested too well what replies he desired.

EAGLE MOUNT, LISSADEOCHA, BALLYNOE.—This is a conspicuous bushy mote, also called Eagle Mount and Mounteagle. It is situated on the summit of the long ridge, westward from the church and castle. It commands a lovely view of all the eastern county from the picturesque bold mountains of Ballyhoura and the Galtees to the Slieve Phelim and Cratloe Hills, the tall white spire of Kilmallock rising among the trees to the south-east. The sides are thickly covered with furze and a few very old hawthorns. The flat top is clear and grassy. John Windele calls it "Lassadeocha, formerly crowned by a phallus,"² for he had imbibed strange notions from his predecessor in ogham research—Beauford. The Ordnance Survey Letters only give that wearisome legend (like that told of the majority of forts, castles, and monasteries) that a passage runs from it to Bruree fort.

The platform measures 60 feet north and south by 69 feet east and west, and is 20 feet high to the north and 23 feet to the south; it is about 120 feet in diameter at the base, and has no fosse ring or gangway. There is a depression 8 feet to 10 feet wide, carefully curved, and 3 feet below the

¹ Students of "perverse archæology" will remember Beauford's translation of the name O'Donovan as "the fort on the river" in Vallancey's *Collectanea*!

² Topography of Kerry (MSS. R. I. Acad., 12 C 15), p. 370.

central platform all round the edge. This in many forts I have visited implies the former existence of a dry-stone wall.¹

There is a small pillar about a foot square and 3 feet 6 inches high. Larger examples are not infrequent upon tumuli; it may be a "scratching post" for cattle, but its position is in that case unusual, and it is too low for the purpose. Low pillars stand not only upon other cairns and mounds, but even in the interior, as at Newgrange and at Carrowkeel. The first had once a pillar on the summit. A pillar with reputed ogmic scores (probably natural) is on Knockastoolery platform fort, near the cliffs of Moher, Co. Clare. What may be the character of the Eagle Mount, is at present doubtful.² I incline to regard it as sepulchral or ceremonial, as the *Brugh* at Newgrange was "white-topped," and the inauguration mound of Magh Adhair had a wall round the summit. We are not bound to consider Lissadeocha as necessarily residential, still less as military, though even Magh Adhair was besieged and stormed in A.D. 877 by King Flann Sunach. Sepulchral and ceremonial tumuli and residential forts have all such features in common, and even fosses and rings give no evidence of any particular usage.

The other works seen by me round Bruree are very low, usually with a fosse and an inner and outer ring. One at Knockfenora is oblong, a platform, 5 feet high to the west, rarely rising 3 feet above the field. It is about 100 feet wide and 200 feet long, and is (I believe) called Knockmore fort. The only other one I need notice lies beside the road from Bruree to Kilmallock in (I think) Ballygubba North. It is a low, green mound, rounded in plan and section, of the "Rathnarrow type,"³ but larger than those which I have seen in Clare and Kerry; it is surrounded by a fosse, within which it hardly rises above the field level. The use of these curious earthworks is very problematical.

FORTS BETWEEN BRUREE AND KNOCKAINEY.

BULGADEEN (O. S. 40).

Bealgadan was the site of a legendary battle where the High King Fiach Labraind fell before Eochaidh Mumho about "B.C. 419." At least the

¹ This is implied in older Irish literature by such terms as "white-capped," applied to tumuli, e.g., Newgrange "*Brugh barragheal na Boinne*" (Glenbard Collection of Gaelic Poetry, p. 78), and certain allusions to *dumha*, or *dingna*, with glittering top, in the Dindshenchas, &c.

² Even in early literature the *sidh* and the *dun*, or the *dumha* and the *dun*, are confused; see *Echtra Nerai*, Rev. Celt., vol. x, p. 221. Nera comes to the Sidh to fetch his wife, and calls, "Arise out of the dun."

³ *Journal Roy. Soc. Antt. Ir.*, vol. xxxvi, p. 421.

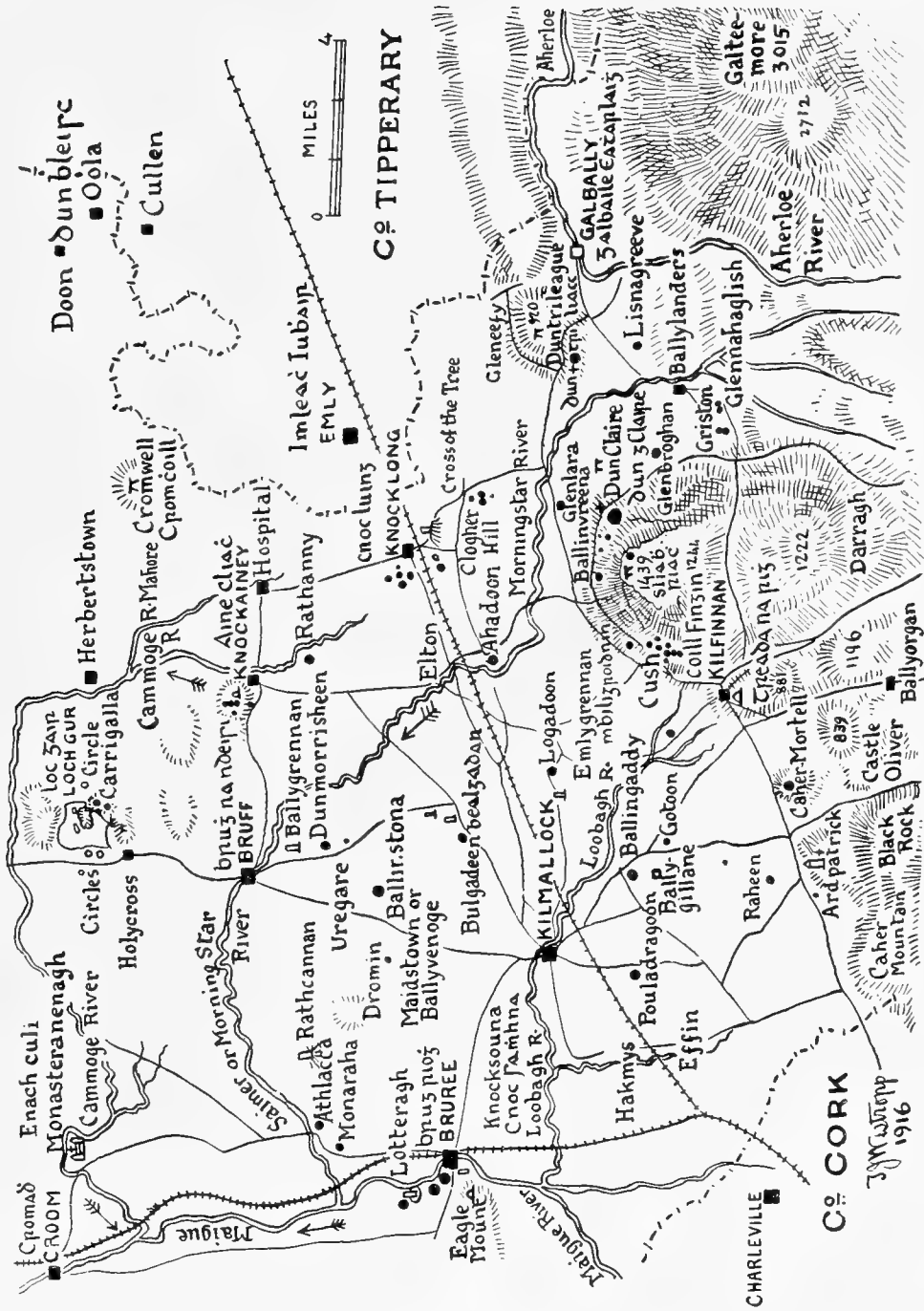
legend shows a belief in the early fame of the place. The Down Survey (Map 34) mentions the "castle and a *rath*" of Bulgideen nan Doe, in 1655. The earthwork, a shapely mote near the Roman Catholic church, is called Rathbaun, which suggests, with the remains, that there was once a wall of the local white limestone round its summit. It is just inside Ballygrennan townland. The mound is 18 feet high to the south-west, 22 feet to the south, and 17 feet to the north. The top is slightly hollow, with a gravelike mound to the north-west. It measures 66 feet north and south, 96 feet east and west. There are slight traces of a ring in a low mound 12 feet wide round the edge. A slight hollow, perhaps the trace of a fosse, surrounds the mote, and is 25 feet wide.

TANKARDSTOWN (O. S. 40).

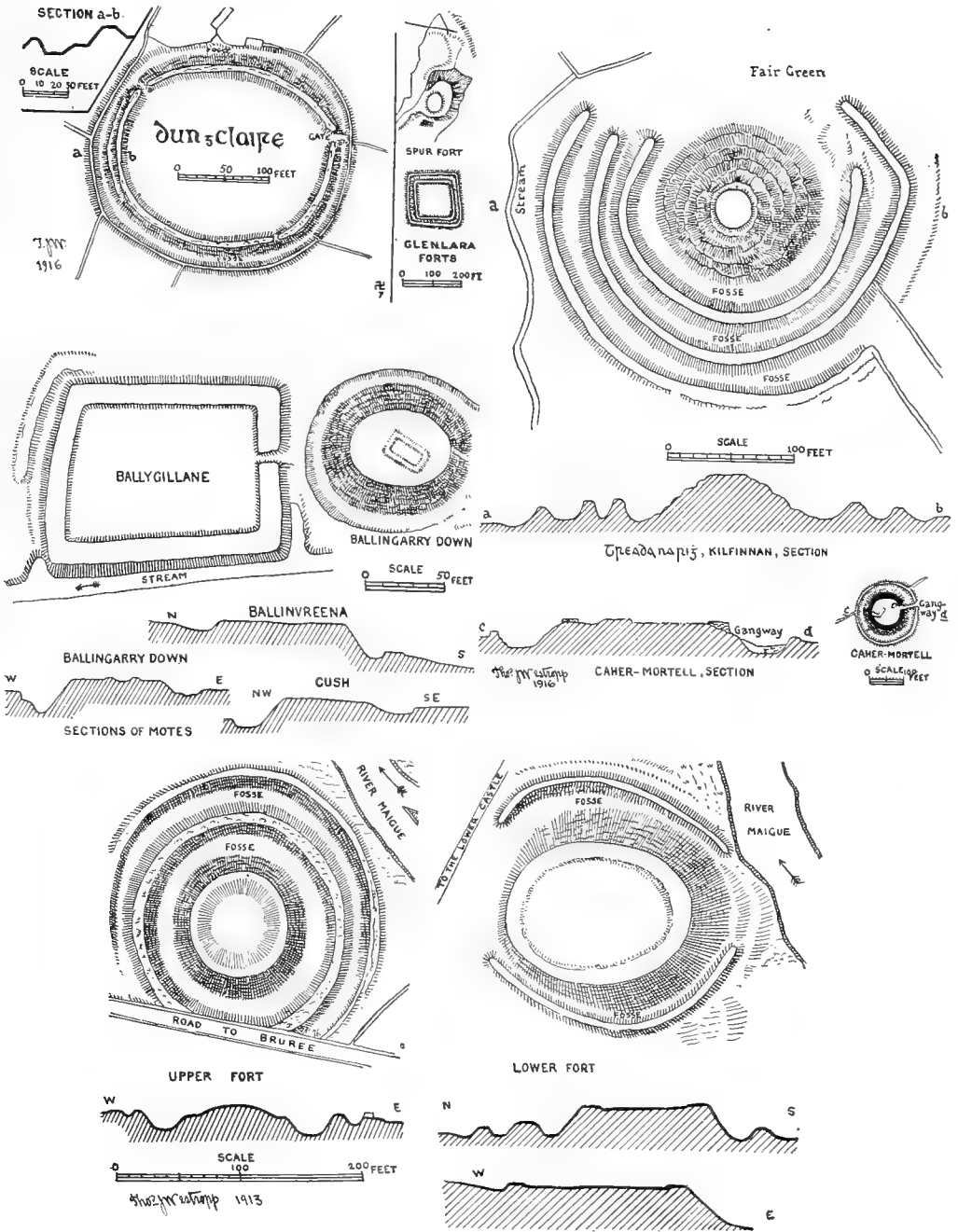
The old Norman family of Tancard has given its name to more than one townland. The subject of this note is not the place near Knocksouna, west of Kilmallock, but to the north-east of that picturesque little old town towards Bruff. To the east of the road, which cut off an angle of field near a little stream, is a very small house-ring; the most curious fact is that it has been spared. In that lonely district, I found no one to explain, but it was unmown and ungrazed, and may be an old burial-place. It is oval, only 21 feet north and south and 24 feet east and west inside; its ring, hardly a foot high inside, rises 4 feet over a fosse 3 feet deep and 6 feet wide, the ring being of the same width. Similar small rings of earth are not unknown in the other Munster counties. It and another larger but low ring to the east of the road are not marked on the Ordnance Survey maps.

DUNMORRISHEEN (O. S. 40).

This lies in Goats' Island townland on the east of the same road, and is a gently sloped mound 7 feet to 9 feet high, 45 feet across the top and 86 feet over all, surrounded by a slight fosse-like hollow 15 feet wide. There are some other forts round Kilmallock, and between it, Knockainey, and Knocklong, which I hope to describe in the last sections of this paper, now practically complete. I shall there study at more length the remarkable "fairy forts" of Knockainey and their striking legends, ancient and modern, along with the forts at Loch Gur. The other forts I shall reserve for sections on the remains of eastern and central Co. Limerick. These will enable students to acquire at least a clear idea of the various types of structures prevailing in the central county of Munster.



WESTROPP.—ROYAL FORTS IN COSHLERA, CO. LIMERICK.



WESTROPP.—ROYAL FORTS IN COSHLEA, CO. LIMERICK.

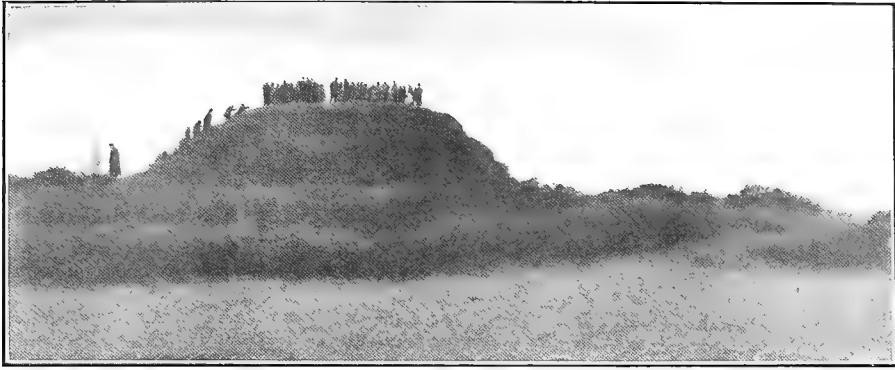


FIG. 1.—Treada na riogh, Kilfinnan.

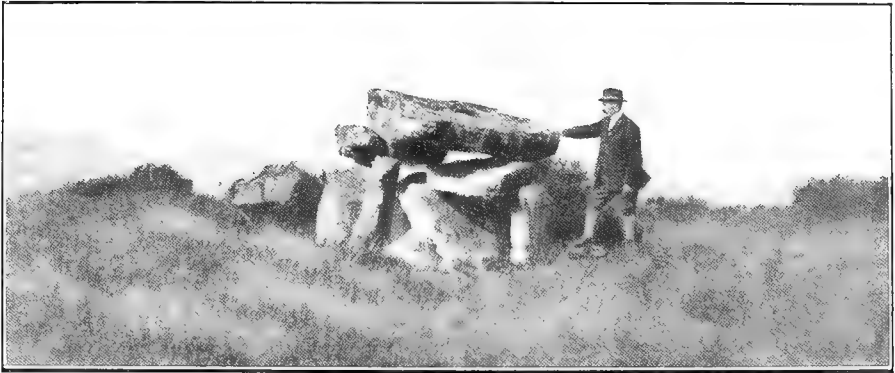


FIG. 2.—Duntrileague Dolmen, from North.

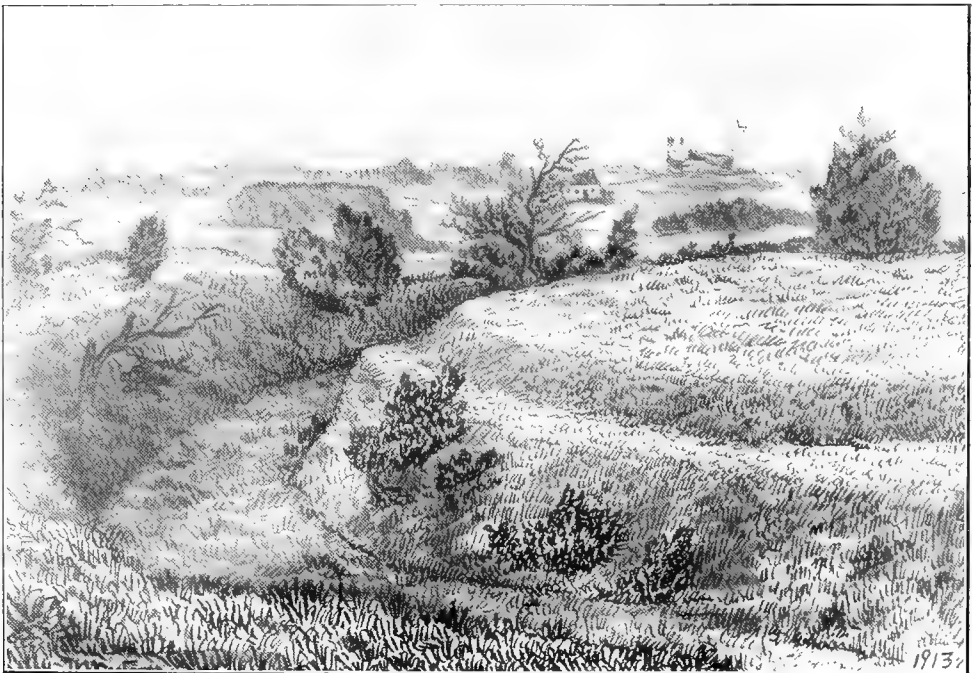


FIG. 3.—The Upper Fort, Lotteragh, Bruree.



FIG. 1.—Duntrileague Dolmen, from West.

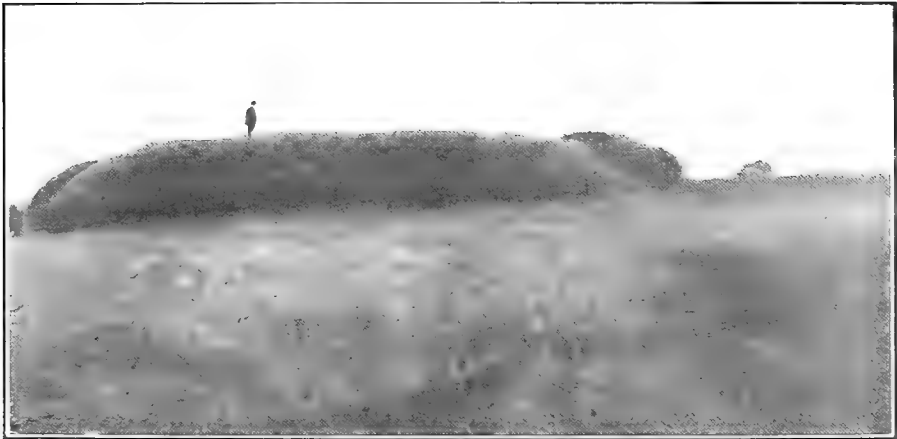


FIG. 2.—Ballingarry Down, Coshlea.



FIG. 3.—The Castle and Ring-wall, Lotteragh, Bruree.

XIII.

ON A RUNIC INSCRIPTION AT KILLALOE CATHEDRAL.

By R. A. S. MACALISTER, Litt. D., F.S.A.

Read NOVEMBER 13, 1916. Published MARCH 21, 1917.

I CHANCED to spend a couple of days in Killaloe at the end of last June. In returning from an evening stroll with my father, who was staying with me, we both noticed a stone built into the wall of the Cathedral precincts, bearing what appeared to be masons' tool-marks. A certain purposeful appearance of regularity which they displayed caused me to cross the road in order to examine them more closely, when to my astonishment I found that they were the letters of a Runic Inscription.



FIG. 1.

The stone is a block, apparently of sandstone: it is built upside-down into the outer face of the enclosing wall of the Cathedral, about 1 ft. from the ground, and midway between the main gate (leading to the west door of the Cathedral) and a green wicket-gate to the left. It is 1 ft. 6 ins. broad at one

end; the sides approximate to one another with a gentle curve. The present length of the stone is 2 ft. 2 ins., but it is clear that both ends are broken.

A marginal line runs parallel with the two long sides, following their curve, and enclosing the inscription. The latter, though weathered, is perfectly clear, except that the initial letter of each line is damaged by the fracture, and the M at the end of the first word is slightly battered. The accompanying cut (p. 493) is a facsimile, carefully drawn from a rubbing. Of the reading there can be no doubt: it is

ÞURKRIM RISTI

KRUS ÞINA

“Thorgrim raised this cross.”

From this it becomes evident that the stone is part of the dexter arm of a cross, the outline of which must have been as shown in the small sketch added to the cut. The opposite arm probably contained a continuation of the inscription, setting forth, in accordance with the common formula, the name of the person in whose memory the cross was set up, and his relationship to Thorgrim.

The stone has, as I hope to show, several points of interest. In the first place, it is the only Runic inscription on stone as yet found on the mainland of Ireland. Only two other runes have hitherto been yielded by this country. The first is on a small strip of bronze, from Greenmount in Co. Louth, which has for many years been in the Academy's Museum. The second is on a fragment of stone discovered by Dr. Marstrander on the Great Blasket, and bearing three Runic letters.¹ It has long seemed strange to Irish archaeologists that, considering the extent of the Scandinavian settlements round the coast of the country, not a single Runic inscription on stone had ever come to light—especially as there are so many inscriptions of this class in Scotland and in the Isle of Man. Now that the reproach has been removed, I trust that this new chapter in the epigraphy of the country will prove rich and fruitful.²

The next point that calls for notice in this new “find” is its palaeography, a subject that in Runic inscriptions is of considerable intricacy. There is,

¹ Dr. Marstrander tells me that he has published this inscription in the *Geografiske Selskabs Aarboeg* for 1908 or 1909. I have not seen it, and know it only from the account that Dr. Marstrander has communicated to me.

² I do not forget that one of the Kilmainham swords, in the Academy's Museum, bears inscribed the name of its former owner. This inscription is not, however, in Runes, but in the ornamental so-called “Lombardic” variety of the Roman alphabet, in which the names of the Danish kings of Dublin are written on their coins.

indeed, not one Runic alphabet, but several, united by bonds of filiation, but distinguished by certain test letters from one another. It is curious that the three Irish Runic inscriptions are each in a different alphabet.

The Basket rune contains among its three letters the character 𐌹 for M. This is enough to assign it to what Stephens called the "Old Northern" alphabet, or its variety the "Anglian": and to show that the Basket rune is the oldest of the three. It is noteworthy that it is also in the least accessible situation.

The Greenmount rune was found in a totally unexpected place—in the earth of a Norman motte, which seems to have been adapted from an older tumulus. The earth contained an extraordinarily heterogeneous assortment of objects, including a flat flanged axe-head from an early period of the Bronze Age, a harp-peg, and the slip of silvered bronze, which bore an interlacing ornament on one side and a Runic graffito on the other. These objects must have been by chance in the earth which the Normans heaped up; and, so far as the not very satisfying account of the excavation permits us to judge,¹ their position in the site where they were found tells us nothing about their date.

The Greenmount inscription reads TOMNALL SELS-HOFO ᛞ A SOER ᛞ [ᛞ]ETA—"Domhnall the Seal-headed owns this sword." Noting in passing, for future reference, that the person named, though presumably a Scandinavian, had a Celtic appellation, we proceed to analyse the palaeography of the inscription. Its special test-letters are T (ᚠ), M (ᚱ), N (ᚦ), A (ᚨ), S (ᚱ), H (ᚨ), O (ᚨ), and E (ᚠ). These all unite it with the "Scandinavian" alphabet of Stephens. If we compare the nearest group of inscriptions—those in the Isle of Man—we observe notable differences, which are enough to show that, whoever Domhnall may have been, he had nothing to do with the Scandinavian settlers in that island. Those inscriptions are distinguished by the use of ᚠ for H (not for E), and of ᚦ for O (not ᚨ , which in Man represents E).

The Killaloe inscription has, unfortunately, few test-letters: in other words, it happens that most of the characters which it contains are common to all the varieties of the Runic alphabet. We see, however; the ᚱ for M, the ᚨ and ᚦ for A, N (with the cross-stroke on one side of the upright line only). T also, which in the oldest alphabet is ᚠ , here appears with only one of its side-strokes; by a strange mistake, to which I can find no parallel, the engraver has retained the wrong side-stroke, writing ᚠ instead of ᚠ . The result of this is, that the letter which he has actually written is not T at all, but L; the context, however, leaves no doubt as to his intention. On the

¹ Roy. Hist. and Arch. Assoc. of Ireland, ser. iv, vol. i (1870-1), p. 471.

other hand, the old s ($\text{L}\text{1}$) has been retained in preference to the short stroke at the top of the line which represents that letter in the "Scandinavian" alphabet.

If we again compare the Manx runes, we find that, with one exception, these differ from the Killaloe inscription in the matter of the s. That one exception is the Mal-Lumkun inscription at Kirk Michael,¹ which is likewise distinguished by certain linguistic peculiarities from the other runes of the island. It is not, however, in an alphabet identical with that of the Killaloe stone. Even the s is different, being reversed ($\text{r}\text{1}$ instead of $\text{L}\text{1}$: the Killaloe stone presents the more orthodox form) : and the A, N, and T of the Kirk Michael inscription have the cross strokes on both sides of the line. Of runes from neighbouring countries, perhaps the graffito on the Hunterston Brooch comes nearest, palaeographically, to the stone before us : though to judge from the available illustrations of this inscription (which I have not seen) it is far from clear, and I confess I do not feel much confidence in the published interpretations.

So far as I can judge, the forms of the letters of the Killaloe inscription link it most closely to a group of inscriptions from the Baltic coast of Southern Sweden. The subject is, however, one of considerable obscurity, and I do not venture to speak with any dogmatism ; I merely record it as the impression I have derived from such comparisons as I have been able to make.

With regard to the orthography of the inscription, we have to notice the omission, very frequent in Runic inscriptions, of the final R of the nominative masculine in the name ÞURKRIM ; and the forms RISTI and ÞINA for RAISTI and ÞANA —to which the Swedish runes also offer analogies. This might suggest inferences as to the original place of origin of the sept to which Thorgrim belonged ; but I would prefer not to commit myself to any theory on this subject, and to await the judgment of others more expert in Runic palaeography and Scandinavian linguistics.

The sense of the inscription, finally, is of some historical importance. Thorgrim was undoubtedly of the stock of Pagan Scandinavian settlers ; presumably one of the colony established at Limerick, which, as we read in the Annals, so often came up the Shannon even past Killaloe on predatory expeditions to the islands of Loch Derg and even up to Clonmacnois. It is, however, curious to find a memorial of the settlement so far from its base, and this inspires hopes that other inscriptions will hereafter be found nearer to Limerick itself.

¹ See Kermode's *Manx Crosses*, p. 195. The facsimiles in this book make a study of the Manx runes easy.

These Limerick Scandinavians are often spoken of as the "Limerick Danes." The term is colloquial and inexact. They belonged to the *Fionn-ghaill* or "White Foreigners"—that is, the Scandinavians proper, who first appeared on the Irish coast about the year 793. The *Dubh-ghaill* or "Black Foreigners," that is the Danes—so called because the Danes are, actually, darker than the Scandinavians—do not appear in Irish history till 851. The redoubtable Turgeis was of the earlier invaders.¹

The Fionn-ghaill were such notorious foes to Christianity, that according to a curious story preserved for us by Mac Firbis,² their enemies, the Danes, coming to attack them, put themselves under the protection of St. Patrick. It was, however, inevitable that they should gradually begin to fuse with the native population among which they settled. The union seems to have been practically complete about a hundred years after their first appearance. If we turn over the pages of the Four Masters, we find that in 951 they made friendly compact with the men of Munster to raid Clonmacnois; and a little later their leader is found to have two sons, one called by the Teutonic name of Amhlaobh (Óláfr), the other bearing the Celtic name Duibh-chend (A. Q. M., A. D. 975). Analogous with this is the owner of the Greenmount sword, with his Celtic name Domhnall. It would, therefore, not be surprising that the Christian religion of the native Irish should have made some progress among the invaders; though there is very little definite record preserved of conversion among them, whatever inferences we may legitimately draw from reading between the lines of the Annals. The native historians could not bring themselves to see any good in the reivers, and uniformly represent them as bloodthirsty pagans. Here, at last, we have such a record: for Thorgrim, in spite of his heathenish name, must have been at least Christian enough to erect a cross.

As to the date of the inscription, I should put it somewhere between the middle of the tenth century (when we find this evidence of fusion to which I have referred) and the date of the Greenmount rune; the poor ornamentation on this latter object is late, and most probably it belongs to somewhere in the first half of the twelfth century. Perhaps the first half of the eleventh century is the most likely period to which to assign the stone before us.

¹ Various attempts have been made to identify Turgeis with persons in Scandinavian record—Ragnarr Loðbrók and others. These are all quite unnecessary. Turgeis was simply the local pirate, who looms large in Irish record because his depredations came home to the Irish who suffered from them; and there is no reason to suppose that he had any importance outside Ireland. It seems to have escaped notice that (if we may trust Stephens) the name occurs on a late tombstone at Saltune in Denmark (*O. N. Runic Monuments*, vol. ii, p. 777).

² *Three Fragments of Irish Annals*, ed. O'Donovan, pp. 120-1.

The name Thorgrim, otherwise well known, adds one to the already long list of examples of the name of Thor, or compounds thereof, that have been recorded in Ireland.¹ Compare the stone from Kilbar on the island of Barra, bearing a cross and a Runic inscription in which Ur *and* Thur, who erect the monument, invoke the favour of Christ on the soul of the deceased.

It is much to be wished that the stone should be taken out of the wall into which it is built, and brought into the Cathedral: or, perhaps better still, deposited for safe-keeping in the National Museum. It is at present exposed to injury from the weather, and from mischievous passers-by. There would be another advantage in so removing it; more writing might be found on the concealed face, or else a scrap of ornament, which would be just as welcome—for it would be an addition to our scanty store of material for tracing the mutual influence of the Scandinavian and the Celtic artists: an important subject, the investigation of which has hardly as yet begun.

¹ See the collection in Dr. Marstrander's article, *Tor i Irland* (Maal og Minne, 1915, p. 80).

XIV.

ROBERT DOWNING'S HISTORY OF LOUTH.

BY R. A. S. MACALISTER, LITT.D., F.S.A.

Read NOVEMBER 13, 1916. Published MARCH 21, 1917.

THE document printed below was contained in the Phillipps Library (numbered 6685), and on the dispersal of that collection was acquired by Mr. Harding, bookseller, of London, from whom I bought it a short time ago.

It is written on five leaves, with two other leaves blank, measuring 13 ins. by 8 ins., in a fairly legible late seventeenth-century hand. It has evidently been folded in four for a considerable time; but a bookbinder has flattened out the leaves, and with a liberal expenditure of blank paper has swollen it out into a volume of very presentable size. One of the two blank leaves, now mutilated (evidently the original outer wrapper), bears the endorsement, twice repeated, "County of Lowth by Robert Downing." There are three different handwritings in these endorsements: one of them is in one hand, the first three words of the second endorsement are in a second hand, and the rest of it in a third hand: all these differ from the hand in which the text is written.

The only clue to the history of the MS. is a pencilled note on one of the bookbinder's blank leaves, "Petty MSS". I cannot, however, identify the handwriting with that of any of the Down Survey documents in the Record Office, in searching which I have to acknowledge the help of Mr. Herbert Wood. Nor can I find anything as to who Robert Downing may have been. The name "Robert Downing, Gent." occurs in a deed, a copy of which is preserved in the Patent Roll, III James II: but no address is given, and there is no evidence connecting him with the author of the MS. From the absence of any honorific prefix or suffix to the name in the endorsement of the MS., I suspect its writer to have been a person comparatively unimportant—possibly a clerk, writing for so much a page.

The people referred to in the text as living at the time, so far as they can be identified, date the document to about 1670–1680: the general appearance

¹ In the second copy of the endorsement "County" is spelt "Countie", "Lowth" is spelt "Louth", and "Robert" is abbreviated to "Robt".

of the MS. agrees with this date. Its contents are to some extent disappointing: the author confesses his reliance on Ware for his facts, and when that authority fails him he is at sea. Still, he preserves some local details of interest. I am not aware of any other record of a Round Tower having existed at Louth in the seventeenth century.¹ The descriptions of this town, as well as of Dundalk and Carlingford, though brief, are vivid. The curious mistake about Smarmor castle, which the author thought at first was an abbey, and its clumsy correction in the MS., suggest that the document was merely a draft meant for a more finished report: the whole has an air of disorder, as though Downing had put down things as they came into his head, intending later to arrange them systematically. The tradition recorded that Monasterboice had first been a bishopric and afterwards a nunnery shows how completely the memory of its true history had been lost.

Mr. Charles McNeill has given me useful help in the decipherment of some obscurely written words.

In conclusion, I have to say that this document, even though only indirectly connected with the Down Survey, is of a public nature; and as I hold very strong views against public documents, and important antiquities or works of art, remaining in private hands, where they are exposed to the risk of all sorts of domestic accidents, and to ultimate loss in the sale-room, I hereby beg to present it to the Academy.

[1] The Countie of Lowth auncientlie called Uriell or Eorgall takinge the name of a Countie from the Towne of Lowth called Ludunensis als Lugudunensis als Louthensis when it was a Bishopricke to whose Diöcesse belonged all this Countie & was united to the Diöcesse of Clogher & soe continued till the time of Dauid ó Bragan B^p of Clogher who liued in King Henry the third reigne & was then united to the See Archiepiscopall of Ardmagh here is at Louth a round steeple

*Monastery of Louth*³ Here ^{was} _{is} [*sic*] alsoe the monostery of Louth or Lughæ built by S^t Mochæos the first B^p there in the time of S^t Patricke living but how longe it continued is uncertaine. But Donatus o Carroll or rather

¹ Petrie (*Ecl. Arch.*, p. 391) quotes from the Annals of Clonmacnois a record of the fall of the steeple of Louth in A.D. 981: it would thus appear to have been restored.

² These numbers in square brackets denote the pagination of the MS.

³ The words, printed in italics in this transcript, are written in the margin of the MS.

Carwell King of Ergall & Edanus ó Kelly B^p of Clogher built or erected here a new Abby of Cannons regulars in 1148 where the s^d Edanus is buried after being 42 yeares B^p of Clogher

Anchorite of Louth Here was alsoe an Anchorite This Towne is an auncient Corporation but altogether ruinated onelie one or two tollerable houses and the rest Cabbins

this Towne first of all gave theire honnour to the auncient familie of the [2] Bermingham whereof John Bermingham Earle of Louth was the last of that familie killed at Ballibragan by some of his owne men in 1[]¹ after hee obtained a great victorie agst Robert [*sic*] Bruce a Scottish King who claymed some title to Ireland being killed lyes buried at Fagher Church aboute Dundalke beside the road to Newry

to this Towne belongeth a hundred or Barony verrie good Lande, lyeing towards the Countie of Monaghan

Here is an auncient Mann^r & Castle in this Barony called Castlering belonging to the noble familie of the Talbotts

Here is an Abby of the Cannons of S^t Augustine called Knock neere Louth in Irish Knocknesangan Latine Collis fornicarum als Monaster' de Monte Apostolorum Sti Petri & Pauli built by Donatus o Carwell King of Urrell &² Here is an auncient Mannour House belonginge a Church & round spire or steeple belonging to the Archbishop of Ardmagh which is called Droumiskynn said by Colganus to bee auncientlie a B^p seat.

Here is a fine river thorough this Barony emptying it selfe to the Mother Ocean at Beltra neere Lurgan []³

The Lord Baron of Louth is dignified out of this Towne granted by King Henry the [3] Eight to S^r Thomas Plunkett K^t whose here male the R^t ho^{bl}e Matthias Ld Baron of Louth enjoyes the same to this day.

The Barony of Dundalke in Irish Stradbally Dunoooooooo⁴ which Towne is auncient Corporation encorporated by the Ld Bertram de Verdun as it is said Governed by two Bayliffes it had severall large walls about it & almost or altogether gone to ruine, here are very many Castles & stone houses in it contained, a verie longe street

&

one of the Fayrest & largest parish Churches in Ireland where S^r Richard fz Ralph vulgarlie S^r Richard of Dundalke is buried

¹ An incompleated date in the MS.

² From the beginning of this paragraph to “&” inserted in the margin of the page.

³ A word which looks like “cave”: I cannot read it with confidence. Presumably the river mentioned is the Fane.

⁴ The last seven letters in Irish characters as shown.

on the east end of this Towne is [buried the *erased*] a Franciscan Fryerie built by the Ld John Verdon in King Henry the thirds reigne here was the fayrest east windowe for the Curiositie of the worke in all this Kingdome

Here is another Priorie of the Crutched Fryers called S^t Leonards under the rule of S^t Augustine to which belonged great endown^{ts} built by Nicholas De Verdon Ld thereof saye others by Bertram de Verdon Ld of Dundalke [4] Here is a Fayre Castle & house about an English myle westward of this Towne called Castletowne belonging for severall hundreds of yeares past to S^r John Bellewes auncestor which came to them together with auncient Mannors of the Roatch by intermarriage with the heresse of the sd Verdone from a great Mount neere this Castle called Dundalgan the Towne of Dundalke takes its name all about this Towne of Dundalke is good Lands as any in this Kingdome¹.

The Fagher Church upon the confines of the Countie of Ardmagh remarkable for the Scotch Kings buryall onelie

Ballymascanlane Castle

Belonging the right Ho^{b^{le}} the Ld Moore Earle of Droghedah but formerlie to the ó Neyles Earles of Tyrone

The Towne & Borrough of Carlingford from which the Earle of Carlingford Ld visc^t Taaffe of Corren is dignified where a Corporation though inhabited but with few fishermen it hath a large Castle therein in former time a Constablership belonging to the Crowne & ²likewise here was at Carlingford a Dominican Priorie built by the Earles of Ulster (Ware)

[5] Here is a verie fayre & large harbour for shippinge & great plenty of all sea fish

Here

betweene Dundalke for about Twelve myles a small brooke or vayle of verie fine Land but towards the Counties of Downe & Ardmagh mightie mountaynes

The Barony of Ardee als Atherdee or De Atrio³ Dei.

A ^{an auncient} corporation [*sic*] where there were many good houses & Castles & the ruines of a verie large Church with the ruines of great walls & mightie Comons belonging to this Towne Here was a Frierie of the Crutched Fryers built by the Ld Roger Pipard of Atherdee⁴ in Anno 1207.⁵

¹ From "all about" to "Kingdome" squeezed in as an afterthought.

² From "likewise" the end of this paragraph added in the margin.

³ Downing seems to have written "Atrico" first and then corrected it.

⁴ These words, of Atherdee, in the margin.

⁵ Downing wrote originally "a Frierie of the Carmelites built by the Ld Roger Pipard in King Edward the first his reigne" and then altered the passage to the form given above, drawing a line through the superseded words.

Here was alsoe a Frierie or house of the Carmelites built by Radulph Pipard in King Edwd the first his reigne. Here is in this Barony another Abby or

In this Towne is a verie large Castle called¹ [6] religious house called Smarmor but of what order I can not learne for its omitted by S^r James Ware it lyes bounding on the Countie of Meath & soe² doth the south west parte of this Barony of Atherdee

In this Barony on the river all downe to the sea are many fayre seats at Clintonstowne Gernonstowne Keppoge the Mayne & many other places of good note

From this Towne of Atherdee was as its said the familie of the Berminghams that were Earles of Louth dignified Barons but latelie the Ld Brabazon Earle of Meath is Baron thereof

In this Barony of Atherdee is the Priorie of Kilsaran first of the K^{ts} Templars erected by the Lady Matilda De Lacy in King Edward³ the seconds reigne and after there overthrow & untill the suppression a preceptorie of the Knights hospitallers

[7]⁴ The Barony of Ferard being the south parte of this Countie all about Droghedah & Downe to the sea being in most places onelie to the sea & about the river of Boyen coursish land neere & formerlie in which stood the Towne & Countie of the Towne of Droghedah in which are besides many auncient & fayre structures being girded about on both sides of Meath & Uriell or Louth with great & high walls and many fortifeing Towers many faire houses & severall large streets the religious houses Followeing that is on Louth or Uriell side.

The Dominican Priory built by Lucas de Netteterville Archb^p of Ardmagh in anno 1224

The house or Convent of the Franciscan built or begun about the yeare 1240 neere the north banke of the river Boyen

The Convent or house of the Erimites of S^t Augustine built in King Edw^d the first his reigne

[8] *Juxta Droghedam Prior the Hospit. St Maria de Urso* The hospitall

¹ This line (In this Towne . . . called) has been added afterwards, and the catchword "religious" deleted. This has broken the continuity of the sense. Evidently Downing discovered afterwards that Smarmor was a castle, not an abbey, and clumsily tried to correct his mistake, forgetting to erase the preceding words "Here . . . Abby or" and "but of what order", &c., on the following page.

² A word, apparently "that," erased.

³ "Henry" written first and erased.

⁴ The last two leaves have been misplaced by the binder, deceived by the absence of catchwords. They are printed here in their proper order.

for poore and infirme people without the west gate built by Ursuo de Samuell [?] about the yeare 1206 whereto afterwards were brought in to here a Priorie of the Crutched Fryers under the rule of S^t Augustine the . . .¹ whereof was called a Custos or Keeper & not a Prior.

St Lawrence A house likewise of the Crutched Fryers which was built by the Mayor & Townesmen of Drogheda as appears by the Inscription after the Suppression

The House of Carmelites of Droghedah built or begun about the reyne of King Edward the First his reyne & founded by the bountie of the Townesmen

St John Pr or Hospit S^t John neere Droghedah lyes in Meath side soe omitted in Louth

[9] In the Barony of Ferard without the liberties of Droghedah

The hospitall of Termon fechin which Pope Celestinus the Third did confirm the possessions thereof 4 Calendes of March 1195 but is said certainlie to bee first founded by St Fechinus of Assedara about the seaventh Century of our Saviors incarnation which house & the demesne & mannour thereof is said to bee granted by Queene Mary or Elizabeth to the Ld Primatt who now enjoys

Here were towards the sea in this Barony auncient & good Castles & houses as Glaspistell belonging to the Dowdalls Bewly to the Plunketts &c

Here was in this Barony the Great Abby of the Cistercian order the Comander wherof was the first Ld Abbott in this Kingdome & out of which the order was brought from this throughout this Kingdome and which was built by Donat o Carroll or rather o Carwell [10] King of Ergall or Uriell this Abby was by S^t Bernard out of the Abby of Clarevale in Fraunce first planted or peopled with Christianus o Conarchy afterwards besides of Lismore was the first Abbott here are the sepultures of many great & famous men as the said Donough King of Ergall Thomas o Connor & Luke Nettervile Archbp of Ardmagh

Here is an building in this Barony about three myles north west from Droghedah called Monoster Boys holelie omitted by S^t James Ware said to bee first a B^p seat but afterwards a Nunnery the Lande except about the sea & by the river of Boyen up to Mellifont is somewhat sterile & Barren

¹ A word omitted.

XV.

A REPORT ON SOME EXCAVATIONS RECENTLY CONDUCTED IN
CO. GALWAY.

BY R. A. S. MACALISTER, LITT.D., F.S.A.

[PLATES XLIII-XLV.]

Read NOVEMBER 13, 1916. Published MARCH 21, 1917.

FOR various reasons opportunity for archaeological research has not been abundant during 1916, and I have only three excavations to report upon. They were not fruitful, but on the other hand were not wholly deficient in result.

I

I begin with one investigation, the results of which were wholly negative. On the western side of the Limerick and Sligo railway-line, about midway between the stations of Craughwell and Ardrahan, there stands the castle of Clochroke. Two or three fields to the south of this is a place where in digging railway-ballast some years ago, a cist was found, containing a skeleton, apparently of a woman, with a couple of urns. These were all, unfortunately, dispersed, and no record was kept of them, so far as I know. Miss Matilda Redington, the Honorary Secretary of the Galway Archaeological and Historical Society, brought me to see the spot; and inspection of the site encouraged me to hope that other cists might be found. Through the good offices of Dr. Foley of Ardrahan, the consent of Mr. Tarpey, the owner, was obtained to conduct an excavation. A whole day was spent on the site, with three men testing the field in every spot that seemed promising. The method followed was to prod in the ground with a sharp-pointed iron bar, and to dig down on every large stone found by this means. Between thirty and forty trials were thus made, but entirely without result.

II

I now come to a group of investigations made on the demesne of Masonbrook, near Loughrea, the property of J. J. Smyth, Esq. I must express the very grateful thanks which all archaeologists will feel towards Mr.

Smyth, not only for the free permission he gave to carry out the research but also for the friendly and practical interest with which he followed it.

The antiquities on the demesne are—(i) a small dolmen, (ii) the now well-known circle called the Masonbrook Ring, (iii) a magnificent earthen ring-fort with triple vallum and souterrain, and (iv) a remarkable tumulus-like mound. The dolmen did not seem to offer any chance of excavation, and the ring-fort was too large to attack with any hope of success: I therefore confined my attention to the Ring and the Mound.

The Masonbrook Ring has been brought to notice in recent years in papers by Mr. H. T. Knox. The fullest account which he has given of it will be found, accompanied with a good plan, in the pages of the Galway Archaeological Society's Journal, vol. ix, p. 71. This makes it superfluous to give more than a few words of description here. It is a ring of earth, about 70 feet in external diameter, and about 3 feet high, on which are implanted a series of seven stones four to five feet in height. In the centre is a low mound of earth, capped with a pile of stones. The accompanying diagrammatic sketch (Plate XLIII, fig. 1) is offered in lieu of a photograph: the monument is in the middle of a thicket of trees and laurels, which makes a satisfactory photograph impossible.

In the middle of the ring was a mound of earth and stones, between three and four feet in height, and 12 feet in diameter. The stones were above, the earth forming a little boss below. It was strongly suggestive of a small burial cairn, and I had very little doubt that it would prove to contain an interment, the circle of stones being analogous to the great circle that surrounds the mound of New Grange.

This hope was, however, disappointed. Not only was there nothing in the heap of stones, but unmistakable evidence came to light that it was of quite recent formation. One of the stones at the very bottom of the heap had been broken with a modern crowbar from its native rock, as a channel on its fractured surface clearly showed. This verifies the hypothesis put forward in Mr. Knox's paper just mentioned that it "possibly was a station of the first Ordnance Survey, when the ridge may have been free from the present surrounding wood." One of Mr. Smyth's workmen, who had been put at my disposal, had a tradition to the same effect.

Beneath the boss of earth, on which the pile of stones stood, and just under the surface of the earth, was a layer of large stones. Under this was a thin stratum of dark earth, in which were found what Dr. Scharff has identified as the teeth of a cow and of a small horse. Nothing else was brought to light in the excavation. Under the dark clay was a bed of light sandy soil, which did not appear ever to have been disturbed; the rock

underlay it, at a depth of four feet from the present surface. (See the section, Plate XLIII, fig. 2.)

The most noteworthy fact, however, is that the rock lies immediately under the surface of the soil except at this point, in the exact middle of the ring. This was proved by testing at several places within its circumference. It is hardly accidental that the fissure or hollow in the rock should be so accurately in the centre of the ring; and this suggests that for some reason it attracted attention, and was the *raison d'être* of the monument. Unless we are to assume that the bones of an interment have absolutely decayed to nothing, and have left not the smallest trace behind, there was no burial in connexion with the monument. This, I believe, limits us to the conclusion that it was a place for religious rites.

There is usually a solitary stone standing outside the circumference of a stone circle. No such stone, however, exists in connexion with the Masonbrook Ring. It should be noticed that the stones, or some of them, were for a long time prostrate, and were re-erected on their old sites in comparatively recent years.

There is an ancient quarry close by, from which it is highly probable the stones originally came.

The Ring having been thus examined, I turned my attention to the Mound. It is a narrow oval on plan, the top surface measuring 115 feet in length and 20 feet in width. The sides rise in a steep slope, divided, by two terraces that surround the whole mound, into three stages. The lowest stage is 22 feet in maximum height, and is surmounted by a terrace 14 feet in width: the outer margin of its platform is raised slightly as a kind of kerb. The next stage is 8 feet high, having a terrace at its top 8 feet wide, without a kerb. The last stage is 5 feet high; so that the whole hill is 35 feet above the lowest point in the surrounding field. For a view of the mound and of the lower terrace, see Plate XLIV.

There are a number of eskers in the neighbourhood, and the mound had all the appearance of having been adapted from some such natural hillock; but I had hoped that it would prove to be a tumulus, artificial perhaps in its upper stages. Testing in several places above and below, however, made it clear that the mound was natural throughout, of esker gravel interspersed with large boulders.

There can be no doubt that it has been scarped artificially to its present form, and care seems to have been taken to make it as symmetrical as possible, for here and there hollows are filled up with large stones. For what purpose, and at what time, this was done are difficult questions. It is not a Norman motte; the proportions at the top are not suitable for the

breches erection; the terraces on the sides of the mound are not found in mottes; and there is not the slightest trace of the bailey at the foot. I can only guess that it was an assembly or inauguration mound, possibly having some radical connexion with the great ring-fort close by. One difficulty about this explanation is, that such an assembly mound seems as a rule to have been associated with some remarkable interment; but I cannot satisfy myself that there was ever any interment in this mound. There is no trace whatever of any building having been erected on the summit.

III

The question of the date of the Masonbrook mound is perhaps illuminated by a sidelight from the third excavation of which I have to speak. This was at Grannagh, midway between Loughrea and Ardahan. The spot is marked in the exact middle of sheet 114 of the six-inch map; the mound is there indicated by a circular shading, in the next field but one immediately above the first *a* of the name "BULLAUNANAGH." My attention was directed to this site also by Miss Redington, and she with Dr. Foley (who here likewise had kindly undertaken the necessary local arrangements) were associated with me in the investigation. Two other friends, Miss Joy Masterman and M. Maurice de Smet, were also with us. Thanks are due to Mr. Fahey, the farmer owning the ground, for permission to dig.

The principal mound at Grannagh is a scarped esker very similar to that at Masonbrook, though not so long and rather wider. Its summit measurements are 92 ft. east to west and 86 ft. north to south. A fosse is excavated round it, with a vallum outside, corresponding in some degree to the terraces that surround the Masonbrook mound. The summit commands a wide extent of country. In one point the Grannagh mound differs from that at Masonbrook; in the middle of the summit is a shallow depression, in which there is clearly the foundation of a square building of one chamber, with a door to the east; the foundations measure 15 ft. east to west by 17 ft. north to south. It may, of course, be merely the remains of a comparatively modern cabin. Plate XLV, fig. 1.

The mound itself being clearly an adapted esker, did not seem to promise much reward for the tremendous labour of digging it. But at its foot was a most remarkable little earthwork which looked much more hopeful. This was a mound, just over 2 ft. in height and 17 ft. 6 ins. in diameter, surrounded by a vallum of about the same height and in external diameter 51 ft. 4 ins. Plate XLV, fig. 2.

On cutting into this mound we found, immediately under the surface soil,

the bones of three persons. They had been cremated, and were so comminuted that nothing of anthropological importance could be learnt from them. They had simply been strewn on the ground in handfuls and covered with a thin layer of earth, no attempt having been made to protect them with urns, with stones, or in any other way. Nothing was deposited with the bones themselves: but rather deeper in the mound we unearthed two bones of a large ox, and almost at the bottom fragments of two spherical green glass beads, and the top of a small bone pin (Plate XLIII, figs. 4, 5). The relative positions of these objects are denoted by letters in the accompanying plan (Plate XLIII, fig. 3). The human bones were at A, B, C; the ox bones at D; the beads and pin round the point E. The human bones were only about 6 inches under the surface, the ox bones about midway through the mound, the beads and pin deep down and near the base. A pile of stones had been heaped up in the middle, on the original surface of the ground, to serve as a nucleus for the mound.

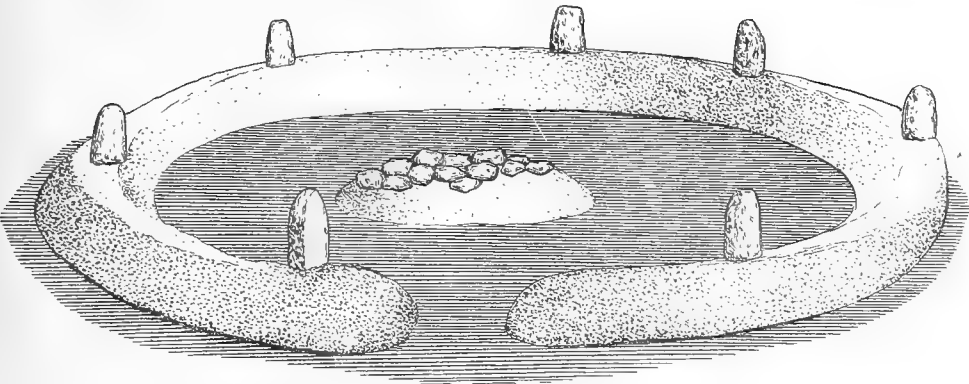
Mr. Armstrong, to whom I submitted these objects, directed my attention to similar beads of late Hallstatt date from Germany, figured in Lindenschmidt's *Altherthümer unserer heidnischen Vorzeit*, vol. v, p. 62, plate xiv, nos. 217, 221. Such beads would probably take some time in finding their way into Ireland; and even if we had any evidence of Hallstatt culture in this country, it would be rash to assign so early a date to the Grannagh specimens. On the other hand, their association with cremated interments requires us to date them to some pre-Christian epoch. This constrains us to assign them to the La Tène period, which is all the more satisfactory as we had not up till now any very definite information as to La Tène burial customs in this country.

While we cannot absolutely assume that the large scarpèd esker in the same field with this interment belongs to the same date, there is a strong presumption that this is so, and that therefore the very similar Masonbrook mound may likewise be dated to the Iron Age. It may be mentioned here that there are two other such adapted eskers on the same townland; one similar, but not so shapely, on the opposite side of the road from Loughrea and a short distance further west; the other, marked "Giants' Grave" on the O. S. map, almost within hail of the example before us. It bears on its summit what has all the appearance of being a dilapidated cist.

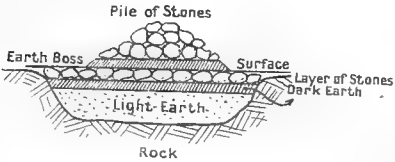
As the time between the end of the Bronze Age and the introduction of Christianity is archaeologically one of the most obscure in Ireland, the inferences as to the date, here suggested, tentative though they must for the moment be, are all the more welcome. The Turroë stone, the most important La Tène monument that Ireland has yet yielded, comes from this district—it

was taken early in the last century from an insignificant-looking earthen fort in the neighbourhood, which also Miss Redington has shown me—and this is evidence that some at least of the very numerous earthworks in the neighbourhood are to be assigned to this little-known period, and that the community living in this part of Co. Galway at the time was of considerable importance.

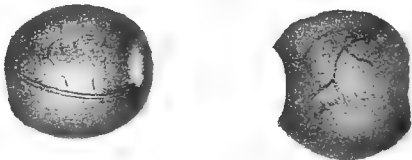
I have handed over the beads and the fragments of the pin to Mr. Armstrong for the Museum.



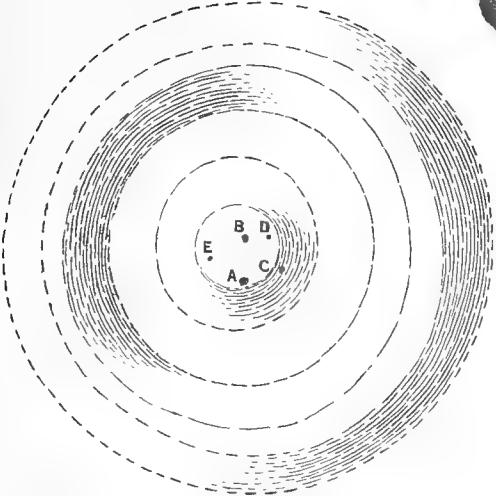
1.



2.



4.



3.



5.



FIG. 1.—The Masonbrook Mound.



FIG. 2.—Lower terrace on the Masonbrook Mound.

MACALISTER.—EXCAVATIONS IN CO. GALWAY.



FIG. 1.—The larger Mound at Grannagh.

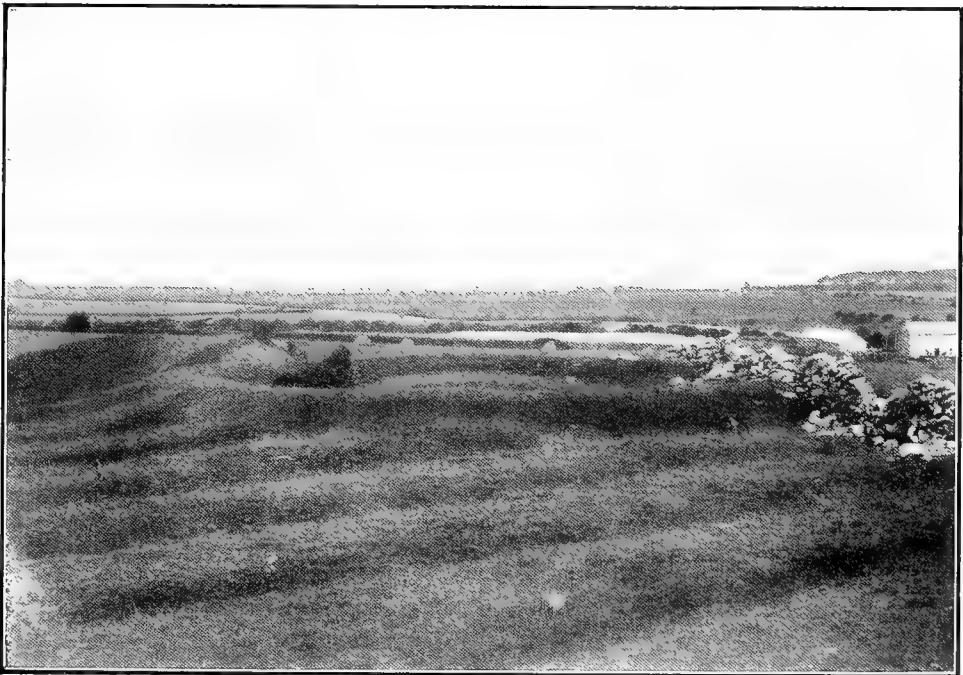


FIG. 2.—The smaller (excavated) Mound at Grannagh.

XVI.

ON SOME ASSOCIATED FINDS OF BRONZE CELTS DISCOVERED
IN IRELAND.

BY E. C. R. ARMSTRONG, M.R.I.A., F.S.A.

PLATES XLVI--XLVII.

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THE number of recorded Irish "finds" of antiquities of Bronze-Age date in which two or more bronze celts have been found in association is small. A "find" for the purposes of this paper may be described as consisting of antiquities discovered in such circumstances that they can be fairly regarded as having been buried or deposited at one and the same time.¹ In the present state of archaeological knowledge it is almost superfluous to insist upon the value of such finds. They are our most certain means of inferring what weapons and implements were in use at approximately the same period; they make it possible for some general scheme of the succession of objects to be evolved, and thus enable a chronology to be formulated for the prehistoric ages.

It is proposed to describe the finds known to the writer in which two or more bronze celts have been discovered in association, and to add some general remarks on the subject of early metal working in Ireland. The finds of copper celts, having previously been published,² are omitted from the present discussion.

In Ireland, as in Great Britain, the bronze celt underwent a well-marked series of improvements, evolving from a perfectly plain, flat, wedge-shaped piece of metal to the final elaborate socketed form. It has been commonly used by archaeologists as a convenient standard for dating antiquities which have been found in conjunction with celts; that is to say, if a plain flat celt is discovered in association with other antiquities, the whole find is considered to belong to the earliest portion of the Bronze Age. If, on the

¹ Montelius, *Die älteren Kulturperioden im Orient und in Europa*, p. 3.

² Coffey, *Journal Royal Anthropological Institute*, xxxi, pp. 276, 277; and *The Bronze Age in Ireland*, pp. 7-12.

other hand, objects are found in association with a socketed celt, the find is placed in the latest portion of that period.

Though various finds of associated bronze celts have been discovered, it will be seen later that only those belonging to the same or related types have been found together in the same deposit. All the celts included in the first six finds described and figured have been tested with a touchstone, in accordance with the method published by L. Weiss and M. v. Schwarz,¹ with the result that in every case their composition has been shown to be bronze.

The finds containing flat celts will be detailed first. In 1840 eleven celts were found in a cist, with some ashes and some bones of deer, in the bed of the Carhan River, Iveragh, Co. Kerry.² Four of these celts, presented by Maurice O'Connell, Esq., M.P., are in the Academy's collection. They are corroded and patinated; all are of the same type, showing no trace of a stop-ridge. (Text-figure 1, p. 513.) It is unfortunate that the remaining seven celts have not been preserved, but in the account of the find it is stated that those presented to the Academy were the largest and most remarkable.

Four flat celts were purchased by the Academy in 1916 with a collection of antiquities. Each celt has a label attached to it, in the same handwriting, inscribed, Ballyvalley Mountain, parish of Clonallan (Co. Down), 3rd May, 1843, John Roney. There can be little doubt that these were found together, as it is improbable that four celts not belonging to the same find would apparently have been discovered by the same person on the same day. All are covered with a green patina, and are quite flat, without stop-ridges. One is decorated with a linear and a herring-bone pattern, another with a herring-bone pattern and broad ridges. (Plate XLVI, 4, 5, 6, and 7.) Three flat celts were found at Carrow-Leekeen, Co. Mayo. They were presented to the Academy by the Rev. P. J. M. Philpin, of Castlebar, through Dr. Frazer, in 1885.³ None shows any trace of stop-ridge; they are covered with a greenish patina and are roughly decorated with a linear ornament. Though it is not definitely so stated, in the note relative to their presentation, in the Academy's minutes, there can be little doubt that these three celts were found together. (Plate XLVI, 1, 2, and 3.)

Among a number of antiquities purchased from the late Mr. S. F. Milligan, M.R.I.A., in 1897, were three celts. Two are labelled as found

¹ *Korrespondenz-Blatt der D. G. f. A., E. u. U.*, 1909, pp. 11, 12.

² *Proc. Royal Irish Academy*, iv, pp. 166, 167; Wilde's *Catalogue of the Museum of the Royal Irish Academy*, p. 399, nos. 47, 49, 53, and 55.

³ *Minutes of the Royal Irish Academy*, 1885, Nov. 30.

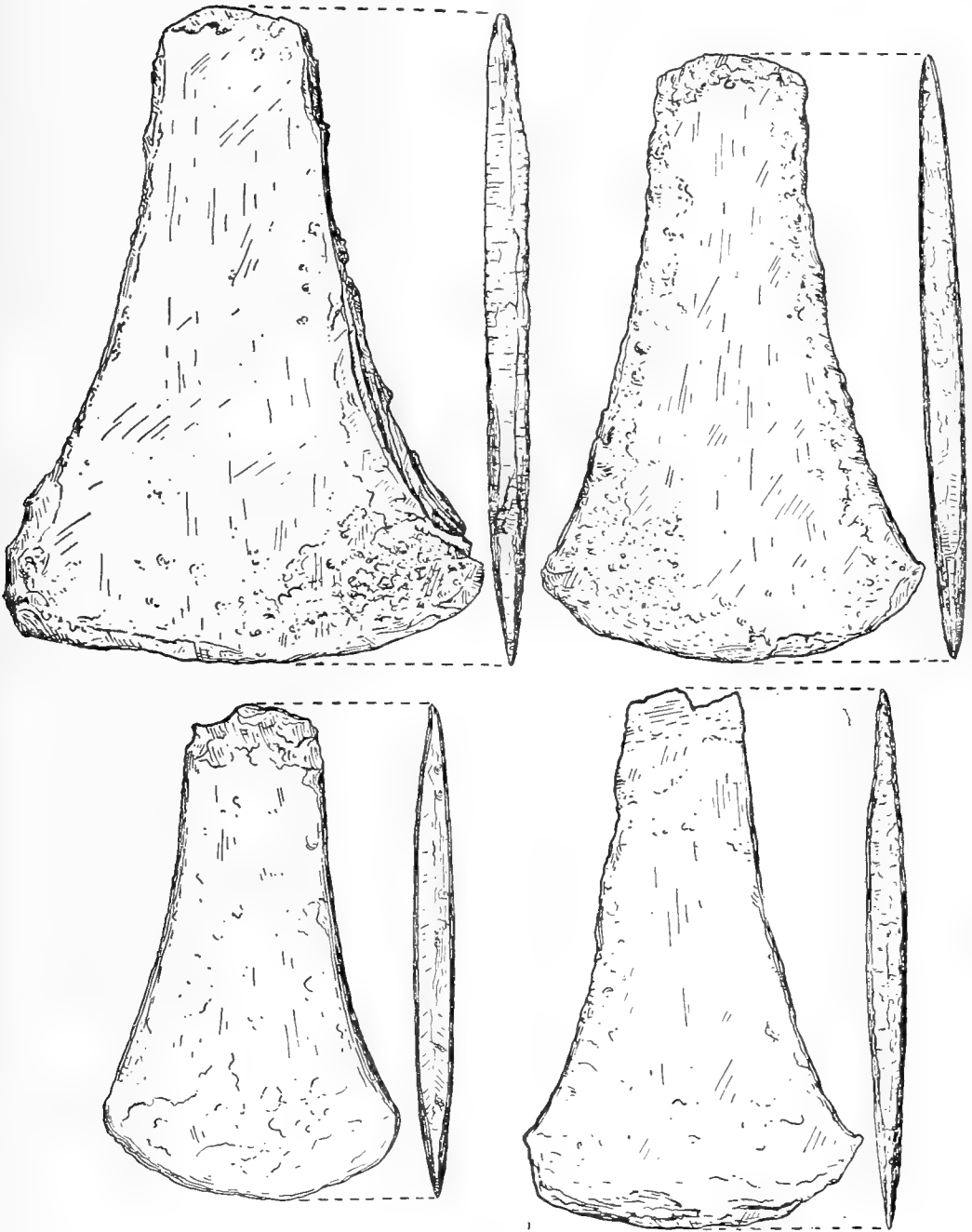


FIG. 1.—Four bronze celts found in the bed of the Carhan River, Co. Kerry. (3)

six feet [deep] in a bog, Letterkenny, and the third, near Letterkenny, six feet [deep] in a bog. All three are covered with a greenish patina, and show the effects of a similar corrosion. They are quite flat without any trace of a stop-ridge. There can be little doubt that they belong to the same find. (Plate XLVII, 1, 2, and 3.) This completes the associated finds of flat celts.

The next type to be considered are celts with side flanges. Of such celts only one associated find is known to the writer; it was obtained in a bog at Doagh Glebe, about four miles south-west of Derrygonnelly, Co. Fermanagh, and consisted of two celts. One is a flanged celt without a stop-ridge; the other is a flanged celt with a stop-ridge. (Plate XLVII, 4 and 5.) This interesting find was obtained by the Academy in 1913 through the good offices of Mr. Thomas Plunkett, M.R.I.A.

The next associated find in typological order is that of two winged celts found together at Killamonagh, Co. Sligo. They were discovered in 1896, five feet below the surface of a bog. Both are of the same type. (Plate XLVII, 6 and 7.)

We now come to finds of associated celts belonging to the socketed type. At Mountrivers, Rylane, Coachford, Co. Cork, two bronze socketed celts were found together with two gold fibulæ and one of bronze, also a number of amber beads. This find, which was discovered in May, 1907, has been described and illustrated in the Academy's Proceedings.¹

At Lahardown, Tulla, Co. Clare, two small socketed celts, a disc-headed pin, a plain bronze ring, and a bronze fibula, were found together in a bog on May 25th, 1861.²

About the year 1821 a large hoard which contained thirty-one socketed celts and numerous other objects of late Bronze-Age date, such as socketed gouges, leaf-shaped spear heads, trumpets, &c., was found at Dowris near Parsonstown, King's Co.³

Two looped socketed celts were found together, some years previous to 1901, five feet below the surface at Calverstown, Co. Westmeath.⁴ They are stated to have been hafted when found. The Rev. Sterling de Courcy Williams, who described the finding of these celts, writes:—"Another interesting fact is that they were both found together, and yet they are both quite different types of instrument." This statement (as can be seen by referring to the illustration of the celts) is not quite correct. They belong to the same socketed type, though they are different in shape.

¹ Coffey, *Proc. Royal Irish Academy*, xxx, sec. C, p. 86.

² Coffey, *Proc. Royal Irish Academy*, xxvi, sec. C, p. 124.

³ *Proc. Royal Irish Academy*, iv, pp. 237, 423. and *Archæologia*, lxi, p. 153.

⁴ *Journal Royal Society of Antiquaries of Ireland*, xxxi, p. 431, 432.

Two bronze socketed celts a good deal broken, a portion of a bronze gouge, three broken bronze rings, three bronze fragments, and a quantity of dry sand, all contained in an earthen vessel, were found three feet below the surface, covered by a flag, at Ballyvadden, parish of Kilmuckridge, Co. Wexford.¹ This find is not illustrated in the present paper, owing to the broken condition of the objects comprising it. The celts are both socketed; one is looped; its cutting edge has been completely broken away; it measures externally at the mouth of the socket $1\frac{1}{16}$ inches, its present length is $2\frac{3}{4}$ inches. The other celt is broken at the mouth, and also on one side of the edge; it measures $2\frac{3}{4}$ inches in length. The gouge is socketed; its upper portion has been broken away; it measures $1\frac{5}{8}$ inches in length. The largest bronze ring is much broken; it is hollow and pierced transversely; its external diameter is $1\frac{1}{2}$ inches; the other two portions of rings are smaller and solid; one of the bronze fragments, which is very white in colour, was analysed and shown to consist of 66·12 per cent. of copper, 30·62 per cent. of tin, 1·91 per cent. of antimony, with small amounts of silver and sulphur.² Only the lower portion of the earthen vessel has been preserved. It is much broken, but it is possible to see that it resembles the lower portion of a cinerary urn; its base measures $5\frac{1}{2}$ inches in diameter, and its sides are about $\frac{9}{16}$ of an inch thick. The find appears to be a founder's hoard ready for melting down: such hoards are rare in Ireland. The discovery was reported on June 11th, 1849, by the Rev. T. B. Armstrong, who presented the objects to the Academy.

Though the Dowris hoard is the only find in Ireland so far recorded containing a large number of associated socketed celts, such finds are common in England and the north-east of France. In some cases so many celts have been found together (4,000 celts connected by metal threads were found at Kergrist-Moëlou, Côtes-du-Nord) that it is considered they may have been used as a form of money. Some examples found are very thin and small; they can hardly have been used as implements or weapons, but it is possible that such finds may be explained as votive offerings.³

It will be observed that, in the associated finds of Irish celts described above, only celts of the same type have occurred together, with the exception of those found at Derrygonnelly, Co. Fermanagh. In this case a celt with flanges, but without a stop-ridge, was found associated with a flanged celt having a slight stop-ridge. The flanged celt in question belongs

¹ *Proc. Royal Irish Academy*, iv, pp. 369, 370; Wilde, *op. cit.*, p. 158.

² *Transactions Royal Irish Academy*, xxii, p. 333.

³ Déchelette, *Manuel d'archéologie préhistorique*, ii, p. 254.

to the latest type of such celts, and approaches in shape the winged form. Celts with highly developed flanges, and flanged celts with a slight stop-ridge, would appear on the evidence of this find to have been in contemporary use.

It may, therefore, be concluded that, apart from the evidence of evolution shown in the object themselves, the fact that celts of widely different types have not been discovered in hoards or finds associated together, indicates that the various forms actually did succeed each other, and that once an improvement was made, old-fashioned and less practical implements soon passed out of use. Probably, many were melted down and recast into more useful shapes.

If finds of associated objects in which only one celt occurs are considered, the same result is arrived at. The writer does not know of any Irish find in which the more primitive types of bronze celts have been discovered in association with bronze antiquities other than celts. The only finds known to him are those in which either a palstave or socketed celts have been discovered. In these cases all the objects associated with the celts belong to advanced types. A list of some Irish Bronze-Age finds was published a few years ago;¹ if this is examined, it will be found that bronze socketed celts have occurred in association with socketed gouges, disc-headed pins, a razor, bronze rings, bronze and gold fibulae, trumpets, crotals, socketed spear-heads, a bronze dagger, and bronze knives.

At Annesborough, near Lough Neagh, Co. Armagh, a palstave was found, together with two torques and a bronze fibula.²

On the other hand, when early types such as halberds and lunulae have been found with other objects, the latter are also early types. Halberds are found either with halberds, as at Hillswood, Co. Galway,³ when seven of these blades were found in association, or with early implements, as at Birr, King's Co., where three copper celts, a fragment of a fourth, a halberd, and a small nondescript blade were all found together;⁴ lunulae have been found either in conjunction with a flat celt⁵ or associated together.⁶

The origin of early metal working in Ireland is obscure; but there can be little doubt that bronze celts, such as those which have been described, were made in this country and not imported. The following are the reasons

¹ Coffey, *The Bronze Age in Ireland*, pp. 81-87.

² Coffey and Armstrong, *Proc. Royal Irish Academy*, xxxii, sec. C, p. 171.

³ Coffey, *Proc. Royal Irish Academy*, xxvii, sec. C, p. 97.

⁴ Coffey, *Journal Royal Anthropological Institute*, xxxi, pp. 276, 277.

⁵ Smirke, *Archaeological Journal*, xxii, pp. 275-277.

⁶ Coffey, *Proc. Royal Irish Academy*, xxvii, sec. C, pp. 252, 257.

for this belief:—(1) The number of moulds for casting celts that have been found in Ireland, of which numerous examples are in the Academy's collection. (For a list of these, with the localities where they were found, see Appendix I, p. 523.)

(2) The large amount of native copper available in Ireland. (See on this subject, Appendix II, p. 524.)

In the present state of our knowledge it is not possible to do more than to indicate tentatively a probable source from which Ireland acquired the knowledge of extracting copper from its ores. It may, however, be suggested that it was from Spain.¹ The Spanish peninsula, especially its southern coast, is very rich in copper ores, which were worked quite at the commencement of the Metal Period in that country.² It has been said very truly that, "In the present state of archaeological inquiry and mining explorations it would be presumptuous to assign to any locality the earliest production of copper from its ores; yet there is strong evidence in favour of the view that it was most probably in Cyprus, and, somewhat later, in the south-east of Spain, . . . that the metal was first obtained in Europe."³ The place where copper was first produced from its ores does not affect the present argument, which, once it is admitted that copper was mined at an early period and in large quantities in Spain, is merely concerned with bringing forward evidence to indicate that influences from Spain were operative in Ireland during the transition between the Neolithic Period and the Bronze Age.

It will be remembered that in Ireland, during this transition period, copper was used unalloyed for making weapons and implements. Among the weapons which analysis has shown to consist of this metal are the scythe-shaped blades termed halberds.⁴ The locality where these scythe-shaped blades originated may now be considered. The Irish examples, according to Coffey,⁴ who made a careful study of the subject, may be placed in the transition between the Neolithic Period and the Bronze Age. The excavations in the south-east of Spain, carried out by H. and L. Siret (to

¹ This view is supported by Déchelette (*op. cit.*, ii, p. 92), who considers that Western Gaul and the British Islands received the secret of smelting the first metals from the Iberian peninsula.

² See on this point Cartailhac, *Âges préhistoriques de l'Espagne*, pp. 201-206. The author figures a number of stone "Miners' Mauls" that have been found in ancient Spanish copper mines.

³ Gowland, *Journal Royal Anthropological Institute*, xlii, p. 245.

⁴ Coffey, *Proc. Royal Irish Academy*, xxvii, sec. C, pp. 94-114. (Analyses of five halberds showed that the tin in their composition did not exceed '31 per cent.) Montelius (*Archæologia*, lxi, p. 114) places halberds in the second period of his Bronze-Age Chronology of the British Isles, but Déchelette (*op. cit.*, ii, pp. 196, 197, and Pl. I) assigns them to the first period of the Bronze Age.

whom archaeologists are chiefly indebted for information about the prehistoric periods in the Peninsula), have yielded numerous copper halberds.¹ The Spanish examples, like the Irish, were hafted in wooden handles; in several cases remains of the shafts were found adhering to the blades. Although rough drawings of halberds attached to their shafts are incised on prehistoric rock-markings in the Italian Maritime Alps,² the number of actual halberd blades found in the north and centre of Italy is small. In England they are rarely found, though examples similar to the Irish specimens have been discovered in Scotland.³ In North Germany and Sweden such blades have frequently been discovered, but they are generally furnished with a handle either partly or entirely of bronze.⁴ Halberds with such bronze handles must be placed later in the series of development than similar blades with handles of wood. The former type is not found in western or southern Europe; only one example appears to be known from Hungary.⁵

Hubert Schmidt, who discusses the origin of the halberd in a recent paper entitled *Der Bronzefund von Canena*,⁶ comes to the conclusion that the invention of this weapon is to be attributed to the Spanish peninsula, whence it spread to the rest of Europe. Dr. Much¹ considers the Spanish halberds to be the oldest weapons of their kind: he reserves judgment as to whether they were invented in Spain, but holds the Irish halberds to be later than the Spanish examples, placing them between those of the Peninsula and those found in Germany. Déchelette, referring to halberds, writes that the discoveries of the Iberian peninsula attest their southern origin.⁸

If the Spanish peninsula may be regarded as the starting-place of the halberds, it seems not unreasonable to consider the Irish examples as derived from that country. The Irish halberds resemble the Spanish more closely than the German examples, being more primitive than the latter and nearer the original prototype. Halberd blades have been found in the tumulus de Saint-Fiacre, commune de Melrand, Morbihan,⁹ indicating that the connexion between Ireland and the Peninsula followed the Atlantic coast-line.

¹ H. and L. Siret, *Les premiers âges du métal dans le sud-est de l'Espagne*, text, pp. 145, 196, 207, and Plates 32, 33, 63, and 66.

² Bicknell, *Prehistoric Rock Engravings in the Italian Maritime Alps*, Plates I and VI.

³ Coffey, *Proc. Royal Irish Academy*, xxvii, p. 105.

⁴ Montelius, *Die Chronologie*, pp. 27-30.

⁵ Déchelette, *op. cit.*, ii, p. 199.

⁶ *Præhistorische Zeitschrift*, i, pp. 126, 127. The whole article deserves study, especially p. 126 to end.

⁷ *Die Kupferzeit*, pp. 131, 132.

⁸ *Op. cit.*, ii, p. 199.

⁹ Déchelette, *op. cit.*, ii, p. 198.

Halberds are not the only evidence of Spanish influence in Ireland. If we go back to the Neolithic Period, we find that many Irish flint arrowheads are ground on their faces, "an apparently useless refinement";¹ in Portugal the arrowheads are ground in exactly the same way; the Irish dolmens resemble those of Spain and Portugal more closely than those of France. In the later Bronze Age the connexion appears to have continued, as bronze palstaves with double loops and a mould for casting them have been found in Ireland.² Such palstaves are characteristic of the Iberian peninsula, and the Irish examples should be compared with those illustrated by Cartailhac.³

A reason for an early connexion between Spain and Ireland may be found in Ireland's wealth in gold during the Bronze Age.⁴ A greater number and variety of gold antiquities have been found in Ireland than in any other country in Europe. The Irish gold ornaments at present known can only represent a small part of the original wealth of the country in this metal, but even the amount known "would probably exceed that of any ancient period in any country, except perhaps the republic of Colombia in South America."⁵

Gold, on account of its brilliant colour and wide distribution, was probably the first metal which attracted the notice of prehistoric man.⁶ The numbers of Irish gold lunulae of early Bronze Age date that have been discovered indicate that the Irish gold deposits were known at a remote period. The prehistoric gold was probably derived from Wicklow, where it has been obtained in modern times in considerable quantities. The total amount of gold procured from Croghan Kinshelagh, on the borders of Cos. Wicklow and Wexford, from 1795 to 1879 may be estimated at between 9,390 ounces and 7,440 ounces, of a value of between £36,185 and £28,855.⁷

If the knowledge of smelting copper from its ores was derived from the Spanish peninsula, it is not improbable that the further knowledge of the art of hardening copper by the addition of tin may have come from the same

¹ Sir C. H. Read, *Encyclopaedia Britannica*, 11th ed., ii, p. 353.

² Coffey, *Bronze Age in Ireland*, p. 27; and Evans, *Bronze Implements*, pp. 104, 431.

³ *Op. cit.*, pp. 230-32, figs. 324 to 328.

⁴ See Kossinna, *Mamus*, vi, p. 2. (He considers that during the early portion of the Bronze Age Ireland supplied West Europe, Great Britain, France, and perhaps Spain with gold.)

⁵ Sir C. H. Read, *op. cit.*, p. 353.

⁶ Gold ornaments belonging to the Copper Period have been found on the Continent. See Montelius, *Die Chronologie*, p. 183.

⁷ Kinahan, *Journal Royal Geological Society of Ireland*, xvi, p. 147. See also on this subject a paper entitled "On the Gold Nuggets hitherto found in the County Wicklow," by Dr. V. Ball, in the *Proc. of the Royal Dublin Society*, viii, N.S., p. 311.

source. The deposits of tin in Spain are plentiful and have been known from early times.¹

The amount of native tin in Ireland is small.² If known at that period it can hardly have been sufficient to supply enough of the metal to alloy the copper used in making the weapons and implements of the early Bronze Age. England, on the other hand, with its rich deposits of tin situated in Cornwall, must in later times have been a source of supply for a large part of Europe. There are, however, indications that the English tin mines were not worked during the earliest portion of the Metal Period. No objects of tin have been found in the Cornish megalithic graves, nor in the later long barrows of the neighbouring counties of Wiltshire or Dorset.³ Schmidt,⁴ who calls attention to the non-discovery of any metal objects in the megalithic graves of the British Islands, points out that the tin of Britain was probably not worked at so early a period; if so, the importance of the export of the metal from Spain would be increased. After the tin deposits of Cornwall became known, the metal may have been imported from England, or possibly the bronze may have been brought to Ireland already alloyed.

It is unfortunate that so few Irish celts have been analysed. Professor J. W. Mallet,⁵ PH.D., F.C.S., chemically examined a number of antiquities from the Academy's collection, among them four celts—two flat, and two socketed. One of the flat celts (W. 16) which was shown to contain 98·74 per cent. of copper, and only 1·09 per cent. of tin, with small amounts of silver, iron, and a trace of gold, has been included by Coffey⁶ in his paper on Irish copper celts. Presumably the small amount of tin it contains is to be considered as due to that metal being an impurity in the copper ore, and not an intentional addition. Professor W. Gowland, F.R.S., F.S.A., analysed, with some English examples, one Irish flat celt; Mr. Donovan analysed a socketed celt from the

¹ Cartailhac, *op. cit.*, pp. 206-209. (The theory that the Phoenicians were the distributors of tin in Northern Europe was formerly widely held. It must be remembered, however, that "Marseilles was only founded in 609 B.C.; Carthage in 800 B.C.; and Utica, according to Strabo and Pliny, about 300 years earlier; . . . the Bronze Age commenced long before these dates" (Avebury, *Prehistoric Times*, seventh edition, 1913, pp. 65, 66). See also on this subject Montelius, *op. cit.*, p. 111; Gowland, *Journal Royal Anthropological Institute*, xlii, p. 251; and Déchelette, *op. cit.*, i, pp. 29-30.)

² Wilde, *op. cit.*, p. 358; and Appendix ii, pp. 524, 525.

³ *Journal Royal Anthropological Institute*, xlii, p. 248.

⁴ *Op. cit.*, p. 131; see also Thurnam (Ancient British Barrows), *Archaeologia*, xlii, p. 229; also Montelius, *Der Orient und Europa*, p. 86.

⁵ *Transactions Royal Irish Academy*, xxii, pp. 322, 325.

⁶ *Journal Royal Anthropological Institute*, xxxi, p. 267.

⁷ *Journal Royal Anthropological Institute*, xxxvi, p. 24.

Dowris hoard;¹ Mr. J. Arthur Phillips, F.C.S., analysed a socketed celt from Ireland;² and Professor B. W. Boyd Dawkins published the analysis of an Irish flat celt made by Mr. Wilson.³ The results of these various examinations are shown in the following table:—

ANALYSES OF IRISH BRONZE CELTS.

	Copper.	Tin.	Lead.	Iron.	Arsenic.	Antimony.	Gold.	Silver.	Sulphur and Carbon.
1. Flat celt (W. 597) (Mallet).	86·98	12·57	—	—	—	—	Trace.	·37	—
2. Flat celt (British Museum) (Gowland).	86·20	12·52	Trace.	·19	·68	·26	—	·21	—
3. Flat celt (Ireland) (Wilson).	94	5·09	—	·01	—	—	—	—	—
4. Socketed celt (W. 576) (Mallet).	88·30	10·92	·10	Trace.	Trace.	—	—	—	—
5. Socketed celt (W. 573) (Mallet).	95·64	4·56	·25	—	—	—	—	·02	—
6. Socketed celt (Dowris Hoard) (Donovan).	85·232	13·112	1·142	—	—	—	—	—	·150
7. Socketed celt (Ireland) (Phillips).	90·68	7·43	1·28	Trace.	—	—	—	—	Trace of Sulphur.

It must be mentioned that Mallet's analyses are to be received with some caution. In the case of a halberd, which he examined at the same time as the celts and returned as containing 2·78 per cent. of tin, a subsequent analysis made by the late Dr. James H. Pollok, M.R.I.A., showed that an error had been made, as the object contained only ·25 per cent. of tin.⁴

Had the art of hardening copper by the addition of tin been discovered in Ireland, we should expect to find the tin in the early implements and weapons used in gradually increasing quantities, until an alloy was obtained containing about 10 per cent. of tin to about 90 per cent. of copper. This, however, does not seem to be the case. Such copper celts and halberds as have been analysed appear to be made from copper mixed with small quantities of other metals, present merely as impurities in the copper ore; though small amounts of arsenic, antimony, &c., would have the effect of rendering the native copper harder.⁵

¹ *Proceedings Royal Irish Academy*, iv, pp. 468, 469.

² *Journal of the Chemical Society*, iv, pp. 278, 288.

³ *Early Man in Britain*, p. 408.

⁴ Coffey, *Proc. Royal Irish Academy*, xxvii, sec. C, pp. 98, 100.

⁵ Gowland, *Journal Royal Anthropological Institute*, xxxvi, pp. 30, 31.

A large number of early bronze celts would require to be analysed before it could be definitely determined whether there was a gradual increase of tin in their composition during an experimental stage; but as the flat celts analysed by Mallet (No. 1) and by Gowland (No. 2) both proved to be rich in tin, such a stage appears improbable. It is possible that the comparatively small amounts of tin in the socketed celts analysed by Mallet (No. 5) and Phillips (No. 7) may have been due to these celts having been recast from worn-out or broken implements, with a consequent loss of tin, due to oxidation on remelting.¹

At the same time, it must be borne in mind, as Professor Gowland² has pointed out, that no single alloy of bronze would be equally suitable for all the weapons and implements of Bronze-Age man. A sword or dagger would require to be harder than a celt; and while 11 to 14 per cent. of tin might be required for them, a smaller amount of, say, 10 per cent. or less would be quite satisfactory for a celt. Variations in the alloy might, therefore, be due to attempts at discovering the most suitable composition for various implements rather than as experiments in hardening copper by the addition of tin.

In the absence of any direct proof to the contrary, the writer does not incline to the belief that the secret of alloying copper was discovered by a process of experiment in Ireland. The improbability of the art of making bronze alloys having been discovered independently in different countries has been pointed out by Professor Boyd Dawkins, who, relying on tables of analyses of bronze implements published by him, which show that in British implements the percentage of tin varies between 5·09 and 18·31, and in French between 1·50 and 21·5, concludes that "The uniformity of the composition of the cutting implements of the Bronze age implies that the art of compounding tin with copper was discovered in one place, . . . Had it spread from different centres, this uniformity would have been impossible."³

The frequent references to Spain that occur in early Irish literature

¹ But see on this point, Gowland, *Journal Royal Anthropological Institute*, xxxvi, p. 27. (He does not think there would be much loss of tin on remelting.)

² *Journal Royal Anthropological Institute*, xlii, p. 243. (On the other hand, the addition of a large proportion of tin, say up to some twenty-seven per cent., while it increases the hardness of the alloy, also increases its brittleness. The alloy of bronze in use at present, as being the most suitable for parts of machinery, is the same as that of prehistoric times, i.e. an alloy constituted of about ninety per cent. of copper and ten per cent. of tin. See M. v. Schwarz, *Præhistorische Zeitschrift*, ii, pp. 421, 422.)

³ *Early Man in Britain*, p. 410. (Rice Holmes, *Ancient Britain and the Invasions of Julius Caesar*, p. 125 n., quotes the above, and adds: "The uniformity which subsists between 5·09 and 18·31, and between 1·50 and 21·5 is remarkable.")

undoubtedly rest upon some material foundation, and are possibly based upon some such early intercourse as has been indicated. If Ireland received the knowledge of metal-working from Spain, the tradition of a connexion with that country might be expected to endure, and in much later times may have been changed into the forms in which we meet it in various early Irish documents.

APPENDIX I.

LIST OF MOULDS FOUND IN IRELAND FOR CASTING VARIOUS TYPES OF CELTS.

The moulds in the Academy's collection include four complete and seven half-moulds for casting palstaves, or flanged celts with stop-ridges; also one complete and one half-mould for casting socketed celts. The localities in which they have been found are as follows:—One of the complete moulds for casting palstaves was found in Co. Carlow; another was discovered in Moonbaun Bog, near Abbeyleix, Queen's Co.; the exact locality of the third is unrecorded; it was deposited by Trinity College, Dublin; the fourth was found at Ballycastle, Co. Antrim.¹ Of the half-moulds one was found in Dromore, Co. Down; another, for casting a flanged celt, was obtained from Lough Seur crannog, Co. Leitrim (this mould also has a matrix for casting a flat celt);² a third, of bronze, was probably found in the North of Ireland; the locality of the fourth is unrecorded (Petrie Collection); the fifth was found near Dundalk;³ the locality of the sixth is unrecorded (Petrie Collection). The seventh is a half-mould of bronze for casting a palstave; it was formerly in the collection of Dr. Hill, of Dublin. The complete mould for casting a socketed celt was found at Ballydagh, Co. Kilkenny; it was deposited by the Royal Society of Antiquaries of Ireland. The locality of the half-mould is unrecorded.⁴

In addition, the following moulds (among others) have been found in Ireland:—Half a stone-mould for casting a double-looped socketed axe, discovered in a field at Innyarn Hill, Fethard, Co. Tipperary. Its present habitat is unknown to the writer. It is figured in the *Journal of the Royal Society of Antiquaries of Ireland*, xix, p. 290. There are also preserved in the National Museum of Antiquities of Scotland, at Edinburgh, a stone-mould

¹ Figured by Evans, *Bronze Implements*, p. 431, fig. 516.

² Figured by Wilde, *op. cit.*, p. 91, fig. 72.

³ Figured by Evans, *op. cit.*, p. 431, fig. 517.

⁴ Figured by Wilde, *op. cit.*, p. 91, fig. 73.

for casting flat bronze axes and a knife, found in Ireland; half of a stone-mould for casting flanged axe-heads, found near Lough Corrib, Co. Galway; and half a mould for casting a plastave, with double loops, also found in Ireland.¹ A single-piece mould of sandstone for casting a flat celt, found at Ballymena, Co. Antrim, is figured by Evans.²

APPENDIX II.

COPPER AND TIN IN IRELAND.

The principal deposits of copper form three groups near the coast. The first is in the valley of Ovoca, Co. Wicklow; the second is in the district of Knockmahon, Co. Waterford; and the third is situated in the southern portions of Cork and Kerry. There are a number of smaller deposits scattered through other parts of Ireland.³ The amount of copper raised from the Irish mines in the last century was considerable; in three years, *i.e.* 1836, 1840, and 1843, the amounts of the ores sold in Swansea were respectively 21,819, 19,580, and 17,509 tons, of a total value of £409,400 7s. 0d.⁴ In the copper mines of the Waterford district stone hammers and other tools have been discovered in the ancient workings, showing that Irish copper was mined in early times.⁵ The Academy's collection contains a number of stone implements of the type known as "miners' mauls." "Most of them have been procured from the south of Ireland, several from the neighbourhood of Killarney; and as many of them have been found in ancient mines, they are usually associated with mining operations, and have been denominated 'miners' hammers.'"⁶ Similar "miners' hammers" have been found in ancient copper mines in Spain and in other early mining centres.⁷

Tinstone has been found in the gold-bearing soil of Wicklow, but only in small quantities. No veins or workable deposits of it have been met with.⁸

Mr. T. Hallissy, B.A., M.R.I.A., of the Geological Survey of Ireland, has

¹ *Catalogue of the National Museum of Antiquities of Scotland*, 1892, p. 124; and Evans, *op. cit.*, p. 431.

² *Op. cit.*, p. 429, fig. 515.

³ Kane, *Industrial Resources of Ireland*, 1845, p. 181.

⁴ Kane, *op. cit.*, p. 204.

⁵ Kane, *op. cit.*, p. 189.

⁶ Wilde, *op. cit.*, p. 85.

⁷ Evans, *Stone Implements*, 1897, pp. 233, 234.

⁸ Kane, *op. cit.*, p. 222; and Gowland, *Journal Royal Anthropological Institute*, xlii, p. 251.

kindly replied (January 25th, 1917) to a query as to the occurrence of tin in Ireland as follows:—"The only other authenticated localities for tinstone in Ireland, besides Croaghan Kinshelagh and the Gold Mines Valley, are (1) a mineral vein in the granite at Dalkey, and (2) at Slieve-na-miskan, Mourne Mountains, Co. Down. It is said to have been found also at Kilcrohane (Sheep Head), Co. Cork, and at Lough Leane, Killarney, Co. Kerry. As far as we know the mineral was never found in quantities sufficient for the extraction of the metal, even on the most modest scale."

APPENDIX III.

IRISH BRONZE CELTS PRESERVED IN THE NATIONAL MUSEUM, DUBLIN, AND IN CERTAIN OTHER MUSEUMS IN IRELAND AND ENGLAND.

This opportunity may be taken of adding a note as to the number of Irish bronze celts preserved in the National Museum, Dublin, and also in some other Museums in Ireland and England. The information as to the latter has been most kindly supplied by the guardians of the various collections, whose names appear in the foot-notes on this and the next page. Taking the celts in the National Museum first, it may be mentioned that in a paper published in the Proceedings of the Society of Antiquaries of London in 1915,¹ the present writer computed the number of those in the National Museum, Dublin, including the specimens in the loan collection of the Royal Society of Antiquaries of Ireland, at over 1500. A recount has shown that this figure was slightly excessive; the correct number at the date given in the paper (November, 1914) should have been somewhat under 1500. In July, 1860, Sir William Wilde² computed the number of celts, including those of copper, at 688. The collection has thus more than doubled in a period of under sixty years. In the British Museum there are 350 Irish celts of different types, including those of copper.³ In the Public Art Gallery and Museum, Belfast, there are 350 celts of bronze, including 110 flat celts, 125 palstaves, and 115 socketed celts.⁴ The Museum of University College, Cork, contains 58 celts, including 22 flat, 21 palstaves, and 15 socketed examples; in addition to these, the Rev. Professor Power has 7 celts in his private collection.⁵ In the Carnegie Free Library and Museum, Limerick, there are

¹ XXVII, 2nd series, p. 253.

² *Op. cit.*, p. 361.

³ *Ex inform.* Mr. R. A. Smith, F.S.A.

⁴ *Ex inform.* Mr. Arthur Deane.

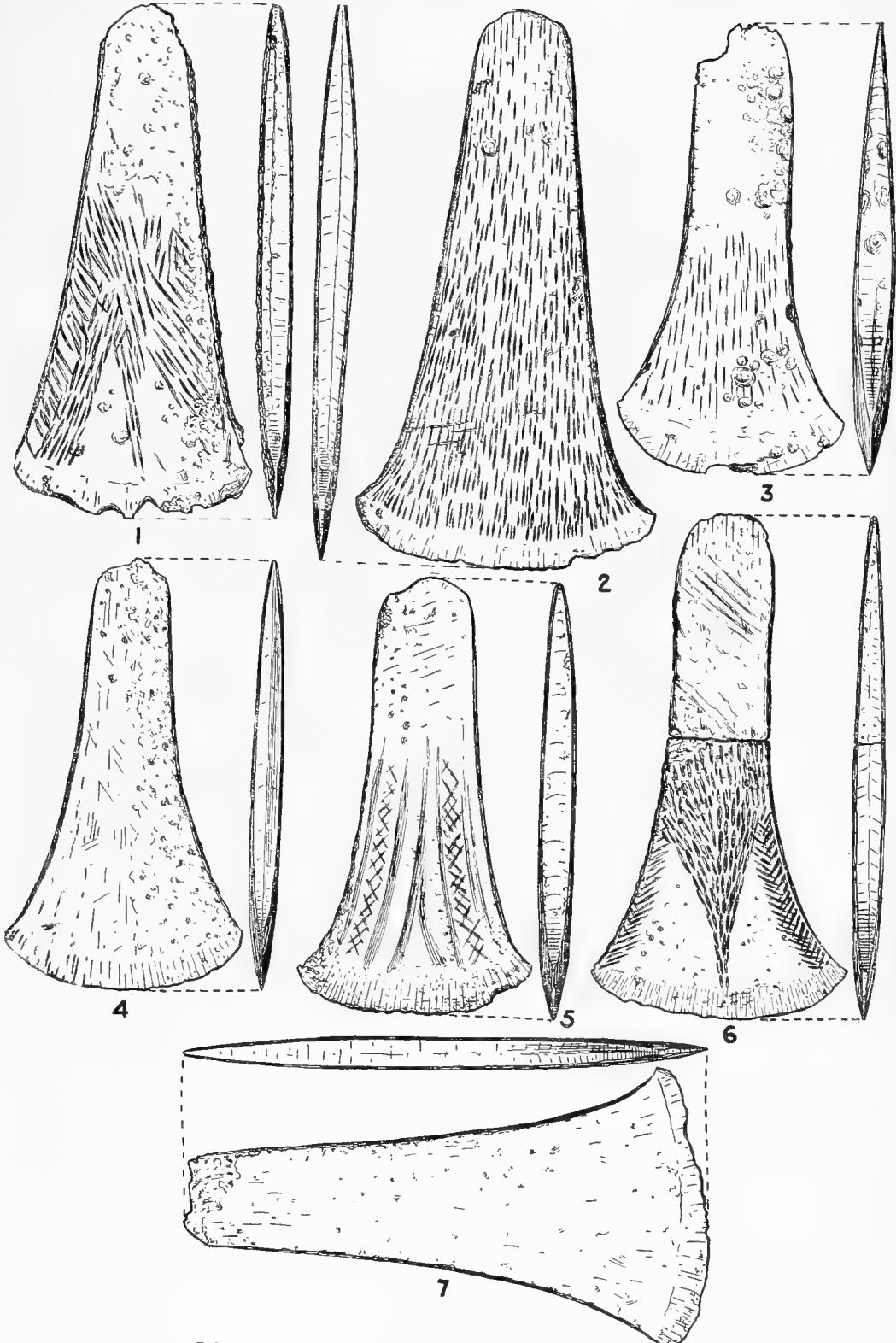
⁵ *Ex inform.* the Rev. Professor Power, M.B.I.A.

46 bronze celts of various types,¹ The Ashmolean Museum, Oxford, possesses 23 Irish bronze celts.² The Cambridge University Museum of Archaeology and Ethnology contains over 90 Irish bronze celts of various types, including the socketed celt, with its original haft, which was found in the River Boyne, near Kinnegad, Co. Westmeath.³

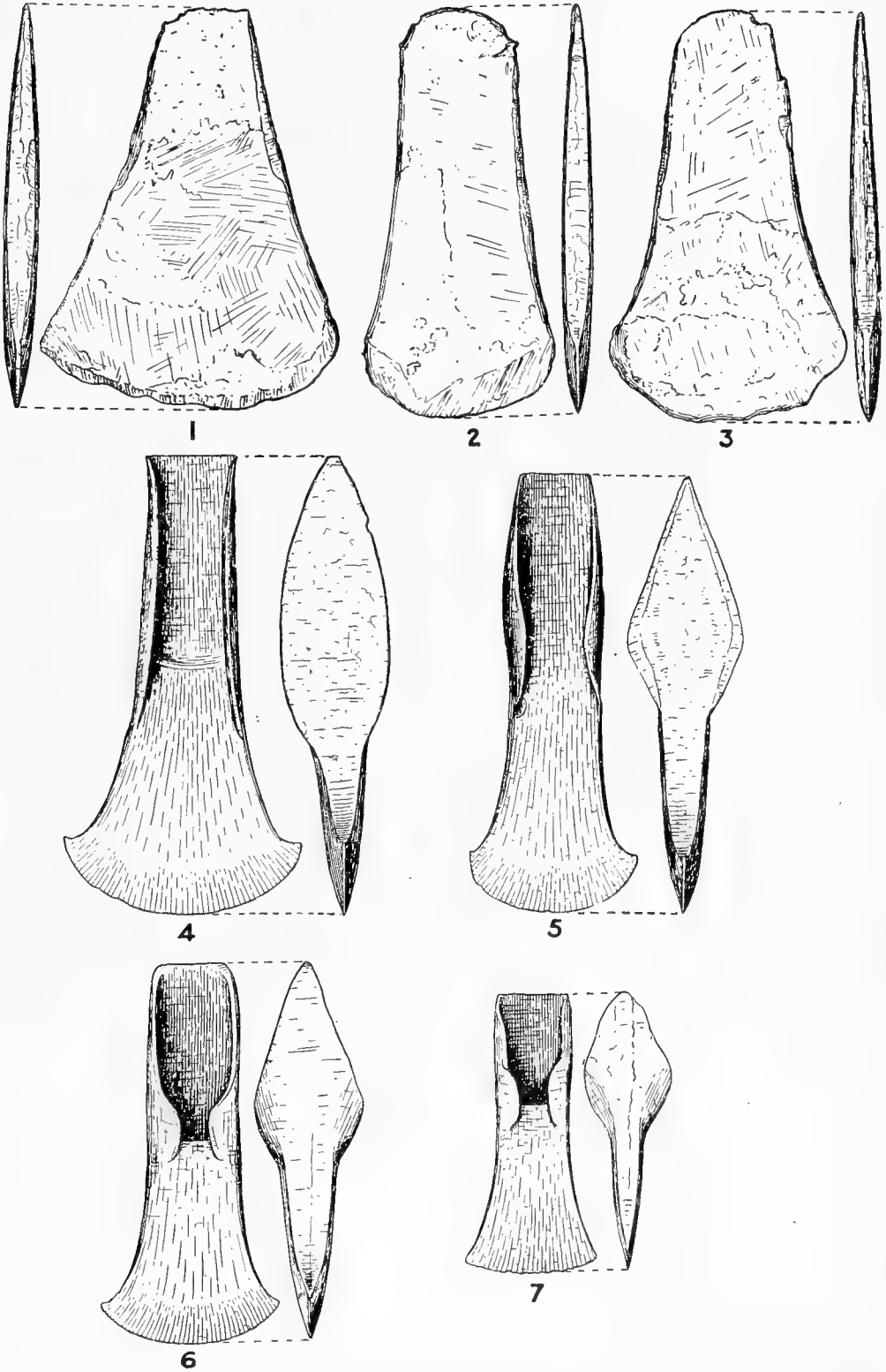
¹ *Ex inform.* Mr. J. P. MacNamara.

² *Ex inform.* Mr. E. Thurlow Leeds, F.S.A.

³ *Ex inform.* Baron Anatole von Hügel, M.A.; and the *Annual Reports of the Antiquarian Committee* for 1891 and 1901.



Celts found at Carrow-Leekin; and Ballyvalley Mountain ($\frac{1}{2}$).



Celts found at Letterkenny ; Doagh Glebe ; and Killamonagh ($\frac{1}{2}$).

XVII.

THE FOUNDATION OF TINTERN ABBEY, CO. WEXFORD.

By THE MOST REV. J. H. BERNARD, D.D., PRESIDENT.

Read FEBRUARY 12. Published MARCH 30, 1917.

IN the search for charters bearing upon the history of the Cistercian Abbey of Graiguenamanagh, in co. Kilkenny, I happened lately upon a reference "Graiguenamanagh?" in the Index to the Charters and Rolls in the British Museum.¹ The charter to which reference is made is classed Add. MS. 4783, fō. 28. I have obtained a transcript of it by the good offices of Dr. F. Elrington Ball, and I give it here, expanding the contractions.

"Johannes dei gratia Rex Anglorum, Dominus Hybernie, Dux Normannie (et) Aquitanie, et Comes Andegavie, omnibus fidelibus suis salutem.

"Noveritis nos gratum et ratum habere testamentum dilecti et fidelis nostri Willelmi Mariscalli comitis Pembroç sicut illud condidit per manus executoris ipsius testamenti faciendum :

"Volentes et firmiter precipientes quod inviolabiliter observetur et precipue de voto suo perficiendo, scilicet de quadam abbacia de ordine Cisterciensi in Hybernia construenda, de triginta carrucatis terre in loco competenti, sicut I(sabella) comitissa uxor sua et Gaufridus filius Roberti senescallus eius providebunt, quibus injunxit hoc facere.

"Testibus : dominis Exonie et Wigornie episcopis, G. filio Petri comite Essex̄, et W. comite Sarisbiř, apud Hamsted iij die Decembris."

This instrument is an early copy (no seal is attached, and the names of the bishops of Exeter and Worcester are not given) of Letters Patent of King John confirmatory of a Will of William Marshall, the great Earl of Pembroke, in which he left 30 carucates, that is, about 3600 acres of land, for a Cistercian abbey to be founded in Ireland "in loco competenti." As King John died before William Marshall, the Letters Patent must have been issued in William Marshall's lifetime. But, as Mr. Goddard Orpen has pointed out to me, in the early part of the thirteenth century alienation of

¹ Vol. ii, 1912.

land by testamentary disposition had not been fully established, and the King's confirmation would naturally be sought in the case of a tenant in chief.

The instrument is dated December 3rd, but the year is not mentioned; nor is it specified at which of the many places called "Hampstead" it was issued; nor is the name of the abbey given which was to benefit by the earl's gift. We must take these points separately.

As to the date. Geoffrey Fitz Robert, the earl's seneschal, and baron of Kells, died in 1211,¹ so the Letters Patent must be prior to that year.

Next, the history of the See of Exeter helps us. Henry Marshall, the earl's brother, was Bishop of Exeter from 1194 to November 1st, 1206, when he died. The See was then vacant until 1214. Hence we conclude that the Letters Patent must have been issued before November 1st, 1206. This leaves only seven years in the reign of John to be considered.

1199 is impossible, for the See of Worcester was vacant throughout that year; and, besides, on December 3rd King John was in France.

The itinerary of the King's movements, drawn up by T. Duffus Hardy,² shows us that in 1201, 1202, 1203, in like manner, King John was in France on December 3rd. In 1204 he was, on December 3rd, at Clarendon in Wiltshire, and journeyed to Gillingham in Dorsetshire; and in 1205 he was at Canterbury on the same day of the month.

Hence 1200 remains as the only possible year for our Letters Patent. And on December 3rd in that year, Hardy finds the King at Abingdon in Berkshire, and also at Bedwin in Wiltshire. Now Hampstead Marshall is on the way from the one to the other, and is quite close to Bedwin. There is, then, no doubt as to the date and place of issue of these Letters Patent. They were given at Hampstead Marshall, in Berkshire, on December 3rd, 1200.

This date, 1200, shows that the Abbey to which the Letters Patent relate was not the Abbey of Graiguenamanagh. The beginning of that great house was several years later. It was established by William Marshall for monks from the Abbey of Stanley in Wiltshire, but their first migration to Ireland did not take place until 1204,³ and they did not settle down at Graiguenamanagh until 1206. Nor indeed have we any evidence that the foundation of Graiguenamanagh was due to a vow or promise made by the earl, such as his will mentions.

¹ Orpen, *Ireland under the Normans*, ii, 266.

² *Rotuli litterarum patentium*, ed. T. D. Hardy (1835).

³ See *Chronicles of the reigns of Stephen, Henry II, and Richard I* (Rolls Series) R. Howlett, ii, 508.

The name of the Abbey of which we are in search is, however, not doubtful. It was the Cistercian Abbey of Tintern Minor, or "de Voto" in the county of Wexford.

In the manuscript Annals of St. Mary's Abbey, Dublin,¹ there is a brief memorandum under the year 1200, "Fundata est Abbatia de Voto"; and this is explained by a fuller entry in another volume of Latin Annals of Ireland,² preserved in the Bodleian Library, which I transcribe:—

A.D. 1200. "Fundatum monasterium de Voto, id est, Tynterne, per Willelmum Mareschallum, comitem Mareschallum et Pembrochie, . . . quia predictus Willelmus . . . fuit in maximo periculo in mari die nocteque votum vovebat domino Jesu Christo, quod si liberaretur a tempestate, et veniret ad terram, faceret monasterium Christo et Marie matri eius, et sic factum est cum pervenisset secure ad Weysford, fecit monasterium de Tynterne ex voto, et vocatur monasterium de Voto."

The date at which the foundation charter of Tintern was granted by William Marshall cannot be prior to the year 1207, as Mr. Orpen has shown;³ but the story of the Annals is that he had made a vow that he would establish a Cistercian House, if delivered from shipwreck, in the year 1200. It will be seen that the Letters Patent which are here printed corroborate the Annals very remarkably. We lose sight of Earl William, as Mr. Orpen points out, from September 3rd, 1200, when he was with the King's court, to March, 1201, when he appears again at the court; and it is plain that he set out for Ireland in the late autumn of 1200, and was in danger of shipwreck off the coast. On reaching safety, he immediately took steps to redeem his vow, and not only executed a Will leaving a large tract of land to the monastery which was to be his thankoffering, but got his Will confirmed by the King's Letters Patent on December 3rd. It is not without interest to find so complete a confirmation of the accuracy (which has been questioned) of these Irish Annals as to the date on which William Marshall first visited Ireland, and the circumstances in which he founded the Abbey of Tintern Minor, so called because it was first occupied by monks from the great house of Tintern in Monmouthshire.

¹ MS. E. 3. 10, Trinity College, Dublin; see Gilbert's *Chartularies of St. Mary's Abbey*, ii, 278.

² MS. Laud. 610; see Gilbert's *Chartularies, &c.*, ii, 307.

³ *Ireland under the Normans*, ii, 207.

XVIII.

ON THE INTRODUCTION OF THE ASS AS A BEAST OF
BURDEN INTO IRELAND.

BY REV. J. P. MAHAFFY, D.D., C.V.O.

Read FEBRUARY 26. Published MARCH 30, 1917.

QUITE recently our valued member, Mr. Garstin, who not only makes researches himself, but promotes them in others, sent me a query he had received on this point—on the introduction of the ass as a beast of burden into Ireland—with the suggestion that of course the use of asses in Ireland would be found in Arthur Young. There was no reference, however, given, so I took down the book to verify it. To my great surprise I was unable to find it, and also in the index (which, like most indices, is untrustworthy) there was no mention whatever of the animal. I searched the book up and down, especially the many details regarding the life and habits of the poor, and I have been unable to find any allusion to this, now their almost universal companion. We all know that the country was full of small horses, so far back that most of us believe this species to be here indigenous. We also know that all through the eighteenth century the gentry were importing sires from England, and so was produced the famous Irish hunter—one of the best products of the country. But how comes it that Arthur Young, who mentions the hobbies or ponies in Ireland, and the barbarous habit of using them for ploughing by the tail, never mentions the ass? It was easy to find out that the Royal Dublin Society, about the middle of the eighteenth century, offered prizes for the importing of the Spanish ass, but only as a sire to breed mules, never, so far as I can find, to improve the breed of the asses already in the country.¹ There seemed to me something so strange in this blank in the observations of a careful author, studying Ireland thoroughly in the years 1773-6, that I began to look for other evidence on this social and economic question. And I may dispose at once of the possibility of finding ass-bones in ancient deposits, or of any use of the animal in the Middle Ages. The original word for ass in Irish is *asal*, evidently borrowed from the current name in Latin; and except perhaps in artistic representations of the Flight

¹ Twiss saw a good many mules about Dublin in 1773.

into Egypt, or the Ride of Jesus into Jerusalem, there is no reference to be found in early Irish life. This I have been told very positively by our specialists in Irish. I come back then at once to modern times.¹

There are plenty of books of travel among us, made by both English and Irish tourists in the eighteenth century. I could not, indeed, remember any allusions to the ass in those I had read, but to search them for stray allusions was a task from which I recoiled on account of the long labour it would entail.

Then I bethought me of the records of the various cities which still had walls and gates, or at least the survival from them of exacting dues for all the animals and all the produce which entered their gates or came into the markets, and found such a list ready to my hand in the docket of tolls printed at the end of Appendix VIII of Whitelaw and Walsh's "History of Dublin" (vol. ii, Appendix, p. lix). In this very long alphabetical list there are horse-loads in quantities; also car-loads, without specifying whether they are worked by men or by draught animals; but that there were no ass-carts seems certain, for there is a toll for a sheep, a lamb, a pig, and also for the skins of each of these animals, as well as for the skin of a horse or bullock. The ass is not once mentioned in the whole catalogue. This tariff was imposed by the Corporation of Dublin in 1763, therefore some years earlier than Young's visit.

Lest this negative evidence might be due to some mistake or some peculiarity of Dublin, I tried the annals of another city, that of Youghal, whose Council Book has been so admirably edited by Dr. Caulfield. Here we have a very similar docket of dues drawn up in 1759, and confirmed by an Act of the Corporation in 1790. This toll was indeed not for passing a gate, but for crossing in the ferry-boat, which brought all the produce from the north side of the Blackwater into the town on its south side (p. 523 of the vol.). Here is what we find:—"For every cow or horse, 2*d.*; for every large pig, dead or alive, 1*d.*; for every small one, dead or alive, $\frac{1}{2}$ *d.*; for every sheep or goat, dead or alive, $\frac{1}{2}$ *d.* (and so on for calves and lambs); for every passenger, 1*d.*" There are also horse-loads taxed, calf skins, and lamb skins. But the ass is not once mentioned.

This evidence seemed to me sufficient, at least for the very superficial study I could make of the subject; but I hope that younger and more laborious members may be induced to search for more in the annals of other towns, which may either confirm or confute my conclusions.

I had time, however, to turn to another chapter of evidence—that of the

¹ Cf. note at the end of this paper.

Irish Acts of Parliament during the eighteenth century (and indeed much earlier), which are carefully indexed. Under the word "ass" what do we find? The first mention is in the Act 17 Geo. II, vol. vi, p. 656 (1743), and in this very indirect fashion: "Any person who shall kill, cut open, or skin any cow, calf, &c., sheep or lamb, or any horse, mare, gelding, colt, filly, ass, or mule, with intent to steal the fat, flesh, skin, or carcase thereof, &c., &c., shall suffer death, as in cases of felony." That enumeration is repeated in later Acts, threatening people who skin any such animal and leave the carcase on the high road, especially in the vicinity of Dublin. But I do not put much stress on this enumeration, which is merely for completeness' sake, and may well have been copied by some official from an English Act. There were a few Spanish asses imported for breeding mules, and there were a few milch asses, so that the animal was not unheard of in modern Ireland.

At last, after several repetitions of these Acts, we come to something definite in the Act 23 & 24 Geo. III (vol. xii, 596), 1783. It is (along with other matters) an Act for licensing hawkers and pedlars. It puts a licence, with a tax of 20s., on any person travelling with any horse or horses, ass or asses, mule or mules, or any other beast or beasts drawing burthen," and the phrase is repeated several times through the forest of verbiage which deprives all these Acts of the remotest pretension to be called literature.

Here, then, I had found what I sought—clear evidence that the ass was recognized as a beast of burden after 1776—the date of A. Young's ignorance—and before the framing of the Act of 1783-4. We may put the date provisionally at the surprisingly recent figure of 1780. In later Acts, up to 1800, I have found no new light; so it may be inferred that the diffusion of this new beast of burden was gradual, and, therefore, silent.

I have not hunted through the books of travel after that date, but have heard from the President that in a book published very early in the last century the writer wonders why they do not have donkeys at Killarney, instead of the ponies used according to the old habit of the country. Here, however, is fresh evidence.

About the year 1800 the Royal Dublin Society organized the production of careful statistical surveys for every county in Ireland, of which twenty-two were actually published, and by special inquirers, to whom the Society issued a list of subjects, as suggestions of the course the inquiry should pursue. In this list, under the head of stock, we find horses, cows, sheep, pigs, even rabbits and bees, but no mention whatever of the ass. There was also to be a chapter of general observations, among which the inquirer might add any matter of interest which occurred to him. Although, there-

fore, the Royal Dublin Society did not enjoin upon these inquirers the duty of reporting on the use of asses, it was most unlikely that they would have ignored it had it been of importance in any county; and in particular they entrusted five counties to one of their most important members—Sir Charles Coote—who reported first on what I may call his own two counties, King's and Queen's, and then on the three midland counties of Ulster—Armagh, Monaghan, and Cavan. We may therefore assume that if he found asses worth mentioning in any one of these counties, he would do so in the rest. He gives a careful and minute account of all the husbandry in these counties. He has chapters on the live stock, on ploughing with oxen, on fairs and markets—in fact, on every detail of the agriculture.

What evidence does he afford on the question before us? His last (Armagh) volume is dated 1804, his earliest 1801. In four of these volumes I could not find the ass even mentioned, though he speaks frequently of the poverty of the cottiers, and their difficulty in cultivating even an acre of land with the help of an occasional horse. He talks of the better class ploughing with three horses abreast, where an ass might have been substituted for one. He tells us in the barony of Trough (Monaghan) of manure of all sorts “scraped together, and carried out on the backs of the poor people who cannot afford to keep a horse for the use of their little farm” (p. 148). And presently we come (p. 164) in the barony of Monaghan to a passage in which he says: “In this and several counties of the North of Ireland they use a small, strong breed of horses which comes from Rathlin Island, off the Antrim coast. This breed seldom exceeds 3 guineas in price, and are most durable and serviceable, especially in a hilly county.”

There then follows this sentence:—“Asses are also very numerous here. Frequently 100 of these animals may be counted in the busy seasons, within the circuit of a mile or two. They are found extremely serviceable, and are very easily fed. They are particularly fond of the tops of furze and green whins, which also contribute much to the feeding of the Rathery (Rathlin) horses” (p. 165). This solitary utterance in a careful survey of five counties corresponds with the other evidence which has been adduced. Sir Charles speaks with no surprise of this plenty of asses. He may possibly, in spite of his obdurate silence, have seen some at least in the neighbouring counties of Armagh and Cavan. But one thing is certain: they were as yet of no import as a help to the life and labour of the poor. By the rich they were certainly not used for labour.

Not content with evidence from one witness, I examined the similar surveys by other specialists of Kilkenny and Wexford, in Leinster; of Londonderry, Antrim, and Down, in Ulster; of Leitrim, Galway, Clare, and

Sligo, in Connaught, with similar results. I could find only two solitary allusions to the ass, and both in connexion with mules.

Mr. Dubourdiou, in his volume on Londonderry, tells us (p. 336) that some years earlier (the volume is dated 1812) Mr. M'Neill imported an ass from Malaga to breed mules, in which he was very successful. He describes this fine animal, above fourteen hands high, used for the saddle, "his head not of that heavy, dull cast so common in our unfortunate creatures of the same species." Apropos of Kilkenny, Mr. Tighe reports (p. 309): "Mules are often used and purchased here and in Co. Wexford at reasonable prices. For a small four-year-old, fit for an Irish car, four guineas, and from that up to sixteen guineas for a very handsome mule." There can be little doubt that here again we have to deal with the importation of a Spanish sire. But the volume on Wexford, a very interesting volume, never corroborates the fact. So treacherous is negative evidence! Still, in 1812, the author on Londonderry knows and despises the local ass.

Now let us hear what the author on Cork says, writing in 1815 (vol. i, p. 224):—"The working beasts of the county are horses and mules. The latter, which are, as a rule, of a very small size, got by the common jackass, are in the south and south-west of the county. They are occasionally employed in draft, but chiefly for back-loads; and, being easily fed, very long-lived, and able to endure great fatigue, are admirably suited to the purposes of a poor peasantry in a rough country. Their greatest fault is a vicious and intractable disposition, for which the owners generally find a sufficient corrective in hard work and bad keeping."

This is in 1815. But I have also found at the very end of the survey of Clare, published in 1808, the following isolated passage (p. 161):—"Very great use is made of mules and asses for carrying baskets and small loads, such as poor people usually load them with; for such persons as are not able to keep a horse they are a great convenience. It is astonishing what a load these little asses will carry, frequently twenty-four stone, much more than their own weight."

The same observer, Hely Dutton, publishing an elaborate volume on Co. Galway in 1824, only mentions the ass *once*, and in this way:—"The verge of almost every bog is inhabited, for the sake of carriage of turf and black mud, of great consequence to the poor man, who frequently possesses no better means of carriage than two baskets on an ass's back, sometimes the human back, and the female sex shares the burden."

Townsend, on Cork, mentions the very high price of cavalry horses, about 1813-14, when he was gathering his information.

The outcome of all this is very plain. The ass was put to the same uses

that he now is in Monaghan in 1802, in Clare in 1808; probably, along with mules, in a few other counties. But, generally, the animal was of little account till the first decade of the nineteenth century.

Yet, if the negative conclusions derived from the silence of the eighteenth and opening nineteenth centuries seem to me well established, I am still at a complete loss to answer the questions which this argument immediately suggests. If the common use of asses be indeed so recent, surely we should be easily able to find out by whom they were imported, and for what reasons? And yet to these obvious questions I have failed to find an answer which is supported by direct evidence.

Naturally, in the face of the Act of 1783, concerning hawkers and pedlars, many of whom were certainly gipsies, and at the suggestion of Professor Kelleher, I turned to that people as the importers of the working ass to Ireland, especially as the travelling tinkers of the present day (mostly gipsies) usually have an ass or two to carry their furniture. I had no leisure to study the history of the gipsies with any care; but, so far as I went I could find no special association between asses and gipsies in England, Scotland, or here. I went through the Index of seven volumes of the *Gipsy Lore Journal*, and could not find a single allusion of any sort to the ass. The gipsies in Scotland—they have been there since Tudor times—are closely connected with horse-dealing and horse-stealing; but I cannot find in books on the subject that they went about Scotland with asses.

Though, therefore, it is quite possible that the first trade in asses may have been through Galloway gipsies, there is no clear evidence so far as I can find.

We come now to the possible causes which may have induced the poor in Ireland—a country full of horses and ponies—to adopt this inferior animal, at least inferior as it exists in Ireland, for none will use such language of the Egyptian or the Spanish ass.

From what I have found, I take the early days of the nineteenth century to be those in which the wide diffusion of the animal took place among us. Were there any large causes acting then which might have affected Ireland? It was obvious to think of the Peninsular War, which lasted 1808–13, and to which the British expedition actually started from Cork. The excellent index to that precious book, *Wellington's Despatches*, in twelve vols. (Gurwood), shows that he was in constant anxiety about his supply of horses. He even discusses whether it were practical to import them from America or from Brazil for his army. He spoke of £30 or £40 each, then a very large sum, being given for cavalry horses, and complains that England and Ireland seem unable to supply one-twentieth of the horses which the French

can command. All this makes it perfectly certain that there must have been a great drain on Irish horses, not only those fit for cavalry, but cart horses, which Wellington tells us are unfit for that purpose, and lighter horses used for draught and transport. This depletion of the country as to horses must have given a singular advantage to those who offered the ass as a cheap and safe substitute, not liable to be bought at fancy prices for the war; and so by some silent process, probably by the poor, and for the poor, this useful beast of burden came into Ireland almost surreptitiously, till it spread over all the country. While the great Duke was conquering the Peninsula, the little ass was conquering Ireland. And, let me add, that a peaceful conquest is often more enduring than a brilliant one. The bray of the ass may signify more lasting peace than the blare of the trumpet. I cannot abandon the conjecture, though I have found no evidence, that the tinkers or gipsies were the agents who produced the change. Sir Charles Coote, as you have heard, spoke of importations of ponies from Rathlin—why not equally asses from the neighbouring Galloway?

My friend Mr. W. G. Strickland tells me that he remembers seeing when he was a boy, in the county of Roscommon, an old man who was said to have helped his father, and himself made his livelihood, by the trade of going to Scotland, and thence importing asses to the north of Ireland, and on to the west. I think it very likely that this accidental bit of information may yet be the clue which will lead us to the solution of the problem.

Unfortunately the history of Ireland for the first twenty years after the Union is very little studied. As the political interest in the country was abolished by the Union, and great foreign wars engrossed all men's attention, there are but few students who have occupied themselves with that period. I, for example, who know something about the Ireland of the eighteenth century, know hardly anything about the early nineteenth, beyond what my mother used to tell me of the social life of Dublin. I earnestly hope some younger member of the Academy, interested in Irish history, will take up that neglected period, and make us know more of the life of the people 100 years ago, before the collapse of high prices for horses, cattle, and agricultural produce after the war, and some bad harvests in the twenties, led to new troubles, such as the tithe war, and other movements which were the beginning of modern Irish agrarian agitation. In these troubles none stood by the Irish poor better than the patient, despised ass.

Quite apart from these historical studies, I can tell zoologists who are in search of a new and attractive subject that there is in all the libraries I have consulted, even in our College library, and the London Library, for which my friend Dr. Hagberg Wright has compiled a valuable subject catalogue—in

all these there is no monograph on the ass even attempting completeness. I have only found the short book of Tegetmeier, which concerns itself almost exclusively with the foreign European varieties, the ass fit for breeding mules. England, he says, has produced no such varieties.

Here are, however, some interesting scraps. I have learned from Professor Pope, one of our best Orientalists, that there are in Arabic two distinct words for two distinct varieties: one, *hamar*, the large saddle ass, always highly valued in the East, and still in southern Europe and northern Africa; the other, the smaller or baggage ass, called *ghash*, which seems to be the parent of our words for it in Latin, French, English, and German. This smaller sort was mainly used as a beast of burden, and was consequently esteemed as such. This suggests a new explanation of a passage in Scripture (Zech. ix. 9) which in the Hebrew has no sensible meaning. But both in the LXX and in the Greek of St. Matthew, who quotes it, the matter is made clear: "Behold, thy King cometh . . . lowly, and riding on a beast of burden (*ὑποζύγιον*), even an ass's colt [or small ass]." The Greek authors knew the distinction between the saddle ass, always a dignified conveyance in the East, and the mere baggage or pack animal. It was a distinct variety, now represented by the asses of northern Europe.

The writer of the monograph I suggest must not only be a zoologist but a historian, and also even a psychologist. For he must set himself to explain how this animal, so dignified in early Oriental history, should have been for centuries the emblem of stupidity and the object of ridicule. Any of us who have studied animals even superficially knows that the ass is not less intelligent than the horse, or even than other animals of higher pretensions. All I can tell our problematical writer of the monograph is that these jokes are at least as old as classical Greek,¹ and this human idiosyncrasy has lasted to the present day. When permission was asked ten days ago by our Secretary that I should read this paper, the proposal was received cordially, but with a burst of hilarity—a curious bit of evidence how easy it is, with a topic worn threadbare through many centuries of repetition, to amuse even the higher varieties of the human species.

NOTE ADDED IN PRESS.—Since this paper was written, various friends and correspondents have added the following facts to my knowledge of the subject. Mr. Burtchaell tells me that in a heraldic book about Irish families, it is stated the ass was the crest of the Monie family, one of whom was

¹ From Homer and old proverbs through the Greek comedy. Cf. Homer, *Iliad*, xi, 558, where the ass is cited as a type of obstinacy, but of intelligent obstinacy.

nominated in the Charter of T.C.D. as one of the first three Fellows in 1592. This crest (which he has not seen) would probably be as old as Tudor days in England.

In Mr. Bagwell's "Ireland under the Stuarts" (II, 30), the captors of Maynooth Castle in 1642 complain that they only got the benefit of one ass in their loot.

Mr. Garstin tells me that he read somewhere of Primate Boyle, who died a very old man in 1702, having an ass to accompany him for the sake of its milk.

Mr. Westropp has found advertisements as early as 1723, and subsequently, in Dublin papers of milch-asses, and the Royal Dublin Society, in 1753, offered a reward of £20 for the importation of a Spanish ass (to breed mules). These references show how the bringing in of the ass as a beast of burden caused no surprise. The use of milch-asses among the richer classes may have been not uncommon in the early part of the eighteenth century.

The experiment was made about sixty years ago by a Mr. Hassard, who owned a rough heather mountain in Co. Antrim, of letting asses loose to live there as do the rough ponies of the country. They all died out in a couple of years, thus proving what Aristotle said long ago, that asses will not live wild in a cold country.

XIX.

ADDITIONAL RESEARCHES ON THE BLACK PIG'S DYKE.

BY W. F. DE VISMES KANE, M.A.

PLATE XLVIII.

Read NOVEMBER 13, 1916. Published APRIL 17, 1917.

IN a previous paper¹ on "The Black Pig's Dyke" or "Valley" I attempted to show that the entrenchments which can be discontinuously traced from the Newry Valley along the southern borders of the counties of Armagh and Monaghan, as well as some fragmentary portions which are still extant in the counties of Cavan, Longford, and Leitrim, the extreme western terminal of which was identified on the Atlantic seaboard at Bundoran, formed once a continuous frontier fortification defining the southern boundary of Uladh at some early date. Following the localities recorded by Keating as marking the northern frontier of the ancient province of Meath, I showed that for the most part they coincided with those I had traced as marking the above alignment of the Black Pig's Dyke. I ventured, however, to suggest one or two possible corrections of the text of Keating, such as "Athlone" following Mohill, and Muckno instead of his "Magh Cnodbha."

Since the publication of my paper, an important contribution appeared in the first vol. of "Archivium Hibernicum," by the Rev. Paul Walsh, B.D., of Mullingar, dealing with the Irish ms. used by Keating in compiling this portion of his work. Father Walsh states that it is preserved in the R. I. Academy as an insertion in a later hand on a spare leaf of a MS. written at Kilcormac in the year 1300, and mentions a less complete copy preserved in the Bodleian Library. Father Walsh found that in several instances Keating had failed to decipher accurately the Irish text, and so these lapses confused the true sequence of certain of the localities named. Students of early Irish history therefore owe Father Walsh a debt of gratitude for his revision of the text. I shall therefore commence by recapitulating the boundary localities,

¹ Proc. R.I.A., vol. xxvii, Sect. C, No. 14. 1909.

revising them where requisite, and adding the result of my further studies of the subject. After having dealt with this, apparently the final frontier of the kingdom of Uladh previous to the conquest of the province by the three Collas, I purpose then to set out the line of two other boundaries to which the same name is popularly attached, of apparently analogous structure and object, which seem to indicate that there were two consecutive recessions of Ulster territory.

Father Walsh's examination and analysis of the statements given by this thirteenth-century record lead him to reject the story attributing to Tuathal Teachtmair the founding of the province of Meath in the second century. Whoever it may have been that finally settled its extent, and fixed its frontier, Father Walsh points out that that province could not have been peopled in the second century by the tribes which are mentioned in the MS. in question, for though some of them were undoubtedly prehistoric races, yet others could not possibly have been settled there till "many centuries subsequent to the date of the alleged formation of the Meath province." Other reasons for rejecting this early date are also put forward. However, the proved identity of the Black Pig's entrenchments with the localities given by Keating substantiates the correctness of the ambit of the kingdom of Meath as therein set out for the west and north, leaving the date of its formation an open question for future inquiry.

The corrected line of the Meath frontier therefore is as follows:—

"To the Shannon northwards."

"To Lough Ribh, and all the islands belong to Meath." Here it should be remembered that Athlone comes in, being at the southern end of Lough Ree. It seems to have marked the extreme S. W. point of the ancient territory of Uladh; and at Kells and elsewhere the trenches are traditionally said to reach "Athlone."

"And the Shannon to Lough Boderg."

Rooskey on the shore of Lough Boderg was the starting-point of the Black Pig's race in Leitrim, and it no doubt ran to Lough Rinn near Mohill.

"And from that to Maohail." Mohill, or rather to a point between Mohill and Cloone.

"To Athlone." An erroneous reading of Keating.

In the MS. "Δτ ρΔ on," Adoon, as corrected by Father Walsh.

"Thence to Scairbh Uachterach."

This I failed to identify properly, and was led to refer it to Lough Achter (Lough Gowna) or to Lough Oughter. But Father Walsh rightly points out that Ballinamore is in the parish of Oughterach.

Here at Ballinamore a distinct tradition exists that formerly the Black Pig's valley ran west to Drumshanbo at the south end of Lough Allen. Its continuation from Dowra on the north shore of that lake has already been described to Lough Macnean, Lough Melvin, and Bundrowes' river at Bundoran. In confirmation of this I found that at Roosky the tradition is distinct that it ran from that point of the Shannon to "the Shannon Pot," which is the local name of the source of that river about three miles south of Lough Macnean, not far from the base of Cuilcagh mountain, a distance by land and water of about forty miles. To return to Ballinamore, and follow Keating's Meath frontier east:—

"To Drumlane." It, therefore, must have passed close to Garadice, formerly known as Lough Finvoy. An island in it contained a fortress called "Clogh-insa-na-torc, i.e. the stone fortress of the Hog's island."² Perhaps a reference to the tradition of the Black Pig, whose ramparts must have passed near.

"Drumlane." The Abbey of Drumlane at Milltown.

"Till one reaches the Magh." Possibly Castle Saunderson race-course, or Redhills.

"To the Cumar of Cluain Eois." Clones.

Here I may add some intermediate points between Drumlane and the parish of Drum near Clones. Drumlane people state that the line of earthworks formerly ran east of Stag Hall, and west of Belturbet, crossing the river below that town. At Redhills the route is stated to have been from Milltown (Drumlane) to Killabandrick lake, on to Redhills, passing on the south side of the village, through the demesne, and east to Drumcor lake in Monaghan, where we have formerly identified its remains. I am also credibly informed by a resident in that neighbourhood that traces of its ditches are still recognizable at the ruins of Magheralin old church and in Redhills demesne.

The next locality given by Keating is "Magh Cnobha." I have already suggested that this should be Muckno, i.e. Castleblayney. Father Walsh corroborates this, as being "muic rnoim" in the MS., that is, "The Pig's Swim." Thence passing near Carrickmacross it ran to the Dorsey camp. Here I may mention that Shantonagh, near Bellatrein, probably refers to the site of "the old rampart."

¹ A passage in the *caitheam congal cluainmhuigh* shows that, according to this ancient story, Bundrowes river was then the western terminal of Uladh. It describes the partition of Uladh into a northern and southern territory. Fergus Mac Leide was given the latter, "from the Bann river to the Drowes."

² Cf. Ann. Four M., A.D. 1257.

Since my first paper was written I have fortunately discovered in the Library of Trinity College, Dublin, a ms. dated December 1st, 1707, among others addressed to Mr. Samuel Molyneux, which describes a great ditch running through the townland of Dorsey, "that begins at Tyrone's ditches at the Glenbogg in the county of Armagh, eight miles distant¹ from this place (as the people that pretend to know most of it stated) runs through this county into the county of Monaghan, and so into the county of Cavan. Where it ends is uncertain. In many places it only remains visible on the tops of hills, not the least footsteps of it anywhere to be seen in the bogs of this place (the Dorsey Camp), which lies directly on the road between Dundalk and Ardmagh, eight² miles distant from the former, sixteen³ from the latter. There seems to have been a gate, as may be easily concluded from its name. The Irish call it Dorras Fuyee (Dorras Fuyee), that is the Gate of the Fews, though they commonly interpret it in a larger sense, viz., the Gate or Inlet of Ulster. About forty paces eastward of the road at this place there begins a new ditch, out of and of the same form with the main work, of about half a mile, which, with part of the great ditch, encloses a piece of this land. Within this enclosure, ten years since, there were dug up sword-blades, skeans, wood cinders, and a cannon ball (at least it was of the same metal and figure as one) at the depth of two feet from the surface."

Canon Lett in his valuable description of the Dorsey⁴ quotes (p. 9) a passage from Sir Charles Coote's Survey of the Co. Armagh. "Near to this place (Newtownhamilton) are yet to be seen the lines of circumvallation of an encampment above a mile and a half in circumference, where it is said the Irish army hemmed in a large detachment of Cromwell's forces and besieged them an entire winter." Possibly the relics dug up here are thus explicable.

A rough diagram is sketched in pen and ink on the ms. suggesting the enclosure referred to, traversed by the road and ending at the bog.

The main interest of this document lies in its testimony that in 1707 "the Great Ditch" in question ran from "O'Neill's ditches" (now obliterated, except a trace south of Drumbanagher demesne), at "the Glen bog" (now known as the "Glen meadow," quite near the Glen Chapel, not far from Goragh Wood Station), and thence south-west for twelve statute miles or thereabouts to the Dorsey, and on through the counties of Armagh and Monaghan to "Cavan," (i.e., about Redhills and Belturbet). The great encampment of the Dorsey is alluded to as having been formed by a similar

¹ I.e. Irish measurement, that is $10\frac{1}{4}$ miles statute, actual distance about 12 miles.

² I.e. $10\frac{1}{4}$ miles statute, actual distance about $10\frac{3}{4}$ miles.

³ I.e. $20\frac{1}{4}$ miles statute, actual distance 20 miles statute.

⁴ Journ. R. Soc. Antiquaries, Irel., vol. xxviii. March, 1898.

ditch diverging from "the main work," and bounding an enclosure, one side of which consisted of the "great ditch" itself. This would be an exactly analogous arrangement to that of the camps of Maesknowe and Stantonbury, which lie along the entrenchment of the Wansdyke in England, and also to others on Offa's Dyke, to which reference was made in my former paper.¹

The following measurements of the Great Ditch are given, and for comparison I have also put down those given in Canon Lett's description of such of those of the Dorsey camp which are still surviving:—

MS. OF 1707, "THE GREAT DITCH."	REV. CANON LETT. THE DORSEY.
"Ditch 15 yds. thick at bottom" = 45 ft. (Probably base of main rampart.)	—
"9 yds. high where highest, 6 commonly." = 27 to 18 ft.	23 ft.
"The trenches at each side of equal depth to it." (The top of central vallum seems to be on a level with the top of the side ramparts.)	—
"and 4½ yds. wide at bottom," = 13·6 ft.	12 ft.
"and 22 yds. at top." = 66 ft. (Probably this means from the middle and top of the central rampart to top of the outer.)	—
"The outward brink of the one trench to the outward of the other is 44 yds. over." = 132 ft.	120 ft.
(I take this to mean the extreme width of the whole work from out to out. It corresponds with double of the above 66 ft.) (Canon Lett states that at present the outer ramparts each measure 5 ft. high and 12 ft. wide at base.)	5 ft. × 12 ft.

The contents of this MS. of 1707 show that my forecast that the entrenchments ran round Slieve Gullion to Meigh, and joined the Dane's Cast, was incorrect as to the point of junction, but they indicate that they continued to the N.E. round the mountain to the Glen Meadow, near Goragh Wood, and there joined "the Dane's Cast."² It would, therefore, seem that Emania was provided with a triple line of defences against invasion from the south. Firstly, the ramparts of the "Dane's Cast" running northward from Meigh, near Newry, along the western slopes of Glen Ree to Lough Shark, and

¹ "Black Pig's Dyke"—Proc. R.I.A., vol. xxvii, Sect. C, No. 14, pp. 306, 307.

² See note on p. 563.

thence across the valley to Scarva. These commanded the Newry pass. Secondly, the main entrenchments running from the southern confines of county Monaghan, dominating the passes of the Fewes and Forkhill, reinforced there by a huge fortified camp, and thence past the western foothills of Slieve Gullion, to join the Dane's Cast, near Drumbanagher. Thirdly, a subsidiary inner line that also is called "the Dane's Cast," segments of which lie about four miles south of Armagh, with a N.E. and S.W. alignment, running from Ballyfaddy, through Lisnadill, to Butterwater stream, the original terminals of which are unknown.

I should point out that the ancient Irish high road, the Slighe Midluachra, passing north from Newry, branched into two routes, one traversing Glen Ree to the north coast of Ireland, and the other virtually following the passes of Forkhill and the Fewes to Emania and onwards. In this connexion I would call attention to passages in our ancient literature which show that the pass between Slieve Gullion and Slieve Fuad was at the time of the writing of the "Táin" recognized as the key to Ulster, and the usual route between Emania and the south. Here it scarcely can be doubted was the "watching ford" referred to in the "Táin." Various references in our ancient literature substantiate this, some of which are cited by Canon Lett. The following passage from "*Le Meurtre de Cuchullain*," by Jubainville¹ shows that the ordinary route from Emania was by the Fewes pass, across which the great ditch and the Dorsey camp were constructed.

Cuchulain is described as starting from Emania in his chariot with Laeg, the charioteer, and galloping southward over the road of Midluachra, and round Slieve Fuad, "and when they arrived at the south of that mountain, they continued to follow southward the road of Midluachra till they arrived in front of the fort which is in the plain of Murthemne, and it was there they encountered the enemy." The relation goes on to describe the fight, and how Cuchulain was killed by Lugaid, the son of Curoi. But before he dies he ties himself to a pillar-stone that he may die standing. His foster-brother Conall goes to avenge his death, and finds the body tied to the pillar-stone.² A few paces from it Conall finds a rampart. I swear to you, says he, by the oath which my nation made, that one will call this rampart the "Rampart of the Great Man." The Druid replied: "This enclosure must henceforward bear the name, this place will always be called the 'Rampart of the Great Man.'" It is interesting, therefore, to note, and would be a remarkable

¹ "*L'Épopée Celtique en Irlande.*"—De Jubainville, tome i, p. 337.

² P. 350. Cf. also "*The Dun at Dorsey*" by Canon Lett.—*Jour. R. Soc. Ant. Ireland*, vol. viii, Pt. i, 1898, pp. 13, 14 ("White Stone of Callaigh Beri," p. 7).

coincidence that the officer in charge of the Ordnance Survey, when plotting the Black Pig's Dyke between Lough MacNea and Lough Melvin at Lattone in Leitrim, found that the almost obliterated remains of the trenches in that district went by the name of the "Great Man's Track" or path. See my former paper, p. 321. For it is quite possible to hold that the Dorsey might be the enclosure which is described as in the plain of Murthemne,¹ since that district has been described as "extending from the Cualgne Mountains to the Boyne," and certainly it lay upon its border. The existence of the "Great Ditch" running to the west from the Dorsey in 1707 further supports such a hypothesis, and the standing-stone in the dun might be the pillar-stone to which Cuchulain is said to have tied himself when wounded. Nevertheless, an examination of the text of certain Irish mss. appears rather to confirm the local tradition at Rathiddy, near the village of Louth, that that locality was the one to which the ancient authorities refer. There, however, no trace of any "rampart" is extant. In the Louth Archæological Journal of 1907, an interesting paper by Mr. Henry Morris describes the locality referred to. Again, in the *Mesca Uladh* (p. 15) we read that Cuchulain, "starting from near Coleraine, drove to the plain of Ardmagh, then to Slieve Fuait, and into the watchman's ford (Δε̇τ na Foraidhe), to Portnoth of Cuchulain, into the plain of Murthemne," &c.

In the Glenmasan ms. of the *Táin bo Cualgne*, in the passage describing the journey of Deirdre and the sons of Uisnech from the Dun of Borrach in the north of Antrim, we find the words: "After that, they proceeded to Finncarn of the Watching on Slieve Fuaid" (Finncarn na Foraire ar Sliab Fuait), and then to Emain Macha. This was after Deirdre had vainly implored her companions to ask the protection of Cuchulain at Dun Dealgan. Before proceeding to describe the discovery of two other lines of frontier it is necessary to correct certain errors which crept into my former paper, and confused its accompanying map, also to give the results of an expedition of research to identify the line between Roosky and Sgairbh Uachterach (Ballinamore) in accordance with the corrected indications furnished by Father Walsh's revision of the original text. I correctly indicated Mohill as the next station to Roosky, but set down the line from Mohill popularly supposed to run thence to Lough Gowna, Granard, and Lough Kinalé, as forming a part thereof. In reality these entrenchments from Lough Gowna to Lough Kinalé appear to belong to another frontier hereafter to be described. I fell into a further error by taking for granted that the River Shannon from

¹ Ex. gr. in the Book of Leinster, 77 a 7, a ford, named Ath na Fertá, is stated to be in Slieve Fuad, though elsewhere described as in Magh Murthemne.

Roosky to Drumshanbo (Lough Allen) formed a part of the frontier between Connacht and Uladh. A reference to the present map will make this clear.

The corrected data afforded by the old MS. from which Keating quoted for his Meath frontier were found by investigation on the spot to be roughly approximate. Local research indicates that the alignment from Knock-na-muice at Roosky (Lough Bofin) must have gone thence to Lough Rinn and by Lakefield to a point on Belscarra stream, about half way between Mohill and Cloone. Here I noted some probable remains of a defaced rampart. Near Cloone are some townlands whose prefix of Sonnagh retain evidence of the proximity of a rampart at an early date on the route past Cloone to Ballinamuck, namely, Sonnaghmore, Sonnaghbeg, Sonnagh Connor, Sonnagheenachty (Finerty). The latter lies a little east of Lough Adoon (Ath-da-on, Keating's "Athlone"). Mr. Thomas O'Reilly, Master of Loughduff National School, near Cavan, who has rendered me valuable assistance on many occasions, writes that when on a visit to the neighbourhood of Adoon in the year 1870, he was shown an extraordinary cutting or dyke, which as well as he can remember was about 20 feet deep and 30 feet across, with a low broad embankment on the east side. He was told by the owner of the farm that this "had been made by an enchanted pig." Nor had he thought of the matter since, until I interested him in my quest. This cutting seems subsequently to have been partially filled so as to be in no way remarkable now. From this place I was told that ramparts had formerly run to Fenagh. There a man named Thomas Greenan at once informed me that he had learned from an old resident that "the Black Pig's Valley had gone from Adoon to Fenagh, passing through the hollow near the glebe house and alongside of 'The Commons' of the abbey." He then pointed to a distant hill with a plantation on it called Drumkeen, past the eastern side of which he stated that the Black Pig's track led to Drumshanbo. Through the hospitable courtesy of the Rev. William Welwood, Rector of Fenagh, I was enabled to follow up the inquiry from place to place, and interviewed various old residents in the parish of Oughterach. The following appears to have been the route:— To St. John's Lough into which a point of land extends called Muckros, "the pig's point." From the lake it again ran, traversing the townland of Mayo, through which an obliging farmer named Roddy conducted me by an ancient roadway (probably carried through the original earthworks) to the top of the hill where the banks ran far apart, and the ground seemed to have had a rampart roughly levelled while the farm track ran through the fosse. From thence he pointed out a disused roadway alongside of the Yellow River through the townland of Kiltybardan, and round Drumkeen (where is the

plantation indicated by Thomas Greenan of Fenagh), and so west to Drumshanbo.

It is now requisite before I proceed to trace in detail what appear to be other frontiers of ancient Uladh, to define shortly what I have learned as to their several respective alignments. That which I have just recapitulated with corrections seems to have been the latest, previous to the destruction of the kingdom of Uladh, since it marks off the most curtailed territory. As the most recent, I shall refer to it as the third frontier. The second or middle frontier, going from east to west, would consist of the Boyne and Blackwater rivers to Navan and Kells, thence to Lough Ramor (Virginia) in county Cavan, and then west to Lough Gowna, Ballinamuck, Mohill, and north to Ballinamore, where it joins the third frontier.

The first and most ancient frontier of the three commenced at Drogheda, with the river boundary of the Boyne and Blackwater. But at Taitenn it diverged to the west through Meath to near Kilskeer, passed south of Crossakiel (the "Ard Chuillend" of the Táin)¹ through Kilallon, and thence to Lough Derravaragh by a junction I am not clear about, then past Multyfarnham to Lough Owel, then to near Mullingar, Mount Temple, and Athlone. Thence north the west boundary of Ulster was formed by Lough Ree and the Shannon to Lough Boderg, whence from Rooskey entrenchments ran to Mohill and Ballinamore.

OF THE ALIGNMENT OF THE SECOND FRONTIER.

We will now describe the middle or Second Frontier, and where the entrenchments are obliterated give the local traditions of their site which are preserved by the country people. Our ancient literature states that the southern boundary of Uladh was formed by the Boyne from Drogheda to its junction with the Blackwater at Navan, and thence to either Taitenn or Kells. From that point I found the local traditions extremely confusing, some indicating that from Donaghpatrick Bridge the Black Pig's Dyke ran westerly to Westmeath and Athlone. Others stated that it ran north-west to Lough Ramor. And as the ditch of the Pale also ran north from Trim and Athboy to the Hill of Lloyd beside Kells, some portions of which are traceable on both sides of the Blackwater and on toward Ardee, much difficulty arose. The Venerable the Archdeacon of Meath, at Kells, author of the History of that Diocese, kindly came to the rescue and drove me from place to place, till I was able to identify the traces of the Pale Ditch for some miles east.

¹ In the *Leabhar Uidhri* this place is said to be "called Crossa Cuill to-day." See the "Táin," Mrs. Hutton, Appendix B, "Ardcullen."

Subsequently I visited half a mile of earthworks marked, I think, erroneously in the Ordnance Map "The Pale." Mrs. Chaloner of Ardnaree (Kingsfort) gave me the clue to this, and on examination I recognized the characteristics of the familiar earthworks of the Black Pig's Dyke. It starts close to Kells from the northern bank of the Blackwater near the weir opposite the Hill of Lloyd, and traverses the townland of Rathbrack to the road which crosses it transversely, and from that runs through the lands of Ballinamona in the direction of Maperath. At a farm house near the river I was told that the structure was called "The Black Pig's Valley," and that it ran to Lough Ramor. It consists of a central vallum or rampart bordered on each side by a fosse. That on the eastern side was much filled up, but the other was in some places 10 feet deep and 20 feet wide. The total width from out to out at present from the outer edges of the fosses is about 15 yards, though one of them is much reduced in size. At the other side of the road which transects it the ground rises steeply in the townland of Ballinamona. The vallum there is massive, and rises some 14 feet above the ground level, with a width of about 21 feet, and the fosse at its foot is about 8 to 10 feet in depth. The works can be traced northward towards Maperath Cottage for about a half a mile, but much defaced. Again, at the townland of Farnadoney on Mr. Chaloner's property, it ran downhill to a stream, but as the high-road was made through it, only on one side part of the rampart can be traced. But on the far side of the stream on the left-hand side of the road in Shancarn, a high rampart about 160 yards long, planted with fir trees, is said also to be part of the "Black Pig's Race," and that the trenches formerly ran into Lough Ramor at Ryefield. The route, therefore, of these earthworks seems to correspond with a frontier of Ulster as given by Connellan in a note at p. 337 of his edition of "The Annals of the Four Masters." "The boundaries between the Kingdoms of Meath and Ulster were the River Boyne from Drogheda to Slane and Navan, and the River Blackwater from Navan to Kells, and to Lough Ramor near Virginia, and a portion of the baronies of Clankee and Castlerahan bordering on Meath." No further indications of the exact boundary west of Virginia are given, nor any indication of the period at which this formed the north frontier of the "Kingdom" of Meath. But it is unnecessary to point out that it in no wise tallies with the boundary given by Keating, which we have traced as No. 3, and which is evidently considerably later than the time of Tuathal Teachtmair, so much so that Father Walsh is inclined to treat that whole story as a fable. West from Lough Ramor I have not been able to trace any earthworks, but there can be little doubt that they ran N.W. through the barony of Castlerahan toward the neighbourhood of Crosskeys, and are believed to have passed close to Ballyjamesduff. But the indications pointed

out there seem to be unreliable. The first distinct remains that I can rely on may be found on the road that runs along the west boundary of Drumbarry townland, and on through Largan to a ring-fort there, and thence N.W. along the slope of Ardkilmore into Drumavaddy and Drumcrow. It is marked south of Slieve Glah in the parish of Denn on the Ordnance Map as "The Worm Ditch," similarly to the one of that name in Monaghan County—it goes also by the names of "the Black Pig's Race," and "the Black Pig's Valley." Further west it is said to have existed in Ardlenny near the church at Ballintemple, and Ballinamoney. At Bellananagh some traces of its course can be seen W. and N.W. of Fleming's Folly, and also behind Mr. Bennet's Corn Mill. Old people there remember seeing portions of it demolished in adjoining fields about 60 years ago. They also state that the ditch on the south side of the rampart was much deeper than the one on the north side. This feature I have referred to in my earlier paper when dealing with the ramparts in Co. Monaghan and those near Granard, indicating that it was erected against invasion from the south. At Bellananagh the people state that the fortifications ran easterly to Drogheda (a traditional survival of its origin as an ancient boundary of Ulster along the Blackwater and Boyne). The other terminal is confidently stated to have been at Athlone. If we consider the distance to Athlone, and the east and west alignment of the works near this locality, it is evident that a confused tradition of Ulster territory having once extended to Athlone, somehow has survived. But we shall see shortly that it was another line of defences belonging to No. 1 Frontier, which started from Donaghpatrick Bridge, that went to Athlone, while this second line we have now traced to Scrabby at Lough Gowna, or else by Crossdoney to the River Erne, ran west through Longford and Leitrim by Ballinamuck¹ to Cloone and Mohill, forming a part of this Second Frontier now under consideration.

I am informed that near Bellananagh is a place called Annamuica, the "Marsh of the pig." Another statement I received is that in the parish of Mullahoran the ditches ran through Pollakeel and Barnahoe, and a man named Delany said that he remembered it passing through the townlands of Ballyboy and Lisduff. It would be worth investigating how far this is correct.

I must here make a digression with reference to the series of ditches at Granard described in my first paper, called Dunclá. At the time of its publication I had no knowledge of any but the one line of defences then

¹ When at Granard, and again at Ballinamuck, I failed to find this trench to Lough Gowna. But I was told that such existed, though perhaps not well marked.

dealt with, namely No. 3 of the present paper; and owing to Keating's error of interpolating "Athlone" next to Mohill instead of "Ath-da-on," Atoon, I had been led into the error of mistaking Oughterach for either Lough Oughter or Lough Achters (the old name for Lough Gowna). I therefore took for granted that the ramparts leading from the latter to Granard and Lough Kinale formed some sort of subsidiary out-works to those of Roosky and Mohill. In describing No. 1 frontier I shall deal with them. Similarly (at p. 319) the "Worm Ditch," in the parish of Denn, county Cavan, did not fall into line with the rest of the series of No. 3. But my subsequent researches have shown that neither of these two sections of ditches was really a portion of the frontier No. 3, which ran from Clones and Belturbet to Lough Allen, but that those of the "Worm Ditch" joined on to those of No. 2.

OF THE ALIGNMENT OF NO. 1 FRONTIER.

If I am correct in assigning the earliest date to the most southern boundary of which I have discovered traces, it is only to be expected that its ramparts would be more obliterated than those of later periods. And through cultivated districts or rich grasslands the spade of the farmer would find the ramparts an obstruction. In Meath, therefore, traces of earthworks are very rare, and for the most part I had to rely on traditional sites and localities handed down as historical for generations by the occupiers of the soil. Here and there a place-name corroborates the popular story, but were it not for the persistence of the Pagan legend of the Black Pig, it would have been hopeless to follow up this inquiry. Nevertheless, it is quite possible that local antiquaries may in some instances find that some of the great double ditches, which are not infrequent in Meath, are survivals, though fragmentary, of the ancient territorial boundary.¹ Moreover, the difficulties of personal exploration of many parts of the country, in default of railway or other facilities, especially for access from the north to Oldcastle, the Fore district, and Castlepollard, were so considerable that I was largely dependent on the obliging services of Mr. O'Reilly, whom I have already mentioned, in addition to most valuable help received from one or two residents, to whom I owe a deep debt of gratitude, and especially Mr. Crofton Rotheram, of Belview.

Starting at Teltown (Taillten), near Donaghpatrick Bridge over the Blackwater, the entrenchments are said to have passed near the Mote of Girley and by Miltown Bridge near Clonmellon, there turning south-west-by-west to Killallon pound. At or near this point I believe the main works of

¹ See note on Clonmellon, p. 552.

No. 1 frontier ran to Lough Lene, and so past Castlepollard to Coolure on the north shore of Lough Derravaragh. But a branch ran on from Killallon west to Stirrupstown police barracks, and past Crosskeys close to a fort at Ballyfore, where is said to be a deep fosse, possibly a portion of the earthworks, and thence to Lough Bane. Still following westerly the boundary of Meath it ran to the Mote of Fore, where remnants of the old ramparts and fosse can be traced close to the remarkable dun. This stands on the edge of what must have been formerly a lake of which Lough Glore is the shrunken remainder. Out of what was the ancient lake the Vallum runs out, and passes the north side of the Mote, and a hollow in the field, about 8 feet wide, marks the accompanying fosse. I was not able to verify the above description personally, but give it as the result of Mr. O'Reilly's examination at my request. The line then passed by Sallymount to Balnacart Bridge or thereabouts, and to Lough Kinale through the townlands of Tullyowen, Tullyshammer, Cuillentragh, Togher, Crockakane, and Cornacreavy. I consider this portion from Killallon to Lough Kinale to be a subsidiary branch in connexion with those of Duncladh, which run from the north shore of Lough Kinale past Granard to Lough Gowna, and were described in my former paper; and I am inclined to think it referable to a later date than the main line No. 1, which I now proceed to follow to Athlone. At Coolure demesne, on the northern shore of Lough Derravaragh, is a large rath, shaped like a horseshoe, called the Rath of Moileen. Opposite it in the lake is a wooded crannoge. In the same field as the rath may be seen about 150 yards of a depression or fosse bordering the remains of a rampart, only one face of which survives. All the rest seems to have been levelled and obliterated. They pointed towards Castlepollard.

The extensive bogs which border the Inny River north of Derravaragh Lough and reach to near Castlepollard forbid any expectation of trenches and ramparts having been brought across them. And I know of no instance of works of the kind having been found across a marsh or bog. Nevertheless, it is possible that in some cases, if the turf were cut away to a lower level, ramparts might be found which, by the growth of bog during the lapse of many centuries, have been buried deeply. Similarly, turf cutters in these same tracts of bog near the Inny have found causeways well preserved 6 feet below the present surface. At Granard, Castlepollard was stated to be situated on the line of the Black Pig's race. I therefore visited that locality, but could find no existing remains. But I learned that a line of entrenchments is said to have been carried from near Castlepollard to Lough Lene by Kinturk (the pig's headland), near the very remarkable dun which occupies the highest summit of a hilly point over the lake, called Randon

(also called Terrygayshus by the people there, which probably is a corruption of Turgesius, the Dane, who is said to have occupied it). At the eastern end of the lake, where a small stream runs out, I noticed what appears to have been a considerable rampart running north-east. A recent deepening of the bed of the stream has, however, interfered somewhat with the apparent height of the rampart, the spoil having been thrown up against its base. If I am correct in my conclusions, therefore, it would appear that from Coolure the line ran east through Lord Longford's extensive demesne of Pakenham Hall, where doubtless its traces have been obliterated, to Kinturk, &c., and from the end of Lough Lene it was continuous towards Clonmellon¹ (or perhaps Kilallon), and there formed a junction with the main line to Donaghpatrick Bridge on the Blackwater.

Now, if the above continuation of the Teltown-Clonmellon route via Castlepollard to Coolure be found correct on further local research, it must have been part of the original and oldest line of frontier. And, fortunately, from Lough Derravaragh south to Lough Owel there is no difficulty in tracing the ramparts and trenches. We therefore must come to the conclusion that the remarkable remains above referred to at Granard and Lough Kinale and thence east by the border of the county of Meath, formed a subsidiary branch line, the object of which is a problem calling for examination.

Its existence at Granard seemed out of sequence with the alignment of No. 3 frontier, dealt with in my former paper, and seemed equally incompatible with that of either No. 2 or the present one. No doubt if the early history of this part of Ireland was more reliable and definite, the explanation might be more easily reached. But the problem before us is to draw historical conclusions from archaeological data—a more difficult task. It will scarcely be denied that at some early period the kingdom of Uladh claimed the sovereignty over all the county of Meath north of the Boyne and Blackwater as far as Kells. And, also, I hope to show from early sources that her sway once extended over at least the western half of the county of Westmeath so far south and west as Athlone. In the epic of the Táinquest the hosts of Queen Meave retreated to Connaught by way of Athlone, on approaching which she asked Cuchulain to take her army under his protection there, "that they so may reach across the ford to westward." . . . "And in that way, they which were left of all those hosts of Erin . . . passed the great ford and came once

¹ I may here remark as a digression, that near this place, on the estate of the late Sir Montagu Chapman, I am credibly informed that there exists a long, straight ridge of considerable size, which should be investigated to find if it is artificial or a natural esker.

more to Connaught.”¹ Early Irish literature refers to the constantly recurring invasions of Ulster territory from Leinster as well as Connaught, so much so that at some periods the northern kingdom appears to have exercised merely a suzerainty over much of her southern hinterland. It is therefore quite probable that a time arrived when the power of Emania was weakening so that the portion of Ulster territory east of the Shannon now represented by the county Longford, had become either debatable territory or had been virtually wrested from her by Connaught, and therefore it seems possible that an auxiliary line of defences was constructed from Lough Gowna to Lough Kinale, and thence east to meet the old frontier above described. Certain passages in the *Táin* seem clearly to support this hypothesis, as I hope to show later on. We will now pass on and describe the extension southward from near Castlepollard through Westmeath toward Athlone. On the southern end of Derravaragh Lake, which is near the village of Multifarnham, in the wooded demesne of Ballinamona, S.W. of the house, are some traces of earthworks from the lake shore, formerly extending southwards, but now largely demolished. About forty years ago a large rampart was levelled, which ran to Soho House. They, no doubt, joined those which run round Carrickgee hill (Hugh's rock), of which presently. I may here mention a pass through the woods of the adjacent demesne of Ballinaclonagh, called “Derreenahauga” (the little oak wood of the battle). My informant was not aware of any story in connexion with it. On Carrickgee hill, at whose base the village of Multifarnham extends, a well-preserved fosse runs along its eastern face, no doubt a continuation of the entrenchments that were constructed from the Derravaragh shore through Ballinamona. The height of the bank on the hill-side of the fosse varies from 12 to 16 or 17 feet. What rampart existed has doubtless been levelled. From the back of the hill the depression of the fosse and remains of ramparts in the townland of Rathganny continue well marked through the fields to the railway (which there runs through a deep cutting), and again recommence on its far side, and on thence to the boundary ditch of Wilson's Hospital, of which it serves as a very efficient boundary on the eastern side. Here some remains of a rampart can also be identified, but no doubt the fosse on its inner side has been filled up from the rampart.

Passing out of the grounds of Wilson's Hospital, the works recommence on the far side of the high road, and run very well preserved through the

¹ The “*Táin*” (Mrs. Hutton's version), p. 434.

Prof. Mac Neill also states that “the southern boundary of Uladh in the days of Fiacha, south of Niall, in A.D. 515, was from Navan west to the Shannon, perhaps at Athlone.”—“Lectures on Irish History.”

fields for a considerable distance till they cross another road and reach the north shore of Lough Owel. This latter portion of the entrenchments is more complete than any of the rest, owing to its having been planted with trees. The present earthworks there consist of a vallum, about 10 feet high, in the best preserved portions, and on its southern side, on the edge of the timber-belt, another about 5 feet above the central level. This is bordered by a fosse, from 5 to 8 feet deep, measured from the field-level outside. This fosse shows also in part the remains of a low rampart of about 2 feet high on the outer side. A hedge runs along its inner side.

On the northern border of the plantation I am of opinion (judging from similar works constructed on level ground) that a corresponding low rampart formerly ran, bordered by a fosse, as on the southern side. But at present there is only a steep hedge and ditch. From the top of the high vallum to the top of the smaller one measures about seventeen yards. This portion of the entrenchments, therefore, seems to have been a formidable defensive work. At the road end of this belt of timber containing the earthworks, and some few hundred yards from the lake shore, a rath was constructed alongside, whose central platform is about forty-eight to fifty yards in diameter, with a ring or bank in some places ten to fifteen feet above the enclosing fosse. Possibly this may have been put up as a place of residence for a guard. Two names are locally applied to these ancient earthworks. The portion at the Multifarnham end was named by the postman, who resides there, "Boreen na hulka" (teste the late Mr. Tuite, of Mullingar, a well-known antiquary). An old woman, whose cottage is on the edge of the trenches, in Wilson's Hospital, also gave me the same name. I have been unable to get any explanation of this word. But I heard a different one from the farmers living near the remainder just described, a length of, perhaps, three-quarters of a mile running into Lough Owel. Here the works go by the name of Boreen na tauna or Boheen na tauna (spelt phonetically), otherwise Boher na tauna. I thought, at first, it might refer to the "ramparts" (sonnagh, in Irish, which, with the article prefixed, becomes t' sonnagh; but, if this were the case, I am informed, the article would become "an," giving "an t' sonnagh," pronounced "a tunny." A variant explanation would be "an tamnagh," usually pronounced "towna," or, in some of the counties of Ulster, "tavnagh" or "tonnagh," meaning "field of grass." Seeing, also, that the country through which this frontier line passes in Westmeath is, and apparently always was, a pastoral district, that appellation would not be a distinctive one. But, with the article "na" prefixed, as in Boher na tawna (pronounced as "saw"), it apparently refers to the Táin, "the road of the Táin." The versions as pronounced to me were

Bohereen tawna, or, as given by the same man, Botheen na tawna, and Boreen na tawna; by another, Bohereen na tawna, and Boher na tawna. It would, therefore, appear probable that this locality recalls by its name some circumstance connected with the great Cattle foray. We find on reference to the original saga that the army of Queen Meave was led south by Fergus after arrival at Granard, and that their guide purposely led them astray, till they reached the "Indeoin River," said to be the Dungolman River, in the direction of Lough Ree. Here a new guide was chosen, and the host "turned and took the nearest course to Ulster," by the Slighe Asail, one of the ancient roads of Ireland, that ran along the western shore of Lough Owel to Portloman, and possibly further north. The hosts, therefore, would have marched to the head of Lough Owel by it, and turned north-east, and crossed the Boher na tawna, to go to Ardculen.

The passage referred to is as follows, quoted from the translation of the "Táin," by Joseph Dunn, 1914:—

Medb. "Fergus, speak, what shall we say?
What may mean this devious way?
For we wander North and South,
Over other lands we stray."

Fergus. "Medb, why art thou so perturbed?
There's no treacherous purpose here,
¹Ulster's land it is, O Queen,
Over which I've led the host."

This seems to be an important testimony, that the Barony of Rathconrath, which is bounded on the west by the Dungolman River, and all the district through which the Connaught army had been led, after they had crossed the Shannon, near Mone Coltna (a moor in Roscommon, between Roosky and Lanesboro'), namely, in Co. Longford, through North and South Teffia, as well as Barony of Moycoish in Westmeath, were, at the date of the writing or compilation of the epic, all considered within the bounds of the Ulster principality. All these lay between the Shannon, which divided Ulster on the west from Connaught, and the frontier line on the east, which has been above described, and which went on to Athlone. It appears to have been a country not known to the Connaught host; but Fergus prevaricated in saying that it was "Ulster," as it would seem that there was no opposition offered to the raiders, and that Fergus sent a message to northern Ulster when he crossed the Shannon, probably about Newtown Forbes, *en route* for Granard. Whatever claim, however, the northern Province may have had upon this south-west portion of Westmeath territory to justify

¹ Is for Ultu in tir darsa tiagusa.

the statement of Fergus, it seems unquestionable that at least a portion of No. 1 frontier in the County of Meath was then universally acknowledged to be the southern boundary of Uladh; for we read that Cuchullin "rode into the marches" from Dun Dealgan, and reached Ardcullin. This is stated in the L. U. MS. to be "called Crossa Cuill to-day." (See note, Appendix B, "The Táin," Hutton.) Here we are told that he cut a spancel-withe, marked it with an ogam inscription, and threw it around the pillar-stone to delay the advance of the hosts. (We find that at Crossakiel there still stands such a pillar-stone, about five feet high, near the Ballinlough Road.) Nevertheless Mrs. Hutton, in her version of "The Táin," in a note on "Ulster" (Appendix B), states that, though "the boundary of ancient Ulster extended from the estuary of the Boyne to the Bundrowes River," yet "in the 'Táin 'Ulaid' is occasionally used in a more restricted sense, and seems to apply only to the north-eastern corner of Ireland—Antrim, Down, and Armagh."

The explanation of this, however, is not far to seek. The epic in question having been, doubtless, written down in Christian times, and probably compiled from various sources, retains traces of various periods, which have not been uniformly reduced and correlated harmoniously. Naturally, therefore, some passages reflect phases of historical conditions in which the outlying portions of the province were dealt with rather as an appanage than as an integral portion of the central seat of power. Such conditions are, even in these days, not wholly obsolete.

To resume. Near Portloman tradition again points out a line of entrenchments which started from the shore to the little hill of Slane mór (on whose conical summit are two small mounds, apparently constructed for watching-places, or look-out stations). On its southern side, from the road, are remains of what seems to have been a double rampart and fosse, running down hill toward Greenpark. Some traces are said to exist between Johnstown National School and Sonnagh House; but I could not identify anything distinct. Yet, the name Sonnagh undoubtedly refers to a rampart, probably near, but not necessarily at, that actual site. Here, in this district, we are traversing historical ground. Slanebeg and Slanemor mark the site of a battle which, in A.D. 494, was won over the Leinstermen by Colman Rimidh, King of the Kinel Owen, from which Conall, son of Aedh, son of Ainmire, escaped by flight. Some eleven years later, at Frewin Hill, not far off, Fiacha son of Niall a Ulidian prince was in turn defeated by Foilge Berraidhe a Leinster chieftain. But at length a final victory was won at Dromdeirge¹ over the Leinster victor, by Fiacha; and we are told that

¹ Ann. Four Masters, A.D. 507; but in Ann. of Ulster, given under years 515 and 516. See note on p. 553.

“from that time forth (i.e. A.D. 507), the land, from a locality in King's County, and extending to Uisneach, remained an integral portion of the Kynaleagh and the Kingdom of Meath.”—(Ann. of Tighernach.)

These events in Patrician times have nothing immediately to do with our subject, but illustrate the historical difficulties which accumulate round the story of King Tuathal Techtmar's founding that kingdom in the second century, as we find that some 300 years later this southern territory was still in dispute between Leinster and Ulidia, and was reconquered by the latter. Later on I shall adduce a historical reference to show that this and a wide stretch of country adjacent was conquered by Ulster at a much earlier epoch.

From the neighbourhood of Lough Owel I lost all traces of entrenchments, except that the late Mr. Tuite, of Mullingar, heard from Mr. Thomas Connaughton, D.C., of Carn, that the tradition of the race of the Black Pig to Athlone is common and widespread, though he knew of no earthworks. But that “from the ruins of Stremminstown Castle an avenue leads to the old main road called the Black Pig's Road, near Carn Castle, and by it in ancient times kings and great people used to travel West from the North.” This is possibly a reminiscence of Táin legends. From another source I find that traces of fosses and ditches are said to exist from the mill of Moyvore and through Washford to Carn and Stremminstown Castles, which went on through Streamstown, at the back of the railway station, to Templemacateer.

I then decided, on topographical grounds, to make some research near Mount Temple and Moate; and on writing to the Rector (an old acquaintance), he made inquiries in the neighbourhood, and then very kindly asked me to come and visit what he had been shown. The Black Pig's race was said by many of the neighbours to have passed through Walderstown cross-roads and near Ballycanbo. Others mentioned Belleville and Creeve Castle as the nearest locality. Accordingly, we made for “The Split Hills,” about which there was a legend. It is a curious formation in a line of low eskers, and not far from it we found remains of a rampart much defaced, with a hollow alongside, running north-west. Fortunately we met with an intelligent young woman, who traced the line on to Belleville, and pointed out the track of an ancient road. This, she said, was formerly a coach-road made upon the Black Pig's race, which led along the edge of what was formerly a wide swamp in Creeve. The rampart at the Split Hills, she said, went by the name of Lukananti (perhaps a corruption of Lugatanti),¹ “the hollow of the old house” Lug-an-t'sean-tech? The ruins of Creeve Castle are close by. She traced the line, the track of

¹ Cf. Joyce, *Irish Place Names*.—“Attatantee. The site of the old house.”

which was scarcely discernible, skirting Belleville through Creevenulla to the Ballyboran Road, at Andy Murphy's cottage. The whole track seemed thoroughly familiar to her: but except near the Split Hills, there were no evident remains of the existence of former entrenchments. The line was said to have gone to Ballykieran, and as that is beside the most easterly extension of Lough Ree, it is the point at which one would expect the entrenchments to terminate, rather than at the site of the present town of Athlone; but I was unable to find any resident there who could point out any remains.

So far I have set out the alignments of these three territorial boundaries, following the traditional routes which are in some portions substantiated by the discovery of earthworks of more or less remarkable character. Their identification as frontiers has been for the most part corroborated by local names and surviving legends. I have ventured to arrange them arbitrarily as regards their respective antiquity in a series of which the most southern is presumed to be the most ancient.

Nevertheless, it may be held that the inverse order might be the correct one, the most northerly defining the limit of ancient Ulster previous to successive acquisitions of territory southwards. In support of the former view, however, and also possibly to elucidate in some degree the periods to which we may refer their erection as well as their topographical features, I shall attempt to put forward some historical data and other suggestive references. Though the early historical records of Ireland are by competent scholars confessed to be unreliable, and the chronology quite uncertain, yet we cannot doubt the general consensus of all tradition shows that long centuries before the reign of Cimbaeth (third century B.C.) (which is the earliest date historians allege as the commencement of reliable history, while recent scholars, such as MacNeill, put it as late as the second century A.D.), the province of Ulster was constantly engaged in warfare with some or all of the other four provinces, and for the most part vindicated its claim to be the prepotent power. For instance, we read that in 4020 A.M., long before the founding of Emania, Sirna, the son of Dian, "wrested the government of Tara from the Ulta." It was he, too, that "avenged upon them the death of Roitheachtach MacMain, whom they had slain at Cruaghan."¹ But in 4423 A.M. Airgathmar, King of Ulster, was monarch of Ireland, to which dignity his grandsons succeeded, one of whom was Cimbaeth, and another claimant was Dithorba, who ruled the territory of Uisnech.

Of Macha, from whom Ardmagh took its name, we read that when asserting her claim to the kingdom before she became the wife of Cimbaeth, she led an

¹ Ann. Four Masters.

army into the territory of Dithorba, drove him into Connacht, where he was slain at Corann, and carried his sons captive into Ulster, and compelled them to erect Emain Macha. What was the extent of territory thus acquired for Ulster we cannot tell; but the barony of Rathconrath, in which the famous Hill of Uisnech is situated, formed a part of the district which we find Fergus MacRoy of the Táinquest claiming as within the confines of Ulster at that epoch. It is true that the Book of Leinster states that on the decease of Macha, who survived her husband Cimbaeth, "the Ulster supremacy over the land of Temair," i.e. Bregia, "was crushed."

Nevertheless, a few years after we find their foster-son Ugaine Mor in 4567 A.M. ruling all Ireland with a strong hand from Tara, so much so that he sub-divided all Ireland into principalities, and appointed each of his twenty-five children severally rulers of the territories in question. But it is notable that the integrity of the northern province, roughly indicated by a line drawn from Sligo Bay to Newry, was not interfered with, excepting a portion of Antrim corresponding nearly to the two baronies of Upper and Lower Glenarm, Latharna being seated in the lower portion called after him Larne, and Laegh, in the upper division, called Magh Lene. We may, perhaps, draw the inference that Ugaine Mor did not wish to interfere with the ruling chieftains of his own province, and also desired to secure that the power of the other four provincial kings should be emasculated. The provincial Pentarchy accordingly became suppressed until Eochaid Aimreamh restored it about the commencement of the Christian era, and the territories of the provinces, of which Ulster alone had escaped disintegration (except in two Antrim districts), were again reconstituted.

From the foregoing outline of its early history, which, though traditional, may be considered more or less reliable in its general features, we may certainly gather that in very early times Ulster held first rank as a military power, with fluctuations, as compared with the provinces of Leinster and Connaught; and that its southern boundaries were not permanently encroached on until the Milesians gradually extended their rule northwards.

After the publication of my former paper on the Black Pig's Dyke, which only dealt with Frontier No. 3, Miss Dobbs, in an interesting communication to the "*Zeitschrift für Celtische Philologie*," pointed out that the direct march of Medb from Cruaghan would lead across South Leitrim, Cavan, and so to Louth. But the itinerary followed by the Connaught army was through Moytra, and past Granard (Teffia), in the county Longford. She suggests that this was probably done to avoid any contest when crossing the entrenched frontier at the initial stage of the journey, and therefore that we may infer the ramparts of Duncladh, &c., to have been in existence at that date.

Miss Dobbs quotes Windisch, preface to "The Táin," p. 32, and Ridgeway's "Date of First Shaping of the Cuchullain Saga," p. 34, to ascertain the probable era of the cycle of Ulidian romances, namely, the century just before, or the century just after, Christ. She then points out that we have no mention in any written document of the construction of such a work or works as those I have described, and that the grotesque legends referring it to the Black Pig connect its traditional origin with one of the most ancient romances that have survived, namely, with the fate of the children of Turenn, and not with Finn MacCumail, or any more recent hero, so that the original fable of the Black Pig is probably referable to a period long anterior to the commencement of the Christian era. The paper concludes by a statement that in her opinion there are grounds for believing that these earthworks (the Dyke and the Dorsey) already existed in the first century of our era, when the events narrated in the Táin bo Cualgne took place. My own further researches, and a study of the additional boundaries now described, increasingly confirm the above conclusion, and suggest that at least a part, if not the whole, of the entrenched frontier No. 1 must have been erected certainly earlier than the Christian era; so much so, that at the time of the Cattle Foray, the greater portion at least of the territory bordered by the earthworks running south and west from Lough Derravaragh had virtually passed out of the practical occupation of Ulster.

Bearing on this point we find a passage in "Cogad Fergusa agus Conchobair," which further indicates that somewhat previous to the time of the Táin foray, and just after Conor's accession, the greater portion of the southern nominal possessions of Ulster, apparently those beyond No. 2, or the middle frontier, was in a most unsettled condition. For we are told that in revenge for a raid on Louth by Fergus MacRoy, allied with Cruaghan, and the then King of Temair Eochaid Feidlech, the Ulstermen ravaged Meath, Taillten, Uisnech, South Teffia, the river Inny (Eithne), and along the Boyne to Temair, and then homeward. "Meath" we may take to mean the part south of Louth so far as Taillten. "Uisnech," *i.e.*, Barony of Rathconrath, &c., "Tethba Deiscert," *i.e.*, the part of Westmeath south of Lough Sheelin, "the river Inny," which runs out of Lough Kinale to Lough Derravaragh, and through the barony of Moycoish. Thence to Navan and Tara, through Bregia, and so north again. We must, therefore, gather that at least most of the territory claimed by Ulster south of No. 2 frontier which seems then to have bounded Ulaith proper, was about the commencement of the Christian era a kind of buffer state, or sword-land, from which supplies were drawn, and battle offered to invaders. This seems to be further substantiated by a passage in the "Revue Celtique," xxi, p. 313, stating that "the district in

which is Da Choca belongs to Ailill and Medb." Da Choca has been identified as Breenmore, some six miles N.E. of Athlone. The district in question must, therefore, have lain along the north-east shore of Lough Ree, at the extremity of the confines of the Ulster hinterland, and may be cited as evidence that at the date of the Táinquest, portions of the outlying Ulster territory had been already definitely alienated. Before we leave this south-western portion of Westmeath, I should wish to call attention to some topographical details referred to in the Táin with its usual precision. In connexion with the final struggle between the armies of Medb, and the levies from Connacht and the southern provinces, we are told that Conor with the Ultonians pursuing the retreating forces of Medb had arrived at "Slemain Midhe." The two little conical hills of Slane Beg and Slane Mor are situated about two miles south-west of Portloman at the southern end of Lough Owel. From the latter we have indicated the line of entrenchments of No. 1 frontier to Slane Mor, and onward to the country near Moate, and towards Athlone. Along its northern side the battlefield of Garech and Ilgarech (names now obsolete) stretched for nine or ten miles west from Slane to a place named Clara or Clare, not far from Ballymore. Here we read in the translation of the "Táin" by O'Looney (preserved in the Royal Irish Academy), that the retreating hosts of Medb halted and encamped. "It was then that the four great provinces of Erin established a dun and an encampment at Clathra that night." The hill of Uisnech is about three miles east in the plain from thence.

In the Yellow Book of Lecan it is stated that at Fedain Collna (which is thought to have been probably a district not far from Ballymore village), Cuchulain lay wounded,¹ and fastened to the ground by "bent willow wands which held his bratt above him so that it may not touch his skin." At a crisis in the battle Fergus MacRoy engages in single combat with Conor. Not knowing who his antagonist was, he presses his foe so furiously that the king's magical shield roars as was its wont when the King of Uladh was in serious danger. Fergus thereupon retires, not wishing to slay the king. But the roaring of the shield is heard by Cuchulain, who bursts the bonds which fasten him to his sick bed, and rising shouts his battle-cry. The following is from the Book of Leinster:—Mac Roth, the chief messenger of all Erin who is in attendance on Ailill and Medb says to them: "I heard a great cry there, to east of the battle and to west of the battle." (Perhaps referring to the sound from the shield, and to the response from Cuchulain on the hither side of the conflict). Ailill then asks: "What kind of a cry is that over

¹ 50 a 28.

there?" "We know that," he is answered, "that is Cuchulain attempting to come to the battle, he being exhausted with the length of his lying in Fert Sciach under bows and hooks and strings" (i.e. bandages and fastenings), "and the Ultonians do not allow him to go into the fight on account of his wounds and hurts, for he is not capable of battle or combat after the fight with Fer Diad."

"That was true for Fergus; it was Cuchulain tired out with the length of his lying sick in Fert Sciath under bows and hooks and strings."

The Stowe MS. reads, "The Fert of Sciach, daughter of Deagad," and in the second paragraph it reads, "Sceth, daughter of Deagadh." The MS. which is called H. by Windisch reads, "The Fert of Sciach, daughter of Deghaidh," and in the second paragraph, "The Fert of Serc (evidently a wrong extension of the contraction), daughter of Deghadh."

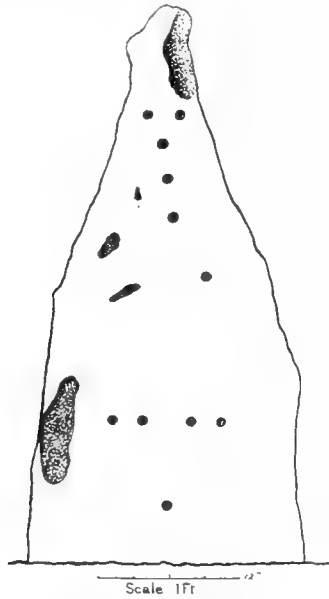


FIG. 1.—Fort Sciach.

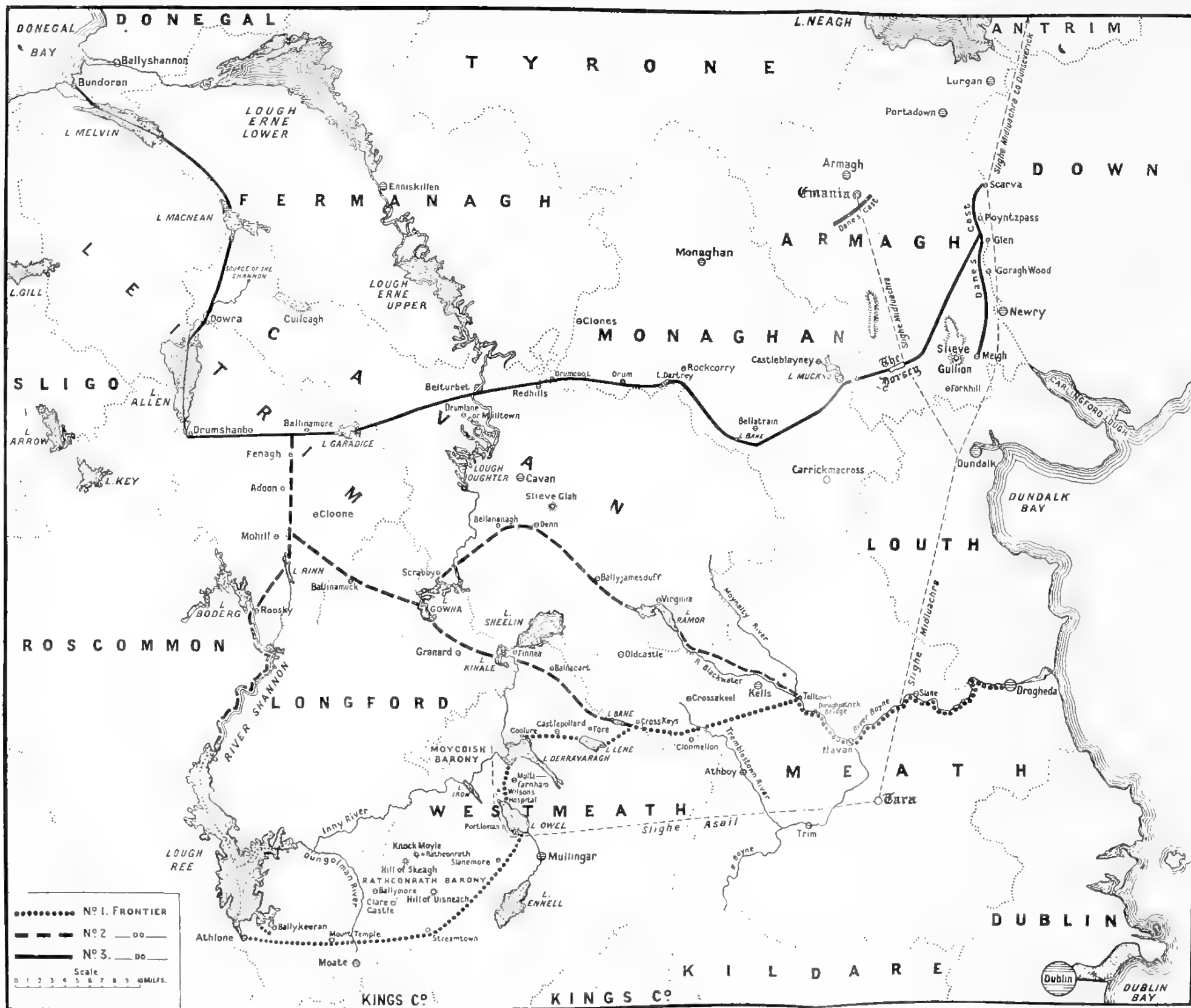
Now in the course of my inquiries in that neighbourhood as to the course of the ramparts attributed to the Black Pig, I was told of a great rock with two marks on it made by the magical pig "when he journeyed from the north to the west," called Carrick-na-muic, the pig's rock. Now if a straight line be drawn on the map from Slane Mor hill to Ballymore village it will intersect the road which leads from Mullingar to Ballymahon near Rathconrath village, and not far from this is "the Hill of Skeagh," on the right hand side of the road, and on its top is the great rock visited by the magical pig. The townland of Skeagh comprises about 390 acres in its bounds, and its

designation as given on the Ordnance Survey Map would naturally suggest that it took its name from thorn bushes, but the story of the magical pig having been associated with it, "coming from the north to the west," induced me to make further inquiries. I found that the rock at the top of the hill "Carraig na Muice" was a natural outcrop, but that there is also an upright pillar-stone standing on a ridge of the hill, about 4 feet high and 2 feet wide at the base, and tapering to the top. On its south-west face are a number of what seem to be small cup-cuttings apparently arranged in designed order and distances. It is apparently a Liggán or monumental grave-stone, and as the old MSS. referring to Fert Sciach indicate the position of Cuchulain's sickbed as having been not far from the camp of Medb, and within a moderate distance from the battlefield, it seems very probable that the Liggán in question marks the fert or grave of Sciach, daughter of Deagadh.

About four miles away is the village of Rathskeagh (so spelled in the Ordnance Map), which may possibly have been the rath of the daughter of Deagadh in question. The three bald hills of Meath, whose tops were supposed to have been cut off by Fergus's sword, are yet to be identified. I know of only one in that neighbourhood. It goes by the name of Croc na Maoil, or sometimes Cnoc na Maoilin. This lies just between the Hill of Sciath and Rathconrath. In the extreme north of the county, south-east of Lough Sheelin and north of the River Gloire, is also a conspicuous truncated hill called the "Hill of Mael" in the Ordnance Survey Map. But this could scarcely be one of the three whose tops were fabled to have been cut off just before Fergus retired from the battle. "The three Moyles of Connacht" truncated by Cuchullin on that occasion were on the far side of the Shannon and near Athlone. That district, however, is unknown to me.

My hearty thanks are due to Professor Hyde, Mrs. Hutton, and Miss Dobbs for their invaluable assistance as to Irish texts, &c.

NOTE ADDED IN PRESS.—I have just received a letter from Mr. Henry Morris, the well-known antiquary and contributor to the *Louth Archæological Journal*, which states that lately at Cullyhauna in the Co. Armagh he met with local testimony still surviving which confirms the statements of this document. His informant, an intelligent young man, mentioned that he had learned from traditional sources that the present fortifications of the Dorsey are only a portion of what once existed in that neighbourhood, namely, a great wall or rampart, which had been demolished, but of which he can yet distinguish some traces.



KANE.—THE BLACK PIG'S DYKE.

May, 1916

1, 2, 3

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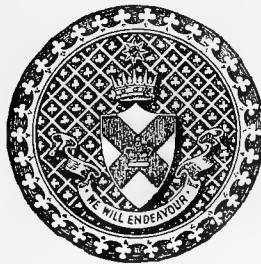
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