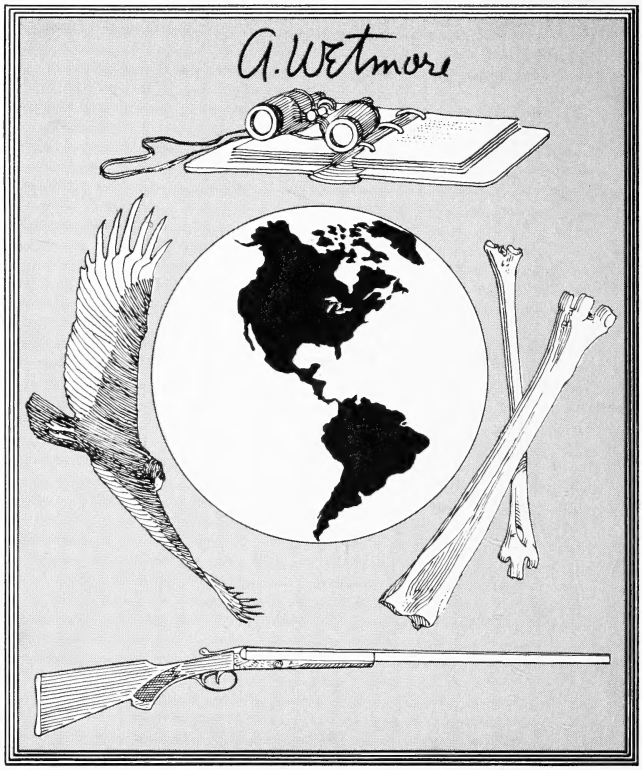
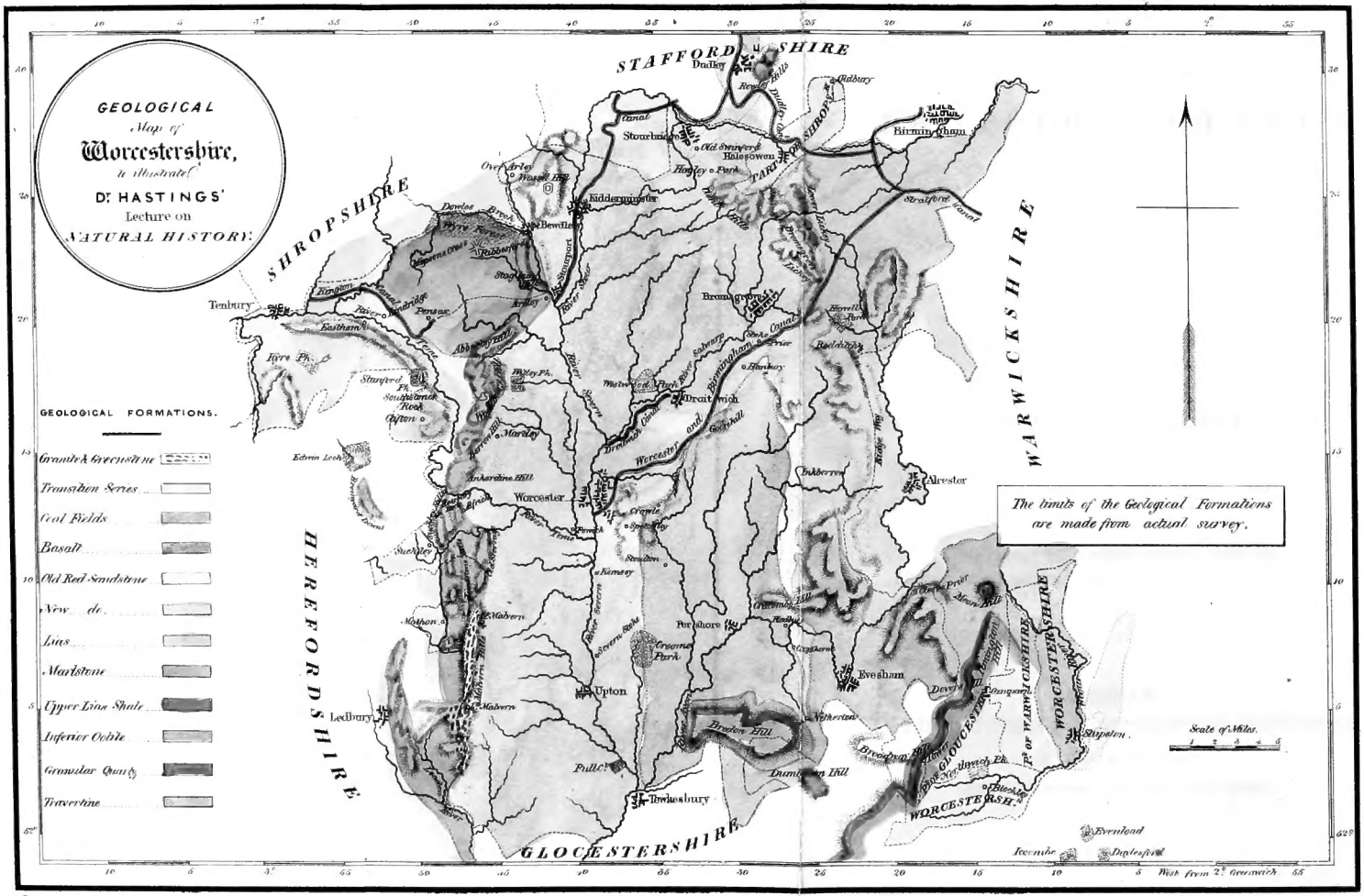


Alexander Wetmore

1946 *Sixth Secretary* 1953

A. Wetmore



Worcestershire Natural History Society.

E. Lees Constructr.

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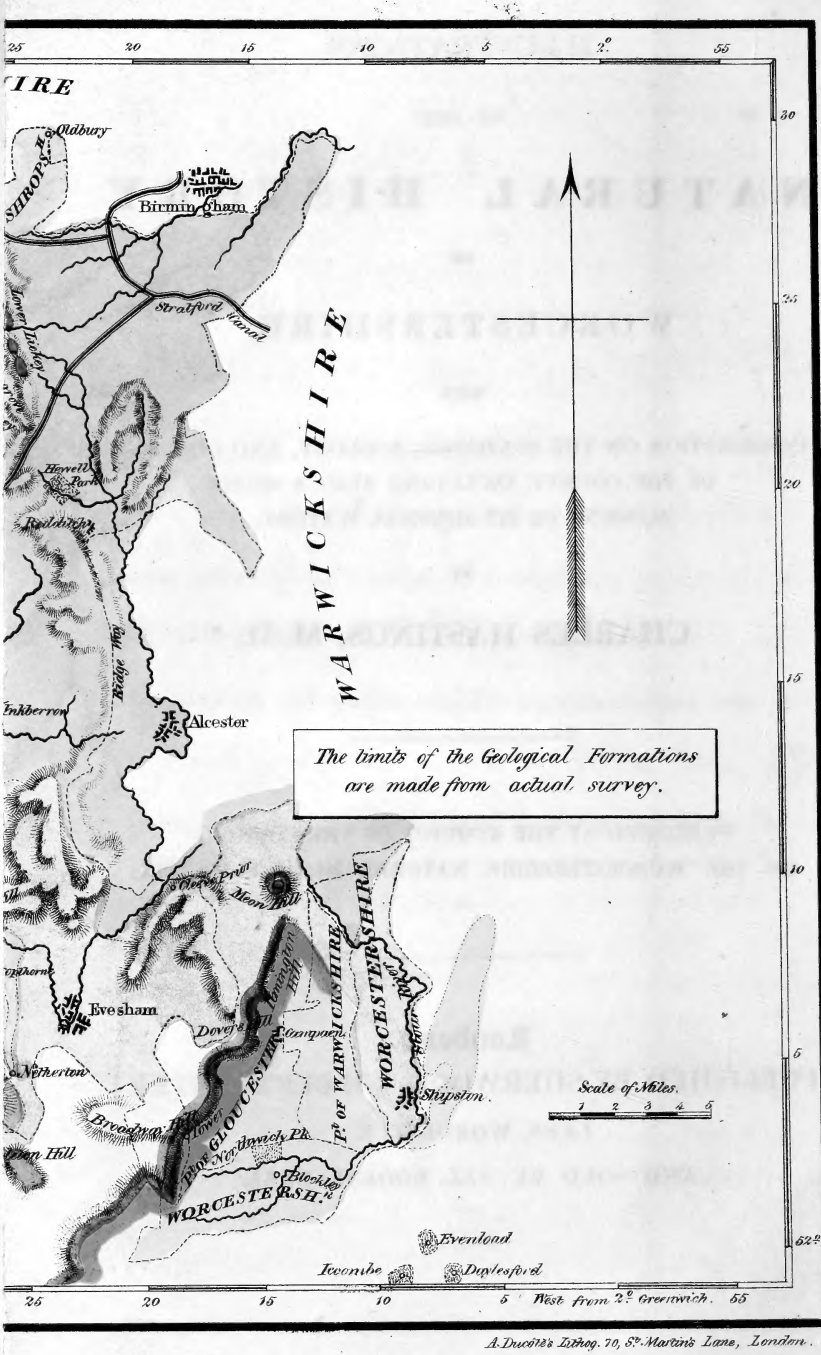

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ILLUSTRATIONS

OF THE

NATURAL HISTORY

OF

WORCESTERSHIRE,

WITH

INFORMATION ON THE STATISTICS, ZOOLOGY, AND GEOLOGY
OF THE COUNTY, INCLUDING ALSO A SHORT
ACCOUNT OF ITS MINERAL WATERS;

BY

CHARLES HASTINGS, M. D.

PUBLISHED AT THE REQUEST OF THE COUNCIL
OF THE WORCESTERSHIRE NATURAL HISTORY SOCIETY.

London:
PUBLISHED BY SHERWOOD, GILBERT & PIPER;
LEES, WORCESTER:
AND SOLD BY ALL BOOKSELLERS.

1834.

TO THE

RIGHT HON. LORD LYTTELTON,

A nobleman not less distinguished by the zeal, talent, and liberality with which he assists in diffusing useful knowledge among every class of the community, than by the social virtues which adorn his private life; this small tribute of respect and admiration is inscribed by his obliged friend and servant,

THE AUTHOR.

PREFACE.

When the Council of the Worcestershire Natural History Society, did me the honour to request the publication of the following Introductory Lecture, I at first entertained a doubt whether by so doing there might not be some risk of injuring the Society; for the opinion which my own judgment had led me to form of its value was much less favorable than that which the communication from the Council induced me to think they entertained of it.

This doubt would probably have led me to decline committing my manuscript to the press, had I not found several active Members of the Society ready to afford me additional information respecting the Natural History of Worcestershire; and with these additions I now offer the Lecture to the public, with more sanguine expectations that it will be favorably received.

I much regret that the urgency of my professional engagements has not allowed me to devote more time

to this composition; but I trust I have succeeded in collecting together information which has an especial reference to the physical and moral phenomena developed in the district in which it is my happiness to exercise a noble profession.

With that profession, the inquiries proposed to be instituted by our Society, have a very close connection; since without a correct knowledge of the Natural History of the locality in which the physician practises, he must be ignorant of many things which influence its mortality, and cannot discern what Hippocrates esteemed the greatest excellence in the art of physic, the constitution of the seasons, and the diseases which attend them.

As respects the map which accompanies the Lecture, and for which I am indebted to the exertions of Mr. Lees, Mr. Pearson, and Mr. Strickland, I trust, as a first attempt to represent the Geological Formations of Worcestershire, it will be considered valuable; as it gives a general outline of the Geology of the district, which for the present, at least, will be useful, and may assist future labourers in their efforts to give a more extended and detailed view of the various and highly interesting features presented to the Geologist in several parts of Worcestershire.

The investigations of that enlightened Geologist, Mr. Murchison, have been extended along the western boundary of our county; and it is expected that his splendid work, which will soon appear, will be illustrated by maps on a large scale, and will afford most important information upon our local researches.

This will enable the Society to take advantage of his erudite labours, and more particularly that part of them which has a reference to the fossils in the grauwacké series of rocks, and to the junction of the old and new red sandstone in Worcestershire.

It should be observed, that Mr. Murchison includes the whole range of our transition hills from Abberley to Malvern, in the upper grauwacké series. The Teme breaks through the line at Knightford's Bridge, from whence the superior grauwacké formation strikes south-south-east for a distance of six miles, until it is met by the sienitic ridge of Malvern, running due north and south. This contact, Mr. Murchison observes, has cut out and deflected the sedimentary rocks from their course, and their direction is accommodated to the western sides and promontories of the intrusive rock.

At Abberley, the elevating forces which have upheaved the two contiguous hills of Abberley and Woodbury, have caused the singular phenomenon of a complete *reversal of the members of the grauwacké*, and thus for several miles on the western flanks of these hills, the "lower Ludlow rock" of Mr. Murchison, is found overlying the "upper Ludlow rock," at angles varying from 70° to 45°. It is conceived that the out-burst of the basalt, which Mr. Pearson mentions in his paper, and the forces accompanying it, have bent back the strata upon their axes, and produced their present singular inverted position. Where this series impinges in its south-south-easterly direction upon the Malvern chain, the same pheno-

menon of a reversal of the strata appears, for the grauwacké and limestone near the sienite are bent backwards, but at a farther distance the disturbance not having been so great, the strata incline towards the west, the subordinate bed of the "Wenlock and Dudley limestone" dipping beneath the exterior and upper zone of "Ludlow rocks." This explanation will render the account of our Geology given in the succeeding pages more intelligible and complete, and give additional interest to the map.

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CONTENTS.

AN

INTRODUCTORY LECTURE

ON

NATURAL HISTORY.

It has been well observed, by an elegant writer, that Natural History is the most instructive and entertaining of all the sciences. It is the chief source from which human knowledge is derived. To recommend the study of it from motives of utility, were to insult the understanding. Its importance, accordingly, in the arts of life, and in storing the mind with just ideas of external objects, as well as of their relations to the human race, was early perceived by all nations, in their progress from rudeness to refinement.

Natural History is intimately connected with all the other sciences; and with all the arts, from the simplest and rudest to the most complicated and most elegant. We cannot well avoid becoming more or less acquainted with the manners of animals, the

economy of vegetables, and the general appearance of Nature. From an acquaintance with these, many advantages have already accrued to man, and from a more intimate knowledge of them many more will doubtless be derived. The husbandman ought to know the character of the tame animals which he employs; what advantages are to be derived from them; whether there are others that would suit his purpose better; where they are to be found; how they are to be procured, and how supported; the qualities of the soil he cultivates, and the means of managing and improving it; the nature of the grains and grasses which he raises, and whether he might not with advantage substitute different species for those in common use.

One circumstance which renders the pursuit of this branch of knowledge highly interesting to every enquirer, is, that whilst for the investigation of those branches of natural science which are connected with the mathematics, much previous study is necessary; it is not so as respects some of the branches of Natural History. These being only collections of highly curious and useful facts, any one may understand them as readily as the professed student. Here then we claim for the division of knowledge which is intended to be cultivated by our Society a superiority over all others—that it not only affords scope for the penetrating genius of an Aristotle and a Bacon, but may be favourably prosecuted by the humblest votary at the shrine of science. Many indeed are the great names that have been immortalized by their devotion

to this branch of learning. But we must claim for the moderns a preeminence in this respect, which they have not arrived at in some of the other departments of knowledge. With the exception of Aristotle, and one or two other great men, the ancients did comparatively little in this regard. It has been reserved to modern times to arrive at any thing like a scientific description and classification of what have been called the several kingdoms of Nature.

Towards the end of the seventeenth century, Natural History began to be generally cultivated. Among our countrymen—Ray, Woodward, Collinson, and Edwards, prosecuted the study of it with singular success, and they have been followed in the same track by many others, scarcely inferior in industry or abilities; none of whom, however, are more entitled to praise than the indefatigable Pennant. But to the celebrated Linnæus is justly attributed the honour of having first formed Natural History into a system: and he may hence perhaps be considered its greatest benefactor. Buffon, it is true, by uniting extensive knowledge, ingenuity, and elegance, has contributed in a signal manner to diffuse among the various ranks of society an ardent desire to obtain a more intimate acquaintance with the same study: and his attempts have been ably seconded by Jussieu, Willdenow, Pulteney, Shaw, and Smith. To these I must add the name of one, only just taken from us, whose towering genius raised him far above the rest of mankind; and whose labours in behalf of Natural History have placed him on the highest

pinnacle of Fame—the great, the learned, the immortal Cuvier.

But notwithstanding all these great efforts, and great and highly honourable have they indeed been to those who have made them, we are far, very far, from having arrived at the consummation so devoutly to be wished. Natural History is not generally cultivated in this country with that zeal and ardour which its high importance demands. The great body of the community have been hitherto very indifferent to the subject. Need I adduce any other proof of the existence of this apathy in the minds of the people at large, than to state the fact, that in this opulent and enlightened county there has never been a single attempt made to claim any public attention to this captivating department of knowledge. The entire history of this far-famed city does not record even one barren endeavour to rouse the dormant energies of its inhabitants in pursuit of the rich harvest which would reward the labourers in this vineyard. But we will hope better things. If there never before was a time in the history of the human race when a thirst for useful knowledge had gone abroad, that time is now arrived, and posterity will reap the advantage of it.

There is no feature more striking in the republic of letters at the present moment than the disposition that exists amongst men to co-operate together to produce any great beneficial result. The advantages of this co-operation in scientific pursuits is easily perceived: the scattered knowledge of many, which

would be singly of small value, when collected into a mass becomes more important; and these societies of men, by diligently collecting and arranging facts, are enabled to arrive at conclusions which advance the progress of knowledge. My medical friends must forgive me if I in an especial manner remind them that they are well able to estimate the value of this co-operation. The volume of Nature lies open to all, but in an especial manner to the medical philosopher: in all regions he is excited to peruse her pages, to interpret her language, and to explain her laws. In the expeditions, whether of discovery, war, or commerce, made to remote parts, and to every climate of this earth, we see with a pardonable satisfaction that the most interesting facts in natural history and science have been collected by medical persons; or by those educated in that profession. It seems to me that a spirit of enquiry into the natural phenomena going on in this globe is congenial with the study of the medical art; and that this disposition may be encouraged and directed in a mode that may lead to important discoveries. How then are we to accomplish this desirable end? I answer, by uniting together zealously and cordially to promote the object we have in view.

The value of this co-operation has been eloquently stated by a distinguished member of this profession. He has taken advantage of the tendency that at present exists among individuals of every class in the community to associate together for the advancement of knowledge, and has proposed that County Natural

History Societies shall be formed for the purpose of ascertaining the circumstances in all localities which are productive of disease or conducive to health.[1]

This enlightened proposal, made by Dr. Conolly, has been universally approved, and I have reason to believe will be very extensively acted upon throughout the kingdom at large, and I rejoice exceedingly that this my native county should be among the first to step forward to institute a society which, as a part of its plan, embraces the objects proposed by this talented physician. There are, I apprehend, unrecorded circumstances of much interest in natural history and medicine, daily occurring in the British Islands; as well as local peculiarities connected with these circumstances, either unnoted or not understood; and it will be admitted that the origin and course of disease often bears a close relation to these local peculiarities. Influences of the atmosphere gratuitously assumed without understanding their properties, are said to affect, very extensively, the health of mankind. Exhalations from the earth, or waters; mineral effluvia; vegetable aroma and miasms; direction and degree of winds; accumulations of electricity, whether silently operating or bursting in storms; modes of life in towns or in the country; effects produced on health in societies pressed together in manufactories, or separated in agricultural employments; the indigenous origin or importation of contagion; the causes of epidemics; the properties,

[1] Transactions of the Provincial Medical and Surgical Association, vol. 1, page 180.

operations, and final effects of many substances taken in food or medicine, or exhibited as poisons, are yet imperfectly understood, and require a searching investigation. The interest that attaches to such inquiries as these, belongs not solely to any class or profession. They emphatically belong to man in his social state, and it is especially desirable for us as Englishmen to become familiar with them; unless, indeed, an ignorance of some of the most interesting phenomena which can engage our attention is still to be the characteristic mark of the inhabitants of this highly civilized land.

With regard to the manner in which Societies for the purpose of investigating the facts of Natural History in the several counties of England shall be constituted, I apprehend a considerable variation must take place according to the progress that has been made in this pursuit in the several situations. In this county the study has been so much neglected by the great mass of the community, that every thing is to be done. It is positively necessary that the student of, as well as the proficient in, Natural History, should have books to which he can refer frequently, for without these he cannot advance himself, or know what has been done by others. With grief and shame be it spoken that we are in this town lamentably deficient in this respect. The transactions even of the several Societies that exist, and are actively employed in the advancement of knowledge, are not to be met with in our Public Libraries. The Transactions of the Linnæan and the Geological

Societies, and of several others, we look for in vain; and we have also to deplore an entire neglect of all foreign works, which are so abundantly rich in Natural History. It will in itself form a strong attraction to cultivated individuals to become members of our newly formed Society, if they find that this great blank in the literature of our city is about to be filled up; which in the course of a few years, it may be, by judicious measures being adopted.

Neither is it a small thing that we are about to form a Museum, which shall more especially collect together all the natural productions of our county worthy of being preserved in such a receptacle. No doubt, for want of such a receptacle, many valuable and curious specimens have been lost, which might have given much pleasure and gratification to the student of Nature—a pleasure the more to be valued because it is pure and undebased; and arises from the kind adaptation, by Providence, of the thoughts and feelings of man to the interesting objects by which he is surrounded. Neither can I avoid here remarking how instrumental the formation of Natural History Societies in the several counties of England and Scotland will be in ministering to the great delight that man experiences in contemplating the works of his Maker. For, as Dr. Conolly observes, "the gradual concentration in County Museums of a great part of the valuable collections already made by scientific individuals, or which would naturally be made in the course of the particular labours of several of the sections, would be a great advantage. The

difficulty which individuals find in becoming even tolerably well acquainted with the geology, botany, and natural history of their own county would thus in a great measure be removed: its products and manufactures would become familiar to every eye, and its history and antiquities to every mind. A tour through the provinces of England and Scotland might then become a tour of science as well as of pleasure; and the peculiarities of our island, displayed in numerous scientific collections, would attract distant and even foreign visitors, whilst they would form so many lessons for young persons of our own nation, who are, generally, extremely ignorant of every thing relating to the country of their birth."

But the laudable purposes for which our Society has been instituted would not be answered by merely forming a library, and making a collection of the curiosities of the county. We have still higher objects in view. We wish to incite our members to endeavour to pay their mite into the treasury of Natural History, and to institute observations, and to collect information on the several branches of this engaging pursuit. It is with this intention, that committees of members have been formed whose duty it is, not only themselves to collect all the valuable information within their reach, but also to endeavour to arouse a far more intense interest in the mind of the community at large, in behalf of Natural History, than has hitherto distinguished the inhabitants of this highly favoured country. And "Let no one imagine" if I may here use the eloquent

language of Dr. Baron, "that the labours of the Naturalist are directed to points of small moment, or calculated to gratify a restless curiosity; that he is occupied in counting *anthers*, or in describing *insects;* and that the height of his ambition is to swell his catalogue of rare productions, or to people his museum with every varied species, more with a desire of evincing his capacity for arrangement, than for useful or dignified purposes. That there may be minds so dead to the real objects of our pursuit, there is too much reason to believe, but *we* can tell them we have higher and better aims—*we* go forth into the external world to find in the wonders it reveals to us the footsteps of the power, the wisdom, the perfection, of the eternal, omniscient and omnipotent Creator."

It would be utterly impossible for me, in the short space which must be allotted to this introductory lecture, to give you any thing like even a correct outline of the subjects which may engage our attention; but as some of the branches of Natural History have been more peculiarly thought worthy of our notice, and as, moreover, committees upon them have been formed by this Society, I feel it incumbent upon me to state to you what subjects may be entered upon, with a probability of reaping the greatest advantage. In doing this, I shall follow the course adopted by the Society, and speak of the several branches, which have been referred to the consideration of our five committees, viz. Statistics, Zoology, Botany, Geology, and Meteorology.

I. Statistics. The committee on Statistics will have much scope for correct observation, in which the members of the medical profession, more especially, will have it in their power to distinguish themselves. This committee, the objects of which may be greatly assisted by gentlemen who reside much on their estates, by men of general science, and by the ministers of religion, should be occupied with every thing relating to the cultivation of the county; its population; the employment of the inhabitants of its towns, or of the country labourers, their wages, diet, the regularity of their labour, their habits of life; descriptions of houses inhabited by different classes of persons; the situation of particular towns, cities or villages; religion; the number of lunatics, idiots, and deformed persons; hospitals, infirmaries, dispensaries, and arrangements for the sick poor, and pauper lunatics: prisons and penitentiaries: and they should particularly endeavour to obtain more correct lists of births, marriages, and deaths, than have been hitherto afforded. The importance, indeed, of statistical investigations cannot well be too highly estimated, for it is only by widely extending, throughout the kingdom, this species of enquiry on statistical or political philosophy, that this most important of all sciences, and which should be held most in reverence, can be established on sure foundations. No science can furnish to any mind capable of receiving useful information so much real entertainment; none can yield such important hints for regulating the conduct of individuals, or for

extending the prosperity of the state; none can tend more to promote the general happiness of the species.

With the view of bringing under your consideration some of the most remarkable facts as connected with the statistics of the county, I may observe that the situation of Worcestershire is completely inland, and very near to the centre of the kingdom. The outline is very irregular. The boundaries are, Herefordshire on the south-west; Shropshire on the north-west; Staffordshire on the north; Warwickshire on the east; and Gloucestershire on the south. In latitude it extends from 52° to 52° 30′ north; and in longitude, from 1° 30′ to 2° 30′ west. The official estimate laid before parliament, states the contents of the county at 431,360 square acres; of which there are 150,000 acres pasturage; and 200,000 acres arable; these, besides corn and cattle, produce wool, hops, cider, and perry. Other objects of cultivation are great quantities of culinary and other vegetables, grown in the vales of the Severn and Avon, furnishing ample supplies to their immediate vicinities, and to their less productive neighbours, the mining and manufacturing districts. The air and soil have been long considered as favourable to health, yielding in this respect to few situations in the kingdom. The temperature of the air in the most elevated parts of the county, is not so bleak as considerably to impede vegetation. The highest point of the Malvern Hills is covered with verdure, and the potatoe flourishes nearly to its

summit. The vallies of the Severn, the Avon, and the Teme, are all nearly on a level, being, on an average, about 80 feet above the level of the sea; and they have, at this low elevation, a warmth and softness, which ripens the grain, and brings to perfection the other produce of the earth, from a fortnight to a month earlier than most other districts, even where the soil and surface are similar. The general distribution of soil through the county, has been estimated by Mr. Pitt,[1] as follows:—

	ACRES.
Light sand, sand loam, gravelly loam, &c.	120,000
Friable Loam, adapted for turnips, hops and fruit,	120,000
Strong clay loam, for wheat and beans,	120,000
Natural meadows on the banks of rivers,	50,000
Grass land, including parks, plantations, &c.	50,000
Woodlands, roads, towns, rivers, gardens, &c.	20,000
Wastes and commons,	20,000[2]

There has, no doubt, since the above survey was taken, been much alteration in the distribution of land, especially in the quantity of land that was then waste, extensive enclosures having of late years taken place. Bromsgrove Lickey, for instance, from a wild

[1] Pitt's "View of the Agriculture of the County of Worcester."

[2] The number of statute acres as stated by Mr. J. Marshall, in 1829, amounts to 466,560, viz.—

Tillage.	Pasture.	Wood, Unproductive, &c.
200,000.	150,000.	116,560.

The details of parishes make the total amount 459,710 acres.

Dr. Nash states the county to contain 936 square miles, or 599,040 acres; but by an account published by the House of Lords in 1805, this county is said to contain only 674 square miles, or 431,360 acres. Mr. Pitt, varying from both, estimates the contents of the county at 750 square miles, or 480,000 acres, and adding 20,000 acres for detached parts, 500,000 acres.

tract, noticed by Hutton in his "History of Birmingham" as famous for its sterility, has been almost entirely reclaimed, and now waves with luxuriant corn. Oldfield Common, near Ombersley, covered with chesnut trees, which used to support troops of squirrels, has been enclosed, and the chesnut trees cut down. Numerous other commons have been drained and enclosed,[1] and even the Malvern Hills are now cultivated almost upon the summit.

Great changes have also taken place of late years in the surface of this county from the system of draining that has been carried on. Many mosses and bogs have been in this way obliterated.[2] From the draining of the bogs which formerly overspread the county,

[1] Since the publication of Pitt's "Agricultural Survey of Worcestershire," part of Hartlebury and Lynall commons, near Kidderminster; and Burlish common, near Stourport, comprehending several hundred acres, have been enclosed. Enclosures have also been effected at Stock and Bradley, Feckenham, Hagley, and various other places, so that Hartlebury, Defford, and Welland commons are almost the only wastes of any extent remaining in the county.

Bredon Hill has been made productive in a similar manner, and an ancient encampment on the hill, near Overbury, which had hitherto been left luxuriating in its native virgin turf and wild flowers, is now transformed into a potatoe garden.

[2] A great change has taken place in the aspect of the county from the extensive drainage that has been carried on in modern times. Mr. Pitt observes that the Croome demesne, belonging to Earl Coventry, "was a morass not half a century back;" and a writer in the "Gentleman's Magazine," describing Croome, observes, that "a vast extent of ground, formerly a mere bog, is now adorned with islands, and tufts of trees of every species, and watered round in the most pleasant and natural manner possible." An urn, near the water, is dedicated to Brown, the designer of these grounds, which records the fact, that "his inimitable and creative genius formed this garden-scene out of a morass." *Dean's Hortus Croomensis.*

Mr. Pitt also states, that Mr. Carpenter, of Chadwick Manor, on the west side of Bromsgrove Lickey, drained a peat bog sixty acres in extent, and converted it into good meadow land. Thus the indigenous botany of the county has been altered, and many bog plants, formerly common, are now become very scarce.

there are now no accumulations of water, or pools of any extent. Perhaps the only one deserving notice is *Longdon Marsh*, which, after heavy rains, still presents the appearance of a considerable lake. This change in the aspect of the county connects itself with the change of diseases, and agues and similar diseases are consequently now almost unknown.

A change has also by this means been effected in meteorological appearances, and the Ignis Fatuus, or Will-with-the-Wisp, formerly so common, is now rarely seen.

The Rivers Severn and Avon, however, especially the latter, overflow their banks after heavy rains, or rapid thaws in the upper country, occasioning partial spreads of water, which soon subside.[1] But this necessarily requires the meadows near their streams to remain in pasture, and the hay they produce is considered very good.

The rivers of Worcestershire are the Severn, Avon, Teme, and Stour; to which may be added, though much smaller, the Salwarp, Arrowe, Ledden and Rea.

The canals, for the extent of the county, are numerous, viz.; the Stourport canal, the Droitwich canal, the Worcester and Birmingham canal, the Dudley canal, and the Leominster canal near Tenbury.

The roads have been much improved of late years,

[1] The body of water formed at Tewkesbury, on the southern verge of the county, by the confluence of the Severn, Avon, Carron, and Swillgate, is so great as completely to insulate that town, and hence the temporary lake formed there during floods has been designated as the largest expanse of fresh water in the kingdom. But this appearance seldom lasts above a fortnight, at one time.

since the system of M'Adam has been adopted; and, under the superintendence of Mr. Stokes, declivities have been removed, and the narrow parts of roads widened, so that those leading to the principal towns may now be described as very good.

The commerce and manufactures of the county have latterly increased, and are still increasing, not only from its own produce, but also from its being a kind of depot for the mining and manufacturing districts which almost surround it. Of its own more peculiar exported produce may be enumerated hops, fruit, cider, and perry. It also exports of its own manufacture, salt, gloves, china, iron, and carpets.

The combination of the above circumstances has been highly favourable to the increase of population, and particularly since the year 1800.

The following statement shews the aggregate of increase of population which has taken place during a period of nearly a century and a half, viz.—

Years,	1700,	1750,	1801,	1811,	1821,	1831,
Population,	88,200.	108,000.	139,333.	160,546.	184,424.	211,356.

Thus giving a ratio of increase of 16 per cent, from 1801 to 1811; of 14 per cent, from 1811 to 1821; and from 1700 to 1831, the increase amounts to 154 per cent.

The number of males and females in the following periods is—

	1801,	1811,	1821,	1831,
Males,	67,631.	78,033.	90,259.	103,367.
Females,	71,702.	82,513.	94,165.	107,989.

The marriages, baptisms, and burials in the following periods stand thus—

For the ten years from 1801 to 1810,	For the ten years from 1811 to 1821,
Marriages, 12,165.	Marriages, 13,178.
Baptisms, Males 23,865, Females 23,175.	Baptisms, Males 27,457, Females 26,381.
Burials, —— 15,004, ——— 15,298.	Burials, —— 16,819, ——— 16,722.

By a table inserted in the "Comparative Account of the Population of Great Britain," calculated upon an average of the totals of baptisms, burials, and marriages in the five years preceding the several enumerations of 1801, 1811, 1821, and 1831; it appears, as respects Worcestershire, that in 1801, the population being 139,333, the burials were 1 in 46; in 1811, the population was 160,546, the burials were 1 in 52; in 1821, the population was 134,424, the burials were 1 in 53; and in 1831, the population being 211,400, the rate of mortality was 1 in 52.[1]

This increase of population has taken place principally in the towns of the county, which are twelve in number; and more especially in those where manufactories are extensively carried on. In many of the agricultural parishes, so far from there having been any increase of population, the number of inhabitants has decreased. With respect to the towns of the county, the following is a statement of the population at the periods of 1801, 1811, 1821 and 1831—

[1] In Capper's "Topographical Dictionary" it is stated that "the average scale of mortality for ten years, according to the registered burials, appears to have been as 1 to 56 of the population." And this was probably the case before the decrease of the rural population and the increase of the towns.

TABULAR VIEW OF THE COMPARATIVE INCREASE OF THE POPULATION IN THE VARIOUS TOWNS OF THE COUNTY, IN FOUR CONSECUTIVE PERIODS OF TEN YEARS EACH.

Names of Places.	1801.	1811.	1821.	1831.	Rate of increase since 1821.
Worcester City, exclusive of Suburbs,	11,300	13,668	17,839	18,610	4 per cent.
Total Suburbs of Worcester,	3,428	4,718	6,302	8,908	41 per cent.
Viz.,—St. John's,	1,574	1,932	2,424	2,661	9 per cent.
St. Martin's,	194	498	816	1,668	104 per cent.
Claines, and Tything,	583	631	1,344	2,518	87 per cent.
St. Michael's, and College,	712	809	793	726	Decrease
St. Peter's,	365	429	472	847	78 per cent.
St. Clement's,		419	453	488	7 per cent.
Dudley,	10,107	13,925	18,211	23,043	21 per cent
Stourbridge, including Old Swinford,	7,197	8,452	10,070	12,638	25 per cent.
Kidderminster, Town and Foreign,	8,036	10,025	12,752	17,913	42 per cent.
Bromsgrove,	5,898	6,932	7,519	8,612	14 per cent.
Stourport, (Mitton)	1,603	2,352	2,544	2,952	19 per cent.
Bewdley,	3,671	3,454	3,725	3,908	5 per cent.
Droitwich,	1,845	2,179	2,176	2,487	14 per cent.
Pershore,	1,910	2,179	2,328	2,536	9 per cent.
Evesham, and Bengeworth,	2,837	3,268	3,487	3,991	11 per cent.
Upton-on-Severn,	1,858	2,023	2,319	2,343	1 per cent.
Tenbury,	1,541	1,562	1,668	1,768	6 per cent.

It appears from the foregoing statement that the greatest proportional increase of population has been in the city of Worcester, (suburbs included,) Dudley, Kidderminster, Stourbridge, Bromsgrove,[1] Stourport, and Droitwich; these are all places considerable for their commerce, and of manufacturing celebrity; whereas, in Evesham, Bewdley, Pershore, Upton, and Tenbury, where no particular manufactures are carried on, the population has increased in a much less ratio, and in Upton has remained nearly stationary.

We cannot but be forcibly struck in passing our eye over the population returns of this county, with the little apparent tendency there is in the agricultural population to increase. In many, indeed, of the parishes there has been a decided decrease;[2] thus, in Shelsley, the number of inhabitants in 1821 was 282, in 1831 it was 271; in Wichenford in 1811 the number was 398, in 1831 it was 355; in Spetchley in 1821 the population was 121, in 1831 it was 117; in Suckley the population in 1821 was 622, in 1831 it was 575. Local circumstances may in some of

[1] As a singular instance of fecundity, it may be observed that the wife of a cottager near Bromsgrove had four children at a birth fourteen years ago, all girls, and they are at present growing up, and in good health.

[2] This decrease in the population of certain rural parishes may be ascribed perhaps rather to the swarming off of the rustic inhabitants to engage in the lucrative employments great cities present, than to any real declension in their marriages or increase. A friend who recently accidentally entered the church-yard of Broadway in this county, meeting with the ringers, enquired their numbers and the amount of their families, when he found that the six ringers were all married, and had altogether 48 children.

these cases have operated to lessen the population in these parishes, but the general result of a careful examination of the population returns is, that in many of the agricultural parishes, in this county, the population has declined during the last ten years, whereas in almost every place where manufactures are carried on, population is fast increasing. Stoke Prior affords a very good elucidation of this position. Within the last ten years a manufactory of salt, soap, and bicarbonate of soda, has been established there, which has had a great effect on the population, for in 1821 the number of inhabitants was 900, and in 1831 was 1,000 ; thus affording an increase of 22 per cent in the number of inhabitants in ten years. Feckenham too, in which village needle making is pursued to a considerable extent, has partaken of the fecundity which attaches to other manufacturing districts. Its population in 1821 was 2,383, in 1831 it was 2,762, which gives an increase of 16 per cent in the number of its inhabitants in ten years. We may observe the same tendency to increase in the parish of Tardebigg, where the hamlet of Redditch is situated, and where needle making[1] is carried on to a very great extent. The population of that

[1] "The excessive earnings of the needle-pointers at Redditch maintain a succession of men who taint the whole neighbourhood with profligacy, who, with the most perfect consciousness, devote themselves to an early death for the sake of a life of idleness and debauchery, and who acquire such a callous indifference to the fate which they know awaits them [premature death from the grinders' asthma, occasioned by the constant inhalation of an atmosphere loaded with metallic particles] that their apprehensions are said to have been excited lest Mr. Abraham's invention [Abraham's magnetic guard for collecting the steely particles] should be successful enough to affect their wages." *Mechanics' Mag. Oct.* 1830.

parish, was in 1821, 2,429, and in 1831, 2,998, thus affording an increase in ten years of 23 per cent in the number of the inhabitants.

It would be interesting to pursue this subject further, and to shew the causes which have checked the increase of population in the agricultural districts of the county, whilst the manufacturing districts have gone on so rapidly augmenting their population. This, however, would lead me into details foreign to my present purpose; and I shall therefore content myself with observing that the practice of considerably increasing the size of the farms let to agriculturists, has manifestly tended rather to diminish the number of persons employed in the cultivation of the land.

Having given the above short statistical details respecting the county of Worcester, I shall enter more fully into an investigation of those circumstances which have operated on the population of the city and suburbs of Worcester. This seems particularly desirable, as at least one eighth part of the people of the county inhabit the city and suburbs of Worcester. It appears that the increase of population within the last ten years, as shewn by the foregoing table, has been very small in the city, but very great in its suburbs.

The trade of Worcester has, for many years, been considerable, and has given employment to a numerous population. This trade arises not only from the surplus produce of the county and its own manufactures, but also from the great conveniences of an extended water carriage.

The glove manufactory alone employs several thousand individuals, principally females, who are enabled to earn sufficient to maintain themselves with comfort. But the employment of sewing the gloves being sedentary, the usual result of such an inactive state of the body is apparent in the varied and troublesome complaints of the digestive organs, which form a large proportion of the cases presenting themselves from this class of persons for medical relief. Part of the process, too, by which the leather is prepared, proves very inimical to health. Those who work at grounding and paring the leather, are exposed constantly to an atmosphere loaded with dust, part of which consists of insoluble pumice stone; as a consequence, they frequently fall victims to bronchitis and consumption.

The china manufactories also employ a large number of people, who generally earn great wages, but part of this occupation proves very detrimental to their health, and it often happens that consumption is thereby produced.

To the trades just mentioned, we must add the iron foundries, lace manufactories, and distilleries, which, though not extensive, are yet of considerable importance, both in a political and medical point of view; and, I believe, we have then stated the chief employments by which the industrious poor of this city support themselves. That they are enabled to do so in a much more satisfactory manner than those in most of the manufacturing towns of this kingdom, may be concluded from the fact, that since

the year 1800, during which time the population of the city has increased in a very extraordinary ratio, the amount of rates for the poor has not at all increased in the same proportion. During the latter years of the late war they increased very considerably, and in the year 1817, when the glove trade was much depressed, they amounted to the enormous sum of £9,068; but of late years the expense of the poor has not much exceeded £4,000 per annum. The charge for 1827 was £4,261. The charge for 1833 was £5,544.[1]

I shall now take a rapid view of the population of Worcester, shewing its gradual increase, from the earliest records still extant.

The population of Worcester, previous to the year 1800, is very inadequately reported. We possess the aggregate number of inhabitants, for two or three distant periods, yet on this number we cannot depend with any certainty; for if we apply to the parish registers, wishing to discover the ratio of increase or decrease, such is their incorrectness and incompleteness, that all reasoning deduced from them must be inconclusive.

The whole population of Worcester is stated by Bishop Sandys, during the reign of Queen Elizabeth, in 1563, to have amounted to about 10,025. In 1646, when Worcester was besieged by the forces

[1] In 1803 the County paid £87,000 poors' rate, at 5½d. in the pound; in 1806, £1,309,122 property tax; the income of its real property according to the property tax act of 1815 was £799,605, and the sum raised for the maintenance of the poor in 1815 was £117,502, at the rate of 2s. 11¼d. in the pound.

of the parliament, the total population amounted to 7,176, being a very considerable decrease since the preceding period. To this number, if we add the garrison and the trained bands, the total will amount to 9,183. From this 9,183 we must deduct the garrison, and it will leave us 8,183, as the total population of the city of Worcester in 1646; a decrease of 2,000 since the year 1563.

It does not come within the scope of my plan to trace out the causes of the increase or decrease of population, when they spring from the advance or retrogradation of trade or manufacture; but I may observe in this place, that the cause of this decrease at the above period, is to be sought in the variations of the woollen manufactory, once employing so large a part of the population of this city. In the plan of the city, published by Mr. G. Young in 1779, he states the number of the inhabited houses as 2,449, and the inhabitants as 13,104; an increase of 5,000 from 1646, and of 3,000 from the reign of Queen Elizabeth. Hence the number of inhabitants to each house, at the above period, was rather above five.

The census of 1801, gives the population of the city of Worcester as 11,300; and the number of inhabited houses as 2,835. The population of the suburbs was 3,428, and the inhabited houses 857. Thus the whole population amounted to 14,728, and the number of inhabited houses to 3,692; leaving nearly four persons to each house.

In 1811, according to the population returns, published under the act of parliament, the population

of the city amounted to 13,668, and the number of inhabited houses to 2,733; the population of the suburbs, to 4,718, and the inhabited houses to 944. Thus the gross population was 18,386; and the whole number of inhabited houses, 3,677, giving about five inhabitants to each house. Here, in ten years, we have an increase of 3,658 inhabitants, and 1,026 houses.

The census in 1821 gives the numbers of the city as 17,839, and the inhabited houses as 3,037. The population of the suburbs, as 6,302, and the inhabited houses as 1791. The whole population, therefore, amounted to 24,141; and the whole number of inhabited houses to 4,828; giving again five persons to each house.

Since 1811, we have an increase of 5,755 persons, and 1,151 inhabited houses. The increase, therefore, in the number of inhabitants, is greater than during the former period; but the increase of inhabited houses is in the ratio of one house to five inhabitants.[1]

I have here traced, from the earliest records extant, the population of the city of Worcester, and the survey shews that, excepting at one period of the

[1] The proportion of Males to Females in the City and Suburbs of Worcester, from 1801 to 1821, dividing the whole period into sections of ten years, was as follows:—

1801, City, 1,000 to 1,311.—In the Suburbs, the Males and Females were equal.

1811, City, 1,000 to 1,320.—Suburbs, 1,000 to 1,246.

1821, City, 1,000 to 1,179.—Suburbs, 1,000 to 1,225.

time, it has been continually increasing. The number of houses, in the ratio of their increase, has rather outstripped the number of inhabitants, and will stand thus :—

PROPORTION OF HOUSES TO THE INHABITANTS.

1779, as 10 to 53.—1801, as 10 to 36.—1811, as 10 to 58.—1821, as 10 to 50.

In 1801 the ratio of inhabited houses is so large, that I feel disposed to suspect some incorrectness in the returns. It does not appear probable that so large an increase of habitations would have taken place, without some increase in the population. Either, therefore, Mr. Young's statement must be wrong, or the returns made under the act of parliament. We have no means of arriving at the data on which Mr. Young formed his conclusions, but, knowing that the other returns were made from authentic sources, I feel disposed to place reliance on them, and to place whatever error there may be, to the side of Mr. Young.

The ratio of inhabited houses in 1821, is greater than in 1811, being in the former case as 10 to 50, and in the latter as 10 to 58. This is material to remark, since nothing more powerfully affects the health of the mass of the people, and increases the burials, than their being crowded together in small and close apartments.

From 1801 to 1821, the ratio of the births and deaths is as follows. I have divided the whole

period into two periods of ten years each, and then have taken the average number.

PROPORTION OF BIRTHS TO DEATHS.

1801—1811, as 14 to 10. 1811—1821, as 147 to 100.[1]

From hence, by a table of Euler's, taking the excess of births above the deaths, and comparing it with the whole population, we determine that the city of Worcester, supposing the present ratio of increase to continue, will double its population in sixty-six years.

The most curious fact exhibited by these returns, is the decrease in the ratio of burials to the whole population.

This ratio stands thus:

1801, as 1 to 32.—1811, as 1 to 43.—1821 as 1 to 48.

The number of births in 1801, was in the ratio of 1 to 31 to the whole population; and in 1821, as 1 to 30; from hence we may conclude that the great increase of population is rather to be attributed to the decrease in the number of deaths, or to the prolongation of human life, than to the increase in the number of births.

I draw these conclusions, trusting to the exactness of the returns, and though, in many cases, they may be incorrect, yet, after every allowance we may feel

[1] I cannot carry the calculation down to 1831, as the births, deaths and marriages, are not given in the comparative account of the population published in 1831.

inclined to make, the gradual decrease in the number of burials must be very great. We may fairly, therefore, conclude that Worcester, though year by year increasing in population, has become more favourable to the prolongation of human life. To whatever cause this fact is to be attributed, whether to the preventive check acting more powerfully, and retarding those early marriages, by which a progeny was produced only to die, or whether to the improved mode of living, increased habitations, cleanliness, or to any other other cause, I leave others to determine; the fact is such, and it proves that this city, instead of being unhealthy, as some suppose, exhibits bills of mortality, in which the average number of deaths is smaller than in most other cities of the same population. That the preventive check has operated in no small degree, will be seen from the following table, exhibiting the number of marriages as compared with the whole population, during three different periods.

PROPORTION OF MARRIAGES TO THE WHOLE POPULATION.

1801, as 1 to 60.—1811, as 1 to 63.—1821, as 1 to 70.

It cannot be doubted, that the number of burials must have been much influenced by this gradually decreasing number of marriages; but still other causes must have concurred, to produce so great a decrease in the mortality.[1] I form this opinion from several causes tending at the same time to increase

[1] I of course mean the ratio which the number of burials bears to the whole population, in the distinct periods of which we have treated.

the burials. The Blockhouse Fields are covered by one hundred and twenty-seven houses, with a population of six hundred and forty-seven persons. This number gives us five persons to each house. As the houses are generally small, and situated in a low marshy ground, with a ditch filling the air with its pestilential vapour, the mortality in this part of the town must be very great. Again, the decrease of agricultural labourers must also have the same tendency. The number of persons employed in agriculture, to the number employed in trade and manufactures, is in the following ratio :—

1811, as 1 to 16.—1821, as 1 to 22.

shewing in ten years, a very considerable decrease of agriculturists. These causes would tend to counteract the influence of the preventive check ; or in other words, the effect produced by the decrease in the number of marriages, would be counteracted by other causes increasing the number of deaths.

I shall now proceed to give a very brief account of the diseases which prevail in the county.

It appears, from what I have before stated, that there is a great variety of soil in the county of Worcester, consisting of sand, bogs, debris of rock, lime, clay, and loam. Immediately under this soil, and the superficial beds of gravel and clay, the principal strata of the county are those of the red sandstone formation.

Dr. Henry, of Manchester, in estimating the

advantages of this kind of stratification upon health, says—"The only principles on which the strata of any district lying beneath the soil and superficial beds of clay and gravel, appear capable of exerting an influence over the health of its inhabitants, are—as those strata absorb water more or less readily and completely, thereby affecting the hygrometrical state of the atmosphere; and as they furnish, by springs and rivers, water more or less impregnated with foreign ingredients, and therefore less or more fit for the use of man. Under the first view, the red sandstone is well adapted, by the avidity with which it imbibes water, to moderate the evils of a rainy climate like that of Lancashire. Under the second aspect, this rock furnishes an abundant supply of beautifully clear water, agreeable to the palate, but holding, in solution, much carbonate of lime, and a little sulphate of that earth, both of which are deposited on boiling. There is no reason to suppose that these impregnations have any effect unfavourable to health. They can have no tendency to produce calculous diseases, which were once imputed to them, but which have been shewn to be produced by causes quite independent of the qualities of water, and to depend on morbid operations of the animal economy. The almost universal freedom of the red sandstone from noxious metals (lead and copper being rarely found in it,) adapts it for the purpose of an excellent natural filter. By its spontaneous decomposition, also, this sandstone is known to furnish an excellent sandy loam, one of the most

desirable that can be found for the production of every vegetable; and in this manner it cannot but materially contribute to the salubrity of any country, of which it is the prevailing rock."

In confirmation of the truth of the principles here laid down by Dr. Henry, it may be stated that the whole of this county in which the sand stone prevails enjoys a great freedom from severe febrile diseases, the worst forms of typhous fever being rarely witnessed; and from my own experience I may assert that the hilly parts of Worcestershire, where there is a clay soil, as about Broadway, and the line of hills running in that direction, are much more prone to be affected with fever than the sand-stone district which comprises the lower parts of the county. This immunity from severe forms of fever is not confined to the rural population; but is in a great measure also to be observed in the large towns. In Worcester it is a very rare thing to meet with very severe cases of fever, and the worst forms of the disease in this town are seen after flood-time in the vicinity of the river Severn. This river, which rises in Plinlimmon, in Montgomeryshire, becomes of considerable size before it enters Worcestershire a little above Bewdley. The bed, in its entire course through the county, is several feet below the banks; it has been stated on an average 18 feet. This circumstance necessarily detracts considerably from the effect that would otherwise arise from so fine a stream passing through so rich a country. It does not, however, prevent the valley through which the river passes

being frequently inundated, particularly in the southern parts of the county, as about Upton, where, after floods, (which almost surround the town) the population is liable to sore throat, bronchitis, and low fever.

The stream of the Severn is much increased after entering the county, by three small rivers and two canals which join it before it reaches Worcester. The river flows rapidly by Worcester in a winding but for the most part south-easterly direction. The chief streets of the city are situated several feet above the river, and the consequence is that although the river rises very high in time of floods, the inhabitants of these parts are not affected by them; but those in the lower parts, chiefly inhabited by the poor, as in Turkey, Cripplegate, and Hylton lane, are very liable to be inundated, and thus from the stagnation of water in the ditches and low grounds, miasmata arise, and the inhabitants, consequently, after rainy seasons suffer from fever and inflammatory disorders.

From want of draining, also, other parts of the city are rather liable to disease. This objection unfortunately applies to some of the houses that have been most recently erected; in the Blockhouse Fields, for example, the houses are erected upon a low marshy ground, and from the circumstance of the bed of the canal, which runs near it, being higher than the foundation on which the houses are built, it is difficult to get an effective drainage; the result is, as the books of our charitable institutions shew, that low fever is more frequent here than in other parts.

Does not such a fact as this, in conjunction with others of a similar nature, shew, that it would be desirable that an act should pass the legislature to compel those who erect any considerable range of dwelling houses, so to choose their site, that the necessary drainage may be effected; the neglect of which must necessarily produce disease and its consequences a squalid population. But notwithstanding these defects in the medical police of Worcester, it must be conceded that fever is seldom epidemic in it. Nor is it only in the town of Worcester that we have the satisfaction to observe this comparative freedom from fever. Even in Kidderminster, where a large manufacturing population is pressed together, and where formerly, in the days of Dr. Johnstone, in the last century, scarlet fever and malignant sore throat were so fearful and so destructive, these diseases now very seldom assume a severe form. The improvement in the health of the town in this respect may fairly in a great degree be attributed to a careful attention to the state of the small river, the Stour, which passes through it, by which accumulations of filth are prevented, and much of the ground, that was formerly marshy, is no longer visited by floods.

Ague as a disease has almost ceased in this county, we rarely see a case of it; although within the last few years it has been rather more prevalent than formerly.

By consulting our infirmary records, I find that fifty years ago a large proportion of cases admitted to that institution were for ague; but I doubt whether

within the last twenty years the whole of the ague patients that have been treated at the infirmary amount to so large a number as ten. This beneficial result may fairly be traced to improved cultivation of the soil.

Small-pox, too, has in a great measure been robbed of its terrors. It is true that we now and then meet with cases of small pox after vaccination, but as far as my experience has gone, they have been very mild; and, at any rate, the mortality from small-pox in this county, as compared with what formerly occurred, is very small indeed; and if the inhabitants were more attentive to avail themselves of the protecting powers of vaccination, the benefits resulting would be still more decisive.

It would be inconsistent with my plan to enter, in this lecture, into any lengthened disquisition concerning the diseases; having therefore, mentioned those which are usually most actively destructive of human life, I shall very cursorily notice others, which though not less formidable in their results, do not call for any particular description here. Scrofula, consumption, bronchitis, indigestion, and rheumatism are all in a degree endemic in the county, and all probably may be in some sort connected with the humidity, which prevails in its less elevated districts; but instances of longevity are frequent in Worcestershire, and the ratio of mortality with us is not so great as in many other parts of the kingdom.

There are some diseases which are incident to the occupations of the people, as consumption to those employed in needle pointing, bronchitis to the leather

dressers, asthma to those who labour in the coal mines, and some degree of spinal curvature among those who are employed in the coal mines at Pensax, where the strata are so thin as to require the men to work with their bodies in a flexed position. The china painters in Worcester are very liable to ophthalmia; and those who labour at the iron foundry to affections of the heart.

Wen in the neck, or bronchocele, is very frequent throughout Worcestershire, and has been erroneously attributed to the impurity of the water; that it is not at all connected with the water of the district is clear, for it occurs even at Malvern, where the water is singularly pure. With regard to the causes which produce wen, in various parts of the world, we are very much in the dark. All that is known upon the subject is, that it most frequently occurs in humid valleys in the vicinity of hills.

I cannot conclude this short description of the diseases of the county, without placing on record the relative mortality from that awful and mysterious visitation the cholera, in the several towns of the county. In Worcestershire this disease was almost wholly confined to the people congregated together in the towns; the rural population, with a few exceptions, escaped its ravages. The only well-authenticated instances of death from this disease in the villages, were at Ripple and Bredon's Norton; and the number of deaths in these localities altogether amounted to three. On Malvern Hill, also, two persons died, but they were vagrants, who did not

belong to the district. At Lye-in-the-Waste, in the parish of Old Swinford, the disease was very severe, but the state of destitution and privation of the people in this district, assimilated them to the town population. These deaths are reported as occuring at Stourbridge, which is in the parish of Old Swinford.

TABLE

SHEWING THE NUMBER OF DEATHS FROM CHOLERA,

TOGETHER WITH THE POPULATION OF EACH TOWN OF THE COUNTY, RESPECTIVELY.

Town.	Population.	Deaths from Cholera.	Ratio of Deaths to Population.
Worcester City and Suburbs,	27,518	77	1 to 357
Dudley,	23,043	277	1 to 83
Stourbridge, with Old Swinford,	12,658	68	1 to 186
Kidderminster,	17,913	102	1 to 175
Bromsgrove,	8,612	18	1 to 478
Stourport,	2,952	13	1 to 227
Bewdley,[1]	3,908	16	1 to 244
Droitwich,	2,487	63	1 to 39
Pershore,	2,336	6	1 to 389
Evesham, and Bengeworth,[2]	3,991	11	1 to 362
Upton-on-Severn,	2,343	38	1 to 61
Tenbury,	1,768	2	1 to 884
Redditch,	3,627	38	1 to 95
Total Deaths from Cholera in the County, 729.			
Ratio of Deaths from Cholera to the total Population of Worcestershire, 1 to 289.			

[1] For a very accurate Summary of the Cases of Cholera at Bewdley, I am indebted to the kindness of my friend Mr. Fryer, and I have given it in an appendix.

[2] It is worthy of notice that the Cholera did not attack Evesham in the year 1832, but made its appearance there in September 1833, and did not spread to any other part of the county.

With respect to longevity, the inhabitants of Worcestershire can probably adduce as many instances shewing that the climate is not unfavourable to long life as most other districts. In taking the account of the population of Droitwich in 1821, there were found six sisters, all of them widows, whose united ages amounted to 443 years, viz.—Elizabeth Everton 86; Ann Underwood 77; Mary Bourne 75; Martha Blackford 71; Margaret Noake 68; Hannah Kendall 66.

The united ages of the sixteen men, inmates of St. Oswald's Hospital, in September 1831, amounted to 1,123 years; and the twelve women, partakers of this excellent charity, had collectively attained the advanced age of 826 years.

At Hawford, in the parish of Claines, December the 17th, 1792, lived Samuel Corbyn, a member of the Society of Friends. He had two brothers and two sisters, all of whom attained a great age.—

John Corbyn,	was born in 1700, and died in 1785.	
Samuel Corbyn,	——— 1706, ———	1799.
Thomas Corbyn,	——— 1711, ———	1791.
Hannah Palmer,	——— 1713, } were living in 1796.	
Candia Burlingham,	——— 1714, }	

The Father died aged 84, and the Mother aged 97.

There is now living in the parish of Stone, in this county, a poor man aged 104, who spent his early days at manual labour, and now enjoys a peaceful and serene old age.

The following notices, also, of aged individuals connected with our own county, being taken from authentic sources, may be relied on.

Mr. Locke mentions in his journal for 1681, that in that year he saw a woman named Alice George, who was then 108 years of age, who was born at Saltwych in Worcestershire; her father lived to 83, her mother to 96, her mother's mother to 111; "she never" adds Mr. Locke, "took any physic but once, about 40 years since."

In 1774, died John Tice, of Hagley, in Worcestershire, aged 125. He was born under the Protectorship of Oliver Cromwell. When about 80 years of age, he was so unfortunate as to have both his legs broken by the falling of a tree, and a violent cold afterwards settling in his head, rendered him very deaf. At the age of 100, when sitting by the fire-side, and alone, he was seized with a fainting fit, fell into the fire, and being a cripple, could not extricate himself; but a person accidentally going into the room, preserved him from death, though not from being much burnt. With proper care, however, he soon recovered, and took his customary walks. But the greatest misfortune that could have befallen him, and which he did not long survive, was the death of his only friend, Lord Lyttelton, for after that event he never left his room. He retained all his faculties to the last.

Thomas Laugher, aged 113, was living in 1813; he was born January, 1700, at Martley, in Worcestershire, where his father died at the age of 97, his mother at 108, and his son at 80. He remembered Queen Anne going to Parliament, 1705, on horseback, seated on a pillion behind the lord chancellor.

Mr. Laugher was formerly a wholesale wine and brandy merchant, in Tower-street, London, and sustained the loss of an immense sum of money, (said to be between one and two hundred thousand pounds,) by the failure of a considerable house in Bartholomew-lane. He never drank strong beer, small beer, or spirits; his principal diet being coffee, tea, bread, and spring water. He recollected the quartern loaf at twopence farthing, meat at one penny per pound, and butter at twopence halfpenny. In 1813, this remarkable man appeared likely to live many years. He walked well for his great age; rose at four o'clock every morning, and took a long walk after breakfast.[1] He however died in 1813, and for five months previous to his death, resided as a pauper in the workhouse of St. Martin's-in-the-Fields, London. He retained his faculties until within three days of his dissolution.

Dr. Nash, in his "Worcestershire," gives this notice under the parish of Bayton. "July, 1778, I saw Elizabeth Palmer, who said she was 105 years old. Her maiden name was Allerton. She was born in the parish of Rock; afterwards she lived in Mamble, and now lives in Bayton; the register of Rock was burnt some years ago, so that her age cannot be ascertained from thence; but one Potter, who within these few months lived not a stone's cast from her, aged 95, said, he remembered Betty Palmer, a woman

[1] I give this statement from authentic sources; but there seems some doubt as to the extreme age of this man, as his name does not appear in the parish register of Martley.

grown and married, when he was a child. She has now the perfect use of all her senses. I saw her mow part of her orchard, which she does every year. Within these few months her house was thatched, and she served the thatcher, carrying him straw, and every other necessary up the ladder to the top of the house. She read to me a small print without spectacles, which she has never yet used, but says she believes she must come to them soon. Her memory is perfectly good, for she mentioned to me several particulars which happened to her the year after the Revolution, (1688) when she was big enough to milk a cow. Her son lives with her, and she does all the business of the house; she rises early, drinks chiefly cider-washings,[1] hath *rarely tasted tea*, never took tobacco in any shape, or drams; has had three

[1] Dr. Nash attributes great virtues to *cider*, which by his account one might imagine to be almost the elixir of life, as in his supplement, after mentioning several centenarians, he observes "the diet of all these was *cider* with a toast." He also gives an extract from the parish register of Delwyn, Herefordshire, where mention is made of "Richard Tufley, a tanner, a very laborious man, who when very ill, was *recovered by drinking cider*, and alive in 1673, aged above 100 years."—"The widow Hill, of Eardsland, was 111 years old in the year 1675; she drank cider before she rose in the morning; for breakfast she had a piece of bread and butter, or cheese, and cider; absented herself but two years from church, and the last time she was there brought the vicar her offering, being twopence in an apple." After such instances of the life-prolonging efficacy of *cider*, no wonder the worthy vicar of Delwyn should rapturously exclaim

——"All the Gallic wines are not so boon
As hearty cider;—that strong son of wood
In fullest tides refines and purges blood.
Becomes a known Bethesda, whence arise
Full certain cures for spittal maladies.
Death slowly shall the citadel invade,
A draught of this bedulls his scythe and spade."

husbands, and seven children; and her father died about 25 years ago, aged 104."

Dr. Nash was informed by R. Bromley, Esq. of Abberley Lodge, that Betty Palmer's mother lived to the age of 102, and her elder brother to above 100,—while the son living with her was aged 70. "I make no doubt she could now walk ten miles without resting," observed Mr. Bromley. Betty died at last, July 20, 1782, aged 113, according to the account of Sir Walter Blount, of Mawley,[1] where she was the day before she was taken ill. Her illness continued a fortnight, but she retained her faculties to the last. Her grandson told Dr. Nash that she had a child when she was 60.

Dr. Nash further records—"June 20, 1783, I rode from Worcester with Farmer Dyer of Claines, whose age, together with the age of the horse he then rode, made 113; they were both in good health and spirits, though somewhat the worse for use. (Horse, 30, rider, 83.) In the succeeding year he died by a fall from this horse."

March 20, 1788, died at Holt Castle, Worcestershire, Anne, Countess of Coventry, aged 98. The earl, her husband, died in 1719, having covenanted to settle upon her a jointure of £500 per annum, but died before the deed was executed. Hence arose a knotty point for the discussion of the lawyers.

[1] At Mawley is a picture with the following inscription—"Jane Corkin, daughter of Thomas Scrimshaw, Woolstapler, born the 23d of April, 1584, in the parish of St. Mary-la-bonne, Cheapside, London, the wife of Edward Corkin, late of London, and is now living, 1710."—So that she was then 126 years old!

However, as has been quaintly enough observed, "she *long* enjoyed the jointure which she *long* contended for."—*Long*, *long*, indeed! the case was decided in her favour in 1722, and in 1798 she died, having received her jointure of £500 *only* 76 times, or reckoning from her husband's death 79 times, amounting to the sum of £49,500. After being a widow 33 years, she married in 1752, Edmund Pytts, Esq, of Kyre, M. P. for the county. The lady's success with her jointure, it is not improbable, was a means of extending her life, since it has become a subject of general remark, that persons who live upon annuities, live longer than other people equally circumstanced in other respects; and it is thought that this is occasioned by the certainty of their means of existence, and their exemption from the cares and perplexities that so frequently harass the minds of men of the world. Yet this can hardly be entirely the case, unless united with carefulness, temperance, and sobriety.

In Arely church, near Stourport, is the following curious inscription—"Here lyeth the body of William Walsh, gentleman, who died the third day of November, 1702, aged 88, son of Michael Walsh of Great Shelsley, who left him an estate in Shelsley, Hartlebury, and Arely; who was ruined and undone by three quakers and three lawyers, and a fanatick to help them out." Whether his being "ruined and undone" shortened his life, it seems hard to say, but at any rate he left a friend who has inscribed his wrongs for the information of posterity, and this friend was

probably the witty William Walsh of Abberley, celebrated by Pope.

In Bengeworth church—"Mary Jephcott, relict of John Jephcott, D. D. late Rector of All Saints, in Evesham, died December 9, 1728, aged 95."

On a tomb in Dailsford church-yard, is this inscription.

"SYMON HASTINGS, JAN. 27, 1627."

"Dost marvel, reader, that I here do lye,
Who might have made this church my canopy?
Why 'tis no wonder. Should a strong built story
Hinder my corps in mounting to its glory?
My parting soul forbad it; and withal
Charged me to chuse *this* place of buriall,
That this my tomb each passenger might tell
They must expect the sound of passing bell.
Eightie two years compleat my days did make,
Before my mother earth me home did take.
And when her right in all mankind she leave,
Heaven to the blest my purest earth receive."

William Lloyd, Bishop of Worcester, was born August 18, 1627, and died August 30, 1717, aged 90. This prelate was the founder of the Bishop's Charity Schools in New-Street, from a forfeited estate which fell to him by the untimely death of Mr. Symonds, in 1708, being determined as he expressed himself, not to receive the "price of blood." There are two portraits of him extant, engraved by Vertue, which represent him as a fine old man at 86 and 87. He must have been of rather a fiery temperament, as in 1702, at the age of 75, we find him involved in an election broil with Sir John Packington, by which unpleasant affair he lost his office of Almoner to Queen Anne.

The Vernon family, who have resided at Hanbury, near Droitwich, seem to have been a little remarkable for attaining if not an extreme old age, at least a fair length of days. The following memoranda are from their monuments in Hanbury church. Rev. Richard Vernon, died 1627, aged 77. Edward Vernon, died 1666, aged 80: his wife Eleonora, 1673, aged 85. Richard Vernon, son of Edward Vernon, died 1678, aged 64. Rev. John Vernon, rector of Hanbury, from 1627 to 1681, "Vixit, docuit, profecit," died December 19, 1681, aged 82. Susanna, his wife, died July 14, 1681, aged 80; thus like the Baucis and Philemon of Ovid

> ——————"They ran their race
> In the same tenour all th' appointed space."

The Rev. Peter Caffy was vicar of Abbot's Norton nearly 59 years, from 1726 to 1785, when he died, aged 87, serving his church twice each Sunday nearly to the last.

At the west end of the north cloister of Worcester Cathedral, close to some steps leading into the nave, is a flat stone with this inscription,

"MISERRIMUS."

The unhappy man, who in the wilfulness of despair, directed this sole word to be inscribed upon his stone, was a clergyman of the name of Thomas Morris, and held the curacy of Claines, near Worcester. Refusing at the Revolution to transfer his allegiance from James II. to William III. he was, with many others, deprived of all ecclesiastical prefer-

ment, and reduced to the necessity of subsisting on the charity of the wealthier Jacobites. Perhaps he might have had miseries of a domestic nature besides, but this is now forgotten; suffice it to say, that, after witnessing the abortive attempts of 1715, and 1745, to restore the dynasty he loved, he died in 1748, silvered over with the weight and infirmities of 88 years. Wordsworth has written a sonnet upon this inscription, but apparently without knowing the history, and a volume has recently appeared upon the same subject.

The history of the celebrated Bishop Hough, who owed all his greatness to the Revolution, furnishes us with a singular contrast to the fate of the neglected "*miserrimus.*" Expelled from his presidency of Magdalen College by the arbitrary James, the triumph of constitutional principles made his fortune. He was restored to his college by William III. and the mitres of Oxford, Lichfield and Worcester, graced his brow in succession. He was born April 12, 1651, and expired at Hartlebury Castle, May 8, 1743, at the age of 93. Dr. Nash states that his constant beverage after dinner when upwards of 90 years of age, was strong beer and sugar.

Warren Hastings, the celebrated Governor General of Bengal and India, may without impropriety be inserted in our "Records of Longevity," since he attained the age of 86. After exercising the functions of a sovereign in India for eleven years, and after dearly paying for his past grandeur by a seven years' trial, Mr. Hastings retired to his native place, Dails-

ford, in Worcestershire, where according to the testimony of Dr. Nash, he lived "like another Cincinnatus, or another Washington, beloved and respected by all." Here he expired, August 22, 1818, in the 86th year of his age.

In March 1811, died at Beverye, near Worcester, the Rev. Treadway Nash, D. D. rector of Leigh, and the oldest magistrate in the county, aged 86. This gentleman, with an industrious and patriotic spirit, which did him infinite honour, after proposing to the Society of Antiquaries to undertake an account of the History and Antiquities of Worcestershire, and offering without effect to open a subscription for that purpose with three or four hundred pounds, at length undertook the laborious and expensive task himself. In 1781 he published the first volume of his valuable Collections for the History of Worcestershire, and completed the work with another volume the following year.

REGISTER OF REMARKABLE LONGEVITY, FROM 1796.

1796.—In March, died Mrs. M. Turner, of Church Lench, aged 110. July, died at Worcester, E. Hunt, aged 100, who enjoyed a good state of health to the day of her death; her mother lived to the age of 108.

1797.—January, died in the House of Industry, Joyce Pardoe, aged 105, in the full possession of her faculties.

1798.—December, died at Wichenford, Mr. John Tilsley, aged 95, parish clerk there for 52 years.

1799.—January, died Mrs. Tilsley, aged 102, wife of the last mentioned. In November, at Kidderminster, Thomas Lamb, a labourer, aged 102.

1800.—February, died at Inkberrow, aged 101, Henry Davis, a labourer; he was born in 1699, and during the long period of his existence, had lived the quiet and innocent life of an ancient English husbandman. He was particularly skilful in grafting, and at the age of 96 pursued his occupation with great vigour and activity.

1801.—February, died in Doldy, Worcester, Susannah Shugars, aged 101.

1802.—Died at Feckenham, aged 103, Mrs. Eadee.

1804.—October, died at Worcester, aged 102, Mrs. M. Bishop. At Claines, aged 100, William Warman. He had received parish relief a number of years past, but till within two weeks of his death was able to walk a considerable distance to receive it.

1810.—April, Mrs. Joan Perkins, near Tenbury, who had attained within one month, the age of 105 years. August, died at Spetchley, Ann Taylor, at the extraordinary age of 114 years. The only record she possessed of her surprising longevity, was her memory, which, together with her health, remained unimpaired till within a few days of her death.

1811.—July, died at Worcester, aged 108, Sarah Smith, mender of chair bottoms.

1812.—July, at White Lady Aston, Mrs. Eliz. Bourne, aged 106; she retained her faculties till she was 103.

1813.—March, at Dudley, died Esther Baker, 103. May, at Chaddesley Corbet, Mrs. Yates, aged 103.

1814.—January, John Morris, of Pedmore Quay, near Stourbridge, aged 101.

1815.—January, at Great Malvern, Mrs. Bellers, aged 104.

1821.—The following extract is from the Worcester Journal of August 16th, 1821. "It is a remarkable fact that two witnesses were examined in causes at our late assizes, whose respective ages were 105 and 101; the name of the oldest is William Crammer; he lives at Redditch, and his occupation through life has been that of collecting hare and rabbit skins for sale; he was examined in a trespass cause, and gave a clear testimony; he appeared in the enjoyment of all his faculties, except a little defect in hearing. He would not ride home, preferring to walk, and performed the distance (17 miles) in one day. The junior centenarian is Richard Woodfield; he resides in Copenhagen-Street, in this city, and was formerly a waterman; he was examined in the cause, *Smith* v. *Caswell*, and gave his evidence with such clearness, as called forth the admiration of the Learned Judge, (Garrow.)"

1826.—January 9th, died at the Worcester House of Industry, Elizabeth Pritchett, aged 100. She retained her faculties until the last. March, died at Moor Green, near Birmingham, Mr. John Bourne, aged 101. August, at the house of Mr. John Tolly, Powick, Mrs. Mary Williams, in her 105th year. She retained her faculties to the close of her life.

1827.—January, at the Link, in the parish of Leigh, near the north extremity of the Malvern Hills, Catherine Hill, aged 102. She had been confined to her bed from bodily weakness, and had lost her sight, but her hearing and mental faculties remained unimpaired.

1829.—January 29, died in the Blockhouse, aged upwards of 100 years, Mrs. Eliz. Griffiths. She was found dead in her bed, having been previously as well as usual. She lived formerly at Grimley, and for a considerable time regularly walked to Worcester, to attend prayers in the Cathedral, at 7 o'clock in the morning.

I feel that I am very far from having exhausted this part of my subject, and whoever may follow me will be enabled to throw much more light on this interesting and useful topic: but I cannot disguise the gratification produced in my mind, by the investigations I have made relative to the statistics of the county, which prove the flourishing condition of Worcestershire, and the increasing health and comfort of the great body of its inhabitants. When the raven note of despondency is so often heard denouncing the decline of our commercial prosperity, it is truly gratifying to observe that we have in the richness and variety of the natural productions of our county a solid foundation for the continuance and increase of its present wealth.

Nor is it less gratifying to find that as far as our examination has extended, the mean duration of human life has considerably increased since the commencement of the present century. Opinions will vary as to the cause of this happy change; one may ascribe it to the more ample supply of food, clothing, fuel, better habitations; another to a salutary change in the habits of our population, as shewn by their increased attention to cleanliness and ventilation in their persons and houses; and though last not least, it may be ascribed to improved medical practice. I shall not attempt, in this place, to weigh in the balance the relative claims which each of these causes has to the production of events so pleasing. Yet it may not be amiss to observe, that though honours await those who by brilliant exploits add to the glory

of their country, yet the greatest contributor to its political well-being is the man who adds to the health or happiness of the poor, the great mass of the community. It is true that renown and wealth may make a nation great; but with nations as with individuals, a truer criterion of happiness is to be found in the superior state of health, and length of days of the inhabitants. I do not appeal to the mere increase of population, as indicative of our prosperity, for we see too clearly that in the worst parts of Ireland, the population increases more rapidly than in the places where the people are better off; but if, along with an increase of population, we find a general increase in the duration of life, we may safely say of such a community, however unhealthy certain portions of it may be, that, collectively, there is a correspondent improvement in health, and a diminution of those causes which militate against longevity.

II. Zoology. According to the full import of the term, zoology is that science which contemplates the attributes and systematic arrangements of living creatures; including not only those animals which are of complicated organization and function, as man and quadrupeds, but also the more simple forms of existence, in which the animal structure, as in the medusæ and zoophytes, scarcely differs from that of the vegetable kingdom.

Man is placed at the head of the whole animal creation, which is made subservient to the gratifica-

tion of his wants and wishes. He alone is blessed with the power (apparently denied to the lower animals) of communicating his thoughts, wishes, wants, and feelings; he alone can look back on, reflect upon, and contemplate the past; he alone can look forward to, and calculate the destinies of the future.

Into the high, intellectual and moral attributes of man it is not so much the province of the naturalist to enquire,—such investigations belong more exclusively to the divine and metaphysician; but the bare contemplation of them is calculated to awaken feelings of awe and reverence for the great First Cause, and constrains us to say with the immortal Shakspeare—

"What a piece of work is man! how noble in reason! how infinite in faculties! in form, and moving, how express and admirable! in action, how like an angel! in apprehension, how like a god! The beauty of the world! The paragon of animals!"

Man, says Buffon, holds a legitimate dominion over all brute animals which no revolution can destroy. Among animals, however, some are more soft and gentle, others more savage and ferocious. When we compare the docility and submissive temper of the dog with the fierceness and rapacity of the tiger, the one appears to be the friend, the other the enemy of man. Thus his empire over animals is not absolute. Many species elude his power by the rapidity of their flight, by the swiftness of their course, by the obscurity of their retreats, by the element which they inhabit: others escape him by the minuteness of their bodies; and others instead

of acknowledging their sovereign attack him with open hostility. He is likewise insulted with the stings of insects, and the poisonous bites of serpents; and he is often incommoded by impure and noxious creatures, which seem to exist for no other purpose but to form the shade between good and evil, and to make man feel how little, since his fall, he is respected.

Into the habits and manners, the structure and functions of all these different classes of animals it is the province of the naturalist to enquire. Some are more immediately within his reach and exposed to his observation. The domestic animals are more especially forced to obey and to serve man; and every thing relating to them is of great interest. The reduction of the horse to a domestic state is the greatest acquisition from the animal world which was ever made by the art and industry of man.

But it is no part of my purpose to enter into detail. I would rather wish to glance at some of the more striking circumstances, which are calculated to awaken your attention to the captivating pursuits that are within your reach.

To the ornithologist I need not say a word to increase the interest with which he regards all the wonders of the feathered tribe, but to those not initiated into this enchanting study, a passing notice may serve to arouse in them some desire to participate in its pleasures. The nest of a bird is one of those daily marvels that from its familiarity is passed over without regard. Each bird prepares

a place for depositing its eggs and sheltering its little brood: different genera and different species set about the task in a manner suitable to their several natures; yet every individual of the same species collects the same kind of materials, puts them together in the same form, and chooses the same sort of situation for placing this temporary habitation. The young bird of the last year, which never saw the building of a nest, pursues the allotted plan in the structure of it, and instinctively selects the usual materials its parents did before, and birds of the same species, in different and distant countries, act in a similar manner. The swallows of Britain and those of the remote parts of Germany observe an uniform order of architecture, and in many instances have been known to return to the same places in which they had reared their young the year before.

Britain is neither remarkable for the production of the powerful and sanguinary among quadrupeds and birds; for the venomous among insects and reptiles; nor for those which afford substances for the materia medica.

So fortunate is England, that few, if any individuals of the animal kingdom are here found decidedly and naturally possessed of that degree of virulence, either in their bite or any other property, constituting poison. The viper (*Coluber berus* of Linnæus) is the only species of our native serpents that has with any degree of precision been ascertained to have a specific venom. The *Anguis fragilis*, which is met with in some districts, has been accused

of possessing poisonous properties, but it has this character perhaps from the bold manner in which it attacks, coming almost erect, and apparently fearless, to encounter its adversary.

But what shall we say of the marvellous works of insects, which so strikingly shew contrivance and design. Take for example the history of bees, and attend a moment to what occurs in the fitting up of their cells, in the hive. "If" says the enlightened author of the Treatise on the Objects, Advantages, and Pleasures of Science, "you have a certain place, as a room, to fill up with closets, or little cells, all of the same size and shape, there are only three figures which will answer, and enable you to fill the room without leaving any space between the cells; they must either be squares or figures of three equal sides, or figures of six equal sides. With any other figures whatever, space would be lost between the cells. This is evident from considering the matter; and it is proved by mathematical reasoning. The six-sided figure is by far the most convenient of these three shapes, because its corners are flatter, and any round body placed in it has therefore more space, less room being lost in the corners. This figure too is the strongest of the three; any pressure from without or from within will hurt it least, as it has something of the strength of an arch. A round figure would be still stronger but then room would be lost between the circles, whereas with the six-sided figure none is lost. Now it is a most remarkable fact that bees build their cells exactly in this

shape, and thereby save both room and materials beyond what they could save if they built in any other shape whatever. They build in the best possible shape for their purpose, which is to save all the space and all the wax they can. So far as to the shape of the walls of each cell; but the roof and floor, or top and bottom, are built on equally true principles. It is proved by mathematicians that to give the greatest strength and save the most room, the roof and floor must be made of three square planes meeting in a point; and they have further proved by a demonstration belonging to the highest parts of algebra, that there is one particular angle or inclination of these planes to each other where they meet, which makes a greater saving of materials and of work than any other inclination whatever could possibly do. Now the bees actually make the tops and bottoms of their cells of three planes meeting in a point, and the inclination or angles at which they meet are precisely those found out by the mathematician to be the best possible means of saving wax and work. Who would dream of the bee knowing the highest branches of mathematics? This little insect works with a truth and correctness which are perfect, and according to the principles at which man has arrived only after ages of slow improvement in the most difficult branch of the most difficult science. But the mighty and all-wise Creator who made the insect and the philosopher, bestowing reason on the latter and giving the former to work without it—from him all truths are known from all eternity, with

an intuition that mocks even the conception of the sagest of human kind."

The labours and the policy of ants, are, when closely examined, still more wonderful than those of the bee. Their nest is a city consisting of dwelling places, halls, streets, and squares into which the streets open. The food they principally like is the honey which comes from another insect found in their neighbourhood, and which they, generally speaking, bring home from day to day as they want it. Later discoveries have shewn that they do not eat grain, but live almost entirely on animal food and this honey. Some kinds of ant have the foresight to bring home the insects on whose honey they feed, and keep them in particular cells, where they guard them to prevent their escaping, and feed them with proper vegetable matter, which they do not eat themselves. Nay they obtain the eggs of those insects and superintend their hatching, and then rear the young insect until he becomes capable of supplying the desired honey. They sometimes remove them to the strongest parts of their nest, where there are cells apparently fortified to protect them from invasion. In those cells the insects are kept to supply the wants of the whole ants which compose the population of the city. It is only by the contemplation of these interesting facts that we can receive with full force the emphatic injunction of that eminent naturalist, the wise King of Israel, "Go to the ant, thou sluggard, consider her ways and be wise."

But the wonders that are revealed in studying the habits and employments of living beings form but a small part of the bewitching pursuits in which the zealous zoologist may be engaged. To him is open the enquiry into the organization of the animal kingdom, and the marvellous adaptation of the living parts to perform the functions for which Providence has formed them. To this branch of enquiry our zoological committee will doubtless call your attention, and there is every reason to hope that they may arrange to have lectures given on comparative anatomy, by which the many striking proofs of design, in the formation of living beings will be clearly laid before you.

I do not feel it necessary to extend further my general remarks on zoology; but shall proceed to give some more particular details respecting the zoological productions of Worcestershire. The forests of Malvern, Feckenham, and Wyre, covering in ancient times a great part of Worcestershire, were receptacles for many wild mammalious animals now extinct. Whether the brown bear *(Ursus arctos)*, formerly found wild in the north of Britain, ever inhabited our county, may be doubted. But it is certain that the wild boar *(Sus scrofa)*, the stag *(Cervus elaphus)*, the beaver *(Castor fiber)*, and the wolf *(Canis lupus)*, were all denizens of our wastes and forests.

The beaver could not have remained long after the arrival of the Saxons, though that it was found here by that warlike people, the names of two places in

the vicinity of Worcester,[1] evidently of Saxon derivation, fully prove. Many parts of the county, also, as Woolershill, Wolverley, &c. were so denominated from the numerous wolves that haunted their neighbourhood. We have no record of the final extinction of these ferocious animals, but they probably continued as long as the line of Plantagenet sat on the throne. They were so numerous in the reign of Edward I. that Peter Corbet was directed by a special mandate of that monarch to superintend and assist in the destruction of them ; but they were perhaps hardly exterminated till after the termination of the civil wars between the houses of York and Lancaster, since, even in our own times, during the invasion of France by the Allied Monarchs, the wolves so increased in that country as to render travelling dangerous, entering the villages even in the day time. The stag probably was finally extinguished in the county when Malvern Chace was disafforested in the reign of Charles I. The forest or chace of Malvern extended to the banks of the Severn, and the red Earl of Gloucester Gilbert de Clare, who received it as a portion with Joan the daughter of Edward I. (by which means it lost its title of forest and became a chace) to end a dispute with the

[1] Barbourne and Bevereye; the former is a brook which running from Tibberton and Perdiswell enters the Severn at the Old Water Works ; the latter is an islet in the Severn a little below Grimley. *Bourn* is the Saxon appellation for a brook, and *Bevereye* signifies the island of the beavers. There is an old Saxon sculpture over the north door of Ribbesford Church, one mile below Bewdley, which seems to represent the death of a beaver. It is certainly more like a beaver than a salmon, to which it has hitherto been usually referred.

Bishop of Worcester, agreed to give him, annually, a brace of bucks and a brace of does, out of his chace of Malvern, at the Bishop's Palace of Kempsey.

In the well-known old song on Malvern, the deer are thus mentioned—

"A chase for royal deer
Round doth beset thee;
Too many, too, I fear
For aught they get thee;
Yet though they eat away
Thy corn, thy grass, thy hay,
Do not forget, I say,
To praise the Lord."

The chace of Malvern was disafforested in 1631, and doubtless any straggling deer that remained were destroyed in the confusion and rapine of the civil wars between Charles I. and the parliament.

Fallow deer are still kept domesticated in the parks at Westwood, Hartlebury, Croome and Northwick. The other domesticated animals, as horses, sheep, oxen, swine,[1] &c. presenting no peculiar features from those of other places, demand no further notice. Dr. Nash has observed, as a reason for there being no breed of cattle peculiar to Worcestershire, that the land is too rich for a breeding stock.

[1] Among the ancient Britons, the oak woods were principally used for the food which the acorns afforded to their droves of swine. Thus under "Inkberrow" Dr. Nash observes from the Domesday Record, that there was "a wood two lewe long and one broad, yielding pasnage for an hundred hogs." *Swinsherd* in the parish of Spetchley derived its name from the herds of swine fed there on the *mast* or fallen acorns. When the woods were felled, as Drayton complains, to supply the salt pans at Droitwich, the feeding of herds of swine gradually fell into disuse, but in the New Forest, Hants, the practice still extensively prevails.

The wild animals still indigenous to the county may be enumerated as follows. The fox, *Vulpes vulgaris*, found in various coverts, as the Cliffey Wood, &c. does not appear to abound, for even the fox-hounds of the county are often disappointed when in quest of him. The wild cat, *Felis catus*,[1] *var. sylvestris*, though almost exterminated, still lingers in the woods about Suckley and Cracombe, but can hardly continue a denizen much longer. The marten cat, *Martes putorius*, is another animal who must retire speedily from before the progress of destroying man: the annual falls of wood disturb him in his retreats, and he is now rarely to be found even in places formerly known as his usual haunts. The otter, *Lutra vulgaris*, is more fortunate, as the Teme being unnavigable, and having no thoroughfare on its banks, he is enabled to carry on his fishing operations comparatively unmolested. Some very large spe-

[1] Dr. Fleming objects to the generally received opinion that the domestic cat, *(F. Catus, var. domestica)*, is a variety of the British wild cat. The size of the domestic cat is less than that of the wild one, and its tail tapers to a point, while in the wild cat it terminates abruptly. Dr. Fleming was therefore of opinion that our domestic cat was derived from Asia. M. Ruppel, however, having discovered a wild cat in Nubia agreeing very much with the domestic cat, is of opinion that this new species, *Felis maniculata*, which is in perfect accordance with the mummies of cats discovered in Egypt, and therefore undoubtedly the origin of the Egyptian domestic cat, is the origin of our European variety, which was bequeathed or transferred by the Egyptians to the contemporary civilized Europeans. Temminck agrees with Ruppel in this view of the case; and Sir W. Jardine says that there is a variety of the domestic cat possessed of the principal features of the *Felis maniculata*, or Egyptian cat. He therefore thinks that we are indebted to the superstition of the ancient Egyptians for our present domestic cat, though since its introduction to this country, it may probably have been crossed with our own native species, and thus varieties have been produced very similar to our own savage wild cat.

cimens have been captured on the Teme, near Cotheridge. The otter is also found in the Ledden, and in the brooks about Crowle, but not, I believe, in the Severn. The badger, *Meles taxus*, is occasionally met with in the Trench Woods, and in wild sandy places, but is uncommon. The weasel, *Mustela vulgaris*, and stoat, *M. erminea*, are not uncommon, and the latter occasionally occurs in its pretty winter dress of pure white with black-tipped tail, when it is called the ermine. The fitchet or foumart, *M. putorius*, pertinaciously continues a precarious existence, though destroyed by all gamekeepers without mercy. The hare, *Lepus timidus*, and rabbit, *L. cuniculus*, are common; but the elegant squirrel, *Sciurus vulgaris*, is now seldom seen except in sequestered woody spots. Some years ago when Oldfield Common, near Ombersley, was covered with chesnut trees, the squirrels were very numerous there, and might be seen in troops, in the Autumn; but the chesnuts having been cut down, and the common enclosed—

> "The *squirrel* has fled to another retreat,
> Where the hazels afford him a screen from the heat."

The urchin, or hedgehog, *Erinaceus europæus*, an innocent object of dread by the country people on account of its supposed attacks on the cattle, and robbing them of their milk, though often persecuted, maintains its ground; and the mole, *Talpa europæa*, makes itself known everywhere by its mining operations, even on Malvern Hills, and in meadows close to the Severn, where it might be supposed the floods

would often destroy it.[1] Two species of rats are found, *Mus rattus* and *M. decumanus*. The latter species is very numerous, and proves a serious annoyance in old houses. The black rat, *M. rattus*, the original English species, has recently much engaged the attention of naturalists, and particularly of one of our own members, Mr. Jabez Allies, from the curious fact that, like the Indians in the New World, the race has almost dwindled away before the more ferocious and sagacious brown Norway rat *M. decumanus*. Whether the popular opinion that the blacks are destroyed by the brown ones, or Dr. Fleming's suggestion that the substitution of tiled and slated roofs for thatch, is the correct cause of their declension, certain it is that within the memory of individuals now living, the black rats which were formerly known to abound are now rarely met with, while the brown rats swarm everywhere. Though at some few farm-houses the black rats are found in company with the brown ones, yet it is believed that Mr. Dowding's, of Wick, is the only place in our vicinity where the black rat is found alone. The water rat, *Arvicola aquatica*, is entirely confined to the country. The *Mus musculus* is of course common enough, and the *M. sylvaticus* and *Arvicola agrestis* are not uncommon in rural places. The harvest mouse, *Mus messorius*, though common in Warwickshire, is but rarely noticed with us. The dormouse, *Myoxus avellanarius*, one of the most beautifnl of the British *Glires*, is abundant in

[1] Dr. Fleming, however, says "they swim with ease, and cross rivers, or shift from one island to another." We have a white variety of it in our museum.

most of our woods, as is also the shrew mouse, *Sorex ananeus*. The water shrew, *S. fodiens*, is, however, either very uncommon or but little observed.—Some years ago they used to be seen sporting on the surface of a piece of water at the back of Dr. Berkeley's, at Cotheridge Court, diving quickly under water if perceived or disturbed.[1]

Among the *Cheiroptera* or bats, we have the large horse-shoe, *Rhinolophus ferrum-equinum*, common bat, *Vespertilio murinus*, great bat, *V. noctula*, eared bat, *Plecotus auritus*, and a species noticed sporting among the Malvern rocks, which is probably *V. barbastellus*.

Of the pleasing feathered tribes, a considerable variety haunt the woods and groves of Worcestershire, and some of the rarer kinds are occasional visitants. The summer migratory birds arrive nearly in the following order, the first occurring in retired places early in March. They are always to be found in copses by the side of the Severn and its tributary streams earlier than in the open country, as they trace the rivers from the coast, and so spread themselves over the surrounding district;[2] hence the diligent observer will often notice them a fortnight before they are generally perceived. These are all of frequent occurrence, especially in the copses in

[1] I am indebted for this fact to John Walcot, Esq.

[2] This accounts for an observation by Mrs. Charlotte L. E. Perrott, of the Chantry, Fladbury, in a communication to our Society on the birds of Worcestershire, who states that several Redstarts were found among the rushes of the Avon, an uncommon place for that bird.

the vicinity of the Severn, where, in the vernal season, the nightingale delights the ear with his ecstatic harmony.

SUMMER MIGRATORY BIRDS.

ENGLISH NAME.	SCIENTIFIC NAME.	TIME OF APPEARANCE.
Wryneck,	Yunx torquilla,	Early in March.
Swallow,	Hirundo rustica,	March 12th to April 17th.[1]
Sand Martin,	H. riparia,	March 20th to April 17th.
House Martin,	H. urbica,	A little later than the swallow.
Wheatear,	Saxicola œnanthe,	At Malvern, March 20th.
Least Willow Wren,	Regulus hypolais,	End of March, in plantations.
Blackcap,	Curruca atricapilla,	Close of March.
Middle Willow Wren,	Regulus trochilus,	Beginning of April.
Cuckoo,	Cuculus canorus,	Early in April.
Nightingale,	Curruca luscinia,	April 1, to 9.
Redstart,	Sylvia phœnicurus,	April 12, to 17.
Whinchat,	Saxicola rubetra,	Early in April.
Yellow Wagtail,	Motacilla flava,	Ditto.
Whitethroat,	Curruca sylvia,	Hedges, middle of April.
Lesser ditto,	C. sylviella,	Ditto.
Sedge Warbler,	C. salicaria,	April, among willows.
Grasshopper ditto,	C. locustella,	Towards the close of April.
Wood Wren,	C. sibillatrix,	Ditto.
Corn Crake,	Rallus crex,	Fields, end of April.
Swift,	Hirundo apus,	After storms, April 28, to 30.
Turtle Dove,	Columba turtur,	April 26, to May 1.
Butcher Bird,	Lanius collurio,	Close of April.
Fern Owl,	Caprimulgus europæus,	Beginning of May.
Flycatcher,	Muscicapa grisola,	May.

Our resident birds, winter and occasional visitants, are principally as follows.—The red grous, *Lagopus scoticus*, and the black grous, *Tetrao tetrix*, inhabit Wyre Forest, near Bewdley, and the latter is also found upon the Clee Hills, and in the woods upon

[1] Small companies frequently appear, preceding by some days or even weeks the arrival of the main body.

the banks of the Teme near Eastham. A singular hybrid, shot by our worthy president Sir C. S. Smith, Bart. near Eardiston, and thought to be a hybrid between the black cock and pheasant, is now in our museum. Perhaps, however, it is to be referred to the *Tetrao hybridus*, of Sparman, the *Tetras rakkellan* of Temminck, mentioned by Dr. Fleming in his British Zoology as existing in the Scottish woods. The hybrid mentioned by White in his Natural History of Selborne, is said by Mr. Herbert to be undoubtedly the offspring of the black cock and pheasant.[1] As it is not my object to give a complete catalogue of our Worcestershire birds, such a minute detail being more proper for a distinct paper in our Transactions, I shall here only select those that seem most remarkable and interesting to the ornithologist. The partridge, *Perdix cinerea*, occurs generally, and a few of the quail, *Coturnix vulgaris*, are met with at Spring Hill. The pheasant, *Phasianus colchicus*, though of Asiatic origin, now abounds in our county, and many beautiful varieties are met with. The *Columba palumbus* in abundance, and the *C. œnas*, sparingly, are denizens of our woods and fields: the latter build in the trees near Cotheridge.[2]

Among the rapacious birds, *Falco subbuteo*, *F. tinnunculus*, so often seen hanging motionless in the air, merlin, *F. œsalon*, honey buzzard, *Pernis apivorus*, hen-harrier, *Circus cyaneus*, common buzzard,

[1] White's Selborne, 8vo. Edit. p. 344.

[2] From the information of John Walcot, Esq.

Buteo vulgaris, and sparrow-hawk, *B. nisus*, are not of uncommon occurrence; but the kite, *Milvus vulgaris*, and osprey, *Balbusardus Haliætus*, but very rarely occur.[1] The long and short-horned owls, *Otus vulgaris*, and *O. brachyotus*, the barn owl, *Aluco flammeus*, and the ivy owl, *Strix stridula*, are met with in various parts of the county; the *S. passerina*, is found at Fladbury, and the very rare little horned owl, *Scops aldrovandi*, has been taken at the latter place.[2]

The cinereous shrike, *Lanius excubitor*, appears occasionally in the wilder parts of the county, and the woodchat, *L. rufus*, is stated by Mrs. Perrot to appear in the neighbourhood of Evesham. The pied flycatcher, *Muscicapa atricapilla*, is an inhabitant of the woods near Eardiston. The undermentioned are all of unfrequent occurrence;—the Bohemian chatterer, *Bombycilla garrula*, the ring ouzel, *Turdus torquatus*,[3] the dipper, *Cinclus aquaticus*, the crossbill, *Loxia curvirostra*,[4] the pine grosbeak, *Corythus*

[1] According to Mrs. Charlotte L. E. Perrot, a lady who has forwarded many valuable communications to the Society, this bird was once seen flying over the river Teme.

[2] Mrs. Perrot says that this bird was brought alive to her residence, the Chantry, Fladbury, but unfortunately made its escape from the basket where it was confined.

[3] The ring ouzel does not breed in Worcestershire, and is only met with for a fortnight, in the autumnal season, at Malvern, which it uses as a place of refreshment in its route to more southern quarters. The berries of the mountain ash attract it to Malvern, and the trees are filled with the birds for a few mornings till the supply is exhausted.

[4] The crossbill appears at very uncertain intervals. When it does make its appearance, it is generally in flocks of from 20 to 30, which spread themselves over

enucleator, the hedge bunting, *Emberiza cirlus*, the snow bunting, *E. nivalis*, the grosbeak, *Coccothraustes vulgaris*,[1] the mountain finch, *Fringilla montifringilla*,[2] the Cornish chough, *Pyrrhocorax graculus*,[3] the hoopoe, *Upupa epops*, and the great black woodpecker, *Picus martius*.

The Dartford warbler, *Curruca provincialis*, occurs at Spring Hill, Broadway, but is unknown or very rarely seen in other parts of the county. The thrushes, *Turdus viscivorus*, *T. musicus*, and *T. merula*, are common, and in the winter season large flocks of the redwing, *T. iliacus*, and fieldfare, *T. pilaris*, spread over the country. The stonechat, *Saxicola rubicola*, inhabits the wild heathy spots that yet remain, and the diminutive but beautiful golden crowned wren, *Regulus cristatus*, is not uncommon in our shrubberies, approaching close to the towns in the winter season, and braving the severest weather.

the country, and seem peculiarly to delight in pine plantations. Here they feed on the cones of the pines, while a centinel overlooking the scene from the top of a tree gives due notice of the approach of an enemy, clucking like a hen with chickens. The crossbills used to be visitants at Cotheridge, particularly haunting a Weymouth pine there, but from the information of Mr. Walcot, who kindly instituted an inquiry, the crossbills have not been seen there since 1821. Old writers on Natural History accuse them of visiting Worcestershire and Herefordshire in large flocks for the sake of the kernels of the apple, and by piercing the pulpy fruit with their curved bills to obtain them, doing great mischief in orchards. In the present day, however, the farmers have no cause of complaint on this account.

[1] Large flocks of these birds were seen near Captain Patrick's, at Crow's Nest, in the autumn of 1833, and in other parts of the county.

[2] The mountain finch is met with during the winter season in small flocks.

[3] This rare bird was killed at Lindridge, in November 1826. It was perched on the summit of a building adjacent to Sir C. Smith's, where it was probably resting after a long flight.

The wagtails, *Motacilla alba*, and *M. boarula*, ornament the shores of our rivers and ponds, especially the less common *M. boarula*, which appears to breed with us: the reed bunting, *Emberiza schœniclus*, too, sporting among the aquatic grasses, with its black head, has a pretty effect. The various titmice, *Parus major*, *P. ater*, *P. palustris*, *P. cœruleus*, and *P. caudatus*, are all denizens of our groves and woods; and in retired shady spots, the nuthatch, *Sitta europœa*, is observed. The creeper, *Certhia familiaris*, is well known as a "tree runner," and the green woodpecker, *Picus viridis*, makes the woods resound with his harsh laugh. The spotted woodpecker, *P. major*, commonly called the *French eikle*, is less diffused, and the *Picus minor*, though not very rare, is oftener heard than seen. The lark tribe need not here be adverted to, nor are the species of it yet sufficiently discriminated.[1] The *Fringilla cannabina*, and the mountain and rose linnets, *F. montium* and *F. linaria*, occur in various parts of the county. The starling, *Sturnus vulgaris*, breeds in our trees, and occasionally appears in immense flocks. The screaming jay, *Garrulus glandarius*, the magpie, *Pica caudata*, the crow, *Corvus corone*, the rook, *C. frugilegus*, and the jackdaw, *C. monedula*, are well known. The raven, *C. corax*, has become rare with us. The beautiful kingfisher, *Alcedo ispida*, though not often seen from his native haunts, darts frequently along the Stour and the Teme, and their tributary rills.

[1] The *Anthus Richardi* is reported to have been killed in the low meadows at Fladbury.

Passing on to the waders, and water birds, *Grallæ* and *Palmipedes*, the heron, *Ardea cinerea*, is of very frequent occurrence, although no heronry now exists in the county, and the nearest is in the park adjacent to Warwick castle.[1] The bittern, *A. stellaris*, has been often shot on the banks of the Severn, and Pennant remarks that a specimen of the little bittern, *A. minuta*, was shot as it perched on a tree in the Quarry at Shrewsbury. Both the crane, *Grus cinerea*, and the stork, *Ciconia alba*, have been shot near Fladbury, but it is uncertain whether they were truly wild.[2] The water rail, *Rallus aquaticus*, and the spotted gallinule, *Gallinula porzona*, are sometimes found in damp sequestered spots, while the common gallinule, *G. chloropus*, is often to be met with, as is the coot, *Fulica atra*, dashing over the pools on sable wing. A beautiful specimen of the grey phalarope, *Phalaropus lobatus*, shot in November, 1833, as it was hovering over a pool at Mr. Wheeler's of Newnham Court, near Tenbury, adorns our Museum, and other rare contributions of a similar kind will eventually shew, I trust, that our efforts in establishing a museum will prove beneficial in a high degree to every department of Natural History. The avocet, *Recurvirostra avocetta*, was shot a few years ago close to Worcester bridge; and the curlew,

[1] A heronry existed some years ago at Croome, but the birds being troublesome, and making too free with the fish of the ponds, it was destroyed.

[2] Mrs. Charlotte L. E. Perrot, on whose authority this information is given, says, that "the crane and *ciconia* were both shot by the late Mr. Perrot's keeper, but I should be inclined to think that they had escaped from some private collection."

Numenia arcuata, and the whimbrel, *N. phæopus*, have been met with on the rivers Severn and Teme. A specimen of the greenshank, *Totanus glottis*, was also shot on the Teme, in December, 1826. The woodcock, *Scolopax rusticola*, the great snipe, *S. major*, the common snipe, *S. gallinago*, and the jack snipe, *S. gallinula*, all appear in our copses and watery places; the first sometimes appearing as early as September 30th, and curious varieties occasionally occurring. The sandpiper, *Totanus hypoleucos*, is well known by its piping note, and flits across our streams in small companies during the summer season. The godwit, *Limosa rufa*, may be mentioned as one of our rare winter visitants.

The lapwing, *Vanellus cristatus*, is very common in barren fields, especially about Crowle, and Bredon Hill, where large flocks of them unite in reiterating their singularly plaintive and discordant note. The sanderling, *Calidris arenaria*, is an uncommon visitor, but a specimen was shot on the Teme, in December, 1826; and the green plover, *Charadrius pluvialis*, has been killed at Hill Furze, in the vicinity of Fladbury. The thick-knee'd plover, *Œdicnemus bellonii*, extends its range just within the southern limits of our county, a few breeding among the stony barren parts of the Broadway and Bredon Hills.[1] The oyster-catcher, *Hæmatopus ostralegus*, hardly occurs within our limits, but it has been shot, on the Teme,

[1] A young bird of this species was caught alive in the summer of 1832, near Twining, and brought to Worcester, where it was identified by the Curator of our Museum.

by Mr. Knight, of Downton Castle, near Ludlow. A straggler of the great bustard, *Otis tarda*, was killed near Worcester a few years ago. The cormorant, *Phalacrocorax carbo*, in time of floods often visits the interior of the country, and the following species have been met with at similar times during the winter season, wandering from their usual haunts :—the gannet, *Sula bassena*,[1] the velvet scoter, *Oidemia fusca*, the black scoter, *O. nigra*, the eider duck, *Somateria mollissima*,[2] the golden-eye, *Clangula vulgaris*, the long-tailed duck, *C. glacialis*, the pochard, *Nyroca ferina*, the scaup duck, *N. marina*, the tufted duck, *N. fuligula*, and the sheldrake, *Tadorna vulpanser*. The common wild duck *Anas boschas*, breeds in our retired pools and marshes, and the following species are of frequent occurrence in the winter season on our various rivers and pools, some of them most abundantly :—the pintail duck, *A. acuta*, the wigeon, *A. penelope*, the garganey duck, *A. querquedula*, the teal, *A. crecca*, the wild swan, *Cygnus ferus*,[3] the grey goose, *Anser palustris*, the

[1] This singular straggler was met with flying over an arable field at Alfrick, in this county, in the winter of 1833, and is now in our Museum.

[2] Killed at Evesham, according to Mrs. Perrot.

[3] The wild whistling swan, *Cygnus ferus*, appears upon the Severn and Teme in severe winters, or when the flat meadows are overflown. A flock of them was noticed at Powick wier, on the Teme, in February, 1830 ; and on the 3d of February, in the same year, the Rev. Henry C. Philpott, of Severn Stoke, shot a beautiful specimen, while on the wing with six others, crossing the meadows between Severn Stoke church and the Rhydd. It measured 7 feet 9½ inches from wing to wing, and weighed 21 pounds. This specimen is now in the Philosophical Institution at Bristol. Another was shot on the 11th of February, on the flood, below Diglis, by Mr. Lane, junior, of Friar Street, Worcester, by whom it was stuffed. The domes-

wild goose, *A. ferus*, the bernacle, *A. bernicla*, the goosander, *Mergus merganser*, the red-breasted goosander, *M. serrator*, the crested grebe, *Podiceps cristatus*, the red-necked grebe, *P. rubricollis*,[1] the little grebe, *P. minor*, the northern diver, *Colymbus glacialis*,[2] the fulmar, *Procellaria glacialis*,[3] the stormy petrel, *P. pelagica*,[4] the black-backed gull, *Larus marinus*,[5] the common gull, *L. canus*, the kittiwake, *L. rissa*,[6] the yellow legged gull, *L. fuscus*,

ticated swan of our pools, *C. mansuetus*, a native of Eastern Europe and Asia, is larger than the above, and is distinguished from it by a black callous knob at the base of the bill.

[1] This bird, Mrs. Perrot informs us, "is very scarce in the interior, two specimens were however shot about four years ago, during a very severe winter. One specimen was shot on the Severn, and the other on the Avon; both of which are now in the valuable collection of birds belonging to H. E. Strickland, Esq. at Cracombe."

[2] Mr. Lees was informed by Mr. Williams, of Hadley bowling-green, formerly keeper to Sir John Packington, that this very rare bird appeared upon the large pool in Westwood Park, in 1821. Mr. Williams remarked that it dived in a very singular manner, bringing up a fish after each submersion, and the other birds on the pool appeared alarmed at its movements, and kept at a respectful distance from it. The female, *C. imber*, of authors, was shot near the Severn, in the southern part of the county, in December 1827.

[3] "The fulmar," says Mrs. Perrot, in a communication to our Society, "was found near the village of Hill, much exhausted, but from the kindness of a neighbour was kept alive to be forwarded to me. Unfortunately, the lad to whom it was entrusted, on receiving a bite from the bird, killed it. I, however, made a sketch."

[4] Several specimens of *P. pelagica* have been found far inland after storms, and the one referred to in the text was found near Worcester, in a dying state, by Mr. Pitman, of the Tything.

[5] This bird, called the *wagel* in its spotted immature plumage, has been several times met with on the shores of the Severn, Teme, and Avon. Mr. Flinn, of Worcester, killed a very fine specimen, after a desperate resistance, in a field near the Dog and Duck, at Henwick, where it had flown out of the Severn, in January 1833. This specimen is now in the Society's Museum.

[6] Numerous specimens of the kittiwake appear with us in the winter season,

the common tern, *Sterna hirundo*,[1] the black tern, *S. nigra*,[2] and the small tern, *S. minuta*.[3]

Worcestershire produces so few reptiles, that it is unnecessary to say much concerning them. We have the nimble lizard, *Lacerta agilis*,[4] the water eft, *Triton aquaticus*, the brown eft, *T. vulgaris*, the frog, *Rana temporaria*, and the common toad, *Bufo vulgaris*. In serpents, the black snake, *Natrix torquata*, is pretty common, the blind-worm, *Anguis fragilis*, rather less so, but both, from a general ignorance of their innoxious qualities, excite almost equal alarm with the really venomous viper. The common viper, *Vipera communis*, is rather too frequent in waste stony places, about the Trench Woods, and Malvern, Bredon, and Abberley Hills, but we seldom hear of persons being bitten. The red viper, supposed to be the *Coluber chersea* of Linnæus, has been met with occasionally at Cracombe, and Mr. Hugh Strickland, of Cracombe House, has accurately described it in a communication inserted in Loudon's

though Bewick states the bird to be scarce. One was found by the servant of Mr. Jabez Allies, lying nearly dead in a field close to Catherine Villa, after a hurricane on Good Friday, 1834. The bird was fed for a few days, but eventually died, and is now preserved for our Museum.

[1] Two fine Worcestershire specimens are in our Museum.

[2] Seen a few summers ago by John Walcot, Esq. flying over the Severn.

[3] Observed in the Avon, according to Mrs. Perrott.

[4] Pennant mentions a remarkable lizard, probably the green lizard, *Lacerta viridis*, "which was killed near Worcot, in the parish of Swinford, Worcestershire, in 1741, which was 2 feet 6 inches long, and 4 inches in girth. The fore legs were placed 8 inches from the head; the hind legs 5 inches beyond these; the legs 2 inches long; the feet divided into 4 toes, each furnished with a sharp claw. Another

Magazine of Natural History. Whether the red viper be a good species or not, I shall not here attempt to decide, leaving the subject open for still further investigation.[1] It is said to be extremely rare, but it has been found in Cranborne Chace, Dorsetshire, and in several arid waste situations in the county of Suffolk.

Worcestershire not possessing any large accumulations of water, of course its principal fish are to be found in the rivers before enumerated in the statistical notices. The Severn produces the greatest variety, the principal of which are salmon, lampreys, lamperns, shad, plaice, shrimps, soles, cod, conger-eel, porpoise, and sturgeon. The six last, however, are seldom found higher than Berkeley Pill, in the county of Gloucester, the tide, except on extraordinary occasions, not being observed higher than Tewkesbury, where the western bank of the river forms the most southern extension of the county.

The lamprey, *Petromyzon marinus*, is an eel-shaped fish, with seven breathing holes on each side of the neck, and a somewhat oblong mouth, with many rows of yellowish pointed teeth disposed in a circular form. These fish are of a dusky colour, irregularly marked with a dirty yellow, and often attain the weight

was killed at Tenbury, in the same county. Whether these are not of exotic descent, and whether the breed continues, is what we are at present uninformed of."

Brit. Zool. iii, 22.

[1] Dr. Leach, in the third volume of his "Zoological Miscellany," makes it only a variety of the common viper, and Dr. Fleming, in his "British Zoology," concurs in the same opinion.

of three or four pounds.[1] They are best in season in the spring, at which time they ascend the river, from the sea, being then of a most delicious taste and much esteemed by epicures; they are however, if eaten to excess very unwholesome, and the death of Henry I. has been ascribed to partaking of them too freely. These and lamperns, are considered peculiarly good when potted, and Worcester potted lampreys and lamperns are known all over the world. The fresh-water lamprey, or lampern, *P. fluviatilis*, is more abundant, but much smaller and cheaper than the preceding; they resemble eels in their form and slimness, their colour is blackish upon the back, and blue upon their bellies, and upon each side of the throat they have seven parallel holes, which serve them in the place of gills. In the spring of the year these fish are frequently seen sticking by their mouth to stones in shallow water. They enter the Severn from the sea in the beginning of the year, spawn in March or April, and about midsummer again return to the ocean. The pride, or least lampern, *Ammocœtes branchialis*, is a curious little fish about the size of a goose quill. It is frequent in many of our rivulets especially about Bromsgrove, and is commonly denominated the nine holes, though in reality, like the lamprey, it has no more than seven on each side the neck. Dr. Plot, in his Natural History of Oxfordshire, calls them "the pride of the Isis."

The salmon, *Salmo salar*, is too well known to need

[1] It has been noticed as high up the river as Apley Park, Salop.

any particular description here. The Severn salmon is particularly esteemed, and the river so swarmed with this fish formerly, that it is recorded to have been usually sold at twopence halfpenny per pound, and it was thought necessary in those days that a clause should be introduced into indentures providing that apprentices should not be compelled to eat salmon more than twice a week. Two and sixpence and three shillings per pound is now not an uncommon price for this delicious fish, particularly if fresh from the river.[1] The salmon enters the Severn, for the purpose of spawning, in December, and the three successive months, and when this great law of nature is fulfilled, they return to the ocean; but it is a curious circumstance, that their retreats in the deep ocean, from whence they issue in their highest vigour, and to which they return in their lean unwholesome state, is unknown. They leave their salt water haunts and are in season earlier in the Severn than in any other English river; but from irregular and unlawful fishing they are now become comparatively scarce. It is obvious that if the old fish are indiscriminately destroyed in their progress to their spawning beds, there can be no young broods, while if the young salmon are not protected in their progress to the ocean, but few of them can arrive at maturity to return to their native fords. The law

[1] In January 1833, a very fine fish nearly a yard in length, was discovered near the shore, close to where the warm water enters the river from the city engine at the bottom of Newport Street. It was speared and brought up into the city, where the captor refused a sovereign for it.

has consequently directed that there shall be no fishing for salmon during the fence months, which are from November to March, and a local act has directed the appointment of conservators for the purpose of enforcing this law. But the fishermen are so united with each other to prevent any interference with their occupation, the technicalities required by the law are so complicated, and the magistrates in general so unwilling to visit the fisherman with heavy penalties for merely exercising his usual avocations, that it is very difficult to convict and punish the offending parties.[1] The fact is, the laws on this subject are rather partial and unequal, and therefore rarely enforced; but till this subject is properly revised by the legislature, and the young fry protected by laws which can be enforced, it is hopeless to expect the fish will become more plentiful. The principal destruction, however, takes place below Gloucester, where the salmon are so harassed, that but few are enabled to overcome the obstacles placed there to stop their progress. When the young fish are five or six inches in length, they are called *salmon smelts,* or *samlets,* and when they have attained the weight of from six to nine pounds, they have the name of *grilse.*

[1] Some years ago a "Severn Association" was established for the protection and preservation of the salmon, and while the late Mr. Moseley lived, numerous unlawful nets were destroyed, and much unwholesome fish burned. The Association is still in existence, but its duties are now almost wholly circumscribed to eating the unfortunate fish which it was originally constituted to protect. Upwards of £200 was originally raised to enforce the objects of the Association, but no permanent benefit has resulted.

The shad, *Clupea alosa*, is another fish which the Severn affords in great perfection. These fish generally appear in May, though sometimes in April; this however depends a good deal upon the quality of the water; if it is clear, they ascend early in the spring, but if there happens to be a flood, they wait till the waters are restored to their former purity, and if they meet with a flood in their progress upward, they immediately return, and keep below Gloucester. The weight of the shad is seldom less than four pounds; they continue in the river about two months, and are succeeded by a variety called the twaite, which is less than the shad, never weighing more than two pounds, and is but little esteemed. Dr. Fleming says that the celebrated white-bait of the Thames, which appears near Blackwall and Greenwich during the month of July, is the fry of this fish; but as although the shad are plentiful in the Severn, we hear nothing of the white-bait, further investigation seems to be required on this point.

It is a curious circumstance that though the salmon ascend many other tributaries of the Severn, and are frequently caught in the Teme, yet neither that fish, nor the shad, lamprey, nor lampern, ever attempt to enter the Avon at Tewkesbury, which joins the Severn at that place. There are certainly various impediments to the passage in mills and weirs, but such obstacles are in other places surmounted by salmon. It is, however, stated by the fishermen, that the salmon manifest the utmost aversion to the Avon

water, and if forced into it by them, when deposited in the trunks of their boats, they turn round to escape, and soon die if they are not relieved. It seems probable that some unpleasant vegetable particles are held in solution by the waters of the Avon, which, notwithstanding its universal praises by the poets, is in effect little better than a winding stagnant pool, and offers no advantages to the fish, who prefer a quick flowing stream with a gravelly bed, and dislike the muddy bottom of the Avon.

In the month of April the shores of the Severn are annually darkened with innumerable quantities of elvers, which are seen fringing the sides of the river with a black ascending line, which appears in constant motion. The elvers, in their progress from the ocean, continue visible for many weeks, and precede the migration of the shads. These elvers were formerly considered to be the young of the conger eel, *Anguilla conger*, but Dr. Fleming suggests in his "History of British Animals," what has indeed been since fully confirmed, that they are the fry of the common eel, *A. vulgaris*. It is well known that the latter spawns in the sea, and great numbers migrate to the coast in the dark and stormy autumnal nights for this purpose. The young ones appear as elvers in the following spring, and proceed in myriads up the mouths of rivers to journey to the fresh-water lakes and marshes inhabited by their parents. When the elvers appear in the river they are taken in great quantities with sieves of hair cloth, or even with a common basket, and after being scoured and boiled

are offered for sale. They are either fried in cakes, or stewed, and are accounted very delicious.

Some of the gigantic tenants of the great deep, occasionally wander into the Severn. November 1st, 1819, a pike-headed whale, *Balænoptera boops*, was left by the receding of the tide within ten miles of Gloucester. It was sixty feet in length. In the summer of 1813, a large sturgeon, *Accipenser sturio*, was caught in the Severn at Worcester, on the side of Pitchcroft.[1] Daniel, in his "Rural Sports" states, that "In the Severn, near Worcester, a man bathing, was struck, and actually received his death wound from a sword fish, *Xiphias gladius*. The fish was caught immediately afterwards, so that the fact was ascertained beyond a doubt." These monsters are found of the length of fifteen feet, and the snout, or sword, two or three feet more.

The more common fresh-water fish of the Severn are the roach, *Leuciscus rutilus*, the dace, *L. vulgaris*, the chub, *L. cephalus*, the bleak, *L. alburnus*, the carp, *Cyprinus carpio*, the trout, *Salmo fario*, the perch, *Perca fluviatilis*, and the flounder, *Platessa flesus*. The pike, *Esox lucius*, sometimes occurs in our pools of very considerable size.

The Teme contains excellent grayling, *Coregonus*

[1] Several sturgeons are recorded in the annals of Tewkesbury as having been taken in the Severn at that place; and in 1829 a large specimen was caught there and landed in the Bushley meadows, in this county; the lord of the manor, J. E. Dowdeswell, Esq. having waived his right to it, the fishermen cleared upwards of ten pounds by exhibiting it, and disposing of the flesh, &c. in small portions to the curious. This sturgeon was seven feet in length, two feet ten inches in girth, and weighed one hundred and twenty pounds.

thymallus, and trout, *Salmo fario.* Daniel observes, that "In the rivers of Worcestershire, the angler will find salmon, trout, grayling, salmon trout, and most other river fish. Near Kidderminster the trout in the Stour are very fine. In the Salwarp and the brooks that run into it, the trout and eels are peculiarly excellent."

The limits necessarily assigned to a survey of the principal objects of Natural History afforded by this county, will not allow me to enter largely upon the multifarious details of Entomology. I have already adverted to the pleasures to be derived from the cultivation of this delightful field, and to the astonishing sagacity displayed by several of the insect tribes. I shall, therefore, only add that, from the variety of scenery, both of hill, woodland and valley, which Worcestershire presents, the practical collector need not doubt of obtaining an abundant harvest as a reward for his exertions. The Trench Woods, near Droitwich, are considered peculiarly favourable to the production of the lepidopterous tribes, and here several very rare species have been captured. The stag beetle, *Lucanus cervus,* inhabits Bewdley Forest, but its range extends no farther northwards. The *Scarabœus nasicornis,* or rhinoceros beetle, is abundant in the neighbourhood of Dudley, where it is very destructive to old ash trees; and the *Lucanus inermis,* or small stag beetle, is also found in that vicinity. But I must reserve a more particular catalogue for the appendix.

I ought, however, to observe that the study of ento-

mology merits particular attention in connection with the preservation of our orchards. Many insects commit great ravages among our fruit trees, and unless their history is minutely known, no well-directed exertions can be employed for their destruction. Several lepidopterous insects feed upon the leaves of the apple and pear, but the *Aphis lanata*, or American blight, has proved uncommonly destructive, and the cotton-like substance in which the insect is enveloped, is extremely annoying and unsightly. It has now advanced from the apple to various other trees and plants, and it seems every season to be gaining ground;[1] nor does it appear that any process that has been hitherto made use of, is fully adequate to the destruction of this pest.

The study of entomology is also absolutely necessary to the florist who designs to keep his favourites free from insect ravages. This will appear evident from the following extract from a paper addressed by John Williams, Esq. of Pitmaston, to the Worcestershire Horticultural Society, in 1829. "The splendid green and gold beetle[2] was rather a scarce insect in this neighbourhood till within the last three or four

[1] Salisbury says it was first brought to this country by the refugees from France, in the reign of Louis XIV., when a colony of these people settled at Paddington, and there it was first observed to begin its depredations on the apple trees. That it is a native of a warmer climate appears evident from its being killed by exposure to the action of frost. *Salisbury's Hints to Proprietors of Orchards, p.* 38.

[2] *Scarabæus auratus*, Lin.—*Cetonia aurata*, of modern entomologists.—Rose may chaffer, green beetle, and brass beetle in some parts of England. When touched it emits a fetid moisture from the tail. The grubs of the rose beetle feed on dead leaves and stalks, and should be searched for at the roots of trees and shrubs in the garden.

years. In fact, before this period, I have rarely observed more than perhaps a dozen in my garden in the course of a season. But it is now so much increased as to become a serious annoyance to the gardener and florist. The last three seasons, my lilacs, strawberry blossoms, and roses, particularly the Scotch and Chinese varieties, have greatly suffered from their depredations, and, unfortunately, they do not retire into the ground in the month of June as is the case with the common chaffer beetle; they continue till August, devouring strawberries, raspberries, and cherries, though their favourite food, in the early part of the season, seems to be the stamina, anthers, and corolla of flowers, which are no sooner expanded than they are despoiled of their beauty. Thinking the warm dry summer and winter of the years 1826 and 1827 might have caused their sudden increase, I was in hopes the wet summer last year would have reduced their numbers. But this, I now fear, will not be the case, for last week I observed the first flowers of a seedling purple lilac were covered with them, and in the course of an hour they had devoured every blossom. As a matter of curiosity, I had them collected, and the specimens sent were all taken from this shrub." This is sufficient to show that the study of the insect tribes is not unconnected with the pursuits and objects of life.

The preceding sketch of the zoology of Worcestershire, while it indicates the progress that has been already made in this branch of science, will show what remains to be done. It is not to be supposed

that it can at present be otherwise than an outline, which future observation must confirm, and future research fill up. It will, however, be valuable as a record of past efforts, and will, I trust, give an impetus to our Zoological Committee to urge on their course with additional ardour, so that their contributions to science may be not merely an increase to a catalogue of names, but notices of facts important in their bearings upon Natural History, and interesting and useful to the world at large. Such was the object with which we commenced our career, and such I hope it will ever continue to be.

With regard to the invertebral animals, and especially as respects the *Mollusca*, much remains to be done, few researches having been made among us in this department. One of our members has indeed promised to present the Museum with a complete collection of British land and fresh-water shells, which when completed will be an interesting accession to our knowledge; but at present my remarks on this department of zoology are necessarily very brief. Among the *Limacidæ*, the great black slug, *Arion ater*, is very common, and others of the same tribe, *Limax cinereus*, and *L. agrestis*, are numerous and annoying to the gardener and agriculturist. The *Helicidæ* present to our notice the *Helix nemoralis*, the *H. hortensis*, the *H. arbustorum*, and the *H. aspersa*; but the edible snail, *H. pomatia*, seems unknown among us. A variety of the smaller and less conspicuous species of these tribes also occur, as well as individuals of the genera *Clausilia*, *Buli-*

mus,[1] *Succinea*, *Pupa*, *Planorbis*, *Limneus*, *Physa*, *Valvata*, and *Paludina*; but the various species including probably many non-descripts, require further and more minute elucidation, and will doubtless receive it from some of our friends who are attached to this department of Natural History. I shall, therefore, close my observations in the zoological department by remarking that the fresh-water mussel, *Anodon cygneus*, in numerous varieties, is found abundantly in the Teme and Severn and their tributary streamlets, and that the painter's mussel, *Mysca pictorum*, is also to be found on the shores of the last-named river. I shall now proceed to notice the succeeding divisions of our intended investigations.

III. Botany. A task of no ordinary pleasure awaits your Botanical Committee; for what can be more delightful than the investigations which it will be their duty to encourage into all the beauties of the vegetable world. Teeming as this county does with vegetable productions, and richly clothed as are its hills and dales with flowers and plants, they never can be at a fault for objects to which their pursuits may be directed.

On the limestone hills; in the woods, in the bogs and morasses of this fertile county, the botanist will ever find ample recompense for his toil. To the purple-tinted mountain of Malvern, every one who has

[1] The curious *Bulimus tuberculatus*, is said by Dr. Turton to be found in "woods about Pershore, in Worcestershire." *Turton's Manual of Land and Fresh-water Shells of the British Islands*, p. 82.

a feeling for the picturesque and beautiful will resort; and how much is the delight experienced by the wanderer on those health-restoring hills enhanced, if he carry with him a taste for botanical pursuits, for that celebrated chain of hills is rich in phænogamous as well as cryptogamous plants. It is no part of my plan to attempt a catalogue of the plants growing on the Malvern Hills. That task, indeed, will I doubt not be very ably performed by a gentleman, who has promised us much important information respecting the localities of plants. I may, however, observe that the professional wanderer among these delightful mountains, cannot fail to remark the number of medicinal herbs, which are not less useful in their virtues than ornamental in their appearance. The *Colchicum autumnale*, *Digitalis purpurea*, *Hyoscyamus niger*, *Erythræa Centaurium*, *Agrimonia Eupatoria*, *Marrubium vulgare*, *Cytisus scoparium*, *Chelidonium majus*, *Geum urbanum*, *Glechoma hederacea*, and *Humulus Lupulus*, with some others of less note, are all to be gathered on these hills or within a short distance of them.

I may further observe, generally, that the geographical distribution of plants on the Malvern Hills, and on the country around, does not offer any peculiar features. The class of Alpine plants, so frequent in the more lofty mountains in the north, are not found here, and the temperature of the summits of the Worcestershire hills differs too little from that of the valleys to afford much difference in the character of its vegetation. In fact, the Botany

of the county generally, and the distribution of its indigenous plants, must be considered as in some degree connected with its Geology. As none of our eminences exceed 1500 feet in altitude, we possess no real Alpine plants; nor, if we except the bleak hills of the lower Lickey to the north of Bromsgrove, have we any tract where the vegetation presents even a peaty sub-Alpine aspect. Here, however, a singular difference is visible, though not at all dependent upon altitude, for this disjointed primitive formation is but 900 feet above the sea. Nevertheless there is a perceptible distinction in climate, and several plants are found here that are common to mountainous and boggy situations, though not occurring elsewhere in the county. Among these we may enumerate the kingspear or asphodel, the cranberry, bilberry, &c. Cultivation has now, however, reduced the locality of these plants to a very narrow space. Four species of heath also adorn the wastes of the Lickey, while the *Calluna vulgaris* is the only one found throughout the whole Malvern chain. The hills of Malvern, and the limestone heights on their western declivity, have their peculiar and beautiful plants, which will be more fully enumerated in the appendix, but I may here observe, the rocks of the North Hill at Malvern, are the only habitat known in our county for the beautiful *Sedum album*. The oolitic outlyer of Bredon Hill, again, has its peculiar plants, several of the vetch tribe growing only on the declivities of that fine eminence.

The changes in the habitats of plants by the

progress of cultivation, and the alteration of roads, will also engage the researches of the practical botanist. Many plants have changed their localities, or have become entirely lost to us, even within our own recollection, by the circumstances adverted to. This will appear obvious on reference to the edition of Withering's Botanical Arrangement of British Plants, edited by Dr. Stokes,[1] who formerly resided in Worcester, and who supplied Dr. Withering with the habitats of many Worcestershire plants. But many of these no longer occur in the places indicated by Dr. Stokes. We may instance the *Sium latifolium*, no longer found "in the moors, near Pitchcroft;" the *Apium graveolens*, not now found in "Sansome fields," though abundant on the banks of the salt-water Droitwich canal; and the *Scandix Cerefolium*, which till 1830 grew, as recorded by Dr. Stokes, "in considerable plenty in the hedge on the south-east side of the Bristol road, just beyond the turnpike," but the road-surveyors in altering the course of the Bristol road, having cut the bank away where the *Scandix* grew, not even a stray plant is now to be met with there.

In Dr. Nash's History of Worcestershire, a catalogue of Worcestershire plants is given, the only one of any account that had up to that time appeared; but one plant is introduced there without sufficient authority, which should be expunged, as it has really no place in the Worcestershire Flora. This is the

[1] We have this edition in our Library. It is interesting, as many of Dr. Stokes's remarks are not embodied in succeeding editions.

exotic *Iris Xiphium*, which is stated by that writer to have been found by the Duchess Dowager of Portland "by the river side near Fladbury," where no other person has since been able to detect it, and where, if the plant really existed, it must have been an outcast from a garden. On this authority, however, the plant figured for some years in our British Floras, but is now excluded by all accurate writers.

A circumstance of much interest, as connected with the Natural History of the county, and as having some reference to the department we are now engaged in, I shall here advert to, because it relates to a question of much importance—the disappearance of certain diseases.

Within less than half a century a considerable portion of the land in the vales of the Severn, the Avon, and the Teme, was little better than a complete marsh, and the local history of situations of this kind, as given by the older inhabitants, represents ague as having been a frequent visitor. So much, indeed, have I understood, did this disease prevail fifty years ago, in the marshy vale below Malvern, that the vicar of the parish used every Sunday morning, before church, to give away large quantities of a remedy, for its cure, to the poor of the parish. Since these lands have been drained a case of ague is a rare occurrence: but in investigating the Botany of the spots in which this disease has occurred, we find in abundance those vegetable productions that grow in marshy situations;—as the *Iris*, *Scirpus*, *Equisetum*, *Drosera*, and *Colchicum*.

IV. Geology and Mineralogy. Another branch of Natural History to which your attention will be called by our Society is Geology and Mineralogy. It is astonishing that in a county, rich in mineral productions, which have been one great source of the wealth of it, so little care should have been taken to establish anything like an exact knowledge of its geology and mineralogy. To the neglect, indeed, of this knowledge may be traced the lavish expenditure of money in many fruitless speculations. How many persons have lost their property in search after coal, in situations where the slightest regard to the principles that have been established, and the rules that have been discovered, relative to the association of coal with certain stratified rocks, would have saved those individuals from ruin and misery.

It is, indeed, but a few years ago, so complete was the ignorance of persons upon these subjects, that a shaft was sunk to raise gold[1] from the hills of Malvern, and the individuals concerned lost a large property in the speculation. Setting aside, then, all considerations of the suitableness of such pursuits to our

[1] The spot where these mining transactions were carried on is still called "the gold mine" by the country people; but whether in reality the projectors of this scheme thought that gold could be found there, or were merely in search of copper or tin ore, traces of which it is said they discovered, certain it is that after carrying on their operations for some years to no good purpose, the scheme was abandoned. Geology not being well understood in those days, it is probable that the splendid lustre of the micaceous rock which abounds at this point, misled them as to its metallic composition. A similar instance of mineralogical ignorance is mentioned by the Rev. Thomas Pearson, in an elaborate paper on the structure of the Abberley Hills, contributed by him to our Society, where he states that two Scotchmen ruined themselves in attempting to manufacture iron from the basalt of those hills.

intellectual gratification, the mere desire of thrift should prompt us to become acquainted with the geological peculiarities of our county.

The vale of Worcestershire in a geological point of view is a part of the great plain of red marl, or new red sandstone formation, that prevails so generally in the centre of England. Several, however, of the older rocks, particularly the transition limestone, protrude in various situations through it; and these I shall briefly notice in succession,[1] when I have glanced at the phenomena presented by the new red sandstone itself. Immense beds of diluvial gravel are accumulated in its valleys and upon its sandy ridges, and these gravel beds are composed of a great variety of materials. In general, however, the common quartzose and granitic pebbles in innumerable varieties predominate, but black and variegated jasper, flinty and chloritic slate, many varieties of porphyry, and of variegated compact and granular sandstone also occur, and on the declivities of the upper Bromsgrove Lickey, where this formation attains an

[1] The principal eminences of the county, when viewed from the city of Worcester, may be thus enumerated. To the west, at the distance of eight miles, the primitive chain of the Malvern Hills is seen beautifully stretching from north to south upwards of nine miles in length. From the termination of these in the north-west, a chain of hills of transition limestone or connected with that formation, extends, with a very picturesque outline, to the Abberley Hills in the north. In the north-east the Hagley and Clent Hills are seen in connection with Bromsgrove Lickey, whose bold fir-crowned height gradually declines in the eastern horizon till it meets the vale. In the south-east, the lias hills of Cracombe, and the Broadway Hills of the oolitic series, rising to 1086 feet, appear, with the noble outlyer of Bredon in advance; while the distant chain of the Cotswolds fills up the southern view, apparently uniting with May Hill and the lesser protuberances of the grand Malvern chain.

unusual elevation,[1] large pebbles of breccia, boulders of chert, with casts of entrochi, and large blocks of porphyry are abundantly distributed. All these pebbles appear evidently to have been subjected to the action of water, which must have rolled them from a considerable distance, as we in vain seek for any vestiges of similar rocks *in situ*. But in the neighbourhood of Kidderminster and Bewdley regular beds of rounded pebbles of granular quartz rock occur in the sandstone, exactly similar in substance to the quartz rock of the Lower Lickey; from which Dr. Buckland[2] infers that there has been an extensive destruction of the sources from whence these pebbles have been supplied, as they often contribute no inconsiderable proportion to the entire bulk of the strata where they are found. The last diluvial waters have in many places torn up these pebbles from their lodgement in the new red sandstone, and they are thus mixed up with the later superficial gravel and spread over the surface of the plains of the midland counties

[1] The upper or "Bromsgrove Lickey" which overhangs the camel-backed subordinate range of the Lower Lickey, and attains an elevation of upwards of 1000 feet, stretches from north-west to south-east, at the distance of nearly ten miles from the bed of the Severn, and divides the upper part of the vale of Worcester from the more elevated plains of Birmingham, which in point of climate are a fortnight later in the ripening of their productions than those of the vale of Worcester. This protuberance of the new red sandstone formation has its north-west termination in the Clent and Hagley Hills near Stourbridge, where strata belonging to the old red sandstone occur, affording the calcareous breccia called cornstone. It is continuous south-eastward to Tardebigg, on the east of Bromsgrove, whence it stretches by Feckenham forest to the Ridgway on the west of Alcester, and there slopes off into the vale of Avon above Evesham.

[2] Dr. Buckland on the quartz rock of the Lickey Hill, Worcestershire, in *Trans. of the Geological Society of London*, 4to. vol. ii. p. 516.

in enormous quantities, being dispersed indiscriminately without reference to the age or substance of the rock which lies beneath them. Mr. Horner noticed this gravel to the north of Birmingham, and Dr. Buckland has traced it through the vallies of Oxfordshire along the course of the Thames into Berkshire. It thus appears that the quartz rock of the Lower Lickey, the Wrekin, and Caer Caradoc, formed anciently one united mountain mass, which some convulsion has reduced to ruins, and broken and rolled down their angular fragments to pebbles, which were buried in the new red sandstone at the period of the deposition of that formation. From this lodgement they were again torn up, according to Dr. Buckland, by the waters of the last deluge, and dispersed by them over the surface of the various rocks on which they are now scattered.

In the vale of Evesham, watered by the Avon, the diluvial deposits consist of clay, gravel, and sand, in various proportions, and scattered over the country with capricious irregularity.[1] Where the sand predominates, it is often of great service in lightening and fertilizing the otherwise clayey soil. The clay is in many places dug for brick making, and the gravel is a valuable material for the roads. The latter is composed of a variety of broken rocks, for the most part of older formation than those of this district, but chalk flints are not unfrequent, and the *Echinocorys*

[1] I here gladly make use of the information supplied by Hugh Strickland, Esq. of Cracombe House, in a valuable contribution made by that gentleman to our Society, on the Geology of the Vale of Evesham.

scutatus, a well known chalk fossil, has been met with. In the neighbourhood of the lias the diluvial beds often contain rolled fragments of the fossils of that formation, such as *Gryphæa incurva, Ammonites*, &c. At the village of Bredon the *Hippopodium ponderosum* occurs in the gravel in addition to the above fossils. Near the oolite hills the diluvial beds contain, as might be expected, fragments of oolite.

Besides borrowed fossils the diluvial beds occasionally contain fossil remains of their own, consisting of the bones of land animals, which appear to have been living in this country at the time of the catastrophe which caused the deposits in which they are now imbedded. This Society possesses several bones of the hippopotamus found at Cropthorne, and we are in hopes of obtaining more from the same place. The remains of a species of deer also occurred at Cropthorne. In a gravel pit at Chadbury bones of the rhinoceros have been found, also a fine molar tooth of that animal, which has been presented to this Society by Mrs. Perrot, of Fladbury. Fossil bones of some large animal have also been found in Mr. Day's clay pit at Bengeworth, and the Society is indebted to Mr. Stokes for a fine tooth of the elephant from Stratford-upon-Avon.

Thus then there is ample evidence of the existence in our diluvial strata of those interesting remains which carry us back to a period, and not, geologically speaking, a distant one, when the hippopotamus, rhinoceros, and elephant, roamed undisturbed in the vallies of Worcestershire ; and hence I beg to recom-

mend to the attention of the Society the numerous pits of gravel, sand, and clay which abound in the county, not doubting that many valuable relics may thus be rescued from the workmen, who unless taught otherwise will still continue to throw them aside as worthless and unprofitable.[1]

Connected with the great plain of red sandstone, and greatly productive of wealth to the county, is the bed of rock salt extending beneath it, and the brine springs in connection with it. The prevailing rock around Droitwich, where the salt works have been for many years situated, is a fine-grained calcareo-argillaceous sandstone, beneath which strata of marl and gypsum alternate, till the brine is met with, at a considerable distance below the surface, flowing over a bed of rock salt which has not hitherto been penetrated. About three miles from Droitwich, at Stoke Prior, similar works have lately been established, and several articles of commerce, as soap, barilla, bicarbonate of soda, and salt are produced.

It is not improbable that the whole of the plain of Worcestershire was in ancient times the bed of the sea, while the various hills that now appear, formed the basis of rocks rising out of that primitive ocean. The red marl is generally stated by geologists to be formed from the ruins or debris of older rocks, but

[1] We have also in our Museum a most magnificent and perfect tusk of the *Elephas primigenius*, weighing nearly 40 pounds, and some bones of the Siberian rhinoceros, which were found in 1815 in a bed of diluvial gravel at Little Lawford, Warwickshire, and recently presented to us by the kindness of John Walcot, Esq., a devoted friend to this branch of science.

they do not descend to any particulars respecting it. We conclude, however, that after the deposition of the coal strata, powerful volcanic eruptions took place in the antediluvian world,[1] and this is proved by the various trap rocks in England, and the grand basaltic columns of the Giant's Causeway in Ireland, and Staffa in the Hebrides. Now one of the hills near Dudley is also crowned with basaltic columns, and basalt appears in the Clee Hills and our own Abberley Hills. A violent heat, then, at that period acting from beneath has caused the crystallization of the salt, and the consolidation of the red marl, giving to it at the same time its red and white colour, while probably at the same time the bed has been upheaved from below. After these volcanic eruptions, however, a season of quiet ensued, as the strata deposited upon the marl is crowded with shells.

From Droitwich the new red sandstone extends southwards down the valley of the Severn, abutting against the elevated escarpment of the sienitic or granitic chain of Malvern. This abrupt termination of the sandstone at the base of Malvern Hills is very curious; for whilst over the whole of the plain of Worcestershire the recent formations of the new red sandstone prevail, we no sooner reach the eastern side of Malvern Hill than we find the very oldest, or primitive rocks. Mr. Horner, in his paper in the first volume of the Geological Transactions, describes this part as being composed of sienite, but later investigators consider it more properly a granite

[1] Dr. Ure's New System of Geology.

rock, containing occasionally crystals of hornblende, and associated with gneiss, and greenstone.[1] Sienitic granite, however, occurs in some parts of the range, and the variety of appearances which the constituents of these primitive rocks put on, in their different proportions of felspar, hornblende, quartz, and mica, is very remarkable. Epidote occurs on the End hill, traversing the granitic and sienitic rocks in small veins of a yellowish-green colour.

There is no mineral production on this mountain convertible to any useful object, but the rough stones are used for walls and building purposes.

There is some difference of opinion respecting the height of these hills. Dr. Nash makes their height above the Severn at Hanley to be 1,313 feet; and Col. Mudge states that he found their height above

[1] The greenstone is the prevailing rock on the eastern side of the hills, and forms the summits of the Worcestershire Beacon and North Hill. It is often in a very decomposing state, and splits into small irregular pieces with decomposed surfaces, so that it presents a very deceptive aspect to a tyro in geology. It is traversed by slender veins of granite, and contains crystallized sulphate of barytes in its fissures. The granite itself occurs at the northern part of the range in very irregular masses, interspersed with agglomerated mica; but the composition of the Herefordshire Beacon and its subordinate heights, is a red friable granite, in which mica is a rare component, and is often entirely wanting. Mr. Ainsworth observes, in a paper on the Geology of the Malvern Hills, in the *Ed. New Phil. Jour.* that "From the most northerly point to as far as their structure can be investigated in the south, they present an uniform series of primitive rocks, from highly crystalline granite to the more compact chlorite slate; and the transitions between these two rocks may, with a little patience of research, be traced throughout all their gradations; not that these gradations occur exactly in accordance with the relative situation of the mountain masses, but that in particular localities, such transitions are distinctly marked out. The central part of the range, comprising the Herefordshire Beacon and its table-land, the hill extending to the north to the Wych road, and the hill above Eastnor wood to the south of the Beacon, are all composed of granite, with slight local variations of texture."

the sea to be 1,444 feet. Now as the Severn at Hanley cannot be more than 40 feet above the level of the sea, it is evident that Dr. Nash's statement varies very much from that of Col. Mudge; but as the authority of the latter gentleman with regard to other eminences, has not been disputed, there is little doubt that he is correct in this instance.[1]

[1] I have received the following note relative to the height of the Malvern Hills, from Mr. Lees, the Hon. Curator of our Society, which while it confirms the statement of Col. Mudge, proves that the Worcestershire Beacon is the highest point of the range. "Feeling dissatisfied with the existing accounts of the height of the Malvern Hills, as stated by Dr. Nash and Mr. Horner, especially as the latter gentleman was told by Col. Mudge that his admeasurement of 1,444 feet applied to the Herefordshire Beacon, I commenced a series of barometrical observations in March, 1832, commencing with Roseberry Rock, at Knightwick, proceeding along the chain of limestone hills and primitive rocks, and terminating at the Herefordshire Beacon, near Little Malvern. I found that the mercury in the barometer sunk one-twentieth of an inch lower on the Worcestershire Beacon than on the Herefordshire, though on the same day and under similar circumstances of weather and temperature. My calculation of the height of the Herefordshire Beacon exceeded that of Col. Mudge by four feet only, and that of the Worcestershire Beacon and its subordinate ridges I give as under, verified by another barometrical observation in 1833.

HEIGHT OF THE WORCESTERSHIRE BEACON AND ITS SUBORDINATE RIDGES ABOVE THE LEVEL OF THE SEA.

Places of Observation.	Feet.
St. Ann's Well,	762.
Ridge of the Hill between the Beacon and Sugar Loaf,	1,072.
Summit of the End Hill,	1,080.
The North Hill,	1,342.
Cave in the Rock, near the vein of quartz on the western edge of the Beacon,	1,372.
Highest point of the Worcestershire Beacon,	1,482.

Though I claim no peculiar accuracy of observation, and some variations dependent upon temperature are always to be expected in barometrical observations, yet I feel no doubt that the above details will be found substantially correct; and in future no doubt can arise as to the superior altitude of the Worcestershire Beacon."

The unstratified granite, is the principal formation on the eastern side; but we no sooner reach the summit and approach the western side than we come to a new class of stratified rocks, consisting principally of sandstone, and transition limestone, in which shells and other organic remains are found. This causes a great difference in the aspect of the eastern and western sides of Malvern Hills,—a difference, which the most careless wanderer on the summit of these hills cannot have failed to observe.

To this cause is also to be ascribed the difference in the chemical composition of the springs on the two sides of the hills :—the rare purity of those on the eastern, or Worcestershire, side; and the selenitic impregnation in those of the western, or Herefordshire side.[1]

The stratified rocks of the western side of the Malvern chain take a parallel direction to that of the range, and consist of alternating strata of sandstone and transition limestone,[2] but their dip is very irregular. The eminences that extend in a north-east direction, from the End Hill to Knightwick including the bold headland of the Storrage, consist of a gritty

[1] The springs of the country on the western side of the Teme in the vicinity of Clifton, where the rocks are of the old red sandstone and transition limestone series, are highly impregnated with calcareous matter; and Southstone's Rock between Clifton and Stanford, is a local formation of travertine, deposited by the water that formerly flowed over the rock.

[2] Numerous fossils such as alcyonites, madreporites, coralloids, chain coral, and terebratulites, with occasionally vertebræ of the encrinite, and fragments of orthoceratites, are found in the upper beds of the lime. The *Asaphus caudatus*, also occurs, and the great trilobite has been found, though rarely, in the strata at Ledbury.

conglomerate passing into grauwacke, which forms the boundary of the new red sandstone. The strata on the western side of the Storrage abound with terebratulites.[1] Upon this rock the limestone reposes in an almost uninterupted chain of hills from Mathon to Suckley. Beyond the limestone another range of sandstone hills, abounding with shells, and identical with a similar rock at Ludlow, occurs. On this the superficial soil of the country to the westward lies; and the rivulets flowing from the hills in the same direction, take their course into the Frome, and finally into the Wye. The nearest point to which the limestone approaches Worcester, is at Leigh Sinton, near the Norris Farm, a distance of eight miles. At Rosebury Rock, near Knightsford Bridge, a considerable disruption of the strata appears to have taken place, and the precipitous conglomerate in that spot is mixed up with various rounded fragments of older granitic rocks in a singular state of confusion. At this point the river Teme breaks through the old red sandstone series, and flows in a south-eastward direction through the red marl to join the Severn, near Powick.

In various places in the valleys, between the sandstone and limestone, shafts have been sunk with the expectation of finding coal, at some points it is said with partial success;[2] but in the majority of cases it

[1] Mr. Jabez Allies undertook the examination of this part of the country with great zeal, and in company with Mr. Lees, explored the whole chain from Mathon to Knightwick, in the present year.

[2] The late Mr. John Allies, of the Upper House, Alfrick, sunk a shaft for coal at

is almost needless to say the attempts were abortive. At a place called the Vine's End, near Cradley, a shaft was sunk by subscription of several neighbouring farmers in the solid limestone ; but after expending upwards of £200, they obtained nothing more than fragments of carbonate of lime, and broken impressions of trilobites. The shafts are now all closed up, and it will be well if the present proprietors remain contented with the unsuccessful trials that have been already instituted.

Ankerdine Hill, near Knightsford Bridge, is composed of the grit and grauwacke strata before intimated as occurring at the Storrage, and from hence a range of hills, comprehending Woodbury and Abberley Hills, extends a distance of 18 miles in a direction bearing north-east to Bewdley. The western side of this ridge is occupied by the old red sandstone formation. The strata of old red sandstone and lime alternate with each other, being very irregular in their inclination, but for the most part dipping eastward, though at the south-west termination of Abberley Hill they assume an almost vertical position.[1] No doubt can exist as to the disturbance that has taken place in

the south-eastern base of the Berrow Hill, Martley, an eminence of old red sandstone. It is traditionally stated that coal was really found there, but that the vein was too narrow to pay the expense. However this may have been, the shaft is now closed, but a quantity of blue clay that was excavated yet remains.

[1] The Rev. Thomas Pearson, Rector of Great Witley, to whom the Society is indebted for an elaborate paper on the structure of the Abberley range, thus describes the beds of the limestone rock. "It commences at the south-west point of Abberley Hill as impure lime, then passes into a greyish-coloured lime, then impure lime, which is succeeded by a pale brown sandstone, in which are found nodules of lime, also lime amalgamated with sandstone. The sandstone beds again

this formation at some distant period, from the evident traces of distortion which some of the quarries present, and this is most probably to be referred to the irruption of a basaltic dyke which according to the statement of Mr. Pearson, rises abruptly on the eastern side of the range, in the parish of Shelsley Beauchamp. This dyke is entirely unconnected with any of the same formation, and there is no rock of a similar character nearer than the Clee Hills, which are ten miles distant. As another proof of the disturbance the strata of these hills have sustained, it may be mentioned that a small unconnected patch of limestone occurs in the parish of Astley, on the eastern side of the range, abutting upon Abberley Hill, while another equally limited mass appears in the parish of Rock, to the north-west. The beds of impure slaty limestone contain the butterfly trilobite, *Asaphus caudatus*, and the Dudley trilobite, *Calymene Blumenbachii*, has been found, though rarely, in the purer lime. The sandstone beds are rich in bivalves.

The coal field subordinate to this formation occurs on the north-western side of the Abberley Hills. No coal has been found on the eastern side of the range, except small patches in the parish of Ribbesford, which have been detached from the main body by some convulsion of nature. One isolated out-crop has been discovered at the bottom of the river Severn,

pass into greyish limestone, and again alternate—their connection is exceedingly curious and interesting. The sandstone, like the lime, has an almost vertical inclination, occasionally fancifully diverging from the straight line."

where the new red sandstone forms the eastern bank of the river, and other patches are found in the higher ground on the western side, in an almost vertical position. Other irregular beds are discovered to the west of the range; but in the parishes of Rock, Abberley, Mamble, and Bayton, and the chapelry of Pensax, a more extended field is opened, though irregularly disposed, and from whence the contiguous parts of Herefordshire are supplied. The range of this coal is limited and very irregular. The coal is found at a depth varying from 45 to 200 feet, lying under a superincumbent bed of clunch. In some places a bed of sandstone overlies the clunch. The thickness of the coal measure is from 20 to 30 inches, and for the most part two horizontal measures run parallel with each other, separated by a twelve-inch clunch.[1] From these two measures the principal supplies are procured. This coal is highly bituminous, and is unfit for the use of the smithy. It seldom finds its way beyond the rural districts, except in very hard winters, but is much used as coke for the hop kilns. It has been imagined that a thick measure of better coal might be discovered deeper in the earth, but none such has been hitherto found, and no good reason exists to suppose that any such will be discovered.

Our attention is next directed to the Dudley coal field in the extreme northern portion of the county, and its attendant hills of limestone and basalt, magnificent features of this part of the country. A great portion indeed of this formation is in Staffordshire,

[1] MSS. of the Rev. Thomas Pearson.

but it cannot be overlooked even in a cursory sketch of the geology of this county. Mr. Keir states this district as distinguished by a bed of coal of remarkable thickness, generally ten yards, and represents the formation as extending from Bilston southward to Brettel Lane, Amblecoat, and the Lye, near Stourbridge, seven miles in length, and on an average four miles in breadth, forming a tract of 28 square miles.[1] In the centre of this district are two ranges of hills, the limestone hills which begin to rise in the vicinity of Bilston and Wolverhampton, extending to the town of Dudley[2] whose castle occupies the slope of the last hill of the chain; and the basaltic hills of Rowley,[3] which proceeding from Dudley, through Rowley, divide into two branches, and terminate in a valley between Oldbury and Halesowen. Dudley Castle hill is perforated by caverns, which in some

[1] Keir on the Mining District of south-west Stafford, quoted in Scott's History of Stourbridge, 8vo. Mr. Scott observes that "another but very inconsiderable coal-formation occurs at Compton, in Kinver, near to which is that of Shatterford, on the road from Kidderminster to Bridgenorth, probably joining the coal fields at the north-west of the Abberley Hills."

[2] "The district around Dudley Castle," observes Dr. Booker, the worthy vicar of Dudley, "presents an interesting field for geological research. Various beds of coal, ironstone, and limestone constituting vast sources of wealth to their proprietors, and of profitable employment to multitudes of miners and mechanics, *there* approach the earth's surface; the coal, in some places, cropping out, as it is technically termed, and chalybeate springs gushing forth,—as if purposely to indicate that at no great distance are deposited those subterranean treasures with which the Creator has stored the earth, to reward the ingenuity, the labour, and perseverance of man." ***Dr. Booker's Dudley.***

[3] Two of the hills of this series, Cawney and Tansley, adjoining to Dudley, and opposite to the Castle Hill, are in Worcestershire. Columnar basalt occurs on several of the hills.

places are 60 feet below the surface of the earth, forming a tunnel for a subterraneous navigation, and immense buttresses of limestone are left to support the excavations.

In connection with the coal strata are the subordinate beds of ironstone, the proximity of which to the limestone and coal is so important a feature in the mineralogy of the district. It is this which gives such an impetus to the industry of the manufacturer, for without the lime to act as a flux, and the coal to be employed in the various operations of the furnace, the ironstone would be comparatively useless.[1] "What advantage, indeed," observes Dr. Booker, "would be derived from living in a land 'whose stones are iron,' were coals and lime not also deposited near, to flux the stubborn ore? The disappearance of *vegetable* fuel from the neighbourhood,—plentiful as it was in its chaces and woods some centuries ago, proves *that* could not have been the material intended by Divine Providence for the purpose: and even were it as plentiful now as formerly, inadequate would it be to furnish a supply for between 80 and 90 devouring furnaces; which at the present time, like so many fiery beacons, emit their volumes of flame and smoke within seven miles of Dudley Castle. The term *devouring* will not be deemed too strong, when it is known that the average consumption of coal by each furnace is not less than 160 tons per week; which,

[1] The average quantities of coal, ironstone, and limestone, required to make one ton of pig iron, are, of the former, four tons, of the second between three and four tons, and of the third one ton. *Dr. Booker's Account of Dudley.*

multiplied by 85 (the present number of furnaces now in blast in the neighbourhood) will make the weekly consumption 13,600 tons; and the latter quantity multiplied by 52, will make the enormous total of 707,200 tons a year."[1]

The proximity of the basaltic hills of Rowley to this coal field seems to indicate former convulsions and dislocations of the strata; nor is this mere conjecture, for at the colliery of Mr. Fereday, near Dudley Port, where the workings are carried down 800 feet perpendicularly, a sudden elevation of the coal beds takes place to the extent of 400 feet, the measures being precisely correspondent with those 400 feet lower. On the south-eastern side of the castle, the coal takes a declining direction, and is supposed to lie at a great depth beneath the basaltic rocks, which at some distant period, when some powerful volcanic eruption disorganized the primitive globe, have broken through the strata. The basaltic dykes, or faults, as the miners term them, are common to most coal fields, and no doubt exists as to their igneous origin, as the coal is charred and converted into coke wherever it comes in contact with the basalt.

To the south of Dudley and the Rowley Hills is the Clent range,[2] commencing at Hagley, and stretching southward to the vicinity of Belbroughton. The hills belonging to this range are considered by Mr. Yates to consist of porphyritic and amygdaloidal trap, more or

[1] Booker, pp. 130—131.

[2] Walton Hill is the loftiest of the Clent range, rising 792 feet above the Stour, and 15 feet higher than Clent Hill, the adjacent eminence.

less decomposed, the solid rock not being visible, and the soil to the depth of two or three feet, as well as at the surface, abounding in angular fragments of this substance.[1] Dr. Buckland, however, refers them to the old red sandstone series, and they afford quarries of calcareous breccia or cornstone, at various places in their line. He observes that "beyond the north extremity of the Lower Lickey to the base of the Clent and Hagley Hills, the country is composed of a fundamental rock of old red sandstone, having the new red sandstone irregularly and unconformably strewed over it, but from the similarity of colour and substance in the beds composing these two formations, it is impossible to trace accurately the precise limits of each, the only sections being at a few quarries where the cornstone is extracted from the old red sandstone to be burnt into lime."

Before closing the geological description of this part of the county, it may be necessary to advert to the celebrated Stourbridge clay, so well known for its employment in the manufacture of crucibles. The floor or stratum on which coal rests consists of clay in an indurated state, and generally possessing the qualities of fire clay. The Stourbridge clay forms a small oval tract in the parishes of King's Swinford and Old Swinford, about a mile and half in length, and one mile in breadth, three strata of coal being superimposed between it and the surface of the earth. The fire clay thus lies 150 yards below the surface, and 45 yards below the coal. The Stourbridge clay

[1] Rev. James Yates, quoted in Scott's Stourbridge.

is remarkable as containing more alumina than any other yet discovered, which accounts for its plastic superiority. It is employed in the manufacture of crucibles, and vessels for the conversion of iron into steel, and in the baking of porcelain. The inferior qualities are formed into fire bricks.

Intervening between the Clent Hills and Bromsgrove Lickey, are the eminences of Romsley and Waysley, abounding with rolled pebbles analogous to those of the Upper Lickey. To the east of these heights stretches the primitive line of the Lower Lickey, composed of granular quartz, extending rather more than two miles from north to south, and intersected by four transverse vallies, through the winding defile of the most easterly of which, is the high road from Worcester to Birmingham.[1] Ruebury Hill, on the north, is a round eminence detached from the rest, the summit of which is crowned with an encampment. The quartz in this range is stratified in beds varying from an inch to many feet in thickness, separated by thin laminæ of soft argillaceous slate, which is highly micaceous, and of a yellow colour. Through the quartz itself small crystals of red and yellowish felspar are disseminated, usually in a state of decomposition. Similar felspar is found in most of the larger interstices; and occasionally also in minute fissures that divide the quartzoze strata in lines parallel with their planes. The strata are split

[1] The road has been recently altered, and is now conducted along the western side of the Upper Lickey, and penetrates the Lower Lickey line by the valley between Rednall and Ruebury hills.

by these fissures into millions of small angular fragments of irregular form, so that it is scarcely possible to find a solid block of one foot in diameter, except in those cases where the felspar is sufficiently tenacious to hold together the quartzoze fragments in a kind of breccia. Most frequently these interstices are entirely empty, and the rock in consequence falls immediately into small pieces on being moved from its native bed, so that without artificial fracture, it is applicable at once to the purposes of small gravel.[1]

Towards the southern extremity of the ridge is a trap rock, near to which is an old quarry of transition limestone. This limestone occurs again towards the north extremity of the chain, with an insulated patch of coal measures occupying the space between the quartz and the limestone, while to the north-east are quarries of old red sandstone. On the western side of the quartz, dividing it from the Upper Lickey, is a triangular valley containing coal measures, which have never been wrought on any extensive scale. The high ridge of quartz on the east, and the still higher escarpment of new red sandstone on the south-west, limit this little valley, which is terminated on the south by the union of these two ridges at an acute angle. Thus the Lower Lickey, and its little group of attendant rocks more ancient than the new red sandstone, is, together with them, completely insulated by a vast extent of new red sandstone, abutting against and covering them up on every side, and dividing them from the nearest trap, lime and

[1] Professor Buckland, in *Geolog. Trans*, 4to. vol. 2.

coal formations at Dudley on the north, at Shatterford, near Kidderminster, on the west, and at Abberley on the south-west, between which points the small patches of coal just adverted to at the Lickey, though apparently so minute, form a valuable connecting link.

It now only remains to trace the extent of the lias formation in Worcestershire, its connection with the inferior beds of the red marl, and the oolitic escarpments which repose upon it. The lias occupies nearly the whole of the Vale of Evesham, and extends from 200 to 300 feet up the sides of Bredon and Broadway Hills.[1] This formation consists of a series of black or blue shales, producing by exposure to the atmosphere a solid stiff clay. At the lower part of the formation beds of limestone occur from two to eight or ten inches thick, which produce excellent lime; but when used as a building stone this limestone is apt to shiver with the frost. At Binton, near Bidford, and at Hasler, these beds are thin, smooth, of fine quality, and are used for flooring and other purposes. At Crowle, and Broughton Hacket, on the east side of Worcester, good limestone of this formation occurs abounding with shells, with alternating strata of argillaceous sandstone.

The extent of the lias in this county will be best observed by a reference to the geological map; but as it has not hitherto been correctly laid down, I shall avail myself of the use of Mr. Strickland's paper

[1] At Bretforton it has been sunk into more than 300 feet in quest of coal, without being penetrated.

before adverted to, in describing it, as that gentleman has paid particular attention to the subject. The most northern point of the lias formation in Worcestershire, is near Lower Bentley. From this place its line of junction with the red marl passes about one mile south-east of Hanbury, and thence at the back of Meer Hall to Goose Hill, and on the north of the Trench Wood to Crowle, its course being for the most part marked by a low range of hills. At Crowle is a good section of it, shewing very distinctly its junction with the red marl. From Crowle the line of junction crosses successively the roads to Alcester, Evesham, and Pershore, and then turns due south, passing close to Pirton, and crossing Croome Park, where it forms a low bank, with the house at the foot and the gardens at the top. Beyond Croome it continues with great regularity between the fork of the Avon and Severn as far as Tewkesbury. To the eastward of the line of junction thus indicated, the country to the eastern boundary of the county is entirely of the lias formation, with the exception of the oolitic outlyer of Bredon, and a singular fault in the lias, extending from Netherton in the south to near Lower Bentley in the north, a distance of 15 miles. A narrow strip of red marl is thus exposed, first by a valley of elevation varying from half a mile to a mile in width, as far as Radford, on the Alcester road, and secondly by a fault properly so called, extending from Radford to Feckenham, the red marl being raised up and forming a long range of hill, with the lias abutting against it at the base.

The lias of Worcestershire though not so productive in organic remains as it is in Dorsetshire and Yorkshire, contains notwithstanding in some of its beds, considerable abundance and variety. The vast Saurian reptiles for which Lyme Regis is so famous, though rare, are not wanting in our district. Vertebræ of the ichthyosaurus have occurred in Coltknap Hill, at Abbey Manor, near Evesham, at Hasler, and probably in many other places.[1] These facts suffice to render it highly probable that good specimens of these magnificent reptiles may occur in our lias district, and the interest excited by our Society in the cause of geology may be the means of saving many a valuable specimen from the hammer of the quarryman.

Bredon Hill, in the southern part of the county, a magnificent outlyer from the great oolitic chain of the Cotswolds, now demands our attention. Its middle region consists of marlstone reposing upon the lias, or lias shale, which extends from 200 to 300 feet up its sides, as it does upon the more distant ridge of Broadway. The marlstone, which abounds in fossils, consists of a series of beds of sandstone and sand, in various degrees of induration. It ranges along the side of the Broadway range, at about half the height, and skirts Bredon Hill in the same manner, where it forms the summit of five or six flat-topped projections, half the height of the main range, and jutting out from it on the north and east sides. In Dumbleton Hill, which is of inferior height,

[1] Mrs. Brown, of Hasler, possesses a vertebra of the *Plesiosaurus*.

it occupies the summit, proving by the regularity of its occurrence in these hills, that the intervening vallies have been denuded, and that Dumbleton and Bredon Hills are correctly termed outlyers. The upper lias shale succeeds the marlstone about three quarters of the way up, where it may be traced above the marlstone quarries, round the north side from Aston to Woolershill, its situation being commonly marked by a grassy slope, below the steep brow caused by the inferior oolite. Frequent springs are thrown out along the line of its course, as is always the case when clay interstratifies with more porous strata. The summit of Bredon is crowned by the inferior oolite, which rises gradually towards the west and north about 900 feet above the level of the sea. This rock also occupies the brow of Ilmington and Broadway Hills, where it reaches an altitude of 1,086 feet, and forms a cap on the summit of Meon Hill. On Bredon Hill the inferior oolite appears at some period to have been much disturbed; for in the various quarries its strata are seen greatly shattered, and dipping in all directions, often with a high degree of inclination. These dislocations are probably of great antiquity, as the present outline of the surface does not appear to be affected by them. The general dip of the oolite of Bredon is to the south, and hence descends with a gradual slope much lower down on that side than on the north, where it terminates suddenly in a bold escarpment.

I have thus taken a general though superficial survey of the interesting geological phenomena pre-

sented within the limits of Worcestershire; but I must leave detailed statements of the chemical composition of the rocks and soils, and catalogues of the fossils incident to the transition and secondary strata to the more minute researches of other members of our Committee on Geology and Mineralogy.

In what I have said it has been my principal object to shew how peculiarly incumbent it is upon us, living in the centre of a county peculiarly rich in natural productions, to cultivate a knowledge of them, by which both useful and pleasurable results will ensue; and I cannot, therefore, close these observations respecting the importance of our geological proceedings, without again adverting to the neighbourhood of Dudley.

To a stranger entering Worcestershire from its northern side, the appearance of the county there presents a far different aspect from the verdure and richness which delight the eye in the vales of the Avon and Severn: the numerous iron and glass manufactories, the towering chimnies, which elevate their summits on every side—

"Whose Stygian throats breathe darkness all day long."

and the presence of coal strata, have impressed a peculiar character on the district. But the mineralogist is here repaid for the absence of the beauties of the vegetable creation, by a rich abundance of fossil remains, many of which have no analogies with any of the existing races of beings at present known.

Some of these productions are very rare, and it will

be an object of much interest with your Geological Committee to obtain a good collection of them, wherewith to enrich your museum; and the study of them may now be pursued with advantage and interest, for of late years much has been done towards elucidating the peculiarities of fossil remains, and connecting them with the present state of geological science.

To Cuvier we owe much in this respect. "In the hands of this distinguished naturalist," says Mr. Murchison, "Natural History became adorned for the first time with the highest attributes of pure philosophy. To him we owe the most important of the laws which have regulated the distribution of the animal kingdom, and by the application of which we have been made to comprehend many of the mutations on the surface of our planet. He it was who, removing from geology the incumbrance of errors and conceits heaped on it by cosmogonists, contributed more than any individual of his century to raise it to the place which it is assuming among the exacter sciences. Unlike our predecessors, we no longer have to wade through the doubts and perplexities which retarded their acquaintance with the lost types of creation; to his skill we are indebted for a knowledge of their analogies with existing races; and he it was who from their scattered bones, remodelled the skeletons of those wondrous originals which have successively passed away from the surface of our planet." No one then will dream of doubting that to those who are disposed to become acquainted with the

mineralogy of our county, abundance of opportunity is afforded, and our Geological Committee will consequently have ample field for their exertions.

Mineral Waters. Worcestershire is singularly rich in the production of Mineral Waters, the qualities of which are very various. The springs of most notoriety, and which indeed have obtained great celebrity in the cure of several diseases, are those of Malvern, and on this account I shall first notice them. Throughout the whole extent of the Malvern Hills there are several small springs, some of which are found to be mineralized. These waters were first examined by Dr. Wall, of Oxford, in 1756; afterwards by Dr. Wilson Philip, in 1805. There are two principal springs, that at St. Anne's Well, on the Worcestershire Beacon, and the Holy Well Water, midway between Great and Little Malvern; besides which there is a chalybeate spring impregnated with simple carbonate of iron. The result of the several analyses that have been made of the Holy Well and St. Anne's water is not very satisfactory, as it has not discovered any active principle in them capable of producing very beneficial results. Dr. Wilson Philip's analysis, which places the contents of the water in the most favourable point of view, represents that it contains carbonate of soda and a very small proportion of carbonate of iron, not more than a quarter of a grain in a gallon of water; but it seems doubtful whether the carbonate of iron which appeared to be detected by Dr. Philip in the water, was not afforded by the prussiate of potash and muriatic acid, which he

used in his experiments, rather than from the water itself. Certain it is that all other experimenters, amongst whom is Dr. Scudamore, have failed in detecting any active ingredient in these waters. But in the present imperfect state of analytic chemistry, it would be going too far to assume that there is no active principle in these waters, because it has not hitherto been detected; for in the very act of our analysis, as at present conducted, it is very probable that some undiscovered change may take place in the mineral water operated on, which misleads us in forming an estimate of its virtues. When analytical chemistry shall have attained a greater share of accuracy, it is possible that the Malvern Water may be found to contain some principle possessed of sufficient activity to account in part at least for the benefits arising from its use.

We must, therefore, be guided by observation and experience in judging of the effects of these waters; and these are found to be very considerable in arthritic, calculous, dyspeptic, and scrofulous cases. It should not at the same time be forgotten, as Dr. Scudamore remarks, that the salubrious air of Malvern, and the peaceful feelings which the quiet and charming retirement of this delightful spot inspires, greatly assist any curative effects of the waters, and contribute, in a great degree, to strengthen the body, to calm the mind, and thus to promote the general health.[1]

[1] For a very good account of these springs, see Mr. Addison on the Malvern Waters.

In noticing the mineral springs of Malvern I must not omit to mention that the water of Walm's Well, which is situated at the southern base of the Herefordshire Beacon, has long been celebrated, by the poor, as being more efficacious than the springs that have been before alluded to; and Mr. Lewis, of Hanley, tells me he thinks there is some good ground for giving this spring the preference; for he has had under his care some very obstinate cases of cutaneous diseases which derived very little benefit from the use of the water at the Holy Well, and St. Anne's Well, but were much relieved by bathing at Walm's Well.

The Mineral Springs at Malvern form, however, but a part of those which occur in this singularly productive county. It contains others which in point of efficacy and activity of operation on the system, are scarcely inferior to those of Cheltenham and Leamington; and we only require some accidental circumstance to tempt fashionable visiters to resort to the neighbourhood of Evesham, in order that the springs of this spot may vie with those of either of the two former celebrated watering places in their far-famed restorative virtues.

It had long been known that several wells near the town of Evesham, and at some distance from each other, contained saline ingredients, and in the Autumn of the year 1821, a public meeting took place at the Town Hall of Evesham, and a Committee was appointed, under whose direction wells were sunk at Hampton. A specimen of the water flowing into one of them, about eleven feet below the surface

of the ground, was examined and found to contain carbonic acid gas, sulphate and carbonate of lime, sulphate or muriate of magnesia, and sulphate of soda, altogether amounting to 50 grains of solid contents to a pint. When the same well was sunk to the depth of twenty-two feet, a much more copious saline spring was found, beneath a compact stratum of blue lias. This water contained much less sulphate of lime than the more superficial spring, and, according to Mr. Hume's analysis, of Long Acre, held in solution carbonate of magnesia, sulphate of magnesia, muriate of magnesia, and sulphate of soda. A comparison of the analysis of this spring with those of Leamington and Cheltenham shews, that there is not a very great difference between the three ; and as a consequence, since the analysis of the Evesham springs by Phillips and Hume, a pump-room and baths have been erected at Hampton, and several persons in the neighbourhood have taken these waters as a saline aperient, with good effect ; though it does not seem likely at present that they will be resorted to by distant invalids.

In a wood, in the township of Cradley, near the town of Dudley, arises a spring of salt water; this is described by Dr. Plott, in his History of Staffordshire. " In Pensnett Chase, south of Dudley about a mile and half, is a weak brine, belonging to the Rt. Hon. Edward, Lord Ward, of which his lordship once attempted to make salt, but the brine proving too weak, he thought fit to desist, although possibly it might have been advanced to profit, by the art of

tunnelling, much used in Cheshire to keep out the freshes."

A more recent account of this spring has been given by Dr. Male of Birmingham, in the Midland Reporter, from whose analysis it appears that it contains common salt, muriate of lime, muriate of magnesia, muriate of iron, carbonic acid gas, green oxide of iron, azotic gas, silica, and sulphate of lime.

By comparing the solid ingredients of Cradley spring with sea water, and the well known efficacious water of Moffat, it is evident we have in it a remedy of no mean value. Numbers of the inhabitants of Dudley and its neighbourhood, Dr. Male says, have been for a series of years in the habit of using this water in cases of scrofula, and strumous swellings of the glands, indigestion, constipation of the bowels, diseases of the skin, worms, jaundice, and bilious diseases.

The spring yields about eight gallons an hour, and has very strong purgative qualities, in which particular it greatly exceeds either the Cheltenham or Leamington waters. The Lord Dudley erected a bath which is supplied by this water, but the remote situation, the vicinity of collieries, badness of roads, and deficiency of convenience will, for ever, prevent this being a fashionable place of resort, although it is by no means improbable that when suitable accommodation is afforded, it will, at no very distant period, be a place of refuge for the afflicted.

Situated nearly in the centre of the county, and on the river Salwarp, is Droitwich, long celebrated for

its brine springs and the manufacture of salt. The springs, from which the salt is procured, appear to be inexhaustible. It is probable that the manufacture of salt is coeval with the town itself, but it was not until the year 1725 that the strong brine for which it is now famous, was discovered. Its purity is considered superior to that of any procured elsewhere, and the quantity of salt produced amounts to about 700,000 bushels yearly. At a distance of from 30 to 40 feet below the surface of the earth, is a hard bed of talc or gypsum, which is generally about 150 feet thick; through this a small hole is bored to the river of brine, which is in depth about 22 inches, and beneath which is a hard rock of salt. The water rises rapidly through this aperture, and is pumped into a capacious reservoir, whence it is conveyed into iron boilers for evaporation. This brine, which is supposed to be stronger than any other in the kingdom, is generally stated to contain one fourth part of salt; but this calculation I conceive to be too low, for Mr. Evans[1] was good enough to obtain for me one wine quart of this strong brine, which weighed two pounds eight ounces, and yielded on evaporation ten ounces and a half of salt.

The salt springs are not confined to Droitwich, but extend in many directions around that part of the county, and, I have before mentioned, that at Stoke Prior, about two miles from Droitwich, a manufactory of salt is carried on.

As respects the water which is supplied by the

[1] The Hon. Sec. of our Natural History Society.

wells in this county, I may say a few words in order to dispel the fears which prevail respecting it. Many persons seem disposed to attribute the prevalence of some diseases in the county, as wen, scrofula, and consumption, to the impurity of the water. It appears to me, however, that the impurity of the water of this county has been greatly overstated. That it contains a considerable proportion of the salts of lime is very evident, but it is difficult to conceive how these can be instrumental in producing the direful effects that have been attributed to them; since it is well known that some of the salts of this earth are in daily use as remedies for these diseases. The water therefore may fairly be considered as free from deleterious impregnation. One consequence resulting from the spring water containing lime so generally in solution, is the occurrence of petrifying springs in several parts of the county. The springs, for example, on the western side of the limestone hills beyond Leigh Sinton, are so loaded with calcareous matter that the moss within their influence becomes literally turned into stone, and specimens may be collected appearing as if they had been subjected to the power of Medusa's head.[1]

[1] In addition to the mineral waters already noticed, many others might be mentioned, as the saline springs at Abberton, Walton, near Tewkesbury, and a powerful purgative water close to the river Ledden, near Redmarley, but as the ingredients of them all are very nearly similar to the Hampton Spa, it is unnecessary to dilate upon them. The one last named is popularly known as "the spa," and is constantly resorted to by the country people around, and used by them as an aperient.

V. METEOROLOGY. Meteorology will deserve from our Society much consideration. The time is now arrived when this infant science should emerge from its present helpless state, and present some great general truths that may lead to progressive discovery.

Your Committee on this subject will have to describe the climate and general weather of our county, and the causes of any peculiarities; and to keep exact records of diurnal changes, and annual or other differences of the atmosphere, as to temperature, dryness, calmness, and electrical phenomena.

Your Committee will not fall into that very general mistake by which it is supposed that meteorology, as a science, has no other object but an experimental acquaintance with those variable elements which from day to day constitute the general and vague result of the state of weather at any given spot. Such heterogenous elements can be of little avail when viewed simply as a group of facts towards forwarding any one end of the science, or giving us any precise knowledge regarding it; but the careful study of these individual points, when grouped together with others of the same character, may afford valuable aid to scientific generalization.

A new impulse seems of late to have been given to meteorological inquiries, in consequence of the interesting reports that have been presented upon this branch of knowledge to the British Association for the Advancement of Science, and I have no doubt your Committee will avail themselves of these reports,

and that the inquiries will be carried on upon the principles which recent improvements render desirable.[1]

It will be an interesting object of research for your Committee to investigate the climate of Worcestershire, and to trace all those circumstances connected with it, which have an especial reference to the health and longevity of the inhabitants.

The climate of this county is soft, warm, and healthy; and, even as far back as the time of Henry III., when its marshes were undrained, and its surface was almost covered by an immense forest, we may infer that this was the case, for the county was then noted for its abundance of fruit.

The vale of the Severn, as might be expected from its low level, being, on an average not more than

[1] The Association recommend the following observations to be particularly attended to.

"That persons travelling on mountains, or ascending in balloons, should observe the state of the thermometer, and of the dew-point hygrometer, below, in, and above the clouds, and determine how the different kinds of clouds differ in these respects.

"That the decrease of temperature at increasing heights in the atmosphere, should be investigated by continued observations at stated hours, and known heights. The hours of 9¼ A. M., and 8½ P. M., as giving nearly the mean temperature of the year, are suggested for the purpose.

"That the temperature of springs should be observed at different heights above the mean level of the sea, and at different depths below the surface of the earth, and compared with the mean temperature of the air and the ground.—Detached observations on this subject will be useful, but a continued and regular series of results for each locality will be more valuable.

"That series of comparative experiments should be made on the temperature of the dew-point, and the indications of the wet-bulb hygrometer, and that the theory of this instrument should be further investigated."

sixty feet above the level of the sea, is mild; the snow seldom lies long on the ground, and in the months of January and February it is no unusual thing for the meadows to appear of a vivid green colour. John Williams, Esq., of Pitmaston, who has been for many years a very accurate observer of the weather in the neighbourhood of Worcester, in a communication to the editors of the Midland Reporter, observes, "The corn harvest is some days earlier in the vale-part of Worcestershire than in the counties of Hereford or Gloucester. Again, when the north-east wind blows in the winter or spring months its temperature is perhaps a little modified in passing in an oblique direction across the German Ocean; for in severe winters plants are less injured in the neighbourhood of Worcester than about London. The average fall of rain about Worcester is twenty-seven inches. In wet seasons it amounts to thirty or thirty-one inches; but in dry summers the annual fall does not exceed twenty-two or twenty-three inches."

We are, however, greatly in want of positive thermometrical records which might enable us to compare the climate of this county with other parts of England, and I am greatly in hopes that the Society will give an early attention to this important investigation.

From some information which I have obtained through the medium of a very intelligent friend, Mr. Parker, of Woodthorpe, near Sheffield, I am disposed to think the difference in temperature between this part of England and the northern coun-

ties is much greater than I had anticipated. This difference, as will appear from the following comparative statement of thermometrical observations made at Woodthorpe, and at Barbourne, near Worcester, is very considerable. The observations at each place were made at the same hour of the day, and the aspect to which the thermometers were exposed was a northern one.

Mean temperature of the last week in October, at 12 o'clock in the day.

Barbourne,	Woodthorpe,
60° 3′	55° 5′

Mean of the month of November.

49° 16′	44° 2′

Mean of first week in December.

50°	44° 4′

Mean of the whole 6 weeks.

52°	45° 32′

There are many other subjects not at all less interesting than those to which I have alluded, that will with great propriety fall within the scope of our Society, but the Society has wisely determined not to extend too widely at first the field of their investigations. It will, however, be perfectly compatible with the design for which we unite together that the antiquities of the county should receive an early attention from us; and it is to be hoped that all those who are interested in these important inquiries will join our ranks, and furnish us with notices of the past history and habits of the people of the county; of any records of its former state of cultivation;

of its climate at distant periods; of the past and present modes of dress, architecture, &c.; all of which would concur to the general objects of the Society.

Attention also to the agriculture of the county will necessarily be directed by those of our members who have it in their power to inform us of the state of the soil and the general drainage of the county, and of extensive changes in the surface, or the breaking up of large pasture lands; all of which circumstances exercise a considerable influence over the state and prosperity of different classes of our inhabitants.

Having now given you as it were a prospect of the promised land, it remains for you to determine whether *you* will go in and possess it. A land not indeed rich, as that of the Israelites of old, in olive-yards and vineyards; but rich in rewarding us, by improving our mental endowments, by purifying our affections, and by leading us on to give glory to God, and to do good to mankind. Will you then give an answer to this question? Are you ready to take your share in endeavouring to carry forward the good work in which we have engaged? I see among you many whose talents and acquirements eminently fit them for the task; but are you willing labourers in this field of knowledge? You must remember that in the social world, if a man will not work, neither can he have food. So it is in the world of science. Science gives no reward to idlers; and therefore it signifies not your having the ability,

if you are not determined to exert yourselves, and to leave nothing undone to advance the interests and to serve the cause of the Institution which we have so happily formed for the cultivation of this interesting department of knowledge—Natural History.

But I hear that some have raised an objection to our Society, and entertain a fear that it is calculated to interfere with, and impair the efficiency of, Institutions in this town, that have been laudably formed to cultivate knowledge. To these timid objectors I would reply that they need entertain no such imaginary and groundless anticipations. The departments of knowledge to which we propose to direct attention have never yet been prosecuted by any Society in this town; and, therefore, without at all interrupting the exertions of others, we may fairly associate to advance a much neglected branch of study, leaving them still to pursue the honorable and praiseworthy course in which they have hitherto been engaged. Indeed, I may add, that from all associations of a kindred nature we may fairly, and certainly, look for support and countenance; because it has uniformly and invariably occurred,—that whenever a taste for ennobling and elevating studies has been diffused, every selfish and narrow principle has been swallowed up in the one great and absorbing desire of forwarding, with our utmost energies, every attempt to diffuse the bright beams of natural knowledge over every portion of the community.

It is undeniably of the utmost importance that no little feeling of jealousy should exist amongst those

who advocate the necessity of widely disseminating the fundamental truths upon which all our knowledge must rest; for unfortunately, a sect, I hope every day becoming less numerous and powerful, has always been in existence, which from various motives has resisted every attempt to extend the boundaries of human knowledge; erroneously concluding that the acquirement of the truths of natural science has an evil tendency upon the mind, by producing pride and conceit, and "forgetting," as Lord Bacon says, "that it is not any quantity of knowledge how great soever, that can make the mind of man to swell; for nothing can fill, much less extend, the soul of man but God, and the contemplation of God; and therefore Solomon speaking of the two principal senses of inquisition, the eye and the ear, affirmeth that the eye is not satisfied with seeing, nor the ear with hearing;" and concludeth thus: "God hath made all things beautiful or decent in the true return of their seasons: also he hath placed the world in man's heart, yet cannot man find out the work which God worketh from the beginning to the end:" declaring, not obscurely, that God hath framed the mind of man as a mirror, or a glass, capable of the image of the universal world and joyful to receive the impression thereof, as the eye joyeth to receive light; and not only delighted in beholding the variety of things and vicissitudes of times, but raised also to find out and discern the ordinances and decrees which throughout all those changes are infallibly observed.

Let us then eschew and turn aside from all those false and foolish notions, which have led some erroneously to decry knowledge, and particularly that kind of knowledge which it is the object of this Society to cultivate;—

> "Without thee, what were unenlightened man?
> A savage, roaming through the woods and wilds
> In quest of prey; and with the unfashioned fur
> Rough-clad; devoid of every finer art,
> And elegance of life: but, taught by thee,
> Ours are the plans of policy and peace;
> To live like brothers, and conjunctive all
> Embellish life. While thus laborious crowds
> Ply the tough oar, Philosophy directs
> The ruling helm; or like the liberal breath
> Of potent Heaven, invisible, the sail
> Swells out, and bears the inferior world along."

You will then admit that the undertaking in which I wish to engage you is noble and delightful, and one which calls for the devotion of your best energies to its service; and let me assure you that none can be excused from lending their aid in this important enterprize. How small soever may be the offering you can make to this Society, that offering will be accepted, and a corresponding reward will await you in the increasing prosperity of this promising Institution. None can be excused from this necessary duty on account of time not being afforded from his usual avocations. If we are disposed we can all make time for any object we have in view, and the most active or busy man that hath been or can be has unquestionably seasons of leisure, which are well or ill employed

as they are devoted to engaging studies or idle pleasures.

It is quite true that the name of Philosopher is given more especially to him who dedicates a life of leisure to the cultivation of his mind, and to the extension of the boundaries of human learning. But many great names can be cited of men who in the midst of the active and busy pursuits of life have found time to devote their best energies to the cultivation of learning. The greatest luminary of modern times, Lord Bacon, was of this number; and it has been well said, "there can be no doubt that the assiduous devotion of the bulk of our time to the vocation which our condition requires is an important duty, and indicates the possession of practical wisdom. This, however, does by no means hinder us from employing the rest of our time, beside what nature requires for meals and rest, to the study of science; and he who, in whatever situation his lot may be cast, works his day's work, and improves his mind in the evening, as well as he who, placed above such necessity, prefers the refined and elevating pleasures of knowledge to the low gratification of the senses, richly deserves the name of a true philosopher."—

> "With thee, serene Philosophy, with thee,
> And thy bright garland, let me crown my song;
> Effusive source of evidence, and truth:
> A lustre shedding o'er the ennobled mind,
> Stronger than summer noon; and pure as that
> Whose mild vibrations soothe the parted soul,
> New to the dawning of celestial day."

Already do I feel that my discourse has encroached

much upon your patience and valuable time; but I should be unwilling to part without leaving you duly impressed with the feelings under which we should all aim to study the lessons which it is the object of our Society to convey, and I cannot, it appears to me, better effect this desirable purpose than by taking leave of you in the words of the learned and eloquent author of the Discourse upon the Objects, Advantages, and Pleasures of Science.

"The highest" says this distinguished statesman, "of all our gratifications in the contemplation of science, remains: we are raised by them to an understanding of the infinite wisdom and goodness which the Creator has displayed in all his works. Not a step can we take in any direction without observing the most extraordinary traces of design; and the skill everywhere conspicuous is calculated in so vast a proportion of instances to promote the happiness of living creatures, and especially of ourselves, that we can feel no hesitation in concluding, that if we knew the whole scheme of Providence, every part would be in harmony with a plan of absolute benevolence. Independently, however, of this most consoling inference, the delight is inexpressible of being able to follow, as it were, with our eyes, the marvellous works of the great Architect of Nature, to trace the unbounded power, and exquisite skill which are exhibited in the most minute, as well as the mightiest parts of his system. The pleasure derived from this study is unceasing, and so various that it never tires the appetite. But it is

unlike the low gratifications of sense in another respect: it elevates and refines our nature, while those hurt the health, debase the understanding, and corrupt the feelings; it teaches us to look upon all earthly objects as insignificant, and below our notice, except the pursuit of knowledge and virtue."

I will now only express my anxious hope, that every returning year may find the members of this Society steadily pursuing its objects; for then this Institution must inevitably flourish—must be influential in extending the empire of knowledge, and in directing the application of this valuable possession to its right use, by leading us to an humble reliance upon the wisdom of the Supreme Being, and a modest bearing towards our fellow men.

THE END.

APPENDIX.

A.

SUMMARY OF THE REPORTS

MADE TO THE

BOARD OF HEALTH ESTABLISHED IN BEWDLEY,

of the Cases of Spasmodic or Asiatic Cholera which occurred in Bewdley, from the 15th of August to the 23d of November, 1832.

PROGRESSION OF THE DISEASE.

Date of Attack.	Number of Cases.	Deaths.	Date of Attack.	Number of Cases.	Deaths.
On Aug. 16	1, out of which	1	On Oct. 1	2, out of which	1
20	3, ———	1	4	1, ———	0
26	1, ———	1	7	1, ———	1
27	3, ———	1	12	1, ———	1
29	4, ———	1	14	1, ———	0
31	4, ———	1	15	7, ———	2
On Sep. 1	2, ———	0	16	3, ———	1
7	3, ———	1	17	3, ———	0
8	1, ———	0	On Nov. 17	1, ———	0
11	6, ———	0	19	1, ———	1
19	3, ———	0	20	1, ———	
22	1, ———	0			
24	1, ———	0			
25	3, ———	0			
27	1, ———	1			
28	1, ———	1			
Total	38,	9	Total	22,	7

SUMMARY OF CASES.

Ages not exceeding.	Number of Cases.	Males.	Females.	Recoveries.	Deaths.
5 years	10	5	5	6	4
10	6	3	3	5	1
20	7	5	2	6	1
30	15	11	4	12	3
40	10	5	5	8	2
50	6	5	1	4	2
60	4	2	2	1	3
70	2	1	1	2	0
	60	37	23	44	16

B.

FISH OF THE AVON.[1]

The river Avon abounds with fish, particularly eels and pike, which are extremely fine, some of the former have been taken nearly six pounds weight, though they generally average from two to four. A pike was caught near Evesham weighing twenty-one pounds, last December. The carp are far more rare, though some very large ones have been occasionally caught; one of fifteen pounds was brought to this place, having been taken near Wyre. Tench and trout are rare; large chub and bream are plentiful, as well as the smaller kinds of fish, viz. gudgeons, bleak, roach, dace, which are very numerous, and there are some fine perch. That singular little fish the loche *(Gobitis barbatula,)* is scarce, though I have seen a few specimens.

I will here mention a curious confirmation of the opinion in favour of the overland migration of eels. A relation of the late Mr. Perrott's was out in his park with his keeper, near a large piece of water, on a very beautiful evening, when the keeper drew his attention to a fine eel quietly ascending the bank of the pool, and with the turning motion of a snake making its way through the long grass; on further observation he perceived a considerable number of eels quietly proceeding to a range of stews, nearly the distance of a quarter of a mile from the large piece of water from whence they started. The stews were supplied by a rapid brook, and in all probability the instinct of the fish led them in that direction as a means

[1] This information is extracted from a Paper the Society was favoured with from one of their talented honorary corresponding Members, Mrs. Perrott, of the Chantry, Fladbury.

of finding their way to some large river, from whence their ultimate destination, the sea, might be obtained. This circumstance took place at Sandford Park, near Enstone.

At Cracombe there are two large fish ponds, united partly by a ditch, though with a high bank intervening between the ponds and ditch. As the ponds contained a number of store carp and tench, the eels were repeatedly destroyed, but as constantly reappeared; we are therefore led to believe that they ascended the ditch and crawled over the intervening dry land. A strange circumstance corroborates these opinions; a very fine eel was found in a cellar at Cracombe, but whether it had descended, by the grating, or ascended by the drain, I am not prepared to say. From the best authority, I can affirm that eels have been seen creeping up the lock gates, clinging to the weeds and mosses which cover the woodwork. Early in the summer great numbers of the young elvers, seldom exceeding five or six inches in length, which are supposed to be the first of the species which take their departure for their annual pilgrimage, may be seen working amongst the stones when the water is low. There are two distinct kinds of eels in the Avon, the silver, and yellow eel; there is likewise another description, but which I have never seen, called frog-mouthed eels by the fishermen, from the extraordinary width of the mouth.

The river shells are extremely numerous, and though much thinner in substance than those of the ocean, bear to them a strong resemblance in form, and some even in colour. The *Meritæ* are almost exact fac-similes of those found on the West Indian coast. The *Mya* occasionally produces pearls, sometimes nearly perfect, at others forming a part of the shell, apparently caused by some injury which the exterior had received, and which the inhabitant had endeavoured to remedy.

C.

CATALOGUE

OF SOME OF THE

RARER LEPIDOPTEROUS INSECTS

FOUND IN WORCESTERSHIRE.*

Papilio Machaon, Swallow-tail Butterfly. Taken near Worcester, but very rare.

Gonepteryx Rhamni, Brimstone Butterfly. Woods in Spring.

Colias Europeme, Clouded Sulphur. Has been noticed in the meadows near the confluence of the Avon and Severn, flying with great swiftness, in August, but is a rare insect.

C. Chrysotheme, Small Clouded Yellow. Rare. Near Worcester. In the Cabinet of Mr. A. Edmunds.†

C. Edusa, Clouded Yellow. Taken near Worcester, but rare. In the Cabinet of Mr. A. Edmunds.

Pontia Napi, Green-veined White. Woods, &c. but not very common.

P. Sabellicæ, Early Green-veined White.

P. Cardamines, Orange-tip. A beautiful attendant upon the Spring, though not scarce in Woods and Meadows.

Leucophasia Sinapis, White Wood. Not uncommon amid sylvan scenery.

* For this Catalogue and for many interesting facts relative to the Natural History of the County before detailed, I am indebted to our indefatigable and talented Curator, Mr. Lees.

† The Cabinet here alluded to contains all the Insects mentioned in this List, and indeed nearly all the Worcestershire Lepidoptera. The beauty of the specimens is superior to those we have seen in any other Cabinet.

Pieris Cratægi, Black-veined White. Woods near Worcester.

Nemerobius Lucina, Duke of Burgundy Fritillary. Trench* Woods, on the eastern side of Worcester, and Cracombe.

Melitæa Artemis, Greasy Fritillary. Not common. Trench Woods. A specimen was taken on the wing in Friar Street, Worcester, April 1834.

M. Selene, Small Pearl-border Fritillary. Haunts the bog on the western side of the Worcestershire Beacon, Great Malvern, in May and June.

M. Euphrosyne, Pearl-bordered Fritillary. Abundant in Bewdley Forest. Also met with in Perry and Nunnery Woods, &c.

Argynnis Adippe, High Brown Fritillary. Shrawley Woods.

A. Aglaia, Dark-green Fritillary. Shrawley Woods.

A. Paphia, Silver-washed Fritillary. A fine local insect, abundant in Shrawley Woods.

Vanessa C. Album, Comma Butterfly. Described as "rather uncommon" in Rennie's Conspectus, but of frequent occurrence with us. The caterpillar feeds on the hop, which may account for this circumstance.

V. Polychloros, Large Tortoiseshell. Nunnery Wood, Northwick, &c. Scarce.

V. Urticæ, Small Tortoiseshell. Most abundant on the banks of the Severn.

V. Io, Peacock Butterfly. A beautiful though common denizen of the woods and lanes.

V. Antiopa, Camberwell Beauty. Very uncommon, but has been captured at Barbourne, close to Worcester.

* These woods, situated on an eminence near the junction of the red marl and the lias, about five miles on the east side of Worcester, are much resorted to by entomologists for the rare insects that are met with there. Sale Way, one of the ancient British Roads, passes near, and the name of Trench seems to imply the site of an old castrametation, traces of which, indeed, appear on the verge of the wood.

V. Atalanta, Red Admiral. A common though extremely beautiful embellishment to our autumnal scenery. Often observed perched on decaying apples and pears.

Cynthia Cardui, Painted Lady. A few specimens occasionally observed, but not numerous.

Apatura Iris, Purple Emperor. Has been observed at Perdiswell, but is very rarely taken.

Lemenitis Camilla, White Admiral. A solitary individual taken near Worcester.

Hipparchia Ægeria, Speckled Wood. Abundant in all our Woods.

H. Megæra, Wall Butterfly. Lanes, &c.

H. Semele, Grayling. Bewdley Forest.

H. Galathea, Marbled White. A beautiful insect, which when observed sporting upon the bright pink blossoms of the *Orchis pyramidalis,* is peculiarly interesting. Woods at the western base of the End Hill, Malvern, where the plant just indicated flourishes abundantly.

H. Tithonus, Large Heath. Woods and Meadows.

H. Janira, Meadow Brown. A common field wanderer.

H. Hyperanthus, Ringlet. In all our shady Woods.

H. Davus, Small Ringlet. Not common.

Thecla Betulæ, Brown Hairstreak. Trench Woods.

T. Pruni, Dark Hairstreak. Rare.

T. W.-Album, Black Hairstreak. Taken in Trench and Warndon Woods. In the Cabinet of Mr. A. Edmunds.

T. Quercus, Purple Hairstreak. In the Trench Woods.

T. Rubi, Green Hairstreak. In Perry and Trench Woods, but rather scarce.

Lycæna Phlæas, Common Copper. A brisk little insect, and abundant.

L. Dispar, Large Copper. Very rare in this county. A solitary individual has been taken.

Polyommatus Argiolus, Azure Blue. Near Cracombe Hill, &c.

P. Alsus, Small Blue. Grimley and Trench Woods. Uncommon. In the Cabinet of Mr. A. Edmunds.

P. Asis, Mazarine Blue. Taken at Hawford, near Worcester, and in the Trench Woods.

P. Dorylas, Light Blue. Not uncommon.

P. Icarius, Black-bordered Blue.*

P. Alexis, Common blue. Meadows, &c. Often seen sporting in company with the *Lycæna Phlæas.*

P. Argus, Silver-studded Blue. Trench Woods.

P. Agestis, Brown Argus. Trench.

Thymele Alveolus, Grizzled Skipper. Trench Woods, Bewdley Forest, Wassel Hill, &c.

T. Tages, Dingy Skipper. Nunnery Wood.

Pamphila Linea, Small Skipper.

P. Sylvanus, Large Skipper. Netherwood, Oddingley, and the Trench.

Ino (Sphinx, Lin.) Statices, Green Forester. Trench Woods.

Anthrocera Trifolii, Broad-bordered 5-spot Burnet. Fields near Worcester.

A. Filipendulæ, 6-spotted Burnet. Abundant.

Smerinthus Ocellata, Eyed Willow Hawk Moth. Not uncommon.

S. Populi, Poplar Hawk.

S. Tiliæ, Lime Hawk. Both common among the trees to which their names refer.

Acherontia Atropos, Death's Head. A great favourite with collectors, from its magnitude, and the doleful insignia it bears on its thorax. As it is now comparatively plentiful since the great increase of the cultivation of the potatoe, on which the caterpillar feeds, a doubt arises as to its being

* All the blues are extremely agile in their movements, and when they appear in considerable numbers sporting among the flowers of the meadows, make a beautiful appearance. Authors seem to make some confusion in their nomenclature. The *P. Icarius* appears to be the most common with us.

originally a native of Britain. A specimen of extraordinary magnitude adorns the Cabinet of Mr. A. Edmunds.

Sphinx Convolvuli, Convolvulus Hawk. Rare, but occasional specimens are taken near Worcester. One was caught in Hylton Street, some time since.

S. Ligustri, Privet Hawk. Common in gardens.

Deilephila Livornica, Striped Elephant. Near Worcester, but rare.

D. Celerio, Sharp-winged Elephant. Rare.

D. Elpenor, Elephant. Trench Woods.

D. Porcellus, Small Elephant. Woods, near Worcester.

Macroglossa Stellatarum, Humming Bird Hawk-Moth. In gardens, where it emulates its namesake in extracting the honey as it hovers over the jessamine blossoms, and dashing off with great celerity.

Sesia Fuciformis, Narrow-bordered Bee Hawk. A beautiful but very rare insect. Among damp ground near the Trench Woods, where the *Scabiosa succisa* abounds.

Trochilium Apiformis, Hornet Sphinx. Near Dudley, but very rare.

Ægeria Tipuliformis, Currant Clear-wing. A pretty but not uncommon insect in gardens, in the height of summer.

Æ. Culiciformis, Large Red-belted Clearwing. Near Worcester.

Hepialus Humuli, The Ghost. Common.

H. Carnus, Rosy Swift. Nunnery Wood.

H. Lupulina, Brown Swift.

H. Hecta, Golden Swift. Perry and Shrawley Woods.

H. Sylvina, Evening Swift. Perry Wood.

Cossus Ligniperda, Goat Moth. The caterpillar when full grown has a disgusting appearance, and is of considerable magnitude. They are great destroyers of willow trees.

Zeuzera Æsculi, Wood Leopard. Another wood destroyer in its caterpillar state. The moth is a most beautiful though rather rare insect. Trench Woods.

Pygæra Bucephala, Buff-tip. Not uncommon.

Clostera Curtula, Chocolate-tip. Among poplars in lanes, &c.

Cerura Integra, Intire-barred Kitten. Bewdley Forest.

C. Vinula, Puss Moth. Among willows, not rare.

Stauropus Fagi, Lobster Moth. Nunnery Wood. Very rare.

Notodonta Perfusca, Dark Prominent. Bewdley Forest, and Perry Wood. Very rare.

N. Ziczac, Pebble Prominent. Moors, near Worcester.

Leiocampa Dictæa, Swallow Prominent. Trench Woods, and Henwick Hill.

Lophopteryx Camelina, Coxcomb Prominent. Nunnery Wood, common.

Ptilodontis Palpina, Pale Prominent. Perry Wood.

Petasia Cassinea, Sprawler.

Peridea Serrata, Great Prominent.

Saturnia Pavonia-minor, Emperor Moth. Ronk's Wood, and Helbury Hill.

Lasciocampa Rubi, Fox-coloured. Perry Wood.

L. Quercus, Oak Egger. Nunnery and Trench Woods.

L. Roboris, Great Egger.

Trichiura Cratægi, Pale Oak Egger.

Pœcilocampa Populi, December Moth.

Eriogaster Lanestris, Small Egger. Trench Woods.

Gastropacha Quercifolia, Lappet. Hedges, near Hallow.

Dasychyra Fascelina, Dark Tussock. Trench Woods, but rare.

D. Pudibunda, Pale Tussock.

Demas Coryli, Nut-tree Tussock. Bewdley Forest.

Porthesia Chrysorrhœa, Yellow-tail. Common in hedges.

Euthemonia Russula, Clouded Buff. Cracombe.

Arctia Villica, Cream-spot Tiger. Perry Wood. The hairy caterpillars of the Great Tiger, *A. caja*, are well known.

Nemeophila Plantaginis, Small Tiger. Nunnery Wood.

Phragmatobia Fuliginosa, Ruby Tiger. Trench Woods.

Spilosoma Menthrasti, Great Ermine.

S. Papyratia, Water Ermine. Rare.

Diaphora Mendica, Spotted Muslin. Uncommon.

Fumea Bombycella, Transparent Chimney Sweeper. Very rare.

Nudaria Mundana, Muslin.

Callimorpha Jacobæa, Pink Underwing. Not common in some districts, but plentiful with us.

C. Miniata, Red Arches. Nunnery Wood.

Eulepia Cribrum, Speckled Footman. A very local insect. Bewdley Forest.

Lithosia Flava, Straw-coloured Footman. Taken in Nunnery Wood, by Mr. Edmunds.

Gnophria Rubricollis, Black Footman. Nunnery Wood.

Setina Eborina, 4-spot Small Footman. Scarce. Trench Woods.

Triphæna Orbona, Lesser Yellow Underwing.

T. Fimbria, Broad-bordered Yellow Underwing. Bewdley Forest and Trench Woods. Very rare.

T. Ianthina, Lesser Broad-bordered Yellow Underwing.

Cerigo Texta, Brown-bordered Yellow Underwing. Taken in Perry Wood.

Lytæa Umbrosa, Six-striped Rustic. Nunnery Wood.

L. Leucographa, White-spotted Rustic. Nunnery Wood.

Charæas Cespitis, Autumnal Rustic. Lanes, near Worcester.

C. Confinis, Allied Rustic. Near Worcester.

Rusina Ferruginea, Feathered Rustic. Rare.

Agrotis Lunigera, Lunar Dart. Lowesmoor.

A. Corticea, Heart and Club Rustic. Lowesmoor.

A. Suffusa, Dark Sword-grass. A scarce local insect. Near Worcester.

A. Sagittifera, Archer Dart. Rare. Worcester.

A. Pupillata, Pupilled Dart. Lowesmoor.

A. Nigricans, Dark Garden Dart.

Graphiphora Subrosea, Rosy Dart. Very Rare.

G. Brunnea, Purple Clay.

G. Triangulum, Double Square-spot. Perry Wood, but not common.

G. Baja, Dotted Clay.

G. Plecta, Flame Shoulder.

G. Punicea, Small Square-spot.

Semiophora Gothica, Hebrew Character. Perry Wood, and Dudley Castle Hill.

Orthosia Intermedia, Connecting Drab.

O. Gracilis, Lead-coloured Drab.

O. Munda, Twin-spotted Quaker. Uncommon.

O. Sparsa, Powdered Quaker. Rare.

O. Pallida, Pale Quaker. Very Rare.

O. Stabilis, Common Quaker.

O. Miniosa, Blossom Underwing.

O. Cruda, Small Quaker.

O. Litura, Brown-spot Pinion.

O. Pistacina, Pale-beaded Chestnut. Scarce.

O. Lunosa, Lunar Underwing.

O. Lota, Red-line Quaker.

O. Upsilon, Dingy Shears.

Mythimna Turca, Double-line. Rare.

M. Conigera, Brown-line Bright-eye. Perry Wood, and Dudley Castle Hill.

Grammesia Trilinea, Equal Treble-lines.

Segetia Xanthographa, Square-spot Rustic.

Caradrina Redacta, Lesser Dotted Rustic.

C. Sepii, Mottled Rustic.

C. Superstes, Powdered Rustic.

Glæa Rubiginea, Dotted Chestnut. Very rare. A single specimen captured in Nunnery Wood, by Mr. Edmunds.

G. Satellitia, Satellite.

Amphypyra Pyramidea, Copper Underwing.

Pyrophila Tragopogonis, Mouse Moth.

Nœnia Typica, Dark Gothic.

Dypterygia Pinastria, Bird's-wing.

Xylina Lambda, Grey Shoulder-knot.

X. Putris, Flame.

Calocampa Vetusta, Red Sword-grass. Rare.

C. Exoleta, Sword-grass. In Gardens, &c.

Xylophasia Lythoxilea, Light Arches.

X. Hepatica, Clouded-bordered Brindle.

X. Epomidion, Clouded Brindle.

X. Scolopacina, Slender Clouded Brindle.

Hadena Remissa, Gothic Brocade.

H. Thalissina, the Sea Green.

H. Cucubali, the Campion.

Heliophobus Popularis, Feathered Gothic.

Mamestra Pisi, the Broom Moth. On Malvern Hills.

M. Persicariæ, Dot Moth.

Miselia Oxyacanthæ, Hawthorn.

Polia Seladonia, Brindled Green. Oaks. Bewdley Forest.

Acronycta Alni, the Alder Moth.

A. Psi, Grey Dagger. In the Woods near Worcester.

A. Tridens, Dark Dagger. Nunnery Wood.

Thyatira Batis, the Peach Blossom. A beautiful little insect, worthy of its name. Perry Wood.

Ceropacha Octogesima, the figure of 80.

Calyptra Libatrix, the Herald. On Dudley Castle Hill.

Nonagria Typhæ, the Bulrush. Caterpillar feeds on the pith of the *Typha latifolia*.

Leucania Pallens, Pale Wainsot. Dudley Castle Hill.

Phlogophora Meticulosa, Angle-shades. Dudley Castle Hill, &c.

Cucullia Scrophulariæ, Betony Moth.

C. Verbasci, Mullein Moth. The caterpillar is beautifully spotted, and feeds on the *Verbascum Thapsus*, at the base of

the Malvern Hills, where the plants are rendered very unsightly by its ravages. A very local insect.

C. Umbratica, Shark.

C. Tanaceti, Tansy Shark. On the banks of the Severn, where the *Tanacetum vulgare* abounds.

Gortyna Flavago, Frosted Orange. Vicinity of Worcester.

Pyrophila Tetra, Mahogany Moth. Gardens.

Polia Tincta, Silvery Arches. Very Rare. A pair taken by Mr. Edmunds at Lowesmoor, near Worcester, at an interval of two years.

Apatela Leporina, Miller. Rare. Taken at Grimley.

Acronycta Ligustri, Coronet. Taken in Tapp's Nursery, on the Privet. Rare.

Scotophyla Porphyrea, True Lover's Knot. Bewdley Forest.

Plusia Tota, Golden Y. Dudley Castle Hill, and Nunnery Wood, near Worcester.

P. Chrysitis, Burnished Brass. Dudley Castle Hill; and not scarce near Worcester.

P. Bractea, Gold Spangle. Dudley Castle Hill. In the Cabinet of Messrs. Child* & Grey, Dudley. Also near Bromsgrove.

P. Festucæ, Gold Spot. About the Pool in Nunnery Wood. Also in Bewdley Forest.

Anarta Myrtilli, Small Beautiful Yellow Underwing. Bromsgrove Lickey. Woods under Malvern Hills.

Patocala Nupta, Willow Red Underwing. Near the Old Water Works, Worcester, and among the willows on the banks of the Teme.†

* Mr. Child was a clever painter of fishes, residing at Dudley, who formed a very good Cabinet of Insects, but proceeding to America under fallacious expectations, he disposed of his Cabinet, and in returning to Europe, forlorn and disappointed, was shipwrecked and perished.

† A specimen of this insect was taken flying in St. Swithin Street, Worcester, July, 1826. Mr. Edmunds informs me he has often seen it flying about the streets.

Mormo Maura, the Old Lady. Frequent about domestic offices.

Biston Prodromarius, Oak Beauty. Perry Wood, &c., on oaks.

B. Hirtarius, Brindled Beauty. Woods in the southern part of the county.

Alcis Repandaria, Mottled Beauty. Dudley Castle Hill.

A. Conversaria, Great Carpet. Very rare. Nunnery Wood.

A. Roboraria, Great Oak Beauty. A fine but scarce insect. Trench Woods.

Eurymene Dolabraria, Scorched-Wing. A rare and curiously-marked insect. Nunnery Wood.

Ephyra Omicronaria, the Mocha. A most elegant little insect. Woods at Malvern.

E. Orbicularia, Dingy Mocha. Very elegant, but rare. Perry Wood.

Anticlea Derivata, Perry Wood.

Cleora Bajularia, Maid of Honour, or Blotched Emerald. A rare insect. Perry and Nunnery Woods.

Cidaria Didymata, Twin-spot Carpet. Dudley Castle Hill.

Abraxas Ulmata, Clouded Magpie. Woods on the limestone hills, north-west of Malvern.

Melanippe Hastata, Argent and Sable. Bewdley Forest.

Ennychia Octomaculata, White-spot. A small but highly beautiful local insect. Bewdley Forest.

Ptychopoda Ornata, Lace Border. Trench Woods.

Cilix Compressa, Goose Egg. Not uncommon.

Cloephora Prasinana, Scarce Silver Lines. Perry and Nunnery Woods.

Pterophorus Pentadactylus, Large White Plume. Woods near Worcester.

Alucita Hexadactyla, Six-cleft Plume. About Houses and Gardens. An uncommonly elegant species.

Dasychira Fascelina, Black Tussock. Very rare. Trench Wood.

D.

CATALOGUE

OF THE

MOST REMARKABLE AND INTERESTING PLANTS,

INDIGENOUS TO WORCESTERSHIRE,

WITH THEIR HABITATS.

"With reference to the primary wants of mankind at large, the vegetable kingdom is of the highest importance. Let the earth cease to produce its accustomed fruits, and every form of animal life must soon be annihilated: for all animals either derive their nourishment directly from vegetable food, or feed on those animals which have themselves fed on vegetables. And without the aid of the same productions, we should be deprived of various substances which are now employed for clothing, and fuel, and the construction of our habitations. Innumerable, indeed, are the instances, in which the adaptation of the vegetable kingdom to the arts and conveniences of life is visible."

Professor Kidd's Bridgwater Treatise.

No connected and accurate catalogue of Worcestershire Plants worthy the attention of the scientific botanist in the present day is in existence, although scattered notices occur in various publications. The first meagre mention of our indigenous botany appears to have been in Gough's Additions to Camden's Britannia, and with the exception of such notices as Ray and Hudson introduced in their general works, this was all that appeared on the subject for a long period. Mr. Pitts, an alderman of Worcester, sent an account of the Sorb tree, in Bewdley Forest, to the Royal Society, which was inserted in the Philosophical Transactions in 1678. What more Mr. Pitts might have done in the cause of Botany is unrecorded. In 1786 the celebrated "Botanical Arrangement" of

Dr. Withering appeared. As that gentleman resided at Edgbaston, near Birmingham, almost on the boundary line of the counties of Warwick and Worcester, he necessarily introduced a great number of Worcestershire plants into his pages, and the localities of some of them are particularly referred to. But the second edition, which came out greatly improved, in 1787, under the co-editorship of Dr. Jonathan Stokes, is more peculiarly valuable to the Worcestershire botanist. Dr. Stokes resided at that time in Kidderminster, and his references to the habitats of many Worcestershire plants are peculiarly curious and valuable, since some of these are now unfortunately obliterated. Dr. Nash when he published his ponderous folios on the Topography of Worcestershire, prefixed a list of plants, many of which are rare, and some not now to be found in the places there indicated. This list was probably communicated to Dr. Nash. Pitt, in his "Agriculture of Worcestershire" published in 1810, has given a list of vegetable productions, which he observed, he says, in "a tour through the county in September and October, 1805." This in some respects is not amiss, but the latin names, whether by his own mistake or that of the printer, are terribly misspelt. In 1817 Mr. Thomas Purton, surgeon, of Alcester, published a "Midland Flora," in 2 volumes. Alcester lying within a few miles of the eastern boundary of our county, many Worcestershire plants are described by Mr. Purton, and more especially in his "Appendix" published in 1821, in 2 parts, which is peculiarly rich in the cryptogamous plants. Sir James Smith has praised this work for its accuracy, but its value as a book of reference is much deteriorated by its interminable additions, corrections, and appendices. Mr. Purton died in 1833. Other notices of Worcestershire plants may be found in Turner and Dillwyn's "Botanical Guide through England and Wales;" Laird's Topography of Worcestershire, in the "Beauties of England and Wales;" Walford's "Scientific Tourist through Great Britain;"

Florence's "Worcester Guide;" Dr. Booker's "History of Dudley;" Scott's "History of Stourbridge;" and Loudon's "Magazine of Natural History," where the plants observed growing on the granitic and sienitic chain of the Malvern Hills are detailed by Mr. Edwin Lees. Ainsworth has likewise mentioned some of the Malvern plants, in his Essay on the Geology of the Malvern Hills, published in Jameson's Edinburgh Journal, and other notices of them occur in the "Midland Medical and Surgical Reporter." Having consulted these works, and with the kind aid and contributions of several botanical friends, I now proceed to give such an accurate notice of our native plants as I trust will give satisfaction to the friends of Natural History. In the case of the rarer plants, to avoid any mistake, I have introduced the name of the individual on whose authority it is inserted.

Hippuris vulgaris, Mare's Tail. Pools. Rare. Clifton-upon-Severn.—Dr. Streeten.

Ligustrum vulgare, Common Privet. Abundant in the hedges.

Circæa lutetiana, Enchanter's Nightshade. Perry Wood, Shrawley Wood, and other moist shady places.

Veronica Anagallis, Long-leaved Brooklime. Pools near Powick, on the Malvern Road. Ashmore Common. Near Pershore. Duck Brook, near Worcester.

V. scutellata, Narrow-leaved Speedwell. Bogs on the Malvern Hills, especially at the western base of the Worcestershire Beacon. Rare.

V. montana, Mountain Speedwell. Described by Purton as "very rare." "Wood at the west end of Powick Ham, near Worcester."—Dr. Stokes; where it has since been found by Dr. Streeten, but Mr. France having recently built upon this spot, and made alterations in the ground, the plant has disappeared. In a wood nearer to Malvern.—Mr. Lees. By the side of a stream, in a place called "the Gullet,"

between the Swinnet and Holly Bush hills, in the Malvern Range, southward of Little Malvern.—Messrs. Morris and Lees, 1834.

Pinguicula vulgaris, Butterwort, or Yorkshire Sanicle. On the north-west side of Malvern Hills, in the bog below the Worcestershire Beacon, but in no other part of the range. Also on Feckenham bog, according to Purton.

Lemna gibba, Gibbous Duck-weed. Rare. On Bishop's Pool, Northwick.—Dr. Stokes. Still found there.

Salvia verbenaca, Wild English Clary. On the bank by the road side, at Red Hill, near Worcester.

Valeriana rubra, Red Valerian. On the wall close to the western entrance of Worcester Cathedral, 1826. The plant has since disappeared, probably by the ruthless hand of some exterminator.

V. dioica, Marsh Valerian. In a marshy field close to Laughern Brook, near Worcester, above Bubble Bridge.

V. officinalis, Great Valerian. Nunnery Wood, and the banks of the Severn. The narrow-leaved variety on Bredon Hill.

Crocus vernus, Purple Spring Crocus. Very rare. Several plants were found a few years ago in the middle of a meadow between Worcester and Crookbarrow Hill, by Mr. James Goodman, who pointed them out to Mr. Lees. The roots were so very deep in the earth as not to be extracted, which is probably the reason the plant so seldom flowers, as it has not since been met with in the spot mentioned.

Iris fœtidissima, Stinking Iris, or Gladwyn. Near Alfrick and at the western base of Crookbarrow Hill. Also about Pershore, in woody places.

Cladium Mariscus, Prickly Twig-rush. Feckenham Bog.—Purton.

Cyperus nigricans, Black Bog-rush. Feckenham Moors.

Scirpus cœspitosus, Scaly-stalked Club-rush. Bromsgrove Lickey.

S. pauciflorus, Chocolate-headed Club-rush. Reservoirs near Stourbridge.

S. Holoschœnus, Round-cluster-headed Club-rush. Discovered in marshy places at Throckmorton, near Fladbury, by Dr. Sheffield, Provost of Worcester College, Oxford.—Nash.

S. setaceus, Bristle-stalked Club-rush. At Cookhill. Pedmore Common.—Scott.

S. maritimus, Salt-marsh Club-rush. Ditches about Badsey, according to Rev. W. S. Rufford. Very rare.

S. sylvaticus, Wood Club-rush. Rare. Near Alcester.—Purton. By the large pool in Shrawley Wood.—Mr. Lees.

Eleocharis palustris, Creeping Spike-rush. Banks of a pool at Kinnersley.—Dr. Streeten.

E. acicularis, Least Spike-rush. Bogs at the foot of the Malvern Hills, in several places.

Eriophorum polystachion, Broad-leaved Cotton Grass. Bog at the base of the Worcestershire Beacon, Malvern.

E. angustifolium, Narrow-leaved Cotton Grass. Abundant in a large bog on Hartlebury Common.

Nardus stricta, Mat Grass. On Hartlebury Common, and Malvern Hills.

Phalaris canariensis, Manured Canary-grass. Near Gregory's Mill, Worcester.

P. arundinacea, Reed Canary-grass. Banks of the Severn, Kemsey, &c.

Milium effusum, Spreading Millet-grass. Woods and groves. Perry Wood.

Alopecurus agrestis, Slender Fox-tail-grass. Corn Fields, at Brook-end, near Kemsey.

A. geniculatus, Floating Fox-tail. Severn Meadows, Kemsey

Aira cristata, Crested Hair-grass. On the red marl cliff at the Ketch, two miles south of Worcester.—Dr. Stokes.

A. flexuosa, Wavy Mountain Hair-grass. Malvern Hills.

A. caryophyllea, Silver Hair-grass. Shrawley Wood, Malvern Hills, &c.

Melica nutans, Mountain Melic-grass. In Bewdley Forest, not far from Dowles Brook.

M. cærulea, Purple Melic-grass. Marsh near Pedmore Common.—Scott.

Glyceria aquatica, Reedy Sweet-grass. Pools and ditches in the vicinity of the Severn.

G. rigida, Hard Sweet-grass. Near the Ketch, on the Bath Road, between Kemsey and Worcester.—Dr. Streeten.

Festuca calamaria, Reed Fescue-grass. Shrawley Woods, where it was discovered, in 1801, by the late Mr. Moseley, of Wynterdyne, who sent it to Sir J. E. Smith. Never flowering except when the coppice wood has been recently cut down.

F. sylvatica, Slender Wood Fescue-grass. Perry Wood. Shrawley Wood, &c.

F. pinnata, Spiked Heath Fescue-grass. Near Pershore.

Bromus diandrus, Upright Brome-grass. Severn Stoke.

B. racemosus, Smooth Brome-grass. Severn Meadows, Kemsey.

B. asper, Hairy Wood Brome-grass. Perry Wood.

Arundo Phragmites, Reed. By the side of brooks, and marshy places, at Hindlip, near Worcester, and on the banks of the Avon.

A. Epigejos, Wood Reed. Eastern side of Perry Wood.

A. Calamagrostis, Small Reed. Pensnet Reservoir, near Stourbridge.—Scott.

Montia fontana, Water Blinks. Plashy rills on the Malvern Hills, and on the Common called the Link.

Dipsacus pilosus, Shepherd's Staff. In great abundance by the side of the lane below the Abbey Church, Malvern. Brook at Kemsey.

Scabiosa succisa, Devil's-bit Scabious. Moist pastures near Worcester.

S. columbaria, Small Scabious. On Bredon Hill.—Mr. Pitts.

Asperula odorata, Sweet Woodruff. Woods on the Old Storage Hill, also about Southstone's Rock, and Wassel Hill near Bewdley. Woods at Stanford, and on Ankerdine Hill.

A. cynanchica, Small Woodruff. Bredon Hill.—Dr. Streeten.

Galium pusillum, Least Mountain Bed-straw. Hedgerow on the side of Red-house Lane, Worcester.—Dr. Stokes. Now exterminated, by those remorseless foes to botanists—road-surveyors; the lane in question having been raised and widened.

Plantago Coronopus, Buck's-horn Plaintain. On the conglomerate rock near the Giant's Grave, Habberley, near Kidderminster.—Mr. Lees.

Sanguisorba officinalis, Great Burnet. Very rare. In moist ground at the south-west side of Nunnery Wood.

Parietaria officinalis, Wall-pellitory. Old walls near the cathedral.

Alchemilla vulgaris, Common Ladies' Mantle. A very elegant plant. Lane leading to Henwick Mill. Also in fields at Grimley and Alfrick.

A. arvensis, Field Ladies' Mantle. Lanes about Henwick, and Malvern Hills.

Potamogeton natans, Broad-leaved Pond-weed. Pool at Wichenford, and ponds about Malvern.

P. pusillum, Small Pond-weed. Kemsey Ford.

P. pectinatum, Fennel-leaved Pond-weed. In a pond near the Old Water Works, Worcester.

Mœnchia erecta, Upright Mœnchia. Rocks on the North Hill, Malvern.

Myosotis cæspitosa, Tufted Water Scorpion-grass. Ditch in the Severn Meadows, Kemsey.—Dr. Streeten.

M. arvensis, Field Scorpion-grass. Sandy bank between Hagley and Stourport.

M. versicolor, Yellow and Blue Scorpion-grass. On the

summit of the North Hill, Malvern. Ankerdine Hill. Not common.

Lithospermum officinale, Gromwell. Battenhall, near Worcester, and on the lime rubbish about the western base of the Malvern Hills.

Anchusa sempervirens, Evergreen Alkanet. Near the Blankets, Worcester.—Mr. Ballard and Dr. Stokes. Under an old elm tree beyond the Old Water Works. Very uncommon.

Cynoglossum sylvaticum, Green-leaved Hound's-tongue. Shady lanes about Worcester.—Alderman Pitts.—Ray's Synopsis. The merciless road-surveyors have however now exiled it. In Deerhurst Lane, close to the Lower Lode Ferry, near Tewkesbury. Very rare.

Borago officinalis, Borage. Battenhall, near Worcester, and about Bromwich Farm. At Lower Wick. The fine azure of the flowers is strikingly beautiful. The plant being a biennial is soon lost from the spot where it is noticed.

Echium vulgare, Viper's Bugloss. A fine showy plant, and not uncommon in the northern part of the county, but almost unknown in the southern. It sometimes gets on walls, as on Dudley Castle, where it appears in a very dwarfish state, but in fallow fields it becomes a yard in height.

Primula elatior, Oxlip. About Leigh Sinton, Cradley, &c. in pastures on limestone.

P. veris Var., "Black Cowslip" of Dr. Abbot. A singular dark-flowered variety found in a field at Bromwich Farm, by Mr. Lees.

Menyanthes trifoliata, Buckbean. One of our most beautiful native plants. In a pool on Hartlebury Common

> "Our beauteous *Menyanthes* hides
> Her clustering, fringed flowers;"

but so far in the water as to render it difficult to obtain a specimen. This plant was probably formerly much more common than at present, but the rage for enclosures and

improvements have altogether annihilated many interesting habitats of our native plants. By Act of Parliament, (Geo. iii.) this part of Hartlebury Common is specially reserved, and is "never to be enclosed,"—an enactment of the legislature for which the botanist cannot be too grateful.

Hottonia palustris, Water Violet. Pool at Clifton-upon-Severn.—Dr. Streeten.

Lysimachia vulgaris, Great Yellow Loosestrife. By the side of the wier above Powick Bridge, and banks of the Teme above Bransford. Banks of the Severn below Pixham Ferry. Very rare in this county.

Anagallis cærulea, Blue Pimpernel. On Bredon Hill.—Dr. Nash. Plentiful in a fallow field near the Trench Woods.—Mr. Edmunds. A singular pale purple variety found at Shrawley by Messrs. Walcot and Lees.

A. tenella, Bog Pimpernel. A lovely plant. Bogs on the Malvern Hills.

Campanula patula, Spreading Bell-flower. "Rare," according to Sir J. E. Smith, but abundant in the hedges about Newtown, and in almost all our woods.

C. Rapunculus, Rampion Bell Flower. Hindlip, near Worcester.—Dr. Stokes.

C. latifolia, Giant Bell Flower. Shrawley Wood, where the sandstone cliff shelves down towards the Severn.

C. rapunculoides, Creeping Bell Flower. In a lane near Shrawley Wood.—Rev. G. H. Piercy, of Chaddesley.

C. glomerata, Clustered Bell Flower. Near Knightford's Bridge.

C. hederacea, Ivy-leaved Bell Flower. Very rare. On Hartlebury Common, according to the Rev. T. Butt.

Jasione montana, Sheep's Scabious. In Shrawley Woods, and other sandy places.

Viola hirta, Hairy Violet. Lane leading from Kemsey to Green Street.—Dr. Streeten.

V. palustris, Marsh Violet. On Hartlebury Common,

entangled with the bog moss, *Sphagnum palustre*. A delicate little plant.

Verbascum Thapsus, Great Mullein. Abundant about the Malvern Hills, and by the road sides in neglected spots.

V. Lychnitis, White Mullein. Rare. Near Malvern. Also about Kinver, and Hagley, according to Mr. Scott.

V. virgatum, Large-flowered Primrose-leaved Mullein. A very rare plant. Formerly found by the side of the Kidderminster road at Bevere, near Worcester, where it was first noticed by Dr. Stokes. It has been gathered in the same habitat so late as 1829, but has now disappeared.

V. Blattaria, Moth Mullein. In the vicinity of Malvern.

Datura Stramonium, Thorn Apple. Occasionally appearing on manured soil, near Worcester, but not really a native.

Hyoscyamus niger, Henbane. Side of the road beyond Spetchley, but most abundantly near Little Malvern, at the base of the Herefordshire Beacon.

Atropa Belladonna, Deadly Nightshade. Dudley Castle. Also on a Wall at Lincombe, near Hartlebury, where it has flourished for many years according to Dr. James Nash.

Samolus Valerandi, Water Pimpernel. In the rills at Battenhall, near Worcester, and on Defford Common.

Rhamnus catharticus, Buckthorn. In the hedges about Worcester, formerly common, but now scarce through the alterations of improvers. In the coppice near Battenhall.

R. Frangula, Berry-bearing Alder. Rare. In Wyre Forest.

Euonymus europæus, Spindle-tree. The practice of stubbing up old hedge-rows, and the operations of road surveyors have almost obliterated this shrub, whose brilliant orange clusters of capsules make so rich an appearance in the autumn. In a hedge near the end of the avenue at Dr. Berkeley's, Cotheridge Court. Also near Malvern.

Ribes rubrum, Common Currant. In places where it would seem improbable it could have been introduced from gardens.

In the deep dingle of a wood at Hailstone Hill, near Suckley. Also in a ravine at Clifton-on-Teme, between that place and St. Catherine's Well.

R. nigrum, Black Currant. On the banks of the Severn in several places, but not producing berries.

R. Grossularia, Gooseberry. A frequent straggler from gardens, and an epiphyte on old willows, but occurring also in less suspicious habitats.

Vinca minor, Lesser Periwinkle. In the woods near Leigh Sinton, unquestionably wild. Hedge bank at Little Malvern. Also in profusion at the base of Crookbarrow Hill.

V. major, Greater Periwinkle. Between Cotheridge and Broadwas, by the road side. Hedge bank, near Little Malvern Church.

Ulmus campestris, Common Elm. Worcestershire is famous for the abundance and excellence of its elm timber. It abounds in almost every hedge, though often deformed by the execrable practice of cropping.

U. suberosa, Cork-barked Elm. Hedges near Hallow.

U. montana, Wych Hasel. About the base of Malvern Hills, &c.

U. glabra, Wych Elm. At Hindlip are some very fine trees of this kind.

Cuscuta europæa, Greater Dodder. Very rare. At Shipston-on-Stour, according to the Rev. Dr. Jones. Badsey, and South Littleton.—Purton.

Gentiana Amarella, Autumnal Gentian. On the wooded limestone ridge at the western base of the Worcestershire Beacon, Malvern.

Caucalis daucoides, Small Bur-parsley. Alne Hills.—Rufford.

Torilis nodosa, Knotted Hedge Parsley. Hedge side on the Spetchley road. Hedge, road side, near the Ketch, on the Bath Road.

Chærophyllum sativum, Garden Chervil. In great profu-

sion on the sides of the Tewkesbury Road, just beyond the turnpike, Worcester, first noticed by Dr. Stokes, in 1775. Still there in equal profusion in 1828.—Mr. Lees. But in 1830 the road was altered at this point and lowered, the bank thrown down, a wall built, and every vestige of the plant swept away.

Myrrhis odorata, Sweet Cicely. At Southstone's Rock.—Dr. Stokes.

Sium latifolium, Broad-leaved Water-parsnep.—In the moors near Pitchcroft, Worcester, according to Dr. Thomson, jun.—Withering. Another obliterated plant. By the wier, at Newman's Bridge, near the Devil's Den, Clifton-on-Teme.—Mr. Lees.

S. angustifolium, Narrow-leaved Water-parsnep. Near Bransford Bridge, and at Powick Wier. Also by a pool near Bromwych Farm.

S. repens, Creeping Water-parsnep. On the Malvern Hills, among the trickling springs.

Sison segetum, Corn Honewort. Between Hanbury and Droitwich.—Purton.

Œnanthe pimpinelloides, Parsley Water-dropwort. In some abundance in a meadow at the north-western base of Crookbarrow Hill.—Mr. Lees.

Œ. Phellandrium, Fine-leaved Water-dropwort. In a pool on Powick Ham.

Smyrnium Olusatrum, Common Alexanders. In great abundance at Hill Croome, and about Pershore.

Apium graveolens, Wild Celery. In Sansome Fields.—Dr. Stokes. Now eradicated there by the increase of population. Abundant by the side of the Droitwich Canal, the waters of which imbibe a saline impregnation from receiving the overflowings of the Droitwich brine springs.

Meum Fœniculum, Fennel. Spetchley.—Purton.

Carum Carni, Carraway. Meadows near Worcester.

Pimpinella saxifraga, Burnet-saxifrage. Dry banks on

the Leigh Sinton, and other roads, and elsewhere, very common.

P. magna, Great Burnet-Saxifrage. On the limestone hills, near Suckley.

Bupleurum rotundifolium, Thorow-wax. Badsey, and Bretforton.—Purton.

B. tenuissimum, Slender Hare's Ear. A very rare and curious plant. Found by Mr. Addison, of Malvern, on the common between Malvern and the Rhydd.

Pastinaca sativa, Wild Parsnep. Road side, near Stoughton, abundantly. Battenhall, Cracombe, &c., on red marl and lias marl.

Viburnum Lantana, Mealy Guelder-rose. By the road side at Cracombe.

Parnassia palustris, Grass of Parnassus. North side of Bredon Hill.—Nash. Near Bromsgrove Lickey. Now become very rare in the county, owing to the almost universal drainage of lands.

Linum usitatissimum, Common Flax. In Cowleigh Park, to the north of Malvern.

Drosera rotundifolia, Round-leaved Sun-dew. Bog at the base of the Worcestershire Beacon, Malvern. Hartlebury Common. Bromsgrove Lickey.

Myosurus minimus, Mousetail. Malvern Chace.

Galanthus nivalis, Snowdrop. Occupying the virgin turf in a glen at the northern base of the Herefordshire Beacon, near Little Malvern, apparently wild, but it is to be feared a few years will terminate the existence of the plant at this locality. Other habitats might be named, but they are suspicious.

Narcissus biflorus, Pale Narcissus. In an orchard beyond the Ketch, perhaps a suspicious place; but truly wild and abundant on the banks of Sapey Brook, near a travertine rock called the Hoar Stone.—Mr. Lees. In a pasture at Baynall, near Kemsey.—Dr. Streeten.

N. Pseudo-Narcissus, Daffodil. In a wood at Little Malvern, and covering a whole meadow between Malvern and Cradley. Severn meadows, at Kemsey, and in a wood at the Nash, near Kemsey.

Allium oleraceum, Streaked Field Garlick. Abundant on the Ketch Bank. With double heads of Bulbs at Battenhall, near Worcester.

A. vineale, Crow Garlick. Pitchcroft.

A. ursinum, Broad-leaved Garlick. Very abundant in Ockeridge Wood, near Holt. In various other moist coppices.

Tulipa sylvestris, Wild Tulip. Very Rare. In a little copse on the red marl bank at the Ketch, near Worcester, but the roots being very deep in the soil, rarely flowering.—Mr. Lees.

Ornithogalum umbellatum, Common Star of Bethlehem. In a meadow near Dr. Berkley's, at Cotheridge.—Mr. Walcot.

O. nutans, Drooping Star of Bethlehem. In a meadow near Kemsey Grove.

Narthecium ossifragum, Bog-Asphodel. Near Rubry Hill, on the Lickey.—Purton. A new road has been recently made here, which augurs ill for the continuance of the plant.

Convallaria majalis, Lily of the Valley. Abundant in Shrawley Woods. More sparingly in Bewdley Forest.

Acorus calamus, Sweet Flag. In the Avon, near Pershore, but rare.

J. uliginosus, Little Bulbous Rush. Hartlebury Common. Malvern Hills.

Luciola congesta, Many-headed Bog Wood-rush. Perry Wood. Hartlebury Common.

Berberis vulgaris, Barberry. Under the pretence of its being injurious to corn, this beautiful shrub has been almost rooted out of the county. In a hedge by the side of Comer

Lane, fortunately not very likely to be assaulted by road surveyors.

Rumex palustris, Yellow Marsh Dock. Side of the Chalybeate Spa, at Malvern.

Triglochin palustre, Marsh Arrow-grass. Marshy spots about the Malvern Hills.

Colchicum autumnale, Meadow Saffron. Abundant in almost every moist meadow in the county.

Œnothera biennis, Evening Primrose. Appearing occasionally on suspicious spots within sight of gardens. A single specimen on the bank of the Teme below Powick Bridge.

Chlora perfoliata, Yellow Wort. Not uncommon on dry calcareous soils. At Cracombe, Abberley, Clifton, &c.

Vaccinium Myrtillus, Bilberry. Abundant in Bewdley Forest, and on the Bilberry Hills, Bromsgrove Lickey.* Also on rocks on the Malvern Hills, but sparingly there.

V. Oxycoccus, Cranberry. Bogs on Bromsgrove Lickey.

Menziesia polifolia, Irish Menziesia. On the Lickey Hill, near Bromsgrove.—Mr. Lees. It is to be feared now extirpated, the road having since been altered.

Erica Tetralix, Cross-leaved Heath. This very elegant plant is found abundantly on Bromsgrove Lickey, but not on any part of the Malvern Range.

E. cinerea, Fine-leaved Heath. Bromsgrove Lickey, and various heaths in the northern parts of the county.

Daphne Mezereum, Spurge-olive. Eastham and Stanford. —Rev. E. Whitehead.

Polygonum Bistorta, Great Bistort. Meadow near the spa, at Malvern.—Mr. Edmunds. Also by the rill at Southstone's Rock; in a meadow at the top of Trampley Green,

* A notice-board is still existing on a hill at Cofton Hackett, near Bromsgrove, to the effect that "Whereas persons of all descriptions have been in the habit of trespassing in these woods, under the pretence of gathering bilberries," &c., "this is to warn such persons that they will be prosecuted," &c.

near Kidderminster, and in a moist pasture at Wichenford.

P. viviparum, Alpine Bistort. On Rosebury conglomerate rock, by the Teme, below Knightsford Bridge.—Mr. Lees.

P. minus, Small Creeping Persicaria. In a gravel pit at Malvern Chace.—Dr. Stokes.

Paris quadrifolia, Herb Paris. In deep shady groves, as Witchery Hole near Clifton-on-Teme, woods at Malvern, Eastham, Stanford, &c.

Adoxa Moschatellina, Tuberous Moschatell. By the paper mill at Alfrick, but scarce about Worcester. Abundant in the vicinity of Bromsgrove, according to Mr. Maund.

Butomus umbellatus, Flowering Rush. River Severn below Kemsey Ford.—Dr. Streeten. Abundant by the banks of the Avon, but rare near Worcester. It has however, recently stolen into the Birmingham canal, where it is safe from the operations of road surveyors.

Monotropa Hypopytis, Yellow Bird's-Nest. At the roots of the beech trees in the plantations at Middle Hill, Broadway. Sir Thomas Phillipps, Bart.

Pyrola media, Intermediate Winter-Green. Wyre Forest, near Bewdley.—Dr. Pratinton.

P. minor, Lesser Winter-Green. Shrawley Wood.—Mr. Lees.

Chrysosplenium alternifolium, Alternate-leaved Golden Saxifrage. In a marsh near Leigh Church. Also by a stream in Shrawley Wood.

Saxifraga granulata, White Meadow Saxifrage. Not uncommon. In a meadow near Laughern Brook, at Bevere, near Droitwich, Habberley, &c.

S. tridactylites, Rue-leaved Saxifrage. Adorning the wall fronting the bank of the Teme at Powick Bridge; but the river having now undermined the wall, it has fallen down, and the plant is gone with it.

Scleranthus annuus. On the rocks of the Malvern Hills.

Saponaria officinalis, Soapwort. By the side of the pool in Shrawley Wood. Also near Bewdley and Bromsgrove Lickey.

Dianthus Armeria, Deptford Pink. In a meadow beyond Mudwall Mill, and about Cotheridge. Also at Shrawley, near the church, and in a meadow near Kemsey.

D. prolifer, Proliferous Pink. In a marl-pit at Lindridge Hill, near Hanley Castle,—Mr. Ballard, in Withering; but Messrs. Walcot and Wingfield have since searched the spot in vain for it.

D. deltoides, Maiden Pink. Blackstone Rocks, near Bewdley, according to Mr. Scott; but a very rare plant.

Silene anglica, English Catchfly. Areley, near Stourport. —Mrs. Gardner, in Purton.

S. conica, Striated Corn Catchfly. Found once in a field at Iverley, near Stourbridge, by Mr. Scott.

S. noctiflora, Night-flowering Catchfly. In a sandy field behind Birchen Grove, Broad Heath.

Stellaria uliginosa, Bog Stichwort. In various marshy spots about Hartlebury Common, Malvern Hills, Ashmore Common, &c.

Arenaria trinervis, Plaintain-leaved Chickweed. Shady lanes about Worcester. Ankerdine Hill.

A. tenuifolia, Fine-leaved Sand-wort. Lane near the Toot Hill, behind the Virgin's Tavern, Worcester.

A. rubra, Purple Sandwort. A pretty ornament of the dry declivities of the Malvern Hills.

Cotyledon Umbilicus, Navelwort. In the fissures of the greenstone and granitic rocks at Malvern. Growing very luxuriantly in a lane leading to the Giant's Grave, at Habberley, near Kidderminster.

Sedum Telephium, Orpine. Shrawley Wood, marsh close to Laughern Brook, Worcester, and the rocks at Malvern.

S. album, White Stonecrop. A beautiful and interesting plant. On the rocks of the North Hill, Malvern.

S. reflexum, Crooked Yellow Stonecrop. On the abbeys at Great and Little Malvern.

Spergula nodosa, Knotted Spurrey. In the rill that rises in the declivity between the Worcestershire Beacon and the Sugar Loaf Hill, Malvern.

Lythrum hyssopifolium, Hyssop-leaved Grass-poly. Badsey, near Evesham, and Bretforton. Very rare.—Purton.

Agrimonia Eupatoria, Agrimony. Frequent by road sides in various places. Gathered in great quantities in the time of flowering for the purpose of making an astringent herb tea recommended by rustic practitioners.

Reseda Luteola, Dyer's Rocket. In waste places about Grimley, Leigh Sinton, &c. Growing luxuriantly on a wall bounding Angel Street Cemetery, Worcester.

Prunus Cerasus, Wild Cherry-tree. On Rosebury Rock, Knightwick, and Ankerdine Hill. Abbot's Wood. A solitary tree appearing on Helbury Hill, near Worcester, when the wood was cut down.

P. domestica, Wild Plum-tree. In the hedges near Battenhall, but doubtful if wild.

P. insititia, Bullace-tree. Dudley Castle Hill. At Badsey, according to Purton.

Mespilus germanica, Medlar. Exceedingly rare. In a coppice bordering Deerhurst Lane, opposite the Lower Lode, near Tewkesbury, a spot almost overgrown with underwood, the lane being merely a rough horse track. The *Cynoglossum sylvaticum* grows in the same lane.—Mr. Lees.

Pyrus communis, Wild Pear-tree. It is now somewhat difficult to meet with the pear-tree really wild, for the farmers graft every seedling that appears in their hedges. Perry Wood.

P. Malus, Crab-tree. Common enough in its genuine austere state.

P. torminalis, Wild Service-tree. Gradually dying away, and will probably be quite exterminated in a few years, as the trees are cut down. On the red marl cliff at the Ketch, and occupying the dizzy summit of Blackstone Rock, near Bewdley. The brown berries tied up in bunches are still brought to market, though sparingly, in the autumnal season.

P. domestica, True Service-tree. In the middle of Wyre Forest, near Bewdley, first noticed there by Alderman Pitts, in 1678. Recently visited by Mr. Lees, who reports it to be in a state of decay, and some wood-cutters having recently made a fire against its weather-beaten trunk, its destruction seems impending.

Spiræa Filipendula, Dropwort. At the west end of Perry Wood, and on the Old Hills, but rather rare. Hedges at Brookend, near Kemsey.

Rosa spinosissima, Burnet Rose. Near Crookbarrow Hill, in abundance, and about Nunnery Wood, Hallow, and Cracombe.

R. Doniana, Don's Rose. A beautiful but scarce shrub, first noticed in this county by Mr. Lees, who observed it near Cracombe, and forming tall bushes at Crookbarrow Hill, and Battenhall, near Worcester. Mr. Lees having at first considered it to be the *R. gracilis,* as "the Highlands of Scotland," are mentioned by Sir J. E. Smith as the habitat for the *Doniana,* Mr. Sabine, Secretary of the London Horticultural Society, requested a plant to be sent for the garden at Chiswick, and his opinion was that it must be *R. Doniana.**

R. villosa, Soft-leaved Round-fruited Rose. In Hindlip Wood, near Worcester, and between Bromsgrove and Hagley.

R. tomentosa, Downy-leaved Rose. At Bransford, Fernhill Heath, and between Malvern and Cowleigh Park.

R. Sherardi, Sherard's Rose. Powick.

* Professor Hooker, however, makes both *R. gracilis,* and *R. Doniana,* varieties of *Rosa Sabini. Hooker's British Flora,* vol. i. p. 229.

R. rubiginosa, Sweet Briar. In a hedge between St. John's and Pitmaston. On Ankerdine Hill, and near Crookbarrow.

R. micrantha, Small-flowered Sweet Briar. On the Warren Hill, southward of Little Malvern.

R. Borreri, Borrer's Rose. Side of Perry Wood, and in woods near Malvern.

R. dumetorum, Thicket Rose. Between Worcester and Malvern.

R. arvensis, White Trailing Rose. Abundant about the Abberley Hills, and the Berrow Hill, Martley, &c.

Rubus glandulosus, Glandular Bramble. On Bromsgrove Lickey.

R. idæus, Raspberry. Bishop's Wood, near Hartlebury, Bromsgrove Lickey, and Shrawley Wood.

Potentilla argentea, Hoary Cinquefoil. On the sand-rock between Bromsgrove and Droitwich. On a similar rock near Holt, &c.

P. verna, Spring Cinquefoil. On the rocks of the Herefordshire Beacon, Malvern Hills.—Mr. Lees.

Tormentilla reptans, Trailing Tormentil. Near Cowleigh Park, north of Malvern.

Geum rivale, Water Avens. Scarce in this county. At Abberley, according to Mr. Hickman, in Purton.

Comarum palustre, Purple Marsh-cinquefoil. On Hartlebury Common, and in pools about Bromsgrove Lickey.

Papaver somniferum, White Poppy. Severn side, below Worcester Bridge.

Nymphæa alba, White Water Lily. In the Avon, under Littleton Bank, according to Mrs. George Perrott. Rare in a truly wild state in this county.

Nuphar lutea, Yellow Water Lily. Abundant in the tributaries of the Avon, and in various brooks and pools.

Tilia parvifolia, Small-leaved Lime-tree. Glens and lanes about the Old Storage Hill, and at Clifton-on-Teme.

Cistus Helianthemum, Dwarf Cistus. Abundant on the Herefordshire Beacon, Malvern Hills, and Bredon Hill. Also on dry banks at Alfrick, Clifton-on-Teme, Crowle, &c.

C. polifolius, White Mountain Cistus. Mr. Ainsworth, in a "Sketch of the Physical Geography of the MalvernHills," inserts this very rare plant in the catalogue which he appends to his account. No other person has, however, confirmed this discovery, and some mistake is therefore to be apprehended.

Delphinium Consolida, Field Larkspur. Near Grimley. —Mr. Edmunds.

Aconitum Napellus, Monk's-hood. On the banks of a brook running into the Teme, near Ludlow, but on the borders of this county, truly wild.—Mr.Walcot.

Aquilegia vulgaris, Columbine. In Bewdley Forest, Shrawley Wood, and about Leigh Sinton. The smaller variety, *A. alpina*, of Hudson, on Bromsgrove Lickey.—Dr. Streeten.

Clematis vitalba, Common Clematis. Abundant about Ankerdine Hill, and Malvern. Also in the hedges at Powick.

Thalictrum flavum, Meadow Rue. Eastern side of Pitchcroft, banks of the Severn, &c.

Ranunculus Lingua, Great Spearwort. Bogs on Malvern Chace, according to Mr. Ballard. The late Mr. T. B. Stretch, a Worcester botanist, records having found it in Ockerley Wood, Holt. Ainsworth also inserts it in his list of Malvern plants. Whether drainage has now destroyed the plant, or whether a large variety of *R. Flammula* was mistaken for it, is uncertain, but it is not now to be met with.

R. parviflorus, Small-flowered Crowfoot. Under hedges by the road side, near the Virgin's Tavern, Worcester. Also at Hallow, Cotheridge, Alfrick, and Malvern, in considerable plenty.

Trollius europæus, Mountain Globe Flower. Moist Meadows at the foot of Bredon Hill.

Helleborus viridis, Green Hellebore. Orchard near Mr. Ballard's, Robinson's End, Malvern Chace, according to Messrs. Welles and Ballard, in Withering. Not since remarked.

Nepeta cataria, Cat-mint. Lane beyond the Gas Works, Worcester, and in other similar situations.

Verbena officinalis, Vervain. Near farm houses at Barnard's Green, Powick, &c.

Mentha sylvestris, Horse Mint. By the side of a rill beyond the yew tree on the Ombersley road, Worcester.

M. piperita, Pepper Mint. By the side of a rill at Malvern Link, and in other wet spots about the Malvern Range.

M. rubra, Tall Red Mint. By a pool near the firs, at Clifton-on-Teme.

Lamium maculatum, Spotted Dead-nettle. Found near Defford Common, by Dr. Streeten.

Galeobdolon luteum, Yellow Weasel-snout. In Berwick's Shrubberies, and various shady woods at Powick, Kemsey, Alfrick, Clifton, &c.

Marrubium vulgare, White Horehound. Formerly very common, but being in great request among cottagers as a remedy for cough and asthma, it has been so rooted up or transplanted into rural gardens, that it has become quite scarce. At Astley, and Clifton-on-Teme.

Origanum vulgare, Marjoram. Side of the road at the foot of Cracombe Hill, near Evesham. Also on the top of Southstone's Rock, and at Lower Sapey.—Mr. Lees.

Thymus Calamintha, Calamint. About Malvern, Grimley, &c., by road sides.

Scutellaria galericulata, Skull-cap. In marshy spots by the side of the Severn. Kemsey Brook.

S. minor, Lesser Skull-cap. Hanley Common, beyond Stanford.—Mr. Hickman, in Purton.

Melampyrum cristatum, Crested Cow-wheat. Very rare. Near Ombersley.—Mrs. Gardner.

Lathræa Squamaria, Greater Toothwort. Growing in some abundance under a white poplar tree by the side of the brook below Bridgestone Mill, Alfrick.—Mr. Lees. Also above the bridge, near the mill. At Great Malvern, under an elm by the side of the road near the turnpike.—Mr. Addison.

Pedicularis palustris, Marsh Louse-wort. Rather uncommon. In the boggy marsh at Wyre, near Pershore.

Antirrhinum Cymbalaria, Ivy-leaved Snap-dragon. On the old city walls Worcester, and the south side of the abbey church, Great Malvern, but a garden straggler.

A. majus, Great Snapdragon. Walls about the commandery, cathedral, and bishop's palace.

A. Orontium, Lesser Snapdragon. Cotheridge.—Mr. Walcot. Kemsey.—Dr. Streeten.

Digitalis purpurea, Purple Foxglove. In immense quantities about the Malvern and Abberley Hills, and scattered in various other places. White varieties occasionally occur, but are soon rooted up.

Limosella aquatica, Mudwort. "Pools near the Heath," according to Scott's History of Stourbridge, but the name of the heath is omitted.

Orobanche major, Greater Broom-rape. In Shrawley Wood, by the pool; at Abberley, on the acclivity above the Hundred House; and between Suckley and Bear's-wood.

Alyssum maritimum, Sweet Alyssum. Once found growing on the west bank of the Severn, below Worcester Bridge, by Mr. James Goodman.

Lepidium ruderale, Narrow-leaved Pepperwort. "Rubbish on the side of the Severn above Worcester."—Dr. Stokes.

Teesdalia nudicaulis, Naked-stalked Teesdalia. Pensham Field.—Nash. Abundant on Hartlebury Common, aud at the Giant's Grave, Habberley.—Mr. Lees.

Cochlearia Armoracia, Horse-radish. On the banks of the Severn, truly wild.

Cardamine impatiens, Impatient Ladies' Smock. Western side of the Severn, below Worcester Bridge. Also in Shrawley Wood, and on Rosebury Rock.

C. amara, Bitter Ladies' Smock. "Above Worcester."—Dr. Stokes. Below Worcester, in a willowy spot at the Ketch, close to the Severn.—Mr. Lees.

Nasturtium sylvestre, Creeping Yellow Cress. On the banks of the Severn, at Worcester, most abundantly.

N. amphibium, Amphibious Yellow Cress. In ditches by the side of Pitchcroft.

Turritis glabra, Smooth Tower-mustard. Near an old sandstone quarry between the Mitre Oak and Stourport. —Messrs. Walcot and Lees.

Erodium cicutarium, Hemlock Stork's-bill. By the side of the road near Hallow, abundantly, and in the road leading to Mr. Farley's, Henwick Hill. Pasture at Kemsey.

E. maritimum, Sea Stork's-bill. Growing in considerable plenty on the rocks fronting the south-west at the Giant's Grave, Habberley, 1834.—Mr. Lees.

Geranium phœum, Dusky Crane's-bill. Cradley Park, near Stourbridge.—Mr. Scott.

G. sylvaticum, Wood Crane's-bill. In Bewdley Forest, near to Dowles Brook, plentifully.—Messrs. Walcot and Lees.

G. pratense, Blue Meadow Crane's-bill. Strikingly conspicuous with its large azure flowers, and a great ornament to the banks of the Severn, and many of our minor brooks.

G. lucidum, Shining Crane's-bill. By the side of the moors, Worcester, and along the lane at Merryman's Hill. At Malvern, Abberley, &c.

G. rotundifolium, Round-leaved Crane's-bill. On a wall at Hartlebury.—Purton.

G. columbinum, Long-stalked Crane's-bill. By the side of the shady walk beyond the Old Water Works, and in several lanes about Worcester and Hallow. On Abberley Hill.

Malva rotundifolia, Dwarf Mallow. Not frequent in this county. At the base of the North Hill, Malvern. About Kemsey.

M. moschata, Musk Mallow. At Henwick Hill, Helbury Hill, and various other places, chiefly by the road side.

Fumaria solida, Solid Bulbous Fumitory. In Abberley Woods, according to Mr. Hickman, in Purton.

F. lutea, Yellow Fumitory. Found by Mr. Lees in a shady lane below Abberley Church, not in the immediate vicinity of any garden, but probably naturalized.

F. claviculata, White Climbing Fumitory. Abundant among the loose stones on the declivities of the Malvern Hills.

F. capreolata, Ramping Fumitory. In a hedge at Shrawley, and near Abberley.

Genista spinosa, Prickly Broom. "Whittington Common, near Stourbridge, plentiful, but observed nowhere else."—Scott. The *G. tinctoria* and *G. anglica* are very common.

Anthyllis vulneraria, Kidney-vetch. Abundant on the grauwacké limestone on the western flanks of the Malvern Range, and equally plentiful on the lias at Cracombe Hill.

Lathyrus Aphaca, Yellow Vetchling. Very rare. At Cleve, and Littleton.—Purton. "Grove Coppice, near Stourport."—Hickman. Near Crowle.—Mr. Sheppard, 1834.

L. Nissolia, Crimson Grass Vetch. One of our most beautiful and elegant native plants. The brilliancy of the crimson blossoms fading into purple, has a charming effect when seen in perfection amidst the grassy herbage where it lurks. "In great abundance in a wood near to Pershore."—Purton. Among the bushes beyond Battenhall Lane, Worcester, and by the wood near the Croft Farm, Mathon.—Mr. Lees. Also in a meadow at Kemsey.—Dr. Streeten.

L. sylvestris, Narrow-leaved Everlasting Pea. Perry Wood, and Helbury Hill, on the east side of Worcester; in

the woods about Bredon Hill; and Tiddesley Wood, near Pershore.

L. latifolius, Broad-leaved Everlasting Pea. "Severn Stoke Copse."—Mr. Ballard, in Withering. Unnoticed in Worcestershire by any other botanist.

Vicia sylvatica, Wood Vetch. A beautiful plant, climbing up the branches of trees, and presenting its clusters of blue-streaked flowers for the admiration of those who follow Nature into her most retired recesses. On Bredon Hill.—Nash. In the Devil's Den, Clifton-on-Teme, and in a wood near the Spout, Malvern. In the greatest luxuriance at Lower Sapey, covering the shrubs and trees for a considerable distance along the banks of the brook celebrated for containing the sacred impressions of St. Catherine's mare and colt.—Dr. Feild, and Messrs. Allies and Lees, 1834.

V. angustifolia, Narrow-leaved Crimson Vetch. Near the Giant's Grave, Habberley. Ankerdine Hill.

V. lathyroides, Spring Vetch. Battenhall Lane, Cracombe Hill, and numerous other places in the county.

V. bithynica, Rough-podded Purple Vetch. Woods at Clifton-on-Teme.—Dr. Stokes. Below the Ivyscar Rock, Great Malvern.—Mr. Lees.

Ornithopus perpusillus, Bird's Foot. On the Malvern Hills, Hartlebury Common, Kemsey Common, and Blakebrook, near Kidderminster.

Hippocrepis comosa, Tufted Horse-shoe Vetch. "South side of Bredon Hill, below the Camp."—Nash. No other habitat has been found for it in Worcestershire.

Hedysarum Onobrychis, Saintfoin. Abundant on the Abberley Hills. Also on the limestone west of the Malvern Chain, and on the lias at Cracombe.

Astragalus glycyphyllos, Liquorice Vetch. Helbury Hill, Worcester, the Trench Woods, &c.

A. hypoglottis, Purple Mountain Milk Vetch. Bredon Hill, near the Camp.—Nash. Still there, about two fields

southwards of the outer vallum, but not easily found or got at without scaling the stone walls at some personal risk.—Mr. Lees. The only habitat the county possesses.

Trifolium ochroleucum, Sulphur-coloured Trefoil. On the Link, at Malvern.

T. arvense, Hare's-foot Trefoil. At Malvern, Powick, and on Hartlebury Common.

T. fragiferum, Strawberry-headed Trefoil. On the Spetchley Road before the late enclosures. Evesham, on the Stratford Road. Avon meadows, Pershore.

Lotus major, Greater Bird's-foot Trefoil. In the Gullet, a woody glen of the Malvern Range, and at the base of Abberley Hill. Tiddesley Wood, near Pershore.

Hypericum calycinum, Large-flowered St. John's Wort. In a copse at Little Malvern, but doubtful if truly wild.—Mr. Lees.

H. Androsæmum, Tutsan, or Park Leaves. In a hedge at the western base of the Worcestershire Beacon, Great Malvern.—Mr. James Goodman. On Abberley Hill, growing among the underwood, to a great size.—Messrs. Walcot, Lees and Edmunds. Also on Bredon Hill, above Elmley Castle.

H. quadrangulum, Square St. John's Wort. Lane at Kemsey, and many marshy spots in the county.

H. dubium, Imperforate St. John's Wort. At Sapey, near Clifton.—Dr. John Seward.

H. humifusum, Trailing St. John's Wort. On the North Hill, Malvern.—Dr. Streeten. Also near Nunnery Wood, and on Helbury Hill.

H. montanum, Mountain St. John's Wort. Shrawley Wood, and Abberley Hill.

H. hirsutum, Hairy St. John's Wort. Woody places about Worcester, not unfrequent.

Lactuca saligna, Narrow-leaved Lettuce. "On a ditch bank by the road side, at Spetchley, near Worcester."—Purton.

Hieracium murorum, Broad-leaved Wall Hawkweed. On the rocks at Malvern.

Lapsana pusilla, Dwarf Nipple-wort. Pensham Field, near Pershore.—Nash.

Cichorum Intybus, Wild Succory. Border of a corn field near Pendock.—Dr. Streeten. Also near Crookbarrow Hill.

Serratula tinctoria, Saw-wort. Borders of Perry and Nunnery Woods, &c. Abundant on the bank at Rainbow Hill, previous to the alteration of the road.

Carduus acanthoides, Welted Thistle. In the hedges near the Severn, below Worcester.

C. marianus, Milk Thistle. On the marly bank by the side of the London Road, at Red Hill, near Worcester.

Cnicus eriophorus, Woolly-headed Thistle. Bredon Hill. Nash. Hillend Bank, Longdon.—Mr. Ballard. Foot-way between Clarkton Leap and Kemsey.—Dr. Stokes. On the road from Worcester to Norton.—Mr. Lees.

C. pratensis, Meadow Plume Thistle. By the brook at Upton Snodsbury.

C. acaulis, Dwarf Plume Thistle. On Welland Common, near Little Malvern.

Carlina vulgaris, Carline Thistle. On the Malvern and Abberley Hills, &c.

Bidens cernua, Nodding Bur-marigold. Ponds in the vicinity of Martley. In a ditch near Pitmaston.

Tanacetum vulgare, Tansy. Very abundant on the banks of the Severn and Teme. This bitter herb is still employed to make a tea, which is praised for its strengthening qualities. It has the advantage of costing nothing.

Artemisia Absinthium, Wormwood. About Malvern and Alfrick, near farm houses.

Gnaphalium margaritaceum, Pearly Everlasting. "By a rivulet in the heart of Wyre Forest, Worcestershire."—Rev. T. Butt.

G. rectum, Upright Wood Cud-weed. In Shrawley Wood. —Mr. Lees. Ridgway.—Purton. Fladbury.—Nash.

Tussillago Petasites, Butter-bur. Rather local upon the banks of the Teme. By the side of the brook at Alfrick. Banks of the Severn, opposite Cleveload. Uncommonly plentiful, with most magnificent leaves, skirting the entire course of the brook at Sapey, rendered famous by the wanderings of St. Catherine.—Dr. Feild, and Messrs. Allies and Lees.

Solidago Virgaurea, Golden-rod. On the rocks at Malvern, and in the adjacent woods. Coppice near Bewdley.

Inula Helenium, Elecampane. Side of Bredon Hill, ascending from Great Comberton.—Nash. Noticed between Worcester and Ludlow, in 1795, by Sir J. E. Smith. In the meadow at the back of Mr. Harris's farm house, near Stanford Bridge, between Clifton and Stanford, according to the late Mr. T. B. Stretch, of Worcester.

Matricaria Chamomilla, Wild Chamomile. On Welland Common, and other waste spots about the eastern base of the Malvern Hills. About Wick.

Anthemis nobilis, Sweet Chamomile. On the Link, at Great Malvern, and on other commons about the Hills.

Achillea Ptarmica, Sneezewort. Corn field at the Rhydd. —Dr. Streeten. Also at Battenhall, and Little Malvern.

Orchis bifolia, Butterfly Orchis. In various hilly woods at Powick, Abberley, Malvern, &c., but not in any great abundance.

O. pyramidalis, Pyramidal Orchis. On the edge of the wood near the lime kilns at the Croft Farm, Mathon; and abundantly in the meadows by the Spout brook, at Eastham. —Mr. Lees.

O. ustulata, Dwarf Dark-winged Orchis. Base of the Malvern Range, according to Mr. Ainsworth, in his list of Malvern plants. Abberley.—Mrs. Gardner.

O. albida, White Cluster-rooted Orchis. Cradley Park, and Wichbury Hill, near Hagley.—Mr. Scott.

O. viridis, Frog Orchis. On Hill Top, Cotheridge.—Mr. Walcot. Meadows near Cowleigh Park, Malvern. In a wet meadow at the northern base of the Round Hill, Abberley, plentifully.—Messrs. Lees and Edmunds.

O. conopsea, Aromatic Orchis. Abundantly in the meadows at the northern end of the Malvern range.

Ophrys muscifera, Fly Orchis. Eastham, near Tenbury, according to the Rev. Edward Whitehead.

O. apifera, Bee Orchis. One of the most beautiful and curious of the British Orchideæ, and well worthy the closest attention. In great abundance at Leigh Sinton, where Messrs. Walcot and Edmunds gathered upwards of 70 plants at once, within the compass of a few yards. In almost equal abundance on the travertine by the Spout Brook, at Eastham.—Mr. Lees. Also at Abberley, Cracombe, and Great Comberton, according to Mrs. Gardner, Purton, and Nash.

Neottia spiralis, Sweet Ladies' Traces. In Kemsey Grove. —Dr. Streeten. On the Common near Hunter's Hall, Little Malvern, and on the mound of Crookbarrow, near Worcester. —Mr. Lees.

Listera Nidus avis, Bird's-nest Orchis. In a coppice at Kemsey.—Dr. Streeten.

Epipactis latifolia, Broad-leaved Helleborine. In a place called the Dingle, at Pedmore, near Stourbridge, and in the deep shades of the Devil's Den, at Clifton-on-Teme.—Mr. Lees.

E. purpurata, Purple-leaved Helleborine. "Parasitical on the stump of a maple or hazel, in a wood near the Norris Farm, at Leigh Sinton, Worcestershire."—Rev. Dr. Abbot, in Smith's English Flora. No other botanist has met with it.

E. palustris, Marsh Helleborine. Marshy meadows, Robinson's Street, Malvern Chace.—Mr. Ballard.

E. grandiflora, Large White Helleborine. Mr. Knight's walks at Wolverley.—Dr. Stokes. Woods near Lee Castle, Wolverley.—Mr. Scott.

E. ensifolia, Sword-leaved White Helleborine. A magnificent plant when in perfection, and presenting a noble appearance with its long polished green leaves and pure white flowers. On the top of Abberley Hill.—Rev. T. Butt. In the deep retired glades of Bewdley Forest, between Mopson's Cross and the Sorb Tree.—Messrs. Walcot and Lees.

Aristolochia Clematitis, Birthwort. Springing up in great abundance among weeds and rubbish at the back of the garden of the large house in Foregate Street, lately occupied by Mrs. Pennethorne, and pulled down to make room for the new county courts, 1834. Pointed out by Captain Gordon, and possibly wild, as he suggests. Miss Rawlins found it at Chaddesley, near Kidderminster, according to Purton.

Euphorbia Lathyris, Caper Spurge. Crow's Nest Woods. —Dr. Streeten. Also by the road side there, but as a cottage has been demolished at the spot, it is to be feared the plant only exemplifies the remark of Goldsmith—

> "Near yonder copse, where *once* the garden smil'd,
> And *still* where many a garden flow'r *grows wild.*"

E. Characias, Red Shrubby Spurge. On Malvern Hills. —Dr. Withering.

Typha angustifolia, Lesser Cat's-tail. In a small pond on the Moors, Worcester, and in the pool at Ham Castle.—Mr. Lees.

Sparganium natans, Floating Bur-reed. Muddy pools near Cotheridge.—Mr. Walcot.

Carex pulicaris, Flea Carex. In a bog at the base of the Worcestershire Beacon, Malvern, and on other parts of the Hills.

C. stellulata, Little Prickly Carex. With the above.

C. remota, Remote Carex. In woods at the base of the Malvern Hills.

C. axillaris, Axillary Clustered Carex. Banks of Sapey Brook. In a bog at Wyre, near the Avon.

C. muricata, Greater Prickly Carex. Bredon Hill, &c.

C. pendula, Great Pendulous Carex. In great abundance in Wayman's Wood, Clifton-on-Teme. Also by a rill near Elmley Castle.—Mr. Lees.

C. Œderi, Spring by the road side near the turnpike beyond Great Malvern.—Dr. Streeten.

C. fulva, Tawney Carex. Cradley Park.—Scott.

C. distans, Loose Carex. Cradley Park.—Scott.

C. paniculata, Great Panicled Carex. Banks of the Stour; &c.

C. cæspitosa, Tufted Bog Carex. Upland, near Wichbury.—Scott.

C. vesicaria, Bladder Carex. Pool at Glasshampton, and at Ham Castle, with *Typha angustifolia*.—Mr. Lees.

C. ampullacea, Slender-beaked Bottle Carex. Banks of the Salwarp. Pool on the eastern side of Hartlebury Common.

Litorella lacustris, Plantain Shore-weed. Pensnet Reservoir, near Stourbridge.—Mr. Scott.

Sagittaria sagittifolia, Arrowhead. In the Avon, and its tributary streams.

Fagus Castanea, Sweet Chesnut. In Shrawley Wood, apparently wild.

Populus alba, White Poplar. At Alfrick, and in the vicinity of several brooks.

P. tremula, Aspen Poplar. Nunnery Wood, Malvern, Clifton-on-Teme, &c., not very uncommon.

Hydrocharis Morsus ranæ, Frog-bit. In a pool by the side of the New Road, Worcester. Also in several other ponds near Powick and Kemsey.

Juniperus communis, Common Juniper. Bear's-wood, Suckley. Cracombe Hill, &c.

Polypodium Dryopteris, Tender Three-branched Polypody. In considerable plenty among the loose stones occupying the glen between the North and End Hills, Malvern, pointed out by Mr. Salisbury. It soon, however, withers up.

P. calcareum, Rigid Three-branched Polypody. In the same vicinity according to Mr. Salisbury.

Aspidium Oreopteris, Heath Shield-fern. At the western base of the Worcestershire Beacon, Malvern.—Messrs. Walcot and Lees.

A. aculeatum, Prickly Shield-fern. Very abundant in the stony lanes about Suckley.

A. angulare, Angular-leaved Shield-fern. In the woods at Suckley and Leigh Sinton.

A. lobatum, Close-leaved Prickly Shield-fern. Growing magnificently in the shady dingles by the Spout Brook at Eastham.

A. spinulosum, Prickly-toothed Shield-fern. About Bromsgrove Lickey. Also at Blackstone Rock.

A. dilatatum, Broad Sharp-toothed Shield-fern. Abundant on the declivities of the Malvern Hills, and among moist thickets in the valleys below. Several varieties occur, varying much in size. Also at the base of Bromsgrove Lickey, and on Blackstone Rocks.

A. Filix fœmina, Female Shield-fern. In abundance round the springs of the Malvern Hills, especially in the glens at the base. St. Catherine's Well, Sapey.

A. irriguum, Brook Shield-fern. In the bog at the base of the Worcestershire Beacon, Malvern.

Cystea fragilis, Brittle Bladder-fern. In the neighbourhood of Bromsgrove—Mr. Maund.

Asplenium viride, Green Maidenhair Spleenwort. Rare. Found by the late Mr. T. B. Stretch growing on Ham Bridge, near Clifton. It is, however, eradicated, for some improver, to decorate the spot, has plastered a coat of whitewash over every part of the bridge.

A. Ruta muraria, Wall-rue Spleenwort. On an old wall bounding the "Dark Alley," near the cathedral. Also on walls at Martley, and other places.

A. Adiantum nigrum, Black Maidenhair Spleenwort. On the rocks of the Malvern Hills, abundantly, though small. In shady lanes on the west side of Worcester, and at Kemsey, growing very luxuriantly. With variegated fronds on Rosebury Rock.

Scolopendrium vulgare, Common Hart's-tongue. Not uncommon in moist places. Found by Mr. Lewis, at Hanley, with fronds upwards of two feet in length. Mr. Walcot has specimens with the frond divided into several lobes, growing at Cotheridge.

S. Ceterach, Scaly Hart's-tongue. Rare in this county. On Malvern Abbey Church. Walls at Badsey.

Blechnum boreale, Northern Hard-fern. In Bewdley Forest, on Bromsgrove Lickey, Stagbury Hill, in Shrawley Wood, and at the base of the Malvern Range.

Osmunda regalis, Flowering Fern. On Moseley Wake Green.—Withering.

Botrychum Lunaria, Moonwort. North side of Bredon Hill.—Nash. "On coal-pit banks, near Stourbridge."—Mr. Waldron Hill.

Ophioglossum vulgatum, Adder's Tongue. Base of Rowley Hills.—Scott.

Lycopodium clavatum, Common Club-moss. Rare. Whittington Common.—Scott.

L. inundatum, Marsh Club-moss. In the large bog on Hartlebury Common.—Mr. Lees.

Equisetum fluviatile, Great Water Horse-tail. Boggy glen near Crookbarrow. Also at Alfrick, Malvern, &c.

E. palustre, Marsh Horsetail. Hartlebury Common, bog at Wyre, &c.

E.

MINERAL PRODUCTIONS

OF

Worcestershire,

WITH THEIR ECONOMICAL USES.

Granite.—Found in massive rocks only, on the Malvern Hills, in this county. Its use is circumscribed to the foundations of buildings, walls, &c. The constituents of Granite, Hornblende, Felspar, Quartz and Mica, in numerous varied masses occur along the whole range. Augite, Epidote, Steatite, Asbestos, and Sulphate of Barytes, are also met with in veins and fissures.

Grauwacké.—The grits and sandstones of this formation are scarcely used for any other purpose than that of mending the roads, though the lower beds furnish a stone used in foundations.

Limestone.—This is abundant along the transition line, coloured dark green in the geological map. It is quarried at Mathon, Suckley, Leigh Sinton, Martley, and Abberley. The quarries at Dudley are well known. Limestone of the Lias formation occurs at Broughton Hackett and Cracombe. Mrs. Perrott observes that the lime made from this stone is "extremely good, and chiefly employed to manure and lighten the land at the foot of the hill."

Coal.—The great Coal formation of Staffordshire extends to Dudley and the Lye, near Stourbridge, in this county. Numerous iron-works and furnaces are consequently established here, and the existence of the Stourbridge clay, also, which is subordinate to the coal, and is celebrated throughout the world, has led to the establishment of glass manufactories to a great extent. Besides the coal above indicated, coal for-

mations occur at Mamble and Pensax. This latter is principally used in the hop and lime kilns.

Basalt.—Part of the Rowley Basaltic Range is in this county. It occurs also near Shatterford, and on the western flank of the Abberley Range.

Sandstone.—As will appear on examining the map, a great part of Worcestershire consists of red marl and sandstone. Scott observes that "the vast sand rocks which border the spacious channel of the Severn, above the town of Bridgnorth, furnish, together with their accompanying woodlands, scenery of the most magnificent description." The Blackstone Rocks, below Bewdley, are almost equally romantic, and at Redstone, below Stourport, habitations are excavated out of the rocks as dwellings.

The red sandstone has been long used in Worcestershire as a building material, though it proves a most friable one, and the erosion its surface displays is strongly marked upon the south side of Worcester Cathedral. Some of the lower beds, however, contain a good white sandstone, easily worked, and not exhibiting such speedy signs of decay. A quarry of this variety is worked at Ombersley. The old red sandstone is, however, a far more durable material than the new, being of a much harder consistence. It occurs in the neighbourhood of Tenbury, and at Lower Sapey. The new red sandstone presents various substances in its beds that deserve enumeration.

Salt.—In the lower beds of the new red sandstone are the Brine Springs of Droitwich, and Rock Salt is found at Stoke Prior, near Bromsgrove.

Gypsum.—This substance, called also Alabaster, occurs in the Marl above the Salt, and is employed in making plaster of Paris.

Red Marl.—This upper stratum of the sandstone is often carted into farm yards for the purpose of keeping them dry.

Sand.—Several varieties, differing in colour and fineness,

occur in beds and cavities. The common sand is employed in the making of cement, and a fine stratum found near Stourbridge is used in the manufacture of glass. Mr. Scott observes—"Projecting into the parish of Pedmore is a very capacious mine of sand, the property of the trust of Foley's Hospital. The produce of this stratum is of different qualities, of a yellow tinge, of the nature of drift, suitable to several processes of the iron manufacture, as founding, puddling, &c."

Clay.—Various clays occur, often alternating with sand, and even isolated beds of clay in the midst of the sand. Brick-works are established in various parts.

Lias.—The blue clays of this formation have often tempted speculators to a vain search for coal. Being impervious to water, it is however advantageously used for lining fishponds.

Calcareous Flagstone.—This subordinate stratum of the Lias is found at Littleton, and is almost invaluable as a paving stone for streets, yards, kitchens, &c.

Oolite.—This stone is employed for enclosing at Bredon Hill, whose summit it constitutes. It has been also used as a building stone.

Productions of the Gravel Beds.—The deposits of gravel scattered so profusely over the red sandstone are generally referred to the diluvial catastrophe; but as De la Beche observes, these transported materials, often referred to one epoch, may belong to several. In some instances, as in the case of the Lickey Quartz, the rounded pebbles may be traced to adjacent formations, but for the most part they seem to have travelled considerable distances. The following substances have been found constituting the materials of our gravel beds.

1. *Granite.* In pebbles of various sizes and varieties. Different from the Malvern granite.
2. *Quartz*, of numerous varieties.
3. *Basalt.*
4. *Jasper.* Fine specimens are not uncommon.

5. *Cornelian and Chalcedony.* Rather rare. Mr. Scott mentions that the former is found in the sand quarries at Iverley, "in pebbles resembling globules of ice, some of sufficient lustre to use in jewellery."

6. *Agate.*

7. *Lydian Stone.* "This smooth, shining black-stone, the touch-stone of the ancients," is, as Mr. Scott observes, pretty generally diffused.

8. *Limestone.* Numerous varieties. Mr. Scott found 30, presenting as many different marbles when polished, near Stourbridge. Specimens of clear white marble have been found at Iverley, and in Britannia Square, Worcester.

9. *Ironstone.* Various sizes and shapes.

10. *Carbonate of Copper.* In the gravel bed at Holt.

11. *Ochre,* red and yellow. In most of the gravel beds. Used for making colouring, and a coarse paint.

12. *Porphyry.* The source of this may be traced to the Clent Hills.

13. *Breccia, or Pudding Stone.* In rounded pebbles, some of great size, on Bromsgrove Lickey.

14. *Chalk.* Occurs very rarely in these deposits, but is met with in the gravel beds upon the lias near Bredon.

15. *Flint, or pure Silex.* Is found throughout the district, tinged with various colouring matters.

The above list comprises only the principal ingredients of the gravel beds. They require, however, still further examination, which will doubtless repay the attentive observer; and it is to be hoped that the Geological Committee of the Society will from this imperfect detail be stimulated to renewed efforts for the advantage of the Society.

FINIS.

Printed by E. Lees, Broad Street, Worcester.

THE

ADDRESS

OF THE

COUNCIL

OF THE

Worcestershire Natural History Society,

DELIVERED

AT THEIR FIRST

ANNIVERSARY MEETING,

On Friday, May 16th, 1834,

BY

ROBERT J. N. STREETEN, M. D.

Worcester,
1834.

ADDRESS.

The Council of the Worcestershire Natural History Society in presenting the General Statement of their proceedings during the past year, are desirous, upon the present occasion, of calling the attention of the Members to the more immediate objects of the Society, in order that, by a comparison of what has been effected with the original views entertained at the formation of the Institution, some judgment may be formed how far the Council have fulfilled the important duties entrusted to them.

The primary objects of the Society, as appears from the proceedings of the Meeting held in April 1833, at which it was constituted, and of the subsequent one in July last, at which the laws and general regulations were adopted, the Council conceive to be—first, the obtaining a knowledge of the natural productions of our own county—secondly, the disseminating a taste for the pursuits of Natural History amongst the community at large—and thirdly, the contributing towards the advancement of the several branches of which Natural Science consists, by recording such facts and observations presented to our notice as may appear worthy of preservation.

In order to effect these objects, the Society at the outset resolved upon the formation of a Museum and Library, illustrative of the various departments of the Science, and appointed separate Committees upon Statistics, Zoology, Botany, Geology and Mineralogy, and Meteorology, to collect information upon these several subjects—and as a more especial means of contributing towards the dissemination of the knowledge of Natural History, they resolved, upon the recommendation of the Committee appointed to draw up the rules and regulations, that Lectures should be given upon such subjects as were calculated to promote their views in this respect.

The Council now beg leave to submit in detail what has been done towards the accomplishment of these several objects—and first they proceed to call the attention of the Society to the

MUSEUM.

It is with feelings of the highest gratification that they point out the extent at which this valuable department has already arrived. To the activity of several members of the Society, and to the munificent donations of others, the Museum in each of its departments is indebted for numerous and valuable specimens. In that of Zoology the Council would especially point to the beautiful collection of birds, chiefly Worcestershire, a large portion of which was presented by Sir Christopher Smith, Bart., the respected President of the Society, and for the

remainder of which they are indebted to the liberality of Mrs. George Perrott, of Fladbury, the Rev. A. B. Lechmere, E. Morris, Esq., F. Marston, Esq., of Aston, Salop, J. Lewis, Esq., of Hanley, Mr. Isaac Pemberton, H. W. Wheeler, Esq., of Newnham Court, Mr. E. Ditcher, of Alscot, Salop, Mr. W. Twinberrow, J. Farley Turner, Esq., Denham Cookes, Esq., of Bentley Lodge, Mr. Joseph Twinberrow, Miss Ditcher, of Wheathill, Salop, Rev. J. R. Brown, of Presteign, and Arndell Sparkes, Esq., of Bridgenorth. Numerous specimens in other branches of Zoology, will also be found in the Museum, which have been presented by Edward Holland, Esq., of Dumbleton, Mr. Jabez Allies, Mr. Sayer, E. W. Wilmore, Esq., Sir Charles Throckmorton, Bart., Mr. John Evans, the Hon. Secretary, J. Greening, Esq., Rev. Mr. Philpotts, of Hallow, Mrs. G. Perrott, W. H. Darby, Esq., James Lewis, Esq., John Walcot, Esq., and E. H. Lechmere, Esq.; and especially three cases of serpents and other reptiles, the splendid donation of Sir Thomas Phillipps, Bart.

The season for collecting plants was too far advanced to enable the Committee appointed to the department of Botany to accomplish much in the way of procuring and preparing specimens for this part of the Museum; but to the indefatigable exertions of the Honorary Curator, Mr. Lees, the Society is indebted for a considerable number of dried plants, many of which are highly interesting on account of their beauty and rarity; and it is by the donations of this gentleman and Mr. Walcot, alone, that the

Herbarium of the Society is already enriched with upwards of 300 of our native plants. A collection of mosses from the Malvern Hills has been recently added by Mr. Vareme.

In the departments of Geology and Mineralogy will be found numerous specimens of rocks, fossils, and minerals, including also collections of various formations in the county, and of the Geology of particular districts. These have been obtained, partly through the exertions of the Geological Committee, and partly through the kindness of several gentlemen who have taken a warm interest in the pursuits of the Society. Among the specimens illustrative of the Geology of certain formations and districts, the Council are desirous of calling the especial attention of the Society to the series from the Abberley Range, presented by the Rev. T. Pearson, of Great Witley, and to that of the lias and oolite formations, the donation of Hugh Strickland, Esq., of Cracombe House, as they are illustrative of valuable papers descriptive of the rocks from which they have been obtained. Other series of specimens illustrative of the Geology of parts of this and the adjoining counties have been presented by Dr. Hastings, from Derbyshire; by Thomas Mead, Esq., of Chateley Lodge, Bath, from the Somerset coal basin; by Mr. Jabez Allies, from the Storage and Ankerdine Hills; by E. Morris, Esq., and W. Addison, Esq., of Malvern, from the Malvern Range. In addition to which there are several valuable collections of fossils from the limestone formations, and

other interesting geological and mineralogical specimens from J. Walcot, Esq., Dr. Lloyd, of Ludlow, Thomas Mead, Esq., Dr. Davis, of Presteign, Mr. Jabez Allies, Mrs. G. Perrott, Ormus Biddulph, Esq., of Ledbury, Omwell Lloyd, Esq., O. B. Cooper, Esq., Rev. W. Parker, of Great Comberton, Hugh Strickland, Esq., J. Lewis, Esq., Mr. J. Proctor, of Leintwardine, Captain Pilcher, Dr. Feild, Mr. John Evans, Mr. Lees, Miss Fox, Mr. Edward Allies, J. Allen Stokes, Esq., of Harvington, C. Kilpin, Esq., C. H. Hebb, Esq., Mr. W. D. Lingham, and J. Greening, Esq. And amongst the specimens presented by these gentlemen, many of the animal remains are worthy of close examination and study, and the Council feel called upon to point out the fossil elephant's tusk, and the bones of the rhinoceros, presented by Mr. Walcot; the bones of the hippopotamus, by Messrs. Strickland, O. B. Cooper, and Allen Stokes; and a molar tooth of an elephant, the donation of the latter gentleman, as deserving, in connection with the alluvial deposits in which they were found, of attentive investigation from all who take an interest in geological pursuits.

LIBRARY.

The expences connected with the formation of the Institution, and especially those which the necessity of providing cases for the reception of the Museum, has entailed, have necessarily much limited the Council in their orders for books, and the library is not

therefore in so efficient and flourishing a state as could be wished. Still, however, it already boasts of several very valuable works. Among these stand preeminent the State Records, amounting to upwards of 70 vols. folio, the information contained in which is intimately connected with the department of Statistics, and still more with that of Archæology, to which as being of such high importance, the Council are desirous the attention of the present Meeting should be turned. For this highly valuable work, of which a limited number of copies has been printed, and only for especial distribution, the Society is indebted to the munificence of Sir Thomas Phillipps.

To Captain Winnington the Society is indebted for another work in the same department of Science, the Population Returns, according to the last Census, in 3 vols. folio. In addition to these we have Loudon's Magazine of Natural History, from the commencement, presented by Dr. Nash; various works on Zoology, by Mr. Holl, Mr. W. Redding, Mr. H. Moore, Mr. E. Newman, and Miss Lovett, of Claines; in Botany by Mr. B. Maund, Mrs. Fermor, and Mrs. Holyoake; and in Geology by Dr. Hastings and Mr. Evans; together with several periodicals and other works purchased at the recommendation of the respective Committees.

Proceedings of Committees.

The Council now beg leave to present a Statement of the proceedings of the several Committees, which

they trust will prove satisfactory. The Society, however, will recollect that from various causes considerable difficulties have been encountered by some of these Committees in commencing their operations, and that, therefore, the progress made during the first year has necessarily been slow.

I. The Committee on Statistics, in consequence of the wish that their researches should be carried on in unison with similar researches contemplated in other parts of the kingdom, have not as yet commenced their operations further than by opening a correspondence with the Society lately formed in London for the cultivation of this important branch of Science. In no department of investigation is unity of purpose more essential than in statistical enquiries, and the Committee have therefore determined to wait the result of the expected communication from the Secretary to the London Society, previous to commencing their own investigations. When this shall have arrived, they propose to carry on their enquiries so as to afford every assistance to those which will be made on a grand scale throughout the kingdom, at the same time that it will be their endeavour to obtain such additional and local information as they may consider to be of use to the general purposes of the Natural History Society. But although as a body they have not as yet made much progress, the Council beg to draw the attention of the Meeting to the valuable information collected by Dr. Hastings, one of the Members of this Committee, upon this subject. This

information has already been laid before the Society, and will shortly be before the public also, when the Introductory Lecture of that gentleman issues from the press.

II. The Zoological Committee since its formation have assiduously employed themselves in the fulfilment of the duties assigned to them, in which they have been ably assisted by several Members of the Society. To Mrs. G. Perrott, of the Chantry, near Fladbury, and to Mr. Jabez Allies, the Council are especially indebted for the valuable papers and specimens which they have at various times communicated to this Committee.

The Cases containing a rare and interesting collection of serpents and lizards, and their allies, which have been presented to the Society's Museum by Sir Thomas Phillipps, require careful investigation, and will demand an attentive study for some time, as the papers to which their numbers refer have unfortunately been lost. The Committee hope, however, ultimately to name them according to the latest classification.

A small number of crania have been deposited in the Museum, which the Council are very desirous of encreasing, as it is of the utmost importance that the Zoological Committee should be enabled to proceed in their osteological researches with every possible advantage, the system of the great expounder of Zoology (the lamented Cuvier), according to which it is proposed to arrange the collection of Mammalia when this department of the Museum is in a more

forward state, being founded on the osseous structure.

In the cause of Entomology the Committee hope to engage a few enterprizing Collectors in various parts of the county, with the view of obtaining a complete collection of British Insects, and to this object they will zealously devote their energies during the present year. The Council feel assured that an abundant harvest will be reaped in this extensive field of Science, and that every exertion will be made by the Zoological Committee in the developement of that branch of the study of Natural History which they are called upon to elucidate.

III. The Council beg to observe that the Committee of Botany have laboured under considerable difficulties, partly, as has been before remarked, from the advanced state of the season at which they commenced their labours, and partly from the circumstance that while other departments of the Museum have been enriched by numerous and valuable donations, that of Botany has been almost forgotten. Notwithstanding these disadvantages, however, the Committee have zealously occupied themselves in naming and arranging the plants presented by Mr. Lees and Mr. Walcot; while some of the Members have occupied themselves during the winter season in collecting and arranging for the Museum, some of the cryptogamous plants of this vicinity. The Council trust that the present season will greatly enlarge the Society's Herbarium, and that the Committee will find full employment in the study and

arrangement of the specimens which through the exertions of the cultivators of this interesting Science will, they doubt not, be transmitted to them. It is to be regretted that no perfect Flora of this county exists, but through the activity of the gentlemen already on this Committee, with the assistance of specimens procured from every part of the county, it is to be hoped that measures will shortly be taken to supply the deficiency.

IV. The Geological Committee have entered upon their labours with a task of no ordinary magnitude before them, but by the zeal and energy of the Secretary of this Committee, aided by the enterprize of the Members, much has been already achieved. With the view of abridging the labour of the investigation, these gentlemen divided the county into districts, to each of which they attached one of their own body, soliciting at the same time the aid of all who were likely to assist in the promotion of their objects. This plan has proved eminently successful in the elucidation of very valuable information.

The district of the Malvern Range, chiefly consisting of rocks of the primitive formation, which was allotted to Mr. Morris, has been minutely examined by that gentleman, and the results of his investigations have already, in part, been communicated to the Society, in his very interesting Lecture upon the Science of Geology.

The strata, from Martley, on the south, to Ribbesford, extending north-east, in a range of eighteen miles in length, including the Abberley Hills, has

been ably investigated by the Rev. T. Pearson, and the results communicated to the Council in an admirable paper, accompanied by illustrative specimens, which it is intended to lay before the Society, upon the present occasion. Mr. Allies and Mr. Lees have conjointly examined the grauwacke and limestone hills from Mathon to the Old Storage, and from thence to Knightwick. Numerous specimens of these rocks have been deposited by Mr. Allies in the Museum, and the Council are led to expect from the known perseverance and talents of these gentlemen, that a communication of the facts observed will shortly be laid before them.

The Pensax coal-field has been ably described by Mr. Pearson, in the paper already adverted to; and the examination of the coal-measures of Dudley, and the basalt of the Rowley Hills, has been undertaken by Dr. Feild. That gentleman has presented specimens of these interesting formations, which the Council trust he will further illustrate by a paper detailing his researches.

The investigation of the lias and oolite series of Bredon Hill and its vicinity, undertaken by H. Strickland, Esq., has already been laid before the Society; while the extensive red marl formations were described at considerable length in the Lecture delivered by Dr. Hastings.

The discovery of remains of extinct animals, particularly of the hippopotamus recently found in the gravel at Cropthorne, and presented to the Society, has induced the Geological Committee to carry on the

search in that neighbourhood. These investigations are now in progress, and the Committee are assisted in these interesting researches by the advice of Edward Holland, Esq., of Dumbleton, and Mr. Allen Stokes; and it is not improbable that important discoveries may result.

V. The labours of the Meteorological Committee have as yet been for the most part confined to the necessary arrangements, a long series of investigations being requisite previous to the obtaining of valuable results. The interesting observations of Mr. Addison, transmitted to the Council, have, however, been laid before the Society, and Mr. Lees will upon the present occasion favour the Society with a communication upon the subject.

LECTURES.

The Lectures delivered to the Members and Friends of the Society were intended in the first place, especially to disseminate a taste for the pursuits of Natural History, and secondly, to give such information respecting these pursuits as was necessary to enable the admirers of Nature to enter into the investigation of the subjects before them with advantage. In the Report of the Committee appointed to draw up the Rules and Regulations of the Society, at its first formation, one of the clauses is as follows.—"That taking into consideration the importance of the Science of Natural History, as a whole, and the close and intimate connection of its several branches,

either directly or indirectly, with almost every subject which conduces to the welfare of the human race; and, at the same time, regretting the want of information which prevails, respecting not only the scientific details, but also the more obvious applications of the Science to purposes of practical utility; the Committee have made arrangements for the delivery of a series of Lectures, in the autumnal months, to the Members of the Society, and to which it is proposed that the public also shall be admitted under regulations hereafter to be determined."

This recommendation of the Committee was approved of, and unanimously adopted by the Society, at the General Meeting, in July, and the Council, then first elected, were by an express resolution directed to take measures for carrying it into operation.

Dr. Hastings kindly undertook to give the Introductory Lecture; and several other gentlemen, desirous of forwarding the progress of the Society, agreed to deliver in succession a series of Lectures on subjects connected with the Science. The Lecture of Dr. Hastings, which, at the request of the Council, has been printed, and will be shortly before the Society and the public, formed a general sketch of the field of operations before us:—that of Dr. Malden, who followed next in succession, was upon the Natural History of Man. The Lecture of Mr. Lees, which has also been published, was connected partly with Zoology, partly with Botany:—that delivered by Mr. Addison, was upon Meteorology;

while those delivered in the second series by Mr. Morris and Dr. Streeten, were respectively upon subjects belonging to Geology and Botany. Interspersed with these, a Course of Lectures upon the Earlier Stages of the History of the Germans, rich in statistical details, was delivered by Mr. Walter.

It is not for the Council to pass an opinion upon the manner in which any of those gentlemen who have favoured the Society by complying with their wishes, and coming before the public at their request, achieved the task assigned them; but they may be allowed to appeal to the crowded rooms and the great attention paid by the highly respectable and intelligent audience upon these occasions, that the efforts made were equally in accordance with the views of the Society, and with the taste and good sense of the community in general. It formed no part of the plan of the Council to dictate to any gentleman as to what should be the subject of his Lecture. The high scientific and literary attainments of these gentlemen would have rendered such a proceeding as unreasonable as it was unnecessary. Still, however, the Council are much gratified to be able to state that each one of the departments of their Science has received a portion of attention, and has had its claims to consideration brought before the public.

The very interesting statistical details especially connected with our county brought forward by Dr. Hastings, in the Introductory Lecture to which allusion has already been made; the ingenious and

eloquent speculations of Dr. Malden, upon many of the peculiarities both of form and structure of our race; and the historical details of the habits and customs of the German Tribes, who may be considered as the immediate progenitors of the inhabitants of our native soil, entered into by Mr. Walter, will afford abundant evidence that the branch of Statistics, whether as relating to ourselves, to our forefathers, or to our species, has not been neglected.

The Council are desirous of taking this opportunity of directing the attention of the Society to the importance of Natural Science; for whether we search the annals of our own immediate times, as preserved in the daily records of our parishes, townships, and other local authorities, for evidences of the existing state of the human race, or whether we scrutinize the chronicles of the days that are gone, and without this we can never know whether our state is one of advancement or the reverse,—still we have the same object in view, the knowledge of the Science of Man, and in the practical application of that knowledge, the improvement of the condition of all around us.

The Zoology of the county, as well as the Botany and Geology, has received considerable illustration in the admirable Introductory Lecture before alluded to, and the very curious and interesting details into which Mr. Lees entered in his Lecture upon the Affinities of Plants with Man and Animals, will scarcely have been listened to without exciting some desire on the part of the audience to become better

acquainted with the objects to which the Lecturer called their attention.

Many interesting facts connected with the elegant and truly delightful Science of Botany, were brought forward in the same Lecture, as well as in that delivered by Dr. Streeten, in the second series.

Geology received ample illustration in the Lecture given by Mr. Morris, both in the theoretical and practical details of the Science, and the interest with which the sketch of the Geology of the Malvern Range was listened to, and the many valuable papers connected with this subject which have been laid before the Council, sufficiently evince that this field of research will not prove a barren one to the Society.

Mr. Addison, in taking the subject of Meteorology, and conducting the Society rapidly through the curious details of that branch of the proceedings of the Natural World, filled up the plan of operations; the Lectures delivered before the Society thus affording information respecting each department of Natural History for the investigation of which Committees have been especially appointed.

The Council trust that another arrangement which they have felt themselves called upon to make, in the discharge of the office to which they were elected, will meet with the approbation of the Society. It soon became apparent to them, as it must necessarily to every person at all acquainted with the Science of Natural History, that without some knowledge of Chemistry many of the most interest-

ing facts in Zoology and Botany must remain obscure, and that the Sciences of Geology, Mineralogy, and Meteorology, would be altogether unintelligible. So strongly indeed does this impression seem to have been felt by the gentleman who favoured the Society with a Lecture upon Geology, that he occupied a considerable portion of his Lecture with a concise and rapid sketch of the first principles of Chemical Science. To remedy this deficiency, therefore, and to place the Members and Friends of the Society in such a situation, as should enable them hereafter to comprehend without difficulty those details of the several branches of Natural History which require a knowledge of Chemistry for their illustration, the Council thought, and they trust correctly, that a Course of Lectures upon Chemistry, illustrated by appropriate experiments, would prove acceptable to the Society. They therefore gladly availed themselves of Dr. Thomson's liberal offer of assistance, and trust that the Society will cordially acknowledge their debt of gratitude to that gentleman for his very interesting experimental Course of Lectures upon that elegant and instructive Science.

Communications.

It now only remains for the Council to state the arrangements which have been made with respect to the communications and papers laid before them.

In this early state of the Society it was scarcely to have been expected that much progress could be made in this respect; for though the materials are at hand, the observers are to be stimulated to action, and in many instances the faculty of observation and the taste for its employment alike to be developed. Notwithstanding these difficulties, however, the Council have the gratification of directing the attention of the Society to the original and highly interesting observations and researches of Mr. Addison, of Malvern, Mr. Jabez Allies, the Rev. T. Pearson, Mrs. G. Perrott, Mr. Strickland, of Cracombe House, and other Members. Some of these communications have already been read at an Evening Meeting of the Society, convened for that purpose, others it is intended to lay before the present Meeting, while it is hoped that the Society will upon future occasions be favoured with the papers and observations, not only of those Members who have already shewn themselves to be zealous cultivators of the field of science, but also of others to whom the same wide field of research has hitherto been an unfrequented if not a barren soil.

BUILDING.

The extent to which the Museum and Library have already attained, and the crowded state of the Lectures, render it necessary to contemplate at no distant

period, a more enlarged accommodation than the premises now occupied by the Society afford. A Committee has been formed therefore by some active Members of the Society, to induce the noblemen and gentlemen of the county and city, either to take shares in a building to be erected for this and other purposes of public utility, or to contribute by donations towards the funds necessary for carrying the plan into execution. Notwithstanding the shortness of the period which has elapsed since the formation of that Committee, the Council have the gratification of announcing to the present Meeting that several noblemen and gentlemen have subscribed liberally to the fund now raising for this purpose, and that many £50 shares have been disposed of. Among the donations is the sum of £50 from the noble Patron of the Society, Lord Lyttelton; Earl Coventry, and Earl Beauchamp have contributed £25 each; Dr. Bennet Garlike £20; Lord Ward, Lord Foley, Hon. Col. Lygon, and the Mayor £10 each; and several donations of £5, and smaller sums, have also been received. These are examples which it is hoped will be speedily followed by other noblemen and gentlemen connected with this county, and taking an interest in its welfare.

In conclusion, the Council, before resigning their office to their successors, are desirous of expressing their grateful acknowledgements to the Society and the public for the assistance and support which has upon all occasions been rendered them; and they

congratulate the Society and the county upon the distinguished progress which has been made in the establishment of so truly valuable an Institution.

PROCEEDINGS

OF THE

FIRST ANNIVERSARY MEETING

OF THE

Worcestershire Natural History Society.

The Meeting was held at the Guildhall, Worcester, on Friday morning, May 16th, 1834, the Members of the Society having previously met in the Council Chamber, and elected their President, Officers, and Council for the ensuing year. About one o'clock, upwards of 600 ladies and gentlemen being present, the President, EDWARD HOLLAND, Esq., of Dumbleton, took the Chair, and opened the Meeting. DR. STREETEN then read the Address of the Council. After which, upon the motion of MAJOR MARTIN, of Ham Court, seconded by HUGH STRICKLAND, Esq., of Cracombe House, it was resolved that the Address should be printed, and appended to the Introductory Lecture delivered by Dr. Hastings.

The following papers were then read—

I. On the geological structure of the Abberley Hills, illustrated by specimens of the rocks, by the Rev. Thomas Pearson, of Great Witley.

II. Observations on Ornithology, and the Variations of the Seasons, illustrated by ornithological preparations from the Museum, and by drawings from the portfolio of the author, Mrs. G. Perrott, of Fladbury; read by Omwell Lloyd, Esq.

III. On some striking Meteorological Phenomena lately observed in this county, accompanied by illustrative sketches, by Mr. E. Lees, of Worcester.

It was then moved by Arthur Skey, Esq., of Spring Grove, seconded by Edward Morris, Esq., and resolved unanimously, that the thanks of the Meeting be given to the authors of the communications which had just been read.

The Chairman having announced the names of the Officers and Council for the ensuing year, it was resolved,

On the motion of the Rev. T. Pearson, seconded by Dr. Hastings, that the cordial thanks of the Society be given to Sir Christopher Sidney Smith, Bart., President, to Mr. John Evans, Hon. Secretary, to Mr. Edwin Lees, Hon. Curator, and to the other gentlemen composing the Council for the past year, for the efficient manner in which they have conducted the affairs of the Society.

On the motion of the Rev. H. J. Hastings, of Arely, seconded by Mr. John Evans, that the thanks of the Meeting be given to the Mayor for the use of the Guildhall.

Resolved, on the motion of Dr. Beale Cooper, of Evesham, seconded by John Allen Stokes, Esq., of Harvington, that the thanks of the Meeting be presented to Edward Holland, Esq., for his attention to the proceedings of the day.

COUNCIL

OF THE

Worcestershire Natural History Society,

FOR 1834-5.

Rt. Hon. LORD LYTTELTON, Lord Lieutenant of the County, PATRON.

EDWARD HOLLAND, Esq., PRESIDENT.

Sir CHRISTOPHER S. SMITH, Bart., VICE PRESIDENT.

Mr. JOHN EVANS, HON. SECRETARY.

Mr. EDWIN LEES, HON. CURATOR.

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JAMES P. SHEPPARD, Esq.
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HUGH STRICKLAND, Esq.
Mr. HARVEY B. TYMBS.
JOHN WALCOT, Esq.
Mr. F. WALTER, F. R. S. L.

The following Gentlemen have been nominated on the several Committees for the present Year.

Statistics.

Sir C. S. SMITH, Bart.
C. HASTINGS, M. D.
R. J. N. STREETEN, M. D.
E. HOLLAND, Esq.
Sir T. PHILLIPPS, Bart.
C. HANFORD, Esq.
A. SKEY, Esq.
THOMAS CARDEN, Esq.
T. BEALE COOPER, M. D.
Rev. THOMAS PEARSON.
C. CARTWRIGHT, Esq.
W. H. RICKETTS, Esq.

Dr. STREETEN, Secretary.

Zoology.

Sir C. S. SMITH, Bart.	THOMAS CARDEN, Esq.
A. SKEY, Esq.	J. J. FEILD, M. D.
O. J. LLOYD, Esq.	Mr. W. HOLL.
E. HOLLAND, Esq.	J. WALCOT, Esq.
J. GREENING, Esq.	Mr. E. LEES.
Mr. H. LONG.	Mr. J. ALLEN STOKES.

Mr. HOLL, Secretary.

Botany.

R. J. N. STREETEN, M. D.	Mr. W. TWINBERROW.
JAMES NASH, M. D.	E. MORRIS, Esq.
JOHN WILLIAMS, Esq.	J. WALCOT, Esq.
W. ADDISON, Esq.	Mr. I. PEMBERTON.
Mr. B. MAUND.	Mr. J. NOTT,
OSWALD B. COOPER, Esq.	Mr.E . LEES.

Mr. LEES, Secretary.

Geology.

JABEZ ALLIES, Esq.	O. J. LLOYD, Esq.
JOHN WILLIAMS, Esq.	E. MORRIS, Esq.
T. BEALE COOPER, M. D.	Mr. E. LEES.
C. HASTINGS, M. D.	Mr. J. A. STOKES.
E. HOLLAND, Esq.	HUGH STRICKLAND, Esq.
J. J. FEILD, M. D.	Rev. THOMAS PEARSON.

Mr. MORRIS, Secretary.

Meteorology.

JOHN WILLIAMS, Esq.	Mr. W. REDDING.
C. HASTINGS, M. D.	W. ADDISON, Esq.
J. LEWIS, Esq.	G. ALLIES, Esq.
R. J. N. STREETEN, M. D.	Mr. E. LEES.

Mr. LEES, Secretary.

Printed by E. Lees, Broad Street, Worcester.

WORCESTERSHIRE

NATURAL HISTORY SOCIETY,

ESTABLISHED MARCH 1833.

PATRON.

The Right Hon. Lord Lyttelton, Lord Lieutenant of the County

PRESIDENT.

Edward Holland, Esq., Dumbleton.

SUBSCRIBERS.

(Those marked with an Asterisk are Members of the Council.)

*Addison, Mr. Wm. F.L.S., Great Malvern
*Allies, Mr. Jabez, Catherine Villa
*Allies, Mr. George, Bath-road
Adlington, Rev. John, Worcester
Allcroft, Mr. J. M., Bath-road
Bright, Robert, Esq., Bristol
Burraston, Rev. George, Lark Crescent
Berkeley, Mrs., Cotheridge Court
Berkeley, Robert, Esq., Spetchley
Belson, Miss, Baskerville House (two guineas per annum)
Brown, Rev. J. R., Presteign
Bradley, Mrs. John, London-road
Bradley, Mr. John, Broad-street
Bennett, Mr. R., High-street
Best, Miss M. A., Foregate-street
Bund, Major, Wick House
Blayney, Thos. Esq., The Lodge, near Evesham
Barneby, Thos., Esq., Worcester
Barneby, Wm., Esq., Worcester
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*Holland, Edward, Esq., Dumbleton
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Hill, Mr. John, Greenhill-place
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Howell, Mr. John, Bridge-street
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Ivens, Mr. John, Cross
Isaac, J. W., Esq., Henwick House
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Johnson, Major, Foregate-street
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Kent, Mr. B. G., Ditto
Kilpin, Mr. Chas., Tything
Kershaw, Rev. G. W., St. Nicholas
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*Lingham, Mr. W. D., Broad-street
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Oastler, Mr. Richard, Severn Terrace

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*Pemberton, Mr. Isaac, Broad-street
Peel, Rev. John, Waresley House (five guineas per annum)
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Parker, Rev. William, Little Comberton
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Perrott, Miss, Barbourne
Parsons, Mrs., Albany-road
Perrott, Mrs. Charlotte, L. E., The Chantry, Fladbury
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Page, Miss, Rose Hill
*Parker, Mr. John, Worcester
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Pidcock, Mr. Charles, Sansome-place
Payne, Miss, Bromwich
Peell, Miss, Thorniloe
Pumphrey, Miss S., Rainbow Hill
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Ricketts, Mr. Martin, Droitwich
Ricketts, W. H., Esq., Droitwich
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Rowlands, Mr. John, Albany-road
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DONATIONS.*

Holland, Edward, Esq., Dumbleton	£25	0	0
Turley, Mr. E. A., St. John's	10	0	0
Dent, W., Esq., Foregate-street	10	0	0
Darby, W. H., Esq., King's Hill	2	2	0
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Best, Miss M. A., Foregate-street	1	0	0

* Lord Lyttelton's donation of 50*l.*, and those of other Noblemen and Gentlemen, to the Building Fund of the Society, are not here included.

LIST OF BOOKS, SPECIMENS, &c.

Presented to the Society in 1833.

*** The following include only a portion of the principal Donations to the Society; the whole will be hereafter detailed in the Catalogues of the Museum.

A case containing 150 British Birds and Quadrupeds, from Sir C. S. Smith, Bart. President of the Society.

Three cases containing upwards of 130 beautiful specimens of the Serpent Tribe, a variety of Turtles, Tortoises, and Lizards, and several specimens in British Ornithology, from Sir Thomas Phillipps, Bart. F. R. S., &c.

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A variety of Fossils from the grauwacke and transition limestone, Aymestry, Herefordshire, from Dr. Davis, of Presteign.

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A series of specimens from the Malvern Hills, and adjacent strata, from W. Addison, Esq., F.L.S.

Specimens of the Transition Limestone at Ledbury, and its attendant Fossils, from Ormus Biddulph, Esq. Ledbury.

Series from the Abberley range of Hills, in illustration of a paper on the Geology of Abberley, from the Rev. Thomas Pearson, Rector of Great Witley.

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