PROCEEDINGS

OF THE

Bournemouth Natural Science Society

Vol. 1.

SESSION 1908-09.


BRITISH MUSEUM
NATURAL HISTORY

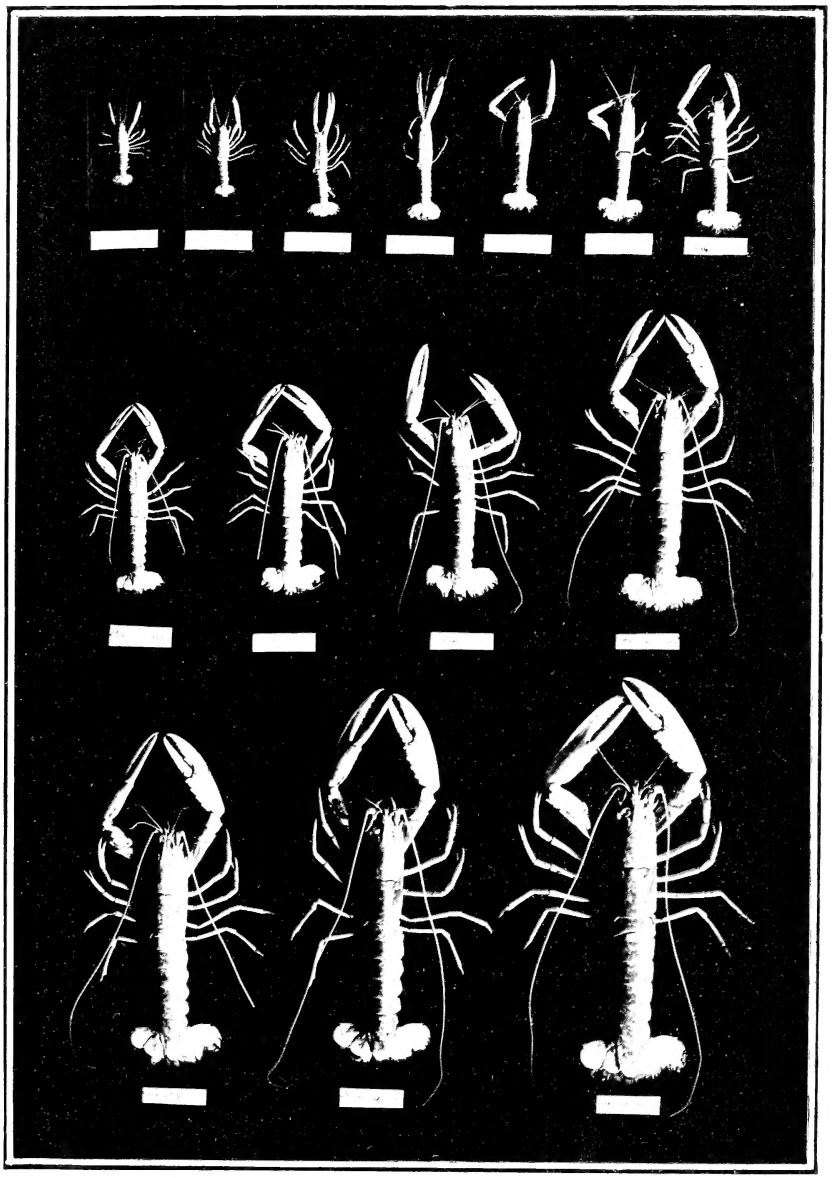

PLATE I.

Ecdyses of a Lobster over a period of three years.
Reared by H. J. Waddington, Esq., F.L.S.

PROCEEDINGS OF THE

Bournemouth Natural Science Society.

- - VOL. 1. - -

SESSION 1908-09.

PUBLISHED BY THE SOCIETY AT THEIR ROOMS,
GRANVILLE CHAMBERS, BOURNEMOUTH, 1909.

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CONTENTS.

ILLUSTRATIONS.

Introductory.

THE BOURNEMOUTH NATURAL SCIENCE SOCIETY was founded in 1904, being the successor to an older society which became defunct in 1897. Its objects are the promotion of Science in all its branches, by means of Lectures, Field Meetings, the Reading and Discussion of Papers, and the formation of Sections of its members devoted to any particular branch of the Society's work.

The Sections at present working are eight in number;— **Archæological** and **Historical, Botanical, Geographical, Geological, Microscopical, Photographical, Physical**, and **Zoological.**

During the WINTER SESSION, from October to April, two GENERAL MEETINGS are usually held in each month, comprising Lectures and Demonstrations on various subjects of scientific interest, illustrated by lantern slides, diagrams, or specimens. These meetings are held in Trinity Hall, Lorne Park, or in THE SOCIETY'S ROOMS, GRANVILLE CHAMBERS, RICHMOND HILL, on Saturday, at 4.30 p.m.

The SECTIONAL MEETINGS are held at Granville Chambers on Thursdays and Saturdays, at 4.30 p.m., each Section being allotted one monthly meeting. At these, the papers are more specialized and technical than the General Lectures.

During the SUMMER SESSION, GENERAL EXCURSIONS to places of interest in the neighbourhood are arranged once in each month, usually on Wednesdays. SECTIONAL EXCURSIONS also take place, one in each week, on Wednesdays or Saturdays.

The management of the Society is vested in a Committee, which is elected at the Annual General Meeting, held in October.

The Members are elected by the Committee, and pay an annual subscription of Ten Shillings for full membership (admitting to all meetings and excursions for the year), or Seven Shillings and Sixpence in the case of those who do not desire to attend Sectional Meetings or Sectional Excursions. Visitors to Bournemouth are permitted to join for the Winter or Summer Sessions on payment of Five Shillings, if approved by the Executive Committee.

The Society is endeavouring to lay the foundation of a MUSEUM, by acquiring collections of archæological, botanical, conchological, geological, and other specimens of scientific interest, which are being arranged, and are open to the inspection of members, at Granville Chambers.

A MONTHLY NOTICE, giving full particulars of all meetings, etc., is posted to every member at the beginning of each month, and an Annual Report or Volume of Proceedings is published every year.

Application Forms for Membership, and further particulars, can be obtained from the Hon. Secretaries of the Society:—

Dr. J. R. L. DIXON,
Sherbrook,
Christchurch Road,
Bournemouth.

COLONEL MARKWICK, C.B., F.R.A.S.,
Innisfallen,
Campbell Road,
Boscombe.

December, 1909.

Bournemouth Natural Science Society.

OFFICERS AND COMMITTEE FOR 1909-10.

President:

DR. A. SMITH-WOODWARD, LL.D., F.R.S., F.L.S., F.G.S.
Director of the Geological Department, British Museum.

Vice-Presidents:

G. BROWNEN, ESQ., F.C.S.
DR. CRALLAN, M.A., M.B.
J. E. LIDDIARD, ESQ., F.R.G.S., M.N.G.S. of U.S.A., M.J.S.
THE REV. E. F. LINTON, M.A.
DR. A. RANSOME, M.A., F.R.S.
MISS C. AGNES ROOPER.
DR. A. W. THOMAS.
DR. J. ROBERTS THOMSON, J.P.
H. J. WADDINGTON, ESQ., F.L.S.

Chairman of Committee:

DR. WILLIAM T. ORD.

Chairmen of Sections:

Archæological and Historical: G. BROWNEN, ESQ., F.C.S.
Botanical: MISS C. AGNES ROOPER.
Geographical: J. E. LIDDIARD, ESQ., F.R.G.S., etc.
Geological: DR. W. T. ORD.
Microscopical: DR. J. R. L. DIXON.
Photographical: C. J. HANKINSON, ESQ., J.P.
Physical: HUBERT PAINTER, ESQ., B.SC., F.C.S.
Zoological: DR. A. W. THOMAS.

Committee:

THE OFFICERS (ex-officio) and

H. BACKHOUSE, ESQ.
S. WHITTY CHANDLER, ESQ., B.A.
W. PARKINSON CURTIS, ESQ.
H. LE JEUNE, ESQ.
J. H. SCOTT, ESQ., M.E.
R. V. SHERRING, ESQ., F.L.S.
G. M. STUBBS, ESQ.
H. B. WELLS, ESQ.

Hon. Secretaries:

DR. J. R. L. DIXON, Sherbrook, Christchurch Road.
COL. E. E. MARKWICK, C.B., F.R.A.S., Innisfallen, Campbell Road.

Hon. Treasurer:

G. BRUMELL, ESQ., A.R.I.B.A.

Hon. Librarian:

A. SCOTT, ESQ., B.A.

Hon. Auditors:

H. SUTTON, ESQ.
E. BICKER, ESQ.

Bankers:

NATIONAL PROVINCIAL BANK OF ENGLAND, BOURNEMOUTH.

Annual Meeting.

THE Annual Meeting for 1908 was held in the Cairns' Memorial House, St. Peter's Road, on Saturday, October 31st, at 4.30 p.m., the President (Dr. Arthur Ransome, M.A., F.R.S.) in the chair).

The Minutes of the previous Annual Meeting were read and confirmed. The Committee's Report for the past year was read and adopted.

The Chairmen of Sections reported the progress made by their respective Sections during the past year, the details appearing in the last Annual Report.

In the absence of the Hon. Treasurer (A. D. George, Esq.), Dr. Ord read the Balance Sheet. This showed a deficit of £2 5s. 4d. Dr. Ord stated that a much larger amount of work had been done this year, causing extra expense; that the Sectional Meetings were trebled this year, and that the Sectional subscriptions did not cover the cost of the Sectional meetings. The Balance Sheet was passed.

The re-election of the President (Dr. Arthur Ransome, M.A., F.R.S.), was proposed by Dr. Crallan and seconded by H. J. Waddington, Esq., F.L.S. This was carried unanimously.

The Committee's recommendations for the vacant offices were also carried. They were as follows:—

G. Brownen, Esq., F.C.S., to be Chairman of the Archæological and Historical Section, vice Dr. Thomas, resigned;

C. J. Hankinson, Esq., J.P., to be Chairman of Photographical Section, vice R. Y. Banks, Esq., resigned;

Dr. Thomas to be Chairman of the Zoological Section, vice Dr. Crallan, resigned;

James E. Liddiard, Esq., F.R.G.S., to be Chairman of the newly-formed Geographical Section;

G. Brumell, Esq., A.R.I.B.A., to be Hon. Treasurer, vice A. D. George, Esq., resigned;

Col. E. E. Markwick, C.B., F.R.A.S., to be Co-Secretary, vice H. Backhouse, Esq., resigned; and

H. Backhouse, Esq., A. Scott, Esq., B.A., J. H. Scott, Esq., M.E., and R. V. Sherring, Esq., F.L.S., to fill vacancies on the Committee.

The proposed alteration of Rule 7 was considered and carried

A discussion arose regarding the admission of members of the Geographical and Historical Associations at a minimum charge of 2/6. It was decided to call a special meeting to consider this matter, and to make a suitable provision in the Rules to cover it.

It was announced that subsequent General Meetings of the Society would be held in Trinity Hall, Lorne Park.

The Hon. Secretary announced the forthcoming lectures.

Balance Sheet for year ending 30th September, 1909.

RECEIPTS.	£	s.	d.
By Balance in Bank	8	16	9
,, Members' subscriptions	105	10	9
,, Refund of amount overpaid to Y.M.C.A. ...	2	3	6
,, Contributions to Furnishing Fund ...	17	2	6
,, Contribution from Mr. Brownen towards Report		10	0
,, Refund from S. & D. Ry., per Mr. Sherring		15	4
,, Geographical Association, per Miss Rooper		4	0
,, Sale of prints of Hemsworth pavement ...		9	0
,,Refund of amounts paid out for Stud. Assn.	10	3	9
	£145	15	7

PAYMENTS.			£	s.	d.
To Rent, old premises at Mr. Thick's	16	10 0			
,, ,, Holy Trinity Hall ...	6	17 6			
,, ,, Granville Chambers ...	15	13 8			
			39	1	2
,, Caretaker's Wages			1	8	0
,, Stationery and Printing			32	8	11
,, Furnishing and Removal Expenses ..			21	18	4
,, Postages...			10	5	10
,, Contribution to cost of curtain, Trinity Hall			1	1	0
,, Share of cost of Agreement				17	0
,, S.E. Union of Scientific Societies ...				5	0
,, Insurance				2	6
,, Lantern Expenses			4	18	10
,, Sundries			2	8	2
,, Amounts paid out for Stud. Association ...			10	11	3
,, Balance at Bank			20	9	7
			£145	15	7

ASSETS.	£	s.	d.
By Subscription received since Sep, 30th ...		7	6
,, Subscriptions outstanding	1	15	0
,, Amount due from Stud. Assn. ..		7	6
,, Balance at Bank	20	9	7
	£22	19	7

LIABILITIES.	£	s.	d.
To Surplus over Liabilities	22	19	7
	£22	19	7

Examined with the Vouchers and Bank Book and Found Correct.

HERBERT SUTTON, *Auditor.*

G. BRUMELL, *Hon. Treasurer.*

Special General Meeting.

A Special General Meeting of the Society was held in Trinity Hall on Saturday, December 12th, 1908, at 5.45 p.m., to consider certain new rules and other alterations in rules recommended by the Committee; Dr. Ord in the chair.

A modification of the Committee's recommendation relative to Associate Members, proposed by A. Scott, Esq., B.A., and seconded by Dr. Crespi, was put to the meeting and carried. (*See* Rule 7—Associate Members).

The rule relating to Visitors was considered. Dr. Crespi proposed that any one visitor may be admitted three times during a Session. This was not seconded. A. Scott, Esq., B.A., proposed that a visitor may be introduced twice. This was seconded by Dr. Thomas and carried. (*See* Rule 8).

It was also agreed that the necessary alterations be made in the rules.

Committee's Report.

THE Committee have much pleasure in presenting the Sixth Annual Report, and in stating that the past year has surpassed all previous years in progress, and in the excellence of work done, and that many important events have occurred to increase the welfare and prosperity of the Society.

The membership has increased from 240 to 261.

The Annual Meeting was held on October 31st, 1908, Dr. Arthur Ransome, M.A., F.R.S., being re-elected President for the ensuing year. The new feature in the proceedings at the annual meeting was the presentation of reports from the Chairmen of Sections, reporting the work done and progress made by the respective Sections during the past year. It was also decided to increase the annual subscription to 7s. 6d. for ordinary meetings, to charge an extra 2s. 6d. for sectional meetings, and 15s. for family tickets. The Committee felt that the Society's progress was seriously limited by the smallness of the previous subscription, and it was a question of either curtailing the Society's work or increasing the subscription. The immense advance in the Society's work which has taken place during the past year has fully justified this increase.

It was decided to hold the general meetings and lectures of the Society in the Trinity Hall, Lorne Park, instead of at the Cairns Memorial House. This change also proved advantageous.

Another very important and beneficial change was also made. The Society vacated its room at 122, Old Christchurch Road, and took, in conjunction with the Bournemouth Students' Association, new and more commodious rooms at Granville Chambers, Richmond Hill, the Sectional meetings on and after February 11th being held in the new rooms. This change involved considerable expense (in moving, furnishing, &c., &c.), and a special fund was opened to cover the abnormal expenditure. The Committee wish to thank those members who generously contributed and enabled them to overcome this difficulty.

On the 23rd of March the Committee decided, in response to requests, to form a Microscopical Section, and Dr. Dixon was appointed Chairman.

On October 10th a lecture entitled "Early Intercourse between Egypt and the Ægean" was given by G. A. Wainwright, Esq., Member of the British School of Archæology in Egypt, and Associate of the British School of Archæology in Rome. During the remainder of the winter session the meetings were held in Trinity Hall, and the following general lectures were given:—

1908.

Oct. 31st.—Annual Meeting. Reports of Chairmen of Sections, &c., &c.

Nov. 14th.—Address by the President (Dr. Arthur Ransome, F.R.S), on "The Principle of the Storage of Force in Living Beings."

*Nov. 28th.—"Some Vanishing European Costumes," with remarks thereon, illustrated by 30—40 coloured lantern slides, by C. J. Hankinson, Esq., J.P.

*Dec. 12th.—"The Saving of Winchester Cathedral and other Historic Buildings," by Francis Cox, Esq., M. INST. C.E.

1909.

Jan. 16th.—"On Beginning the Study of Grasses," illustrated by large coloured and other diagrams, by growing grass plants, and a collection of dried specimens, by J. F. Rayner, Esq., of Southampton.

*Jan. 30th.—"Geology in Relation to Scenery in England," by H. St. Barbe, Esq., of Lymington.

*Feb. 13th.—"A Study of the Geology of the Isle of Purbeck," by Frederick Hovenden, Esq., F.L.S., F.G.S.

*Feb. 27th.—"Volcanoes and Their Action in the Mendip Area," by Major Alfred B. Trestrail, J.P., F.R.G.S., of Clevedon.

*Mar. 13th.—"Halley's Comet," by Col. E. E. Markwick, C.B., F.R.A.S.

Mar. 27th.—"Surnames in Relation to History," by Capt. G. R. Elwes, J.P.

*Mar. 27th.—"Pond Life," illustrated by lantern slides, by Dr. Dixon.

*April 17th.—"The Natives of Sarawak," by Charles Hose, Esq., F.R.G.S., F.Z.S., D.SC. (Cantab).

*May 1st.—"The Great Messinian Earthquake and its Geological Causes," by Dr. Ord.

* Lantern Lectures.

The Sectional Meetings held during the winter session are given in the "Proceedings" of the respective sections (*See* pages 44—59).

During the summer, General Excursions were arranged to the following places:—

May 19th.—To Maesbury Camp, Croscombe and Shepton Mallet.
June 16th.—A Tour through the New Forest.
July 7th.—An Excursion through the Hardy Country.
August 18th.—An Excursion to Romsey.
September 15th.—An Excursion to Glastonbury.

The General Excursions were all very successful and well attended.

Numerous Sectional Excursions were arranged during the summer. An account of these will be found under the headings of the respective sections.

The Geological and Botanical Collections continue to be added to, and the systematic arrangement of the Barton fossils is making excellent progress under the supervision of W. Parkinson Curtis, Esq., assisted by H. Le Jeune, Esq., and H. B. Wells, Esq.

The following presentations have been made to the Society, and the Committee wish to convey their best thanks to the donors :— A collection of 120 Paris Basin fossils and about 300 Barton fossils by R. V. Sherring, Esq., F.L.S. ; fossils from the Headon beds by Dr. Ord and H. Le Jeune, Esq., and other fossils by F. Ross Thompson, Esq., and A. Wickes, Esq., of Bristol; a conchological cabinet, with shell collection, by Dr. Crallan, and a shell collection by Miss Forrest; two magnificent specimens of Pinna gigantea by Mrs. Crallan ; a number of useful and interesting books by Dr. Thomas, Miss C. Agnes Rooper, A. Gray, Esq., and some interesting zoological specimens by H. J. Waddington, Esq., F.L.S. ; a roll-up lantern screen by R. Y. Banks, Esq., and a beautifully carved door-plate by A. Gray, Esq. The Committee are especially indebted to D. Chambers, Esq., of Southbourne, for specimens of great interest from the Celtic Camp which he discovered at Pokesdown.

The Committee desire also to thank the proprietors of the "Bournemouth Visitors' Directory" for the full accounts of the Society's meetings and excursions which they have kindly printed from week to week.

It was decided to issue the notices of Summer Excursions by Circulars once a month, and this arrangement has worked very satisfactorily.

James E. Liddiard, Esq., F.R.G.S., M.N.G.S. OF U.S.A., M.J.S., was appointed the Society's delegate to the British Association, and Dr. Ord was appointed the Society's delegate to the South Eastern Union of Scientific Societies' Congress at Winchester.

The Committee trust that members will do all they can to follow up the good work which has been done, so that the Society's increased prosperity may be well maintained.

List of Members.

(CORRECTED TO 30th NOVEMBER, 1909.)

* Honorary Members. † Past President.

A

Alcock, Miss Edith	St. Margaret's Hall, West Cliff Gardens
Alder, Mrs.	East Grove, Lymington
Alder, Miss Evelyn	,, ,,
Aldridge, Mrs.	Denewood, Alum Chine Road
Allday, J. L	Priory Lodge, Alumhurst Road
Allday, Mrs.	,, ,,
Allis-Smith, Miss E.	Martello Towers, Martello Road, Branksome Park
Anthony, H.	Crossways, Burtley Road, Southbourne
Archer, J. W.	Windlesham, Braidley Road
Archer, Mrs.	,, ,,
Aston, J. J.	Habberley, Hamilton Road
Atkins, Dr. F.	Cathay, Alumhurst Road
Atkins, Mrs.	,, ,,
Atkinson, Miss	Berwyn, Hamilton Road

B

Backhouse, H.	Yelland, McKinley Road
Backhouse, Mrs.	,, ,,
Bagshaw, Mrs.	Pemlin, Richmond Park Avenue
Bagshaw, Miss Marion	,, ,,
Bagshaw, Miss Phyllis	,, ,,
Bagshaw, Eric	,, ,,
Bandinel, J. J. F.	24, Church Road, Southbourne
Bandinel, Miss J. M.	,, ,,
Banks, Ald. R. Y.	Egerton, Portchester Road
Barker, C. T.	St. Peter's School
Barlow, E. W., F.R.A.S.,	Ditton Lodge, Stourwood, Bournemouth
Barrett, J. Hayes	The Nook, Dalkeith Steps
Barrett, Mrs.	,, ,,
Bartlett, H. F. D.	1, Myrtle Road, Richmond Park
Batley, Dr.	8, High Street, Christchurch
Beaumont, —	Elsmere, Sedgley Road
† Beale, Ald. J. E.	Bridge End, Parsonage Road
Bell, Miss R.	Clonmarron, Christchurch
Bell, Miss F. C.	,, ,,
Bell, T. G., M.D.	Poole Road, Branksome
Benison, F.	Aldborough House, Rosemount Road
Benison, Mrs.	,, ,,
Bennett, H. Morden	Manor Lodge, Manor Road
Bennett, Miss E. C.	Bonavista, Boscombe Spa Road
Bennett, G.	Sigwells, 20, Belle Vue Road, Southbourne
Beynon, The Rev. J. M.	Rosslyn, Crescent Road
Beynon, Mrs.	,, ,,
Beynon, Miss	,, ,,
Beynon, J. W. M.	,, ,,
Blackett, C. H.	Rosapenna, McKinley Road
Blackett, W. Eggleston	Blanchland, McKinley Road
Bond, Dr. Eleanor	St. John's Lodge, St. Swithun's Road
Boxer, Miss Violet	Firwood, Alum Chine
Braden, Miss	Knole Lodge, Knyveton Road

Brazier, J. J.	East Hill, Southcote Road
Bridger, Commd'r N. L., R.N.	Walton Leigh, Tower Road, Branksome Park
Brownen, G., F.C.S.	Talnas, Grove Road, Christchurch
Brownen, Mrs.	,, ,,
Brumell, G., A.R.I.B.A.	Maori, Richmond Park Avenue
Brumell, Mrs. G.	,, ,,
Buckland, Dr. F.	Moorland Court, Poole Road
Buckland, Miss	Temple Dinsley, Branksome Avenue
Bulfin, Ignatius, B.A.	The Den, Knole Road
Bulfin, Mrs.	,, ,,

C

Chaffey, J.	294, Wyndham Road
Chambers, D.	41, Seabourne Road, West Southbourne
Chandler, S. Whitty, B.A.	St. George's, Cecil Road, Boscombe
Chandler, Mrs. Whitty	,, ,,
Chapman, F. F.	Penrhyn, Argyle Road, Boscombe
Chapman, Miss	,, ,,
Cherry, J. L.	Spencer House, Constitution Hill, Parkstone
Chidell, Miss	Nairn, Suffolk Road
Chittenden, H.	Pinemore, 127, Richmond Park Road
Clements, Lieut.-Col. W. G., R.A.M.C.	The Hermitage, Southbourne
Coddington, E. F.	St. Frideswide, Southbourne Road
Coles, Dr. A. C.	York House, Poole Road
Cooke, F. I.	Kingsdown, Charminster Road
Cookson, Saml.	St. Kitts, Carysfort Road, Boscombe
Cooper, The Rev. Windle, M.A., F.R.G.S.	Bergen, Branksome Wood Road
Cooper, Mrs. J. Omer	Calcot, Westby Road, Boscombe
Cooper, J. Omer	,, ,,
Cowie, Dr.	Bonaccord, Westminster Road, Branksome Park
† Crallan, Dr.	The Elms, Parkstone
Crallan, Mrs.	,, ,,
Crespi, Dr.	Wimborne
Cundy, Mrs.	Shelley Grove, Boscombe
Curtis, W. Parkinson, F.E.S.	140, Old Christchurch Road

D

Dacombe, J. M. J.	27, Holdenhurst Road
Dance, George	Brackendene, Wimborne Road
Davenport, Miss C.	St. Clement's Vicarage, Bournemouth
Davy, Dr. Humphrey	Red House, Alumhurst Road
de Paiva, R. A.	San Remo, Carysfort Road
Dixon, Dr. J. R. L.	Sherbrook, Christchurch Road
Dodd, Dr.	Maybrook, Wimborne
Donkin, J., F.R.I.B.A.	Maywood, Christchurch Road
Donkin, Mrs.	,, ,,
Druitt, J.	Avebury, Madeira Road
Duka, Dr. A., D.S.O.	15, Grand Avenue, West Southbourne
Dunning, Mrs.	The Homestead, St. Clement's Road

E

Earle, Dr.	York House, Forest Road, Branksome Park
Elwes, Capt. G. R., J.P.	Bossington, Knyveton Road
Evans, Miss	Moordown Girls' School

Evans, P.	Saugeen, Derby Road
Evens, T., M. INST. C.E.	The Pobbles, Southwood Avenue, Stourwood
Evens, Mrs.	,, ,,

F

Firbank, Miss	280, Old Christchurch Road
Fraser-Hird, The Rev. F., M.A.	Eaglehurst, Parkwood Road
Frean, G. M.	Cranicombe, Branksome Avenue
French, J. M.	12, Wharncliffe Road, Boscombe
Fry, Miss	Fontainebleau, Manor Road

G

Galpin, G.	Clarendon Court, Clarendon Road
Gaman, Miss, c/o Mrs. Jeremy	Whalley Range, Portarlington Road
Gardner, Dr. W. T.	Netherhall, Poole Road
Gardner, William Temple	Alexandra Road, Parkstone
Gibbs, Miss E. M.	Thorpe, Watkin Road, Boscombe
Gibbs, Miss M. C.	,, ,,
Goodall, T. B., F.R.C.V.S., F.L.S.	Purewell Cross, Christchurch
Gould, Miss E.	Frome Billet, Howard Road
Gould, Miss M.	,, ,,
Graham, F. A.	21, Beaulieu Road
Gray, A.	Woodville, Melville Road, Winton
Gray, Miss Parker	Collegiate School for Girls, Poole Road
Green, The Rev. E. P., M.A.	Shirley, St. Clement's Road
Guest, —	St. Paul's School
Guy, Miss	,, ,,

H

Hall, J. T.	Highmoor, Ipswich Road
Hall, Maxwell	,, ,,
Handley, Rev. S. B.	Copthorne, Winton
Hankinson, C. J., J.P.	Eastbury, Surrey Road
Harding, Miss	Alma Road Council School
Hawker, Miss	11, Lansdowne Road
Hayllar, J., J.P.	Redholme, Cambridge Road
Hayllar, Miss	,, ,,
Heaton, Guy, M.A.	St David's, West Cliff Road
Heywood, Col. J. M.	Sutherland Hall, South Cliff
Hill, S. McCalmont, D.C.L.	The Priory, Argyle Road, Boscombe
Hinton, Miss	Welcombe, Argyle Road
Hollins, J. C.	Mitford, Pembroke Road
Holmes, Mrs.	Brackenwood, Southern Road, Stourwood
Hose, Charles, F.R.G.S., F.Z.S., D. SC. CANTAB.	Marudi, Queen's Park Road
Hovenden, F., F.L.S., F.G.S.	Glenlea, Thornton Park Road, West Dulwich, S.E.
Hughes, D.	Meran, Wellington Road
Hughes, W.	Beaufort, Hengist Road
Hughes, Miss	,, ,,
Hughes, Miss M.	,, ,,

I

Ibbett, F. W.	Central Education Offices, Yelverton Road

J

Jacob, A. H., M.A., M. INST. C.E.	Glenelg, Westbourne Park Road
Jennings, Miss Catherine E.	Edenhurst, Sandbanks Road, Parkstone
Jeremy, Mrs.	Whalley Range, Portarlington Road
Jeremy, Dr. Mary	4, Richmond Hill
Jermyn, F. L.	Danny Corner, Stirling Road
Jones, W.	254, Old Christchurch Road
Jones, W.	Council School, Boscombe

K

Kaye, Wm. J.	Birk House, Wollstonecraft Road, Boscombe

L

Langley-Smith, W.	Alumhurst Tower, Alumhurst Road
Langley-Smith, Miss	,, ,,
Le Jeune, H.	St. Ives, Ashley Road, Parkstone
Lewis, Miss E.	Sherbrook, Christchurch Road
* Liddiard, J. E., F.R.G.S.	Rodborough Grange, West Cliff Road
Liddiard, Mrs.	,, ,,
Lilley, W.	St. Agatha's, Owls Road, Boscombe
Lilley, Mrs	,, ,,
* Linton, The Rev. E. F., M.A.	Edmondsham, Salisbury
Lucas, Arthur	Croftmoor, Dean Park Road
Lupton, Miss	Bollingbroke, Knole Road
Lyon, C.	Shalimar, Wilderton Road, Branksome Park
Lyon, Mrs.	,, ,,

M

Mackay, Miss	St. Andrew's School, Malmesbury Park
Mahood, Dr.	38, Churchill Road, Boscombe
Mahood, Mrs.	,, ,,
Markwick, Col. E. E., C.B., F.R.A.S.	Innisfallen, Campbell Road, Boscombe
Mate, Ald. C. H.	Elim, Surrey Road
Maude, W. C.	Brackenwood, Gervis Road
May, Mrs.	15, Burnaby Road, Alum Chine
May, Miss B.	,, ,,
McBean, Miss S.	Froebelheim School, Lowther Road
Michell, T.	Trewirgie, Wellington Road
Middleton, The Rev. W.	Birdlip, Lansdowne Road
Moon, P. G. G., F.C.S.	Hill Croft, Alexandra Road, Parkstone
Moorhead, Dr.	Imperial Hotel
* Morris, Sir Daniel, K.C.M.G., M.A., F.L.S.	Inglewood, Hawkwood Road
Moss, Miss	The Grange, Westby Road, Boscombe

N

Neale, J.	Sunnymead, Castlemain Road
Nethercoate, Mrs.	217, Holdenhurst Road
Neve, Miss	Merridale, Westby Road
Nunn, Dr.	King's Park Road

O

Odell, F. E.	Brampton, Alumhurst Road
Ord, Dr.	Greensted, Madeira Road
Ord, Mrs.	,, ,,
Ord, Miss	,, ,,
Oswald, The Rev. H. M., M.A.	Eaglehurst, Bodorgan Road

P

Painter, Hubert, B. SC., F.C.S.	29, Talbot Road, Winton
Painter, Mrs.	,, ,,
Parish, Miss	Bentley Lodge, Hengist Road
Pearce, Miss	Kempstone, Chine Crescent
Pechell, Sir A. Brooke	5, Surrey Road South, Bournemouth
Pechell, Miss	,, ,,
Petrie, E.	Chatsfield House, Boscombe Spa Road Boscombe
Phillips, Miss	St. Ambrose School
Pontifex, Mrs. R. D.	High Peak, West Cliff Road
Prince, Miss	Mont Bletton, Carysfort Road, Boscombe
Price, Miss	The Mount, Branksome Wood Road

Q

Quilliam, Miss E.	Stratton, West Cliff Road

R

† Ransome, Dr. A., M.A., F.R.S.	Sunnyhurst, Dean Park Road
Ransome, Miss	,, ,,
* Rayner, J. F.	Ivy Bank, Highfield, Southampton
Reeves, Miss	Northiam, McKinley Road
Rix, Miss	Wychwood, West Southbourne
Rockstro, Dr.	92, Richmond Park Road
Rogers-Barns, Miss	Bevois Cottage, King's Park Road
Rooper, Miss C. Agnes	Pen Selwood, Gervis Road
Ross, Col. W. H.	Ambleside, Dean Park Road
Rudkin, Miss F.	Ivel Cottage, Hamilton Road, Boscombe
Rumsby, Walter S.	Winchester House, Bournemouth
Rutherford, C. R.	South Dene, Groveley Road

S

Sandell, J. W.	Wilts and Dorset Bank, Boscombe
Scattergood, —	Alma Road Council School
Scott, A., B.A.	Stanley House, Buchanan Avenue
Scott, J. H., M.E., M.I.M.C.E.	Ardrossan, Sedgley Road, Winton
Scott, W. H., M.A.	Hendall, Westminster Road, Branksome Park
Scott, Miss M.	,, ,,
Scott, Miss Stanley	38, Churchill Road, Boscombe
Sedgfield, Miss C. B.	Hartmoor, Alumdale Road
Serpell, E. Wilson	Loughtonhurst, West Cliff
Sherring, R. V., F.L.S.	Kildare, Norwich Avenue
Sherring, Miss	,, ,,
Slade, Mrs. J. Hayter	Whinthorpe, Parkstone
Slade, Miss Doris	,, ,,
Slade, Miss Margery	,, ,,
Slade, Miss Joan	,, ,,
Spencer, J. F.	Glen Thorn, Richmond Park Road
Stevens, T., F.R.I.B.A.	Richmond Chambers

Stevenson, E. A.	Northwood, Windermere Road
Stokes, R.	Laverstock, Cliff Road, Boscombe
Strachan, Mrs.	Burley, Tregonwell Road
Stubbs, G. M.	Broomwood, Westbourne Park Road
Sturdy, Miss V.	The Wick, Burton Road, Branksome Park
Sutton, H.	Ravenshall, Chine Crescent Road.
Sutton, Mrs.	,, ,,
Sutton, K. H. M.	,, ,,
Sutton, Miss C. E. M.	,, ,,
Swallow, E.	Westridge, Sandbanks, Parkstone
Sworn, Mrs.	Normanville, Lansdowne Road
Sydenham, D.	Pier Approach
Symonds, Mrs.	Taynton Grange, Portarlington Road

T

Tallant, Miss A.	Gablehurst, Kingsbridge Road, Parkstone
Thomas, Dr. A. W.	Carmelita, Crabton Close Road, Boscombe
Thomas, T. Gordon	Wychwood, Braidley Road
Thompson, The Rev, G., M.A.	Highbury, Bodorgan Road
Thomson, Dr. J. Roberts, J.P.	Monkchester, Manor Road
Toozs, J. W. L.	Broadhayes, Dean Park Road
Trapnell, A.	Great Chalfield, Wollstonecraft Road
Trapnell, Mrs.	,, ,,

V

Vernon, Dr. A. H.	1, The Crescent, Boscombe

W

† Waddington, H. J., F.L.S.	Moreton, Snowdon Road
Waddington, Mrs.	,, ,,
* Wallace, Dr. Alfred Russel, O.M.	Broadstone, Dorset
Warr, Miss Ada	Cottesmore, Pokesdown Hill
Waters, A. W., F.L.S., F.G.S.	Alderley, McKinley Road
Waters, Mrs.	,, ,,
Webster, The Rev. T.	Danescourt, Fairfield, Christchurch
Welby, The Rev. A.	Englefield, Groveley Road, West Bournemouth
Wells, H. B.	Stalham, Studland Road
Wood, Samuel, F.C.A., M. INST. G.E.	Beverley, Grand Avenue, West Southbourne
Woodall, W. H.	Manor House, Lytchett Matravers, Poole
Woodhouse, W. J., A.C.P.	Mayhill, Chatsworth Road
Woodward, Dr. A. Smith, LL.D., F.R.S., F.L.S., F.G.S.	British Museum, Cromwell Road, s.w.
Woollacott, J. Christopher	Solent View, Belle Vue Road, Southbourne
Wright, The Rev. F. Russell	Mountside, Westbourne Park Road

Y

Yates, R. P.	Wood Manton, Wellington Road
Yates, T. A.	,, ,,
Yates, Miss Ione	,, ,,
Yates, Miss Isabel	,, ,,

RULES OF THE

Bournemouth Natural Science Society.

Amended to 30th October, 1909.

1.—The title of the Society shall be THE BOURNEMOUTH NATURAL SCIENCE SOCIETY. Title

2.—The objects of the Society shall be the promotion of the study of Science in all its branches, by means of Lectures, Field Meetings, the Reading and Discussion of Papers, and the formation of Sections of its members devoted to any particular branch of the Society's work, or by any other means that the governing body of the Society shall deem advisable. Objects

3.—The Society shall encourage the making of reports on any plant, animal, or object of interest, and where the Society may deem it necessary, take such steps as may be advised to secure any such plant, animal, or object of interest from injury, extinction or destruction.

4.—The Society shall consist of Ordinary, Life, Associate, and Honorary Members. Members

5.—The Ordinary, Life, and Associate Members of the Society shall be proposed by an existing Member, and seconded by another existing Member, and notice shall be sent to one of the Secretaries of the Society of the name and address of the nominee, and the names of the proposer and seconder. Any such proposed new Member shall be voted for at the next ensuing Committee Meeting, and if two-thirds of the Committee present and voting shall vote for the proposed new member, such candidate shall become a Member upon payment of the Annual Subscription, and shall receive a card of membership (not transferable) entitling him or her to attend the Meetings of the Society. Members joining during the last two months of the Summer Session shall be given a card of membership to September 30th of the following year.

6.—Ordinary Members shall pay an Annual Subscription of Seven Shillings and Sixpence, due on the first day of October in each year. An additional Sectional Subscription of Two Shillings and Sixpence is charged to cover admission to the Meetings and Excursions of the Sections. The Annual Subscription for members of the same family, not exceeding four, and residing in the same house shall be Fifteen Shillings, each Member being elected in the usual manner, and each receiving a Card of Membership. Ordinary Members

The Subscription for Life Members shall be Five Guineas. Any Ordinary Member who shall have commuted his Subscription, as provided for in this Rule, shall become a Life Member, but shall not by reason thereof have any different rights from those of an Ordinary Member. Life Members

7.—Associate Members are those who by payment of an Annual Subscription of Two Shillings and Sixpence are entitled to attend all the Ordinary Meetings and Excursions of the Society. They also have the privilege of joining any one particular Section they may select at the time of their election, or at the commencement of each Session, their choice being notified by them to the Hon. Treasurer. The following are entitled to become Associate Members, on election by the Committee:— Associate Members

(*a*) Teachers in schools who are still engaged in the active duties of their profession.

(*b*) Persons who in the opinion of the Committee, although unable to pay the fee for full membership, are by their acknowledged scientific tastes or attainments, likely to prove useful working Members of the Society.

On further payment of the usual Sectional Subscription of Two Shillings and Sixpence, Associate Members may join all the Sections. Associate Members shall have no power of voting on the affairs of the Society, or of holding office.

Visitors

8.—Any Visitors introduced by a Member or producing a Member's card, may be admitted to any Lecture of the Society on entering their names and that of the introducing Member in the Society's Visitor's Book. Such privilege not to be acceded more than twice to any one person in each Session.

On the recommendation of the Standing Sub-Committee, Visitors to Bournemouth desirous of attending the Meetings of the Society may obtain a ticket of admission for the winter at a charge of Five Shillings. Visitors for the summer may be permitted to join the Excursions of the Society at the same charge. Applications to be made to the Hon. Treasurer.

Honorary Members

9.—Honorary Members shall consist of any distinguished men of Science, or any persons who may render any special service to the Society. Such Honorary Members shall be proposed and elected in the same way as Ordinary Members.

10.—Any Members whose subscriptions are unpaid at the end of the financial year (September 30th), on notice to that effect in writing having been given to them by the Hon. Treasurer, shall be reported to the Committee, who shall have the power of removing their names from the list of Members.

11.—Resignations should be in writing, and addressed to one of the Hon. Secretaries, and until such are received by them, Members remain liable for their subscriptions.

12.—The power of expulsion of a Member from the Society for objectionable conduct shall be vested in a General Meeting of the Society, provided the Committee has caused special notice to be given on the circular convening the Meeting, and that two-thirds of those present and voting agree thereto.

Officers

13.—The Officers of the Society shall consist of two or more Vice-Presidents, the Chairmen of Sections, an Honorary Treasurer, an Honorary Librarian, and one or more Honorary Secretaries.

14.—There shall be a Committee of the Society, consisting of the Officers and eight Members, who shall be elected at the Annual General Meeting. The Committee shall have the general management of the Society. At all Meetings of the Committee, five shall form a quorum. The Committee shall elect their own Chairman for the year, and shall have power to fill up any vacancies in their number which may occur from time to time. The Chairman at all Meetings of the Committee shall have an original and a casting vote.

15.—The Committee shall arrange for all Lectures, Papers, Demonstrations, and Exhibitions of Specimens, etc., at the Ordinary Meetings of the Society, and shall decide upon all General Field Meetings and Excursions. They shall have power to form any Section or Sub-section,

to consist of not less than six members, for the study of any special subject which the Committee may deem within the scope of the Society's work. They shall also have power to appoint the Chairman of any such Section or Sub-section.

16.—The Committee shall have the control of the funds of the Society.

17.—Any Member of the Committee, other than Ex-officio Members, who shall have failed to attend half the number of Meetings of the Committee in any one year, provided that such non-attendance be not caused by illness or absence abroad, shall not be eligible for re-election, except by desire of the Members present at the Annual Meeting.

The President

18.—The President need not necessarily be selected from Members of the Society, and shall be elected annually. He shall deliver an Address at as early a date in the Winter Session as can be arranged.

Vice-Presidents.

19.—Any Member of the Society who, in the opinion of the Committee, shall have rendered distinguished service to Science or to the Society, shall be eligible for election as a Vice-President.

20.—Each of the Vice-Presidents in rotation shall be requested to act as Chairman at the Ordinary Meetings of the Society.

Sectional Meetings

21.—The Chairmen of any Sections or Sub-Sections appointed by the Committee under Rule 15, shall form a Sub-Committee to arrange for the Sectional Meetings and Excursions, and shall meet for this purpose at least twice in each year. Each Sectional Chairman shall be responsible for the issuing of Notices of Meetings and Excursions to the Members of his Section, and shall submit accounts of costs incurred by him to the Hon. Treasurer, after each Meeting or Excursion, who shall lay the same before the General Committee at their next ensuing Meeting.

22.—A book for each Section shall be provided by the Hon. Secretaries to be kept at the Society's Room, each Chairman of Section to enter therein an account of each Meeting, with number of Members attending, and notes of any matters of interest observed or discussed. Such book to be presented at each Meeting of the General Committee. Every Chairman of Section shall report as to the work of his Section at the Annual Meeting of the Society.

Secretaries

23.—The Honorary Secretaries shall perform all the usual secretarial work; shall keep minutes of all Committee Meetings, and the Annual General Meeting, and a synopsis of all Ordinary Meetings. They shall cause a programme of each Ordinary Meeting to be sent to every Member seven days at least before each such Meeting. They shall make all preparations for carrying out all Ordinary Meetings and General Excursions, at which they shall receive from each Member his or her share of the day's expenses, and therefrom defray all costs of the Meeting. Any surplus of such collection shall go to the General Fund, and any deficit be defrayed out of that fund. They shall keep an account of all out-of-pocket expenses incurred in arranging Meetings and otherwise. They shall give notice of their election to all new Members. They shall furnish a copy of the Annual Report to all Members who have paid their subscription, to Honorary Members, and to any such Scientific Societies as the Committee may from time to time appoint to receive them.

Treasurer

24.—The Honorary Treasurer shall have the custody of the General Funds of the Society. He shall prepare a Financial Statement at the end of each Financial Year to be presented to the General Committee at the Meeting next preceding the Annual General Meeting. He shall receive

and acknowledge all Subscriptions, and shall issue tickets of Membership to all persons who are duly elected and have paid their Subscriptions. He shall, when possible, attend Field Meetings and assist the Honorary Secretaries. He shall bring before the General Committee any accounts that are due for payment. After presentation of the Balance Sheet to the General Committee, he shall submit it to the Auditors, and lastly to the Annual General Meeting of the Society.

25.—At the Annual General Meeting and at all Ordinary Meetings of the Society, not less than ten Members shall form a quorum.

26.—At the Annual General Meeting, which shall be held in the month of October, the President, Officers and Committee of the Society, and two Auditors, for the ensuing year shall be elected (either Auditor having the power to audit the accounts in the unavoidable absence of the other). At this Meeting the Committee's Report of the past year, together with those of the Chairmen of Sections, and the Hon. Treasurer's statement of acccounts, duly signed by the Auditors, shall be submitted.

27.—Alterations in the Rules shall be sanctioned by a majority of not less than two-thirds of the Members present and voting at the Annual Meeting, or at a Special Meeting called for that purpose, and no alterations shall otherwise be made.

28.—Notice convening an Annual or Special General Meeting together with any proposed alterations in the Rules, shall be given to Members at least seven clear days before such Meeting be held. The notice of Ordinary Meetings, and Committee Meetings if possible, shall be at least seven clear days.

29.—On a written requisition, signed by at least five Members of the Society, the Committee shall call a Special General Meeting to consider any question as to the affairs of the Society; such Meeting to be called within three weeks of the receipt of the requisition, and at least seven days' notice shall be given to the Members. At such Meeting no other business than that mentioned on the requisition, and on the notice convening such Meeting shall be considered.

Some Notes on the History of the Bournemouth Society of Natural Science and its Successor.

By Col. E. E. Markwick, c.b., f.r.a.s.

As our Society is now launching its first volume of proceedings, an important epoch to all its supporters, this seems a fitting time and place in which to give a brief account of the previously existing local scientific society. The task has been very much facilitated by an inspection of the minute book of the old Society, which has been courteously lent for the purpose by Mr. Bilson, a former secretary. This book contains not only records of the purely "business" transactions of the Society, but also brief accounts, principally in the shape of newspaper cuttings, of nearly all the lectures delivered and papers read before, as well as excursions made by the Society.

The older Society appears to have been formed, or started, on the 24th January, 1883, when a meeting was held in Bournemouth at which "it was decided to make the attempt to establish a Society for the promotion of Natural Science in the town of Bournemouth." There were present "the following gentlemen only—the night being wet—The Rev. Nehemiah Curnock, Messrs. Dolamore, W. Harding, Ballard, Axford, and Percy Bright."

In February a provisional Committee was formed, consisting of the gentlemen just mentioned, with the addition of Rev. J. Byrne, and Mr. W. McRae as Hon. Secretary. On February 21st, 1883, "An inauguration was held in a suite of rooms kindly lent by Mr. Bright, the Arcade, at which a great number of interesting objects were exhibited, with a number of microscopes and other scientific instruments. The rooms were crowded throughout the evening. Everyone present expressed themselves highly gratified with the result."

In March, 1883, the rules of the Society were decided on, the officers consisting of President, Vice-Presidents, Treasurer, Secretary, and Librarian. A working committee was fixed.

The first annual meeting was held on 3rd May, 1883. Mr. Bright offered the use of a room for the Society, rent free, for the first year. The subscription was fixed at 5s.; the members numbered 68, "but we shall not be satisfied until we have every scientific man and woman in Bournemouth on our roll." Finances satisfactory, a balance of £19 8s. 5d. being then in hand. "Messrs Mate & Sons, the proprietors of the 'Bournemouth Directory,' deserve the thanks of our Society for the reports of all our meetings."

On September 19th, 1883, it was decided that the meetings of the Society be held at 8 o'clock on Thursday evenings.

The progress of the Society may be judged from the two items, number of members and balance of funds in hand, some of which appear in the following table, being gathered from the reports at the annual meetings.

Year.	*Members.*	*Funds.*
1883	68	£25
1884	120	34
1885	132	60
1886	—	— No record.
1887	—	52
1888	—	53
1889	—	— No record.
1890	103	56
1891	125	—
1892	115	—
1893	114	45
1894	—	— No record.
1895	124	Reserve Fund drawn on.
1896	—	— No record.
1897	—	No record, a bald report.

For 10 years or so, from 1883, the Society seems to have advanced and prospered; after that, occurred a gradual falling off, which is reflected in the reduction in the funds, and in the bald character of the annual reports. At a meeting on 30th October, 1896, Dr. Mahomed, the President, told the members that "the Society had not flourished as it ought to have done during the last year," but "he thought there was a considerable amount of vitality left." This vitality, however, was doubtless ebbing, for on the 4th November, 1897, at a general meeting, it was decided "that the Society be dissolved at the termination of the present quarter," when there was also a discussion as to the re-construction of the Society.

At a final meeting on 9th December, 1897, the library and collections were vested in trustees, who were authorized to give the books and collections to any Natural Science Society that may be formed in Bournemouth before the end of 1898. However, it was finally directed that the books be presented at once to the Public Library, and that the collections be offered to the Town Council, and failing acceptance, to the School of Art.

Here we have, then, in miniature, an account of the rise and fall of a local Scientific Society, and some of the facts in that history may not be without interest to us now.

The Society acquired, by gift or presentation at various times, considerable property in the shape of (1) collections and (2) books. For example, as regards (1) it is recorded that in 1883 a collection of birds was presented by Mrs. Pearson. In 1884 two cases of animals and some very fine specimens of moths were given by Dr. Satchel; and there are, generally, constant references to various gifts made by the members to the Society. With regard to (2) it is plain

that by degrees a fine collection of valuable scientific books was secured. A librarian was appointed to look after them and arrange for their issue to members. There is often a reference to the Library in the Annual Report, and the number of books in hand in each year was:

In 1887—223 books
„ 1888—254 „
„ 1889—280 „
„ 1891—378 „

It is much to be regretted that the existing Society has not come into possession of the excellent collections and books formed by its predecessor.

We notice that in the early days, conversaziones and exhibits of specimens and scientific apparatus were generally held once a year in some prominent building in the town, and doubtless were the means of attracting public attention to the existence and the aims of the Society.

In the early years of the Society it was sometimes the practice at a meeting not to have a formal lecture, but a subject was proposed and a discussion on it took place among the members.

In 1890, the Society had trouble as regards subscriptions, a thing which is with us at the present day, and we find it recorded that "In view of the difficulty of collecting subscriptions the Committee deemed it advisable to appoint Mr. Philo as collector. His commission amounted to £1 19s. 5d. The subscriptions in arrears thus collected amounted to £5 5s 0d."

In 1886 there was established the class or grade of "Honorary Members," the qualification being apparently an annual payment of one guinea to the Society. In 1894 the grade of "Life Member" was introduced, the qualification being a benefactor of the Society in past years, by personal efforts. Such members were exempt from payment of subscriptions. The old life member corresponds to our present honorary member.

In October, 1886, there was a discussion on "Vacation Work," from which it may be inferred there was an interval, or interim period, during which no meetings were held or lectures given.

A copy of the rules of the Society, as standing good at the end of 1892, is affixed to the minute book.

In October, 1893, a Microscopical Section was formed.

In November, 1894, a separate Photographic Society was formed, and affiliated to the older Society, the Photographical Section being held "in abeyance." The new Society was to pay £10 annually to the Society of Natural Science for the use of its room.

All the papers read before the Society during its existence have been tabulated, but the detailed list is too long to reproduce here. Suffice it to say, that the total number of papers (103) under the

different branches of knowledge into which our present Society is subdivided, is as follows:

Zoological, 27	Geographical, 4
Physical, 22	Archæological, 3
Geological, 21	Photographical, 1
Miscellaneous, 14	Microscopical, 1
Botanical, 10	

From this we gather that Zoological subjects were most in evidence, while Archæology or Antiquities were not much taken up in those days.

The first lecture or paper was on "Microscopic Life in a Pond," by Rev. N. Curnock. In September, 1883, the subject was "What is Life?" by Mr. Eustace Bright; the decision being that it is hopeless to try to answer the question. Spiders take up three papers. Stonehenge was treated of by Mr. Hood. In a paper on "Climate," by Dr. Davidson, the lecturer remarked—"Surely the day would come when it would be seen that gratitude and reverence were due to such men as Pasteur, Lister, Koch, Klein, and Burdon-Sanderson rather than that they should be assailed with insult, and hindered by mischievous legislation, as if they were criminals rather than benefactors of the whole human and animal races." In 1887, the "Advances in the Germ Theory of Disease" was treated of by Dr. Greves; and we note several papers at various times on medical subjects in connection with public health, &c.

In 1887, Mr. Carus Wilson lectured on "Grains of Sand," and in November of the next year on "Musical Sand" (which is found at Studland), about which a German Professor has quite recently been making enquiries. In 1890 we had "Leaves from the Note-book of an Indian Magistrate," by Mr. Jackson. We can only trace *one* lecture on Astronomy, which was of an elementary character. "Modern Explosives" and "Torpedoes" formed the subjects of two lectures by Mr. Quick, R.N.

In 1884 there was a lecture on Gold and Silver, when the Kong Mountains are given as the only source of gold in Africa! This is a sign of the times, the present goldfields of South Africa being then practically unknown and undeveloped.

So far as I can ascertain, the name of Dr. Dixon, one of our present Secretaries, first appears on the Committee in 1891.

To complete the record we may here briefly refer to the origin and proceedings of our present Society. These remarks are based on information given in the annual reports, five of which have been issued, commencing with that for 1904.

From the first report we gather that "In November last, stimulated by the action of W. Saville-Kent, Esq., F.L.S., F.Z.S., an endeavour was made to resuscitate the Natural Science Society, which had been defunct for many years, hoping that under his influence and guidance the Society might be revived, and regain some of its pristine vigour and activity." Several preliminary

meetings were held at Pen Selwood, the residence of Miss Rooper, with the result that officers were appointed and a set of rules adopted, the title of the Society being given as the Bournemouth and District Society of Natural Science. The chief officers were: President, J. E. Beale, Esq., Mayor of Bournemouth; Vice-Presidents—E. Hyla Greves, Esq., M.D., F.R.C.P., W. Saville-Kent, Esq., F.L.S., F.Z.S., F.R.M.S., Rev. E. Linton, M.A.; Chairman of Committee, J. Roberts Thomson, Esq., M.D., F.R.C.P.; Hon. Secretaries—Miss C. Agnes Rooper and Dr. J. R. L. Dixon, M.R.C S., L.R.C.P.

The Committee reported: "The revival of the Society has been marked by phenomenal success. The membership became 112, and during the session 17 lectures were given."

In the second year the Committee recommended that the evening meetings should be discontinued.

The proceedings of the past five years are more or less fresh in the memory of the bulk of the present members, and there is no need to go into details. The general progress of the Society may be gauged by the following table:—

Year	*Number of Members.*	*Funds in hand.*	*Number of Meetings.*
1904	112	nil	21
1905	140	£3	25
1906	204	£12	23
1907	220	7d.(!)	37
1908	240	£8	51
1909	267	£20	70

It will be seen that the number of members has increased by leaps and bounds; but it is possible we have now reached a period when the membership can hardly be expected to increase much more. As regards finances, a glance at the above table shows that we are just able to pay our way. One of the needs of Bournemouth is a good Museum of local Natural History and Antiquities, which *should* be part and parcel of our Society. This we fear must be a dream of the future until some Carnegie steps in and endows us with the necessary funds.

The year 1909 has been marked by the acquisition of the present commodious rooms in Granville Chambers, which constitute a home of the Society such as it never seems to have possessed before.

If each member of the Society in his or her own sphere does his or her best to recruit new members as opportunity offers, and to contribute something original in the way of scientific papers, lectures, notes, or gifts of specimens, &c., we are confident that the Society has a long period of activity and usefulness before it.

Presidential Address

(ABSTRACT)

By Dr. ARTHUR RANSOME, F.R.S.

(Delivered before the Society on 14th Nov., 1908).

WE have long been accustomed to the idea of the storage of force when contemplating the phenomena of inanimate nature, but in the present address we shall be strictly limited to the consideration of the storage of material, and of the forces resulting from its changes, within living organisms. I propose to adduce some instances of this accumulation of power.

My attention was first called to the subject many years ago, in the course of some experiments upon the germination and early growth of plants. Prof. Draper had made the assertion that—"If growth be conducted in darkness, heat, air, and water cannot cause the young plant to add anything to its substance. It is feeding on the seed. Indeed, when the experiment is carefully made, it is found that there is an actual loss of substance; the resulting plant, if dried, weighing less than the dry seed from which it came. Growth in darkness leads to one result, growth in sunshine to another."—*Human Physiology*, 1856, p. 458.

It seemed worth while to put this assertion to the test. It was easy to ascertain the average loss of water on drying, in seeds and bulbs, and to grow their counterparts in the light and in darkness, and then to dry them carefully and note the differences in the resulting weights. This was done for mustard seeds, peas, kidney beans, crocus, snowdrops, and hyacinths. The result was entirely opposed to Prof. Draper's statement.

(1) In every case, whether in light or darkness, the plants (roots, seeds, stem and leaves) when dried, had lost a certain amount of solid matter up to a certain point of growth.

(2) Up to the period of cultivation observed, in the case of mustard, *i.e.*, when the plants attained a length of two inches in light, and three inches in darkness, the amount of loss was in close relation to the degree of growth.

(3) Up to this point, in mustard, there was but little difference in the extent of loss, in the light and in the dark.

(4) In the case of peas and beans grown in the light, they began to gain in weight when the plants were from eight to twelve inches in height, and when the third set of leaves was sprouting.

(5) The bulbs and the plants resulting continued to lose weight for a still longer time, and it seems probable that it is only when the plant has ceased flowering, and when the secondary bulbs are being formed, that there is any

material gain in weight. It appeared from these experiments that—"As in the animal ovum, so in the seed, the genesis of life receives its first impulse from the seed, and that most plants continue for some time to draw from this source a portion at least of their powers of growth."

From some more complete experiments of Boussingault, I further gathered that the elements which are used up during early growth are the carbon and oxygen, and to a certain extent the hydrogen, of the seed. During germination the starchy portions of the seed, by a species of fermentation, under the influence of warmth and moisture, and also probably by the molecular action of the nitrogenous germ, become changed into sugar or other soluble substances, and these are slowly disintegrated and burnt by a kind of respiration, and heat and other energy is developed. The most important agents in assisting the processes of growth are hydro-carbonaceous particles in their course of transformation, and there is little doubt that the heat energy of these compounds bears some important relation to active life.

It seems probable that the oxydation of carbonaceous compounds in animals has something to do, not merely with the phenomena of muscular contraction, but also with many other vital processes. In like manner plants, perhaps, owe not a little to the same sources. It was shown by the observations detailed above that the plants lost weight during growth almost equally in the light and in the dark. It was thought possible, therefore, that the processes of development and growth might receive their stimulus not only from the direct heat and light of the sun, but also from the energy lying hid in the carbonaceous compounds already stored up within the seed or bulb.

It is probable that nitrogenous substances, as in the case of animal respiration, are equally necessary for the absorption of oxygen. Certain albuminous substances collect in the young leaves of plants, and serve as a store of material that assists both in early growth and in the evolution of leaves. The proof of this statement is to be found in the fact that an albuminous substance, such as asparagin, is found not only in the roots of plants and in their cotyledons, but also in the petioles of young leaves. Sachs, however, remarks on this point, *i.e.*, as to asparagin, that—"Its physiological significance remains at present limited to Leguminosæ, and in them it is confined to the consumption of the reserve albuminous substances." In any case, it is evident that the storage of both nitrogenous and hydro-carbonaceous material does take place as a preliminary to active growth.

These conclusions might probably be extended to certain stages in the more advanced life of a plant or tree, but I have no observations to adduce in confirmation of this opinion. Still, when we observe the manner in which the new bud is already formed in deciduous trees and shrubs, even before the fall of the leaf, it

seems likely that preparation has already been made for the coming expenditure of force in the spring; and if we were able to calculate the total amount of dry material contained in a tree in the autumn, and contrast it with the percentage of this substance in the budding or in the leafy branch, it would probably be found that there had been some loss of substance, due to the molecular energy expended in pushing forward the buds and leaves. When and where the storage takes place cannot now be stated with exactitude, but from the analogy that exists between the germination and budding of plants I cannot but think that, in addition to the stimulus of the food afforded by the rising of the sap in the spring, there is also some liberation of energy from material that had been previously stored up, in anticipation of a revival of spring. It is important to note in this regard that the same kind of combustion of hydrocarbons by oxygen as goes on in germinating seeds, takes place in other parts of the plant where active processes are going on, as during inflorescence, and in the spadix of Arum at the time of fertilization. In all these cases, as in seeds, there is a distinct rise of temperature.

This mode of considering the subject at least adds interest to our contemplation of vegetable nature in the winter months. Instead of looking upon the trees with their bare branches as organisms in a state of torpor, we may speculate upon the amount of latent force that they possess, and may regard them as really more powerful and richer than when they parade in summer finery.

I would suggest this subject as one well worthy of the attention of some of our younger members. It would not be difficult to make the requisite experiments, and I imagine that it might have an important bearing upon some point in woodcraft.

Many other instances of the accumulation of material for the future well-being of plants might be mentioned, though they are often complicated with other subjects. Thus the collection of honey in the nectaries, the fragant essential oils in the glands of petals and leaves, the brilliant colouring matters in corolla and calyx, and even in some leaves, all these have been stored up so as to assist in the cross-fertilization of plants by insects. I would claim these as, in some sense, examples of provision for the future maintenance of the species. Again, many of the devices used for the dispersion and for the most suitable disposal of seeds, and for their preservation until they can reach their most favourable soil—many, if not all, of these may be properly adduced as instances of the general principle with which we are dealing to-night. I would not, however, lay too great stress upon them, as otherwise I might be accused of claiming all the other wonderful adaptations of structure to environment as "fish for my net."

But there is one interesting point that I would mention with regard to the preservation of fruits until the fitting time has come for their destruction. I allude to the mode in which the attacks of insects and other animals are warded off, until the seeds that fruits

contain are ready for deposition in the soil. To some extent this is accomplished by the absence of temptation until the fruit is ripe. The raids of birds and insects, of snails, and of little boys, upon the early strawberries and cherries, are prevented by the absence of sweetness and by the untempting greenness of the fruit. It is always the best of the bunch that is thus attacked. But, in the case of many other fruits a longer sojourn upon the parent stem is required, until, in fact, the fruit is ready to drop to the ground almost by its own weight. This prolonged stay is in some cases secured, as in apples and pears, by the protection of a cork-like rind, in nuts by a hard shell, in other fruits by an evil-tasting substance outside the fruit, but in many others the intrusion of mould fungus and other agents of decomposition is prevented by a layer of antiseptic material.

The essential oils contained in the rind of many fruits are all inimical to the tiny micro-organisms of decay, and these widely distributed, nay, almost constantly present, agents of destruction can only obtain an entrance to fruit in which some abrasion has been caused by accident, or along channels left open by imperfect growth. A pear often begins to rot in the centre, along the line of the junction of the dissepiments of the ovary, and other fruits often betray similar tracks for the entrance of the germs of decay.

But it is from the animal kingdom that we can draw the largest number of examples of storage.

Commencing with the entrance of food into the mouth, we find that in the salivary glands, and especially in the parotids, there is already stored up in their cells a plentiful supply of amylo-lytic ferment, destined to effect the metamorphosis of starch into sugar.

Similar preparations for a coming meal are shown in all the digestive glands. The gastric follicles are found full of cells before food and empty afterwards. The liver is more constant in its functions, which are also more varied than those of other glands. It has, however, a distinct magazine, the gall-bladder, for the storage of its secretion.

After its entrance into the blood, a considerable portion of the food is stored up ready for use when required. Fatty matter in adipose tissue, and starchy matter in the form of glycogen, is stored up both in the liver and in the muscles, and the automatic mechanism by which this is drawn upon as it is needed is very beautiful, though it need not now be described.

There is also in all probability a storage of nitrogen during or preliminary to exercise.

Dr. Parkes and others have shown that the elimination of nitrogen by the kidneys is lessened during exercise. When a period of exercise is compared, after an interval, with one of rest (the diet being without nitrogen, or with uniform nitrogen), the elimination of nitrogen by the kidneys is decidedly not increased, and may be lessened, in the exercise period. As we all know well, also, with

constant regular exercise our muscles enlarge, become thicker, heavier, contain more solid matter, in other words they have gained in nitrogen, and this is doubtless to provide for future similar demands upon their strength.

Pettenkofer and Voit have also shown that during rest a certain amount of storage of oxygen goes on, especially during sleep, and this storage no doubt occurs chiefly in the muscles themselves, and the supply is available at the time of exercise.

The evidence of a storage of nerve power is less distinct than in the case of the muscles. Still it is rendered probable by the phenomena attending the discharge of refuse material from the body and the function of parturition. It is possible also, by means of a galvanic current, to exhaust the nerve power of a muscle or even of a nerve of sensation, and a considerable time elapses before it is restored, showing that a certain accumulation of this force must take place during rest. The brain, again, is certainly a storehouse of nervous energy. We talk of the stores of knowledge and of erudition possessed by certain gifted persons, and although we are ignorant of the precise nature of memory, we may regard it as a case in point. Whether memory depends upon actual "residua" impressed upon the nervous elements, or whether it consists in the more ready conveyance of impressions that have once or more times travelled along a certain course, in either case we may properly regard it as a sort of storage of force, or, at least, as the facilitation of its manifestation, when required at future times. The discharge of phosphorus in the secretion from the kidneys, after severe mental or bodily exertion, is a further proof of the using up of previously stored up material in the nervous system.

But perhaps the most important forms of the storage of material are to be found, as in plants, in the provisions made for the growing germ or for the preservation of the embryo in animals. The egg of an oviparous animal is only a type of the ovum of a viviparous one.

There is indeed some difference in the mode of segmentation of the yelk, and in birds the contents of the yelk-sac afford nourishment until the end of incubation. In mammalia its office ceases at an early period, owing to the close connection soon formed between the embryo and its mother. But in both the function of the yelk is the same; it is a store of nutriment provided until the time arrives at which other sources of food are opened up.

In all the tissues of the young animal also provision is made for future growth.

But this is probably not nearly all that is involved in the process of reproduction.

That there are some still more subtle processes of storage involved in the work of reproduction is evident from the facts respecting inheritance—atavism, prepotency, reversion, alternation of generation, and so on.

It is impossible to enter fully into this subject now, but I should do wrong if I omitted to mention Darwin's attempt to explain these facts by means of his marvellous theory of Pangenesis, a theory that implies an extent of storage in germs and in other parts such as one might regard as incredible if it had not been gravely propounded by such a man. Darwin regards each cell of a living being as to a certain extent independent or autonomous; each such cell then has the power of casting off a "free gemmule" which is capable of reproducing a similar cell. "As each unit or group of similar units throughout the body casts off its gemmules, and as all are contained within the smallest seed or egg, and within each spermatozoon, or pollen grain, their number and minuteness must be something inconceivable. All organic beings, moreover, include many dormant gemmules, derived from their grandparents and more remote progenitors, but not from all their progenitors. These almost infinitely numerous and minute gemmules must be included in each bud, ovule, spermatozoon, and pollen grain." "Truly," as Wendell Holmes says, "this body in which we journey across the isthmus between the two oceans is not a private carriage but an omnibus." An omnibus indeed! But Darwin thought that this is no reason for rejecting his hypothesis, and he believed it affords an explanation of many of the curious phenomena of reproduction which I have indicated above. I shall not venture to pronounce judgment in such a cause.

We have now left the sure ground of fact and have entered upon the region of pure conjecture; but I cannot resist the temptation to recall to your minds a singular supposed instance of storage of mind force, given in M. Renan's complacent account of himself when he speaks of enjoying "the economies of thought, of long obscure lines of peasants and seamen"—as he says, "A race produces its flower when it emerges from obscurity. Brilliant intellectual births come out of a vast abyss of unconsciousness, I would say out of vast reservoirs of ignorance," and again, "Genius, which is always the result of a long previous slumber."

I must leave you to say whether the long list of instances of storage of power that I have now laid before you, in any way justifies M. Renan's notion that he was in a certain sense an "heir of the ages" past. I do not myself think they do, for, as we have seen, the exercise of a talent or of a power increases the storage for future work; and if we were to adopt Darwin's hypothesis, we should have to acknowledge that brain gemmules can only be thrown off from pre-existent similar material, and hence it is much less likely that the dull wits of an ignorant race should produce a clever man, than that as Galton has shown, genius should be hereditary.

Lastly, in this regard, I should like to mention a striking theory of the great French pathologist, Dr. Metschnikoff, as to the cause of "natural death" in both plants and animals.

He believes that the reason why we die, that our days are but as "a handbreadth" and that a man's beauty consumes away with

age, is not because sustenance fails, but by reason of poisons which are gradually stored up in the system, and by means of the action of micro-organisms, forms of phagocytes, which eat away the tissues, as the Psalmist says, "like a moth fretting a garment."

The "auto-intoxication of the bodies of plants and animals is also due to such microbes as the 'bacillus coli.'"

This remarkable hypothesis is defended by Dr. Metschnikoff, with great ability in his recent work, "On the Prolongation of Life," but I must not now do more than refer to it.

I have now, perhaps, given a sufficient number of instances of provision for the future, to prove not only that this principle is carried out as a result of intelligence, but that it is inherent in the materials of which organisms are made. I will leave my hearers to draw the obvious moral.

Report of General Lectures delivered during the Winter Session, 1908-9.

Some vanishing European Costumes.

This lecture was given on Nov. 28th, 1908, by C. J. Hankinson, Esq., J.P., and illustrated by a series of coloured lantern slides, from photographs by the lecturer. The chair was taken by J. Liddiard, Esq., F.R.G.S., Mr. Hankinson dwelt upon the fact that every year witnessed the disappearance of some relic of distinctive costume, and upon the importance of preserving records of such when possible. Differences in costume are principally due to climate, materials available, and to individual taste or special requirements. In England the old distinctive costumes are practically extinct, though traces of them remain in outlying parts of the British Isles. A number of slides were shown illustrating the costumes of Brittany, particularly the coif, or white linen headdress, which has a distinctive form in different districts. Then followed pictures of Swiss, Swedish and Norwegian costumes, their peculiarities being described. In Norway a mantilla-like head shawl is worn, supposed to have originated with the survivors of a Spanish galleon wrecked on the coast. Passing on to costumes of the Austrian Empire, Balkan States and Turks, Mr. Hankinson emphasized the fitness and picturesqueness of the old native costumes over the productions of the modern milliner, and concluded with a few pictures of Oriental costumes, which had remained unaltered for centuries.

The Saving of Winchester Cathedral and other Historical Buildings.

This lecture was given on the 12th Dec., 1908, by Francis Fox, Esq., M.Inst.C.E., who has had charge of the recent work undertaken for the saving of Winchester Cathedral and is a member of the eminent firm of engineers. The chair was taken by Dr. Ord. Mr. Fox began by roughly outlining the methods of strengthening decaying buildings: first, the threatened portions are shored up with strong timbers so as to prevent their collapse while the repairs are in progress. Next, all cracks and defects are filled in with "grout," or liquid cement; this is done with the grouting machine, which forces the cement under pressure into all the voids, thus binding the whole into a solid mass. The last stage is the underpinning, or replacing of defective foundations. At Winchester the trouble is due to bad foundations. The cathedral stands on a peat bog, and the old builders laid great balks of timber on this, building their masonry on the timber. This timber has in course of time decayed, and the superincumbent masonry is gradually sinking. The recent operations consisted of the removal of the peat, piece by piece, from underneath the building and the substitution for it of concrete, deposited by the grouting machine. The continual presence of water made the work very difficult and dangerous, a diver being required to do most of the underground work. Mr. Fox also described the reparation of the old walls at Chester, and the restoration of Trinity Church, Hull, by strutting up the roof, taking down the pillars, and rebuilding them on a proper foundation. The lecture throughout was illustrated by very fine lantern slides, showing the nature of the work at Winchester and the other places referred to.

Geology in relation to Scenery in England.

A lecture given on the 30th Jan., 1909, by H. St. Barbe, Esq., of Lymington, the chair being taken by Dr. Ord. The lecturer began by pointing out how immensely the appreciation of scenery is increased by a knowledge of the causes that have brought about the various effects of mountain, valley, river, etc. The four chief causes that have brought, or are bringing about the present conformation of the earth's surface are, first, the gradual contraction of the earth's crust, accompanied by crumpling or folding; second, the action of water; third, the action of fire, more in evidence in earlier stages of the earth's history than now; and lastly, glacial action, by which masses of rock have been transported from their original locality. Fine mountain scenery is always found in an area in which there once existed volcanoes, which threw up immense masses of lava, etc., the remains and effects of which now go to make up our mountains; as an example, the mountains of Carnarvon are largely due to this cause. The terms anticlinal and synclinal were defined, an anticline being a series of strata in arched form, while a syncline is a series in hollow form, that is, concave towards the top. The weald of Kent and Sussex is the top of an

anticlinal formation, whilst at the top of Snowdon, as a view of that mountain showed, the strata evidently form the bottom of a syncline indicating that the mountain top at one time probably formed the bottom of a lake. A view of Flamborough Head was exhibited to show excessive folding of the strata, and another near Lough Swilly showed the curious sharp folding of clayey strata. The rugged beauty of Giggleswick Scar is due to a "fault," explainable by geological causes; other views showed the grand forms of mountains due to volcanic causes, as in Pen-y-gant, Langdale and Helvellyn. A diagram of the denudation of a volcano of the Vesuvian type was exhibited, showing the changes through weathering undergone by the ejecta. To a volcanic origin are due the hills around Edinburgh which contribute so much to its picturesqueness, while the same cause has produced that wonderful natural barrier that separates Wales from England. The action of ice was illustrated by the case of erratic rocks in Norfolk, supposed to have been brought thither from Norway by glacial action. The lecturer concluded by remarking that the principles of geology can be applied to the most homely landscape as well as to magnificent mountain scenes, and that the application of them affords much enjoyment to the careful observer. The fine slides by which the lecture was illustrated were kindly lent from the collection of Lord Avebury.

On beginning the Study of Grasses.

A lecture by J. F. Rayner, Esq., of Southampton, was given on the 16th January, 1909, the chair being taken by G. Brownen, Esq., F.C.S. Mr. Rayner pointed out that if grasses displaced all other plants, we should still have food in abundance. The cereals, from the various kinds of which many different sorts of bread are made, are all grasses, as also is rice, the principal food of many peoples. Amongst tropical grasses we have the sugar-cane, an important source of food, besides the bamboo, pampas grass and reeds of many sorts, which, though not used as food, are of great value in manufacture. Grass again forms the food of cattle, which in turn provide meat for man's use. There are in the world about 5,000 species of grasses, of which about 100 are British. They are distinguished from the sedges by having round and hollow stems, those of the sedges being usually triangular and solid. Grasses may be annual, biennial or perennial; grasses in which all the shoots have flower stems are annual, those in which some shoots have leaves only are biennial or perennial, but those which have an underground stolon or creeping rhizome are perennial. The lecturer described the structure of the cup and the floral characters, and mentioned that, being wind fertilized, grasses required no coloured petals to attract insects. The lecture was illustrated by a number of diagrams, by a collection of dried specimens, and by a display of a number of freshly gathered specimens.

The Geology of the Isle of Purbeck.

A lecture given on the 13th Feb., 1909, by F. Hovenden, Esq., F.L.S., F.G.S., the chair being taken by J. Liddiard, Esq., F.R.G.S. The lecturer began by explaining the general principles governing the formation of the sedimentary strata of the earth's surface, showing how they were all deposited from water, being either formed of particles of rocks disintegrated by water, or of the remains of the myriads of creatures that had lived in the water. In the course of ages, the deposit, through pressure or chemical action, becomes hardened into rock. Mr Hovenden then illustrated his general remarks by reference to particular strata to be found in the Isle of Purbeck, giving especial attention to the cinder bed, a thin stratum of oyster shells about 22 miles long. These references were illustrated by lantern slides from photographs of many of the points of interest in and near the Isle of Purbeck.

Volcanoes and their action in the Mendip Area.

A lecture with this title was given on the 27th Feb., 1909, by Major B. Trestrail, J.P., F.R.G.S., of Clevedon, the chair being taken by Col. Markwick, C.B. The lecturer said there were three types of volcanoes, according to their shape and structure—the gently pointed conical shaped, the rounded dome-shaped, and the irregular shaped. There are two kinds of volcanic action, the gradual and gentle action as seen in Stromboli, and the violent intermittent action as seen in Vesuvius. Volcanoes and earthquakes are no doubt caused by the secular contraction of the earth's crust, an action always at work. The earth is slowly radiating its heat into space, the outer crust becoming gradually cooler than the heated interior; as it cools it contracts, which causes it to crumple and crack, producing earthquakes, while through the cracks the red-hot matter from the interior is forced up, forming a volcano. Major Trestrail described in detail the volcanic rocks of the Mendips and the traces of their eruptions in geological times. He described, also, similar action as shown on the coast in the neighbourhood of Weston-super-Mare. His remarks were illustrated by some very fine lantern slides from photographs of the district.

Halley's Comet.

For a report of this lecture given on 13th March, 1909, by Col. E. E. Markwick, C.B., F.R.A.S., see page 72.

Surnames in relation to History.

This was a paper presented on 27th March, 1909, by Captain G. R. Elwes, J.P., who was unfortunately unable to be present. The paper was read by the Chairman, G. Brownen, Esq., F.C.S. The origin of many surnames was traced to scientific sources—geology, botany, astronomy, architecture and even heraldry. The surname was originally a personal and descriptive name, based upon hereditary office or physical peculiarity, this name becoming in time

attached to the family. The Celtic and Irish "O" and "Mac" indicated descent. The Roman custom was mentioned of the transference of house signs to the individual, as well as the shortening of names, as Claudius to Clodd, &c. Saxon surnames were tribal names, qualifying epithets, and trades or occupations—the suffixes "kin" and "lin" are also Saxon. Danish survivals are rare and doubtful owing to close relationship with Saxon or Jutish names. In Norman times surnames became abundant, and later the Crusaders brought names from the East; actors in the mystery plays were also known by the names of their parts. Since Elizabeth's time few surnames have been introduced.

Pond Life. After the reading of this paper, Dr. Dixon showed a number of lantern slides of entomological and microscopical objects, and gave descriptions of them, announcing also that a new section of the Society had been formed, the Microscopical Section, with himself as chairman.

The Natives of Sarawak. This lecture was given on 17th April, 1909, by Charles Hose, Esq., D.Sc., F.R.G.S., F.Z.S., the chair being taken by Dr. J. Roberts Thomson, J.P. First a paper by Dr. Hose was read by Dr. Crallan, describing a visit to the Madang country in the heart of Borneo. Ten years ago Dr. Hose, with two members of the Cambridge Anthropological Expedition, set out for this hitherto unexplored tract lying between the head waters of the Batang-Kayan, Rejang and Baram rivers, inhabited by the Madangs, a warlike tribe of the Kenyahs; after 14 days he had to part with his Cambridge friends and pursue the journey alone. Travelling on the rivers was by "dug-out" boats, which were most expertly managed by the Kenyahs through the rapids which abound. The Lata River was so full of rapids that the boats were left, and the journey taken on foot along the banks for some distance. The principal Madang village contains two thousand people, friendly to the white man. They are a fine race, light skinned, with dark eyes and straight black hair. Virgin forests abound, and are at times cleared by the natives to afford space for crops, the method adopted being to cut nearly through every tree on a hill-side, and then pull down one at the top, so that in its fall it breaks down the one below, and so on in succession till all are down over a V-shaped area. The people are expert blacksmiths; they are also fond of music, having instruments of their own. They fix the time for planting rice by the length of the shadow cast by a tall pole on a level piece of ground, the length being measured by a notched stick, the graduations on which are marked from long experience. After the reading of the paper a number of lantern slides were shown, from photographs by Dr. Hose, and were described by him. They showed very beautiful river scenes, types of natives, war canoes, houses—these are most curious, being of great length, but only one room wide, and inhabited by a number of families. The weaving of the native cloth and the manufacture of

a blowpipe—a weapon used for shooting animals with poisoned darts—were shewn in some particularly fine slides. The interest of the lecture was still further increased by the exhibition of a collection of native weapons, instruments, &c.

The Great Messinian Earthquake and its Geological Causes.

A lecture given on the 1st May, 1909, by Dr. Ord, the chair being taken by Dr. Crallan. Beginning with a few general remarks on the origin and sources of earthquakes, Dr. Ord remarked that the two districts of Great Britain where earthquakes are most common (though fortunately only slight ones) are the portion of Herefordshire near the Malvern Hills and the line of the Caledonian Canal in Scotland—in each case near hills or mountains composed of very ancient or igneous rocks. On the Caledonian Canal lies a great fault, or old dislocation of the strata, which is a common feature of unstable areas. The line of mountains in the West of America was mentioned as a district where earthquakes are common, and as exhibiting features usual in earthquake areas. viz:—lofty mountains, proximity to the sea with deep ocean beds, frequent changes in the level of the land, frequency of faults, and the presence of volcanoes. The lecturer explained the instruments in use for recording earthquakes and said that these disturbances usually proceed from a point about 15 miles below the surface, and that a point immediately over this is the seat of maximum intensity. From this point the disturbance proceeds in regular waves, of less intensity as they recede from the centre. The waves from Messina reached the Kew observatory in four minutes after the shock began. Messina lies on the line of mountains formed by the Appenines and the Peloritan Hills of Sicily, once continuous. These mountains are chiefly of old crystalline rocks, though near Messina we have the more recent strata, chiefly Miocene and Pliocene, deposited upon the older rock; in the Pliocene strata, 4,000 feet above the sea, we find recent shells, which points to tremendous upheavals in recent geological times, and instability of the earth's crust in this area. On the western slope of the mountain range is a great fault which is constantly shifting, the line of fracture passing close to Reggio and Messina, and it is this which causes the earthquakes: they have probably been occurring for long past ages and may continue to do so at intervals for many years to come. A number of photographs of Messina, showing the ruin that had befallen it, were shown, and Dr. Ord concluded by remarking that, though investigation into the theory of earthquakes does not enable us in any way to control them, it helps us to see how best we may mitigate their effects, by building houses low and light—least likely to sustain damage themselves and to cause further damage in their fall.

Report of General Summer Excursions, 1909.

To Maesbury Camp, Croscombe and Shepton Mallet.

FAVOURED by magnificent weather 37 members, ladies and gentlemen, took part in this Excursion, which will doubtless be long remembered by all who took part in it as an exceedingly successful one, particularly as regards the insight gained into the beauty and antiquities of the country which lies so comparatively close to Bournemouth. On arriving at Shepton Mallet by train, the party drove to Maesbury, or, as it is spelt locally, Masbury. This ancient earthwork is on the summit of high land, 958 feet above the level of the sea, and the views therefrom are very fine. Almost underneath the hill (so it seemed) could be seen the towers of Wells Cathedral and S. Cuthbert's Church. Further off was Glastonbury Tor, with its quaintly situated church, looking together like a small green mountain. In the further distance was the estuary of the Parrett, and the silver of the Severn Sea, with a promontory of North Devon, running dark into it.

Mr. Brownen, F.C.S., the chairman of the Archæological and Historical Sections, gave an excellent account of the Camp to the assembled party, of which the following is a very brief *résumé*.

The Camp has doubtless been occupied from prehistoric times, and was captured by the Romans in their invasion of Britain by Claudius Cæsar, A.D. 43-9. Close to the Camp coins of Vespasian have been found, as well as a pig of lead stamped with the name of Claudius Cæsar. Flint weapons and a neolithic stone axe have been reported as found in the vicinity. There are other once fortified hill-tops within easy range, such as Brent Knoll, Dolebury, and Worle. In fact, the Fossway, from Grimsby on the Humber to Seaton in Devon, passed near Maesbury, and was crossed quite near by a Roman road running from Ad Axium to Old Sarum. A funeral tablet has been found in the neighbourhood to Julius Vitalis, a pensioner of the 20th Legion.

Two members of the Shepton Mallet Natural History Society then conducted the party through Ham Woods to Croscombe, in which church the magnificent wood carving was inspected. Proceeding thence to Shepton Mallet our party was hospitably entertained to tea, in the Rectory grounds, by the Rev. F. Jones and the local Society. It is hoped we may shortly be able to return the kindness shown, when Bournemouth is visited by the Shepton Mallet Society. Two of its members, viz., Mr. Higgins, the president, and Mr. Barnes, the curator, kindly acted as our guides.

A Tour through the New Forest.

This excursion, in which 62 members took part, was made with the idea of visiting certain points of interest in, and so obtaining a good general insight into the beauties of, the New Forest. It took place on 16th

June, and was a sort of circular tour, in vehicles, from Lyndhurst Road to Lyndhurst, thence to Minstead, Malwood, Stonycross, Boldrewood, and Mark Ash, terminating at Brockenhurst. The members being assembled in Minstead Church, Mr. Brownen, F.C.S., gave them a short account thereof. It was built in the time of the Barons' War, in the reign of Henry III. (about A.D. 1250), and was dedicated to all Saints. The building has suffered much from alteration, and only portions of its original plan can now be made out, the principal features being in the most debased churchwarden's style of architecture. The older portions are a shortened nave, a chancel, and a north porch, the doorway from this porch being a portion of the original 13th century structure. An embattled western tower, and erections forming family pews attached to the north walls of the church, mostly built of brick, as well as extensive alterations on the southern side, mostly of 18th century date, have totally destroyed the characteristics of the original building. The inside of the church has been disfigured by two ugly galleries, one over the other, at the western end, and the eastern chancel is entered from the nave through a pointed Early English arch. Notwithstanding the late barbarisms the little building is not without a certain picturesqueness, surrounded as it is by meadows and forest.

The living is a rectory, to which Lyndhurst is annexed. Its value at the Inquisition of 1290 was given as £6 13s. 4d., but later, in A.D. 1340, Henry and John Pikenet, with Philip Edmunds and Henry Legatt, swore that the ninths were only £4 6s. 8d., that the small tithes and death dues were 44s. 8d. per annum, and that the value of the rectory and garden was two shillings. At the Survey of the Reformation, A.D. 1535, John Pye returned his income as £8 3s. 4d., less 11s. for procurations and synodals.

After an *al fresco* lunch in the pretty surroundings of the church, the party visited the grounds of Malwood, which were thrown open by kind permission of Lady Vernon-Harcourt. Afterwards the spots mentioned above were visited in succession, and all present obtained a series of splendid views of the exquisite and ever varying glades of the Forest, the summer foliage of the beeches and oaks being then perhaps at its best.

A Day in the Hardy Country.

On 7th July some 54 members assembled at Wool Station and drove through a stretch of country connected with Thomas Hardy, the novelist, who has introduced the scenery into many of his novels. Under the conductorship of Mr. C. J. Hankinson, J.P., who was assisted by Mr. Harry Pouncy, of the Dorset Field Club, we visited first, the Elizabethan Manor House ("Wellbridge" of Hardy), forming with its walls and chimneys of mellow brick, a charming object against the beautiful five-arched bridge across the Frome. The date of the building is 1637, and possibly portions are earlier. This is the spot where "Tess" (vide "Tess of the D'Urbervilles," by T. Hardy) came, the night after her wedding.

Passing in the distance an existing military camp, Bere Regis was next reached. The village is supposed to be identical with the Ibernium of the Romans. King John had a favourite hunting box here, in the Forest of Purbeck, and a letter from him is extant in which he enjoins the sheriff of those days to establish a kitchen at Bere. An inspection was made of Bere Regis Church, which is of great beauty and interest. The principal feature is the roof, of dark wood, ornamented with most curious figures, richly carved and painted to represent, undoubtedly, actual mediæval costumes, although the figures themselves are supposed to stand for the Apostles. The figures are curious as being more or less horizontal, with face downwards. The roof, tower, and bells were the gift of Cardinal Morton, minister of Henry VII. The architecture, generally, is Perpendicular, the very fine font being Trans. Norman. The "Turberville Window" is very interesting, containing no less than 20 shields or coats of arms, in most of which the lion rampant, gules, predominates, being the emblem of the Turbervilles.

Proceeding on their way, the party next inspected the beautiful Church of Puddletown, in which the two most striking features are the black Jacobean, or rather Carolean, pulpit, and the gallery, dating from 1634. The Athelhampton chapel contains many monuments to members of the Martyn or Martin family. One handsome recumbent figure, carved in alabaster, is remarkable for the minute and exact representations of all the details of a contemporary set of knight's armour.

After tea, taken in Dorchester, Mr. Pouncy kindly took the party a little tour round the town, pointing out the chief points of historical interest, some of which were connected with Judge Jeffreys, of "Bloody Assizes" celebrity.

Excursion to Romsey. This took place on Wednesday, August 18th, and in spite of a somewhat unfavourable day, many members took part in it. The ancient Abbey Church of S. Mary and S. Ethelfleda was visited. In the absence of the vicar, the party was conducted by the Rev. M. R. West, M.A., and his able descriptions of the Abbey and its historical associations were much appreciated by the members present, who, at the conclusion, accorded him their heartiest thanks.

The first authentic mention of the Abbey occurs in 967, in the reign of King Edgar, during that time of peace which followed upon King Alfred's victory over the Danes. There was shown, under a trap door in the floor opposite the pulpit, the apsidal east end of a large church—evidently the foundation of the Saxon building of King Edgar's time. Other evidences of Saxon work, the carving at the east end of the South Aisle, and the Saxon Rood, were also seen. To outline the history of the Abbey would occupy too much space, suffice it to say that the original abbey was destroyed by the Danes, led by Sweyn, in 994. There is no record of the rebuilding of the Abbey, but in 1120 there is a record of the

present church, built upon the site of the old Abbey, at a time when the Norman style of architecture was at its perfection.

The stately character of the building, its massive walls, the thickness and solidarity of the piers, together with the exquisite sense of proportion and usefulness, are all ideally Norman. The two great east windows are 14th century work. The unusual size of the triforium arches was commented on. The clerestory showed a transition from pure Norman in the chancel to Early English at the west end. The chancel aisles are remarkable, being square externally, but apsidal inside. The party saw some interesting relics of the Ambulatory, in a glass case—the Romsey Psalmster, a MS. Book of the Psalms and Canticles, &c., written at Romsey about 1440, and a head of auburn hair, found in a much corroded coffin beneath the Abbesses' door.

Externally, one of the most interesting features was the "Corbel Table," which runs all round the building above the windows—the corbels, carved into every kind of fantastic device, excited much attention. The magnificent proportions of the triple lancet (Early English) windows at the west end were also much admired.

Many of the members then spent the rest of the day inspecting in detail the many noteworthy features of the Abbey. A small number paid a visit to Broadlands, close by, the residence of the Right Hon. Wilfred Ashley, M.P., who kindly gave them permission to inspect his beautitul park and gardens. In the lake in the Japanese Garden some interesting microscopical specimens were found, and are described under the Microscopical Section.

Visit to Glastonbury. On September 15th, a party of 24 members journeyed to Glastonbury, under the conductorship of Drs. Crallan and Thomas. This is in the country referred to by Tennyson as

> Deep-meadow'd, happy, fair with orchard lawns
> And bowery hollows crown'd with summer sea.

On arriving by rail a visit was paid to the excellent local museum, which contains a fine collection of antiquities and geological specimens, as well as a library of rare books. Among the numerous exhibits were the relics of prehistoric man found by Mr. Bulleid in Godney Marsh, close to the town. These included a very good specimen of a prehistoric dug-out canoe, about 18 feet long. One could not help reflecting that here is a small town of 5,000 inhabitants, which has its well-equipped museum of antiquities and natural history, supported, too, by the municipal authorities—while here in Bournemouth, with its 60,000 inhabitants, nothing of the sort exists! *Verb. sap.*

Proceeding to the Abbey grounds, the party were met by Mr. F. Bligh Bond, F.R.I.B.A., who kindly acted as guide to the ruins of the churches formerly existing here. This gentleman is not only a

practical architect, being in charge of the reparation of the ruins, but is also a skilled and sympathetic antiquary. Glastonbury Abbey is so well known, that no description is necessary here. Suffice it to say that attention was duly called to the exquisite architectural beauties contained in the S. Mary's Chapel, the Galilee, and the Grand Church, the series of buildings terminating on the east with the site of King Edward's Chapel. The total length of the fabric in its prime was 580 feet.

After this, the Church of St. John, in the town, was visited, and then the party ascended Glastonbury Tor, and gained a magnificent view over the surrounding country. On the way back, the Abbot's Barn and the Abbot's Kitchen were inspected, each furnishing fine specimens of the work of the mediæval builders.

Proceedings of Sections.

Archæological and Historical Section.

CHAIRMAN : G. BROWNEN, ESQ., F.C.S.

THE activity of these conjoint sections of our Society for the past year may be seen in the interesting variety of the subjects or objects noticed or discussed.

The Churches of our locality mentioned in the Domesday of A.D. 1086. At the first meeting of the opened winter session held on 12th November, 1908, the Chairman, Mr. Brownen, in reading this paper, called attention to the Saxon and Norman antiquities still in existence.

John Prophete, D.D., Rector of Ringwood, Hants. This paper was read by Mr. Brownen on 10th December, 1908, and will be found in full at page 60.

Plans of Ancient Earthworks, &c., in Dorset. On 14th January, 1909, our Secretary, Dr. Dixon, exhibited, by the kind permission of the Bournemouth authorities, a number of plans drawn to scale, of the Earthworks, ancient Castles and Mote Houses of Dorset, and these elicited an interesting discussion from the members present.

The Roman Villa at Hemsworth. At the next monthly meeting of the section on 11th February Mr. Le Jeune read a paper on "The Recovery of a Roman Villa near Hemsworth, Dorset," illustrated by photographs and drawings. This paper appears in full at page 63, and an illustration on Plate VI, page 64.

Labyrinths and Mizmases. On 11th March Dr. Thomas gave a lantern lecture on this subject. The peculiarities of these curious remains of antiquity were noticed and discussed. Attention was called to a local maze near the cliff at Westbourne.

The Bronzes of Balawat. At the meeting on 8th April Mr. Brownen gave a lecture on this subject, explaining Balawat as an Assyrian Windsor of the time of Shalmaneser II., B.C. 859—25. It was illustrated by full-sized photographic reproductions of this famous relic, which revealed the military and naval art of Imperial Assyria, and led to an animated discussion on art and commerce in general. With this lecture the winter session of indoor meetings closed, and the excursions followed from next month.

Excursion to West Parley, &c. The first excursion of the season was on May 5th to West Parley Church and Dudsbury. At West Parley we were met by the Rector, the Rev. R. A. Chudleigh, M.A., who kindly opened the church and described its principal features. Mr. Chudleigh then accompanied us to Dudsbury Camp and described the peculiarities of this strong prehistoric earthwork commanding the waterway of the Stour.

In May and June our section participated in two general excursions of the Society, the first on May 19th, to Masbury, Croscombe, and Shepton Mallet on the Mendips, and the second on 16th June, to Minstead and Malwood in the New Forest.

Visit to Christchurch Priory. This took place on 23rd June, and a large number of members participated in it. By the kindness of Miss Tighe the ruins and relics in the private grounds and gardens were thrown open, and Mr. Brownen (who conducted) produced a plan of the destroyed monastery, which assisted in the realization of the ancient edifices as they originally stood. The Castle ruins were also visited the same afternoon.

On 7th July our Antiquarian Section formed a part in a general excursion to Wool, Bere Regis, Puddletown and Dorchester, all in the district known popularly as "the Hardy country." It was under the joint conductorship of Messrs. Hankinson and Pouncy.

Excursion to Bindon Abbey & Wool Church.

This took place on 11th August. While the party were resting among the ruins, a short paper was read upon the Cistercian Abbey of Bindon, by Mr. Brownen, who acted as conductor. This was the last of the special antiquarian excursions of the season, but on August 18th, and again on September 15th, two general excursions were arranged by the Society. The first was to Romsey Abbey, under the guidance of the Rev. M. R. West, M.A., and the second was to Glastonbury, under the leadership of Drs. Crallan and Thomas.

Also on 18th September, by invitation of the Geographical Section, some of our Antiquarian members visited Wareham, and were kindly conducted to various ancient buildings there, by the Rev. S. Blackett, M.A., Rector of Wareham.

Botanical Section.

CHAIRMAN : MISS C. AGNES ROOPER.

Some interesting and profitable work has been done by this Section during the past year.

Additions to Herbarium.

The arrangement of the Society's Herbarium has been proceeded with regularly each Saturday morning under the supervision of the Chairman, assisted by R. V. Sherring, Esq., F.L.S., A. Scott, Esq., B.A., Colonel Ross, and other members, and many valuable additions have been made to it. Among these may be mentioned Equisetum sylvaticum, E. hyemale, E. variegatum, Arabis stricta, Draba muralis, Hutchinsia petræa, Vicia lutea, V. gracilis, Lathyrus Nissolia, L. maritimus, Helianthemum polifolium, Bupleurum opacum, Orchis incarnata, Ophrys aranifera, Ononis reclinata, Limonium binervosum, all of which were gathered and presented by R. V. Sherring, Esq., F.L.S., to whom the Society is also indebted for a collection of all the Equisetaceæ known to be obtainable within 100 miles of Bournemouth. There have been presented by the Chairman (Miss C. Agnes Rooper) Corydalis claviculata, Sedum anglicum, Colchicum autumnale, Habenaria vividis; by Dr. Ransome, M.D., F.R.S., Lavatera arborea, and a specimen of the Cotoneaster vulgaris (from the Great Orme's Head), which is now extinct; and by A. Scott, Esq., B.A., Trollius europæus, Sanicula europæa, Scutellaria minor, Erica ciliaris. Specimens of the Lobelia urens have been received from G. Brownen, Esq., F.C.S., and Colonel Ross; Gladiolus communis and Spiranthes autumnalis from Mrs. Austen; while the rare Frankenia lævis has been contributed by M. Picquet, of Jersey.


BRITISH MUSEUM
NATURAL HISTORY

PLATE II.
The Bournemouth Lily
(Simethis bicolor).

Papers contributed. In January a short paper was contributed by the Chairman on the Cruciferæ. In March the Chairman gave a short account of plant tissues, illustrated by lantern slides prepared by Dr. Dixon. In April a short paper was contributed by A. Scott, Esq., B.A., on the leading characteristics and life history of a Composite, illustrated by diagrams and specimens.

Summer Excursions. During the summer, excursions were made to Littlesea, Talbot Bog, Christchurch Meadows, Wootton, and Corfe Castle. Many interesting plants were observed and collected, the excursions being most enjoyable and well attended.

Several members were very active on their own account, and, forming small parties, undertook excursions to the Isle of Wight, Clifton, Torquay, Brandsbury, Hartley (Kent), Weston-super-Mare, Swanage, Weymouth and district, and Wareham.

Bournemouth Lily. It may be of interest to note that the Bournemouth Lily (Simethis bicolor) which was threatened with extermination, owing to the site upon which it grew having been acquired for building purposes, has flowered this year in the Public Gardens, where a number of the bulbs were placed in the hope of preserving the species from destruction. This is very satisfactory, as the plant thrives only under certain conditions of light and moisture (see Plate II.).

Geographical Section.

CHAIRMAN: J. E. LIDDIARD, ESQ., F.R.G.S.

Geography at the Franco-British Exhibition. THE first meeting of the section was held in the Society's rooms on November 21st, 1908, when a paper was read by A. Scott, Esq., B.A., entitled "Notes made at the Franco-British Exhibition on the Geographical Exhibits." In the course of his remarks the lecturer suggested that great advantages might arise, if, in future the educational exhibits generally were arranged according to *subjects*. Had this plan been adopted, comparison between various methods of teaching geography and the illustrations employed for that purpose, would have been much facilitated. He thought great advance was shown in the "Graphic" maps relating to facts connected with temperature, rainfall, barometric pressure, &c., and, indeed, that nothing was more striking than the progress observable in map production generally and in the increasing attention given in English schools to both map construction and map

interpretation. In illustration of this, the lecturer referred in detail to an exhibit from a grammar school near Manchester, in which, by means of land surveying, the pupils were taught the construction and reading of maps in a thoroughly practical manner.

The Island of Rapa Nui. On December 5th, 1908, the Chairman read a paper (illustrated by lantern slides), entitled "Notes on the Island of Rapa Nui: The Great Mystery of the Pacific." This is the famous Easter Island situated in mid-Pacific in lat. 27° S. and long. 109° W., and containing the remains of an unknown race who must have attained remarkable skill in the arts, judging from the numerous statues, hieroglyphic tablets, stone houses, &c., which they left behind them. (*See* Plate III., Fig. 2). Mr. Liddiard, in the course of a most interesting lecture, stated that the present inhabitants have not occupied the island for more than three centuries, and are a fine-looking, brave and cheerful race. Their mysterious predecessors in all probability came originally from some part of South-West America.

A Geographical Conference. A geographical conference of the members of the section was held on January 23rd, 1909, Miss C. Agnes Rooper presiding in the absence of the Chairman. Discussion was opened by Mr. A. Scott reading a short paper on "How the work of the newly-created Section could be made most helpful and interesting to its members?" This gave rise to an animated debate in which Miss Fry, Dr. Mahood, and Messrs. Yates, Day, Barker and other members took part. It is hoped that many of the practical suggestions made on the occasion will bear fruit in the future work of the section.

The Geographical Area of Christchurch. On Feb. 20th, 1909, G. Brownen, Esq., F.C.S., delivered a lecture on "The Geographical Area of Christchurch as seen from the Keep, and its History." J. E. Liddiard, Esq., F.R.G.S., presided. In the course of his address the lecturer expressed the opinion that from its peculiar position north of the Church and Monastery, the Castle could afford no real protection to either of them. Although doubtful of the truth of the Hengist legend, he showed from the character of the coins and weapons found near the prehistoric earthworks at Hengistbury Head that the place in former times must have been held successively by Celtic, Roman and Saxon forces, and was regarded by them as a defensive position of great strength. In a paper replete with archæological detail and conjecture of great interest, Mr. Brownen called attention to a small section of a Romanized British road called the "Salt Way," near Lyndhurst, pointing S.W., and contended that indications of its continuation towards Christchurch still existed. Allusion was also made to the historical significance of such names as "Stan-pit," and "Stoney" Lane, where no doubt in former times mounds or stones were set up to guide travellers through the forest marshes that then

Fig. 1.

PLATE III.

Fig. 2.

Fig. 1. A Sea-Anemone (Tealia crassicornis) devouring a crab.
Fig. 2. Hieroglyphic Tablet from Easter Island.

existed. The whole paper was a good illustration how geography may be used in correlating masses of historical, archæological, and even etymological details, thereby intensifying their hold on the memory and imagination.

Australia and its Development. On March 20th, 1909, R. P. Yates, Esq., gave a lecture on "Australia: Its Social, Commercial, Mineral, Agricultural and Manufacturing Development, &c." There was a good attendance, and the members present followed with great interest the lecturer's account of his tour through the great island continent. The lecture was amply illustrated by lantern slides, and Mr. Yates, in the course of his remarks, showed that he had been a keen and intelligent observer of the scenes he had witnessed.

Dorset Place Names. On April 24th a paper was read on "The Place Names of Dorsetshire" by W. J. Stanton, Esq., of Wimborne. (For an abstract of this lecture see page 65). The subject was ably handled by Mr. Stanton, and a general desire was expressed by the members present that he would read at some future time a similar paper on the place-names of Hampshire.

Visit to Wareham. On September 18th, under the able and genial leadership of the Rev. S. Blackett, M.A., a visit to Wareham took place in connection with the Archæological and Geographical Sections. Notwithstanding the preponderating archæological interest attached to so ancient a town, Mr. Blackett did not fail to call special attention to the striking geographical features presented by its site and the district surrounding it, pointing out the changes effected since King Alfred's days by the silting up of the river, and showing the course taken by the old Roman road.

Geological Section.

CHAIRMAN: DR. W. T. ORD.

Raised Beaches. THE first meeting of the section during the 1908-9 session was held at the Society's room at 122, Old Christchurch Road, on November 19th, 1908. The Chairman read a paper on "Raised Beaches," illustrated by maps, diagrams, and photographs. Some twenty-three members were present. The formation of beaches was described, and the structure of the old beaches, traces of which are found at many places round the south and west coasts of England, was described. It was explained that these chiefly occurred where the strata were hard, where cliffs were of softer material they had been washed away; their usual height being 25ft. or 30ft. above present sea level. Their remains are

found at Brighton, Portland, Torquay, and many places around Cornwall, up the Bristol Channel and along the South Wales coast. The raised beach is usually covered up by a 'head' or mass of debris washed down from above. In the beaches, shells, all of existing species, are found. Flint weapons had been found in the head in one instance.

Glacial Action. At the second meeting, on January 21st, 1909, Mr. Parkinson Curtis read a paper on "Glacial Action South of the Thames," in which he argued that from the denudation of the chalk from the anti-clinal of Sussex and of Purbeck, and the almost complete obliteration of the superimposed strata, and from the admitted facts of glaciation north of the Thames, there must have been local glaciation in Devon, Dorset, and Sussex. Twelve members were present.

Geology of Portland. The third meeting, on February 18th, was held in the new rooms at Granville Chambers, when Dr. Moorhead—late of Weymouth—read a paper on "The Geology of Portland," illustrated by blackboard diagrams in coloured chalks prepared by Dr. Ord. The four strata entering into the structure of the Island of Portland were described—Kimmeridge clay, Portland sand, Portland stone, and Lower Purbeck Beds. Their formation, organic remains, commercial uses, and relationships, were detailed, and a general account of the geology of this interesting spot was given. Twenty-five members attended.

Flints. At the fourth meeting, on March 18th, 1909, Mr. H. B. Wells read a paper on Flints. He referred to the enormous amount of chalk that must have been denuded away to provide the vast number of flints found in the neighbourhood of Bournemouth, both as gravel deposits and in the Tertiary strata. The various forms of flints, their method of production, and the organic remains found in them were described and illustrated by specimens from the author's collection and from the cabinet of the Society. The chemical composition and the deposition of silex in chalk beds was described and an account of the large sheets of flint met with in a pit near Salisbury was given, and samples exhibited. In the discussion which followed, the Chairman—Dr. Ord—referred to the possible sources of silica, especially to that from the decomposition of the felspar derived from granite. The silicified tree trunks of the Purbeck beds at Lulworth, occurring in fresh-water strata, were mentioned by Dr. Moorhead. About twenty members attended the meeting.

Excursion round the Isle of Wight. The first excursion of the summer session on May 27th, consisted of a trip by steamer round the Isle of Wight, to study the natural sections displayed in the

cliffs round the coast. Owing to bad weather only ten members attended, although the excursion proved most interesting and instructive. Dr. Ord conducted, and by means of a series of charts and diagrams described the geology of the several cliff sections as they were passed by the steamer. Through the courtesy of Messrs. Sydenham, the *S.S. Majestic*, which took the party, went as near the shore as was practicable, and excellent views of the cliffs were obtained. The members landed at Shanklin, and spent two hours in examining the lower greensand strata from the beach. A good many fossils were found which have been added to the Society's collection.

Excursion to Hengistbury Head.

The second excursion was made on June 19th, to Hengistbury Head, under the conductorship of Dr. W. T. Ord. Proceeding from Southbourne cross roads, the party walked to the double dykes, near which a halt was called and an account of the geology of the series of Bracklesham strata known as Hengistbury Head Beds, and their relationship to the Bagshot Beds of Bournemouth Bay, was given by the Chairman, illustrated by a large diagram especially prepared for the meeting. The three strata displayed—the Boscombe sands, the Hengistbury Head Beds of sand and clay with glauconitic grains below, and bands of hard iron-stone above, capped by a layer of Highcliff Sands forming the bold cliffs of the Head—were then examined. From the iron-stone blocks on the beach a number of sharks' teeth were extracted, a fossil pine-cone was found, also remains of worm tracks, and teredo-bored wood was observed. Some thirty-five members attended. The recently formed Microscopical Section took part in this excursion.

Excursion to the Mendips.

At the third geological excursion, on June 16th, the Mendips were visited, Dr. Ord taking the party over the ground that he had at Easter visited with the Geologists' Association. Leaving Bournemouth West at 8.35 a.m., members arrived at Shepton Mallet at 10.30. Mays Hill was first visited, and the magnificent views from the summit enabled the conductor to give a sketch of the geology of the district, pointing out its distinctive features. Parts of the counties of Somerset, Wilts, Dorset, Devon and Gloucester were visible, from Exmoor in the West to Cley Hill in the East. Decending the hill, a small quarry in the upper lias was explored, after which two quarries each of inferior oolite with fuller's earth above were visited, and many fossils obtained. Proceeding to the village of Doulting, after an al-fresco lunch, brakes were entered and a halt was made at the celebrated Doulting freestone quarries, where the method of obtaining the stone was observed. Waterlip quarry in carboniferous limestone was then visited, and an interesting section showing Rhaetic, Lias and Inferior Oolite compressed into a few yards in thickness, lying on the planed off edges of Carboniferous Limestone,

was pointed out by the conductor. The igneous eruption of Sunnyhill next demanded attention, and finally, the recently discovered Silurian Beds, from which a good few Silurian fossils were obtained (for a full account of this discovery see page 69). After this an excellent tea was enjoyed at the Doulting Arms. Some sixteen members attended the expedition, which was one of the most interesting and enjoyable of the season. Mr. Barnes, the Hon. Curator of the Shepton Mallet Museum, joined the party and kindly assisted in describing the places visited. The return train reached Bournemouth West at 8.30 p.m.

Excursion to Hordwell Cliffs. The fourth and last geological excursion of the season was to Hordwell Cliffs on Sep. 22nd. Some twenty-eight members met at Christchurch and drove to Milton, where—leaving the brakes by permission of Mr. Troke, in an adjacent field on his farm—they walked to the cliffs and descended to the beach. There an account of the strata was given by Dr. Ord, who afterwards led the party in searching for fossils in the Lower Headon Beds. These being the lowest members of the Oligocene group, and lying on the unfossiliferous Becton Bunny Sands (which are the highest of the Eocene), occur only at Hordwell and the adjacent cliffs of the Isle of Wight. Various fresh water shells, and some fish remains were obtained.

Microscopical Section.

CHAIRMAN : DR. J. R. L. DIXON.

Opening Address. THE first meeting was held on April 22nd, 1909, when an introductory address was given by the Chairman. The formation of sections opened up the subject of specialisation, and the Chairman dwelt upon the advantages and drawbacks of this, and took illustrations bearing upon the subject from Microscopic life. He drew attention to the necessity for an adequate amount of co-operation amongst the specialised branches of the Society in order that the full benefits of specialisation might be obtained. It is hoped that this aspect of the sectional work of the Society will not be overlooked. After pointing out the enormous scope of the section, the Chairman said that one of its first objects would be to encourage members to use their microscopes satisfactorily and scientifically, and that, to help forward beginners, demonstrations on preparing objects for microscopical examination would, from time to time, be given ; that during the summer special excursions would be arranged for obtaining specimens, and that in this way

members would be taught where and how to look for microscopic life; that a microscopist required to understand the order of nature as much when searching for a gnat as a geologist did when searching for coal.

Diatoms were next considered. This subject was chosen not only because of the important part which diatoms play in the economy of nature, but also because they are amongst the best tests for the defining power of microscope objectives. The important parts played by diatoms in nature was made apparent when viewing oceanic life, and the chairman pointed out that they were not only the fundamental food supply, but the primeval supply which has determined the whole course of Marine life, and that this was the fundamental conception of marine biology. Many interesting lantern slides of diatoms, from photomicrographs by the Chairman, were shown—a number showing secondary structure as seen under a one-twelfth inch oil immersion lens. Many diatom slides were shown under microscopes by members.

Excursion to West Parley.

This took place on May 5th. Collecting was engaged in along the banks of the Stour. Many interesting larvæ of Ephemeridæ were obtained, also the fresh water limpet (*Ancylus fluviatilis*) the water spider (*Argyroneta aquatica*), and other more ordinary forms. On May 6th, a meeting was held in the Society's room when the specimens obtained were exhibited under microscopes.

Excursion to East Parley Ponds.

Took place on May 15th. Besides the ordinary forms of pond life, as Volvox, Hydra vulgaris and viridis, Daphnia, Cyclops, &c., which were obtained the only noteworthy find was Diaptomus castor, var caeruleus.

Dredging in Christchurch Harbour.

On June 19th, on the return journey from Mudeford to Christchurch Quay, a dredge was used from the motor-boat, also a small tow net. Several species of Mysis, the phantom shrimp, which has an auditory organ in the tail, were obtained, also Gammarus marinus and Sphaeroma serratum. The tow net yielded one specimen—a Hydra fusca—which was evidently floating out to sea.

Excursion to Marlboro' Deep at Wootton.

This was made on July 21st, when a delightful day was spent, and many captures made—larvæ of Ephemeridæ and Corethra plumicornis, the phantom larva, were obtained, as well as many Entomostraca, also an interesting infusoria Ophrydium versatile and a red alga Palmella cruenta.

To Wool. On August 11th. The moats surrounding Bindon Abbey were full of interesting microscopic life, and the following uncommon algæ were found: Apiocystis Brauniana and Enteromorpha intestinalis.

To Romsey. On August 18th, at the general excursion to Romsey, a visit was paid to Broadlands, and the lake in the Japanese garden was found to be very rich in microscopic life. Volvox globator occurred in enormous numbers, as also Cyclops and various Entomostraca. The Rotifer, Triarthra longiseta, was also present in great abundance.

Several smaller excursions were arranged amongst members, and at one, at Christchurch, the beautiful Floscularia ornata was obtained.

On August 25th, a dredging excursion took place in Poole Harbour and Studland Bay. Many interesting specimens were obtained. A few of the more interesting will be described, but an enumeration of all those found must be left for another occasion. Many of the specimens obtained were shown next day at the Society's room, and examined under microscopes.

On this occasion the chairman gave a demonstration in preparing vegetable tissues for the microscope. A specimen of Equisetum sylvaticum was cut, stained and mounted and the method explained.

Marine Work. The following record of the more important marine work is contributed by H. J. Waddington, Esq., F.L.S.

Among the more interesting finds in marine zoology was a specimen of Monstrilla anglica, carrying ova (*see* Fig. 1, Plate IV). This is rather a rare copepod, of parasitic habits, which has been taken, for the most part, sparingly off Jersey. The usually well developed mouth organs of normal Copepoda are absent. No trace of an alimentary canal can be made out, and no respiratory organs are apparent. This is the first specimen clearly showing how the ova are carried, the method being previously judged by analogy from allied species.

Some exceedingly fine specimens of the polyzoon, Bicellaria ciliata, were obtained and prepared (by Mr. Waddington) for the Society's museum. One or two specimens of the very curious worm, Siphonostoma diplochaitos were obtained from the piles of Salterns pier.

The local distribution of the Caprellæ is a subject of much interest. On Bournemouth and Boscombe piers a variety of Caprella acutifrons is most prevalent but is not met with elsewhere. It has been named by Dr. Paul Meyer, of Naples (the European authority), the Bournemouth Caprella. It is rather larger than the ordinary form, with more powerful anterior legs, which possess an extra and distinctive tubercle. Fig 2, Plate IV, represents the

Fig. 1.

Fig. 2.

Fig. 3.

PLATE IV.

Fig. 1. A rare Copepod (Monstrilla anglica), showing how the ova are carried after extrusion.

Fig. 2. An Amphipodous Crustacean (Caprella acutifrons) parasitic on Hydroids.

Fig. 3. A variety of Caprella acutifrons found on Bournemouth and Boscombe Piers.

ordinary form of Caprella acutifrons, Fig 3 the Bournemouth variety. At Totland Bay the prevailing species is Caprella protopedata. This also predominates at Salterns pier. An extremely rare species Caprella erethizon, was also found at Totland. Two specimens of this Caprella have recently been found at Swanage. At Swanage the prevailing species is Caprella acanthifera. At Poole Quay, Caprella æquilibra is to be met with in profusion, and this season several of these were obtained of unusual size. Some of these were sent to the British Museum, and were found to be larger than any in the collection there. Two or three other Caprellae are more dispersed than those which have been here described.

Photographical Section.

Chairman : C. J. Hankinson, Esq., J.P.

Opening Meeting of Session.

The first meeting of the winter session was held in the Society's former room at 122, Old Christchurch Road, on December 3rd, 1908. Some 15 members attended. The Chairman exhibited a monthly portfolio of the Zodiac Camera Club. A discussion followed, after which it was decided to issue a circulating portfolio of original photographs, scientific and pictorial, taken by members. The late Chairman of the section, Alderman R. Y. Banks, undertook the management of this portfolio, to which all consented to contribute specimens of their work. It was agreed that a contribution of one shilling per head per annum should be paid by members receiving the portfolio, to cover necessary expenses.

Ensyna Paper and Colour Toning of Platinum Prints.

On February 4th, 1908, a demonstration was given by R. Y. Banks, Esq., on the new Ensyna paper recently introduced by the Paget Photographic Co. Some excellent prints, in several tones, were produced, and the advantages and method of working the process clearly explained by the lecturer. This was followed by a demonstration on the colour toning of platinum prints by the Chairman. The salts of vanadium, in several solutions, proved successful in producing some very pleasing colour effects on prints provided by Mr. Hankinson. Much interest was shown in the experiments by members present. This was the last meeting of the section held in the Society's old room.

Reflex Cameras.

The first meeting of the section to be held in Granville Chambers was on March 16th, 1909, when Dr. Ord gave a demonstration on "Reflex Cameras," explaining their construction and principles by black-board diagrams, and showing their working by his Planex camera.

Mrs. Waters kindly brought an Adams' Videx camera for exhibition. The advantages and disadvantages of the new type of camera were clearly explained, especial stress being laid upon the aid to pictorial composition obtained by the full-sized picture as seen by the mirror of the reflex, also the facility by which times of exposure could be correctly estimated from the appearance of the image. The importance of the focal-plane shutter, with which all reflex cameras are fitted, was also pointed out, as reducing the time of exposure to one-fourth of the normal, enabling snap-shots to be taken in very poor light.

Photographic Excursions. The only special photographic excursion arranged during the summer was held on May 12th, when the Chairman conducted a small party to Studland to photograph the well-known Norman Church and picturesque bits in the village. As so many of the general and sectional excursions were to places of interest to photographers, it was not considered necessary to arrange other separate excursions, members having cameras attending most of the field meetings. The most important excursion to photographers was the visit to Twynham Priory of the Archæological Section—(page 45)—on June 23rd, when the opportunity was given—and taken advantage of by several members of the section—of photographing interesting portions of the Minster and the adjacent buildings which are not usually accessible to the public.

The Portfolio. Some 20 members have joined in providing photographs and circulating the portfolio under the management of Mr. Banks, Egerton, Portchester Road, who will be glad to receive names of others who may wish to join. There is a section for scientific prints, as distinguished from pictorial. The portfolio takes about two months to complete each round, so that six pictures a year is the minimum expected from each member.

Physical Section.

CHAIRMAN: HUBERT PAINTER, ESQ., B.Sc., F.C.S.

THE activities of this section during the Society's year, 1908-9, were represented by two meetings at the Society's rooms, an excursion, and an astronomical evening at the residence of Colonel Markwick, C.B., F.R.A.S.

Paper on "Silica" by the Chairman. The first meeting took place on December 19th, at the old committee rooms at 122, Old Christchurch Road. After a few remarks on the derivation of the word "silica," and the sense in which it is used, a brief sketch was given of the history of the subject. A specimen

of the element silicon was exhibited and a practical demonstration of one of the methods of isolating it was given. Then followed a description of the principal natural forms of silica, specimens of some of these being handed round. The preparation of amorphous silica was shown practically, and the remarkable properties of the new "silica ware" were illustrated by simple experiments.

The paper ended with some remarks on the enormous importance of silica in nature and on the multiform services it and its derivatives render to mankind. Mr. E. W. Barlow rendered great assistance in preparing the experiments and Dr. Ord and Mr. W. T. Gardner kindly lent specimens for exhibition.

The Water Supply of Bournemouth.

On February 6th, Mr. W. Temple Gardner gave his paper on this subject at the Society's new rooms at Granville Chambers. This was the first sectional meeting held under the improved conditions, and this circumstance co-operated with the intrinsic interest of the subject of the paper in securing a good attendance of members. A full abstract of Mr. Gardner's excellent paper is given at page 75.

Visit to Gas and Water Works at Poole and Wimborne.

The invitation to visit the Works of the Bournemouth Gas and Water Company kindly given, on behalf of the company, by H. W. Woodall, Esq., M.I.C.E., was thankfully accepted. On June 30th a party of about forty members visited the works at Poole, Wimborne, Longham and Alderney. The weather was favourable and the visit was most instructive and enjoyable. The processes of preparing, purifying, storing and distributing coal-gas were seen in operation at Poole; at Wimborne, Longham and Alderney we saw the way in which the company collects the water used in Bournemouth, and how that water is softened, filtered and stored. The company provided an excellent lunch for the party at the Wimborne works, and after this Mr. Woodall, in responding to a vote of thanks, gave a brief but clear account of the working of the water-softening plant.

Throughout the whole of the visit the party was accompanied by Mr. Woodall and Mr. Moon, the Assistant-Manager, and not only so but a number of the other members of the staff contributed greatly to the pleasure and profit of the visit by being at hand to answer questions and give explanations.

An Astronomical Evening.

By the kind invitation of Colonel Markwick about twenty members of the section had the opportunity of seeing the planets Mars and Saturn under peculiarly favourable circumstances. The party met at Colonel Markwick's residence on September 23rd. The atmospheric conditions were excellent and both planets were well seen in the 8½ inch reflector with which so much good work has been done. Mars was just in opposition (a most favourable one, too)

and on this evening the colours of the planetary markings were particularly well visible. "Mare Tyrrhenum," "Mare Cimmerium" and "Syrtis Major" were amongst the features identified, and much interest was taken in the south polar ice-cap. Saturn was also well placed for observation, and the image formed in the telescope was as sharp as a fine steel engraving. The belts on the planet were seen and a fine view was obtained of the ring system, including Cassini's division and the "Crape" ring. The shadow of the planet on the rings was also made out and several of the satellites, especially Titan, were seen with unusual clearness.

Few of the members who were present will forget the interesting astronomical evening which they enjoyed through Col Markwick's kindness.

Zoological Section.

CHAIRMAN: DR. A. W. THOMAS.

Meetings.

THE work of this Section during the past year has been very satisfactory. During the winter session the following meetings were held and papers read:

On Nov. 26th, 1908. "Some Microscopical Spoils of last Session," with microscopical demonstration by the Chairman.

On Dec. 31st. "Urania Solanus," a few words on its habits in Jamaica, by R. V. Sherring, Esq., F.L.S., and the exhibition of a Calcid, parasitic on Pygaera bucephala, with microscope slide illustrations by W. Parkinson Curtis, Esq., F.E.S.

On Jan. 28th, 1909. "Notes on the Male Genitalia of Euplæa linnei (Midamus)," illustrated by microscope slides, by W. Parkinson Curtis, Esq., F.E.S.

On Feb. 25th. A paper on the "Cowries of the World," with illustrative specimens, by Dr. Dixon.

On March 25th. A paper on "Instinct," illustrated by some examples in insects, by Dr. Crallan, M.A., M.B.

On April 29th. "Remarks on the Structure of the Bryozoa," by A. W. Waters, Esq., F.L.S., F.G.S.

Excursions.

During the summer, a number of interesting Excursions were made, mostly in conjunction with the Microscopical Section, under which heading a description of them will be found. In conjunction with the Microscopical Section some dredging excursions took place, and the sections would welcome a boat of their own, so that the fauna of the bay might be properly examined and recorded. Although this section possesses several lepidopterists, it is to be regretted that it is

without anyone devoting special attention to the Coleoptera, Diptera or other branches of entomology. Some more ornithologists would also be welcomed, as there is a good deal of interesting work waiting to be done among the migratory birds, and Poole Harbour and the environs of Christchurch, which have contributed so many valuable specimens to Hart's Museum at Christchurch, afford very favourable opportunities for pursuing this study.

Tealia Crassicornis.

During the year an interesting and uncommon specimen was obtained in the bay—*see* Fig 1, Plate III, which represents a sea anemone, Tealia crassicornis, devouring a crab. The anemone has partly swallowed the crab, which, however, appears to have been too large for it. In the struggle, the anemone probably lost its grip on the rock or stone to which it was attached, and so was unable to complete its meal. It clung, however, to its prey to the end. An anemone would hardly have been expected to attack or to devour so large an object as this crab. This specimen was presented to the Society's Museum by H. J. Waddington, Esq., F.L.S.

Ecdyses of a Lobster.

The frontispiece illustrates a unique series of the Ecdyses or cast off shells of a lobster. This series has been prepared by H. J. Waddington, Esq., F.L.S., who has succeeded in the difficult task of rearing this lobster, which is still alive, and watching its growth for over three years. The dates of the Ecdyses and their measurements are as follows:—

August 21st,	1906	...	2.20 c.m.
September 14th	,,	...	2.55 ,,
October 9th	,,	...	2.90 ,,
November 23rd	,,	...	3.40 ,,
March 14th,	1907	...	3.70 ,,
May 5th	,,	...	4.0 ,,
July 14th	,,	...	4.40 ,,
August 24th	,,	...	5.05 ,,
October 26th	,,	...	5.60 ,,
February 17th,	1908	...	6.30 ,,
May 12th	,,	...	7.30 ,,
August 16th	,,	...	8.35 ,,
December 9th	,,	...	9.30 ,,
June 8th,	1909	...	10.35 ,,

This series of Ecdyses was shown at one of the Society's meetings, and has since been presented to the British Museum.

A rather rare crab, Gonoplax angulatus, was taken in Bournemouth Bay, during the summer, in a trawl net, and has been presented by Mr. Waddington to the Society's Museum.

A Selection from the Papers read before the Society.

John Prophete, D.D., Rector of Ringwood, Hants.

By G. Brownen, Esq., F.C.S.

(*Read before the Archæological and Historical Section on 10th Dec.*, 1908).

Mankind in almost every age—prehistoric or modern—have shown some respect for their dead, and tumulus, cromlech and monolith, with or without inscription, may be found all over the inhabited earth. In our own country, here and there, the monolith with its edge runes may still be found. After these came the Celtic and other crosses, later still in the Norman age the simple incised stones acting oftentimes as coffin lids. To these in a still later age were added inscriptions and figures. The decorative art of the inlayer and enameller also contributed metal and mosaic work rich in colour and gems.

In other lands and more ancient times the memorial works of Egyptian, Hittite, Assyrian, Greek, Etruscan and Roman empires consisted in sculptured representations of the deceased, but about these peoples for present purposes we have nothing to say, except this, that although the Roman funeral bust in stone may here and there remain in England, attempts in any other way to figure the departed rarely exist amongst us until the brasses of the 13th century. Our oldest brasses in this country are at Stoke d'Aubernon, in Surrey, dated 1277 and 1327 respectively. There is sufficient evidence to prove the existence of earlier brasses, but in the revolutions of the 16th and 17th centuries they were either mutilated or lost. As regards the brass of Ethelred I. at Wimborne, although dated A.D. 872, the year of the death of this Saxon monarch, from its style or lettering it would appear to be not earlier than the 15th century and at its best only represents an earlier memorial. The subject of our present sketch was a notable man in his age, for John Prophete was the last Rector of Ringwood, and his brass, which is preserved from an earlier church and now lies in the south side of the present choir of Ringwood church, is a good specimen of 15th century art. The figure is dressed in processional or choral vestments, and indicates correctly temporal rather than spiritual dignity as we shall presently see. Turning from his brass on the church floor to the story of his life, we may note that the Prophete family were 14th century London goldsmiths, who a little later intermarried with the Lynes, a Wessex family seated at Ringwood and elsewhere.

John Prophete, D.D., was a most important personage in the eventful days of Richard II., Henry IV. and V. His record by preferments is as follows:—Rector of Orpington, Leighton Buzzard and Ringwood, Prebendary of Lincoln, 1387; of Chichester, 1391; of Salisbury, 1413; Prælocutor of Aberguilli, Dean of Hereford, 1393; Dean of York, 1406; and Keeper of the Privy Seal to Henry IV. He is named as a witness in that King's will as "John Prophete, warden of my Privy Seal," dated at Greenwich, 21st Jan., 1409.

John Prophete was thus the contemporary of such famous Englishmen as Wycliffe, Wykeham, Cobham and Beaufort. He saw the rise and fall of Lollardy and possibly knew many of the intrigues which produced the Act for the burning of Heretics (De Hæretico Comburendo, 2 Henry IV., c. 15). Was he infected with Lollardy? This is a difficult question to answer exactly but he seems to have had correspondence with the martyred Cobham, and later than this pleaded for one Joan Cobham, in great distress, after Oldcastle's martyrdom (*Harl. MSS.*, 431). This again leads us to note that much of the correspondence of Prophete still exists, for his Register is in the British Museum (*Harl. MSS.*, 431) and his letters, beautifully written, are in the same Museum among the *Harleian Manuscripts*. The Prophete letters are interesting from historical and ecclesiastical points of view, and well worth reproduction. For instance, we find that Prophete attended the funeral of Roger Walden, Bishop of London, whose career was a chequered one in the dynastic revolution that placed Henry IV. on the throne of England. Prophete tells us that he ventured to lift the veil from the face of Walden lying for burial in St. Paul's Cathedral, and that the corpse looked fairer than usual and more like a man asleep.

But John Prophete was an envoy from the English Court of Henry IV., trying to end what is now called "the great Schism" in the Papacy, which had become the scandal of Christendom. Rival Popes like Urban VI. and Clement VII. had been cursing each other, and then followed Benedict XIII. and Gregory XII. continuing the quarrel. Against both, and the corruptions in the church, Wycliffe had been preaching in England and a little later Huss in Bohemia. Amongst the politicians trying to induce both Popes to abdicate, so that a more respectable Head might be chosen for the church as Pope, we find John Prophete, who described Gregory XII. as a crazy brain-sick old man, with one foot in the pit, and mazy in his dotty old head! Of course Prophete got into trouble with the angry Popes, being excommunicated and deprived of his benefices, but Henry IV. prevented their accomplishment, and by and bye the crowned heads of Europe by stopping supplies brought the quarrelling Popes to reasonableness, and the disgraceful scenes at Lucca and Sienna to a close. The Prophete MSS. are quite a storehouse of clerical politics for the opening years of the 15th century, but we must now leave them for home affairs. In England he helped Cardinal Beaufort in his Cambridge foundation by transferring the income of Ringwood Rectory to King's College—possibly he had worked the rectory

through a deputy or vicar, for a Richard Field is named as such by Bishop Wykeham in 1397. We see no self denial in the act of spoliation of his successor's income even to found a college at Cambridge like "King's." Prophete fully repaired Ringwood Rectory by royal grants (*Harl. MSS.*, 431, 18) and helped the Berkeleys of Bisterne to found their chantry near Ringwood. On 8th April, 1416, being in London, he made his own will and soon afterwards died. This will is at Somerset House (*PPC* 33 *Marche*). In it he desires to be buried either at Leighton Buzzard or Ringwood, and as his brass is in Ringwood Church, he probably lies there, although the exact grave is unknown, the brass having been moved in modern times for convenience and preservation.

The brass, which is six feet long (*see Plate V.*), exhibits the wear of more than four and a half centuries, its inlay of white metal or silver being destroyed, as well as its inscriptions, portions of its shields, saintly figures and canopy. The tonsured head of Prophete is represented as lying on a diapered cushion. The vestments are a surplice with hanging sleeves over which is the almuce. The hands are clasped as in prayer. The morse or brooch fastening the almuce bears a figured head with a nimbus, probably of Christ. On the cope are eight saintly figures on pedestals under canopies—on the right side St. Michael in triumph, St. John Baptist with a lamb and book, St. Peter with his key, St. Paul and his sword, these last two being the dedication saints of the Ringwood church. On the left side is St. Winifred with a book—her pedestal is inscribed Sca Wefrd, below is St. Katherine with wheel and sword, then next St. John with a chalice and dragon, and the lowest is probably Christ in triumph over the dragon, slaying it with a cross-hilted spear. The canopy has foliage ornamentation similar to John d'Campeden at St. Cross, Winchester, and Thomas Aylward at Havant—all three are probably the work of the same artist. As the features on each brass differ it may be assumed that a likeness is intended. If so, John Prophete had a round handsome happy face—his lines had fallen in pleasant places; if he had his worries he also had a good share of prosperity and friends. As a memento of the stormy time of the 15th century in the making of England, may this brass long be preserved at Ringwood as an interesting local object for the historian and antiquary.

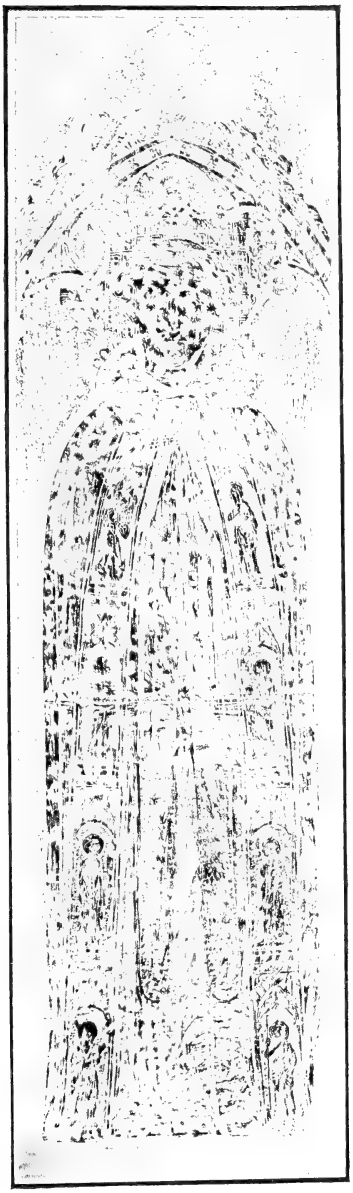


PLATE V.

Brass of John Prophete in Ringwood Church.

The Roman Villa at Hemsworth, Dorset.

By H. Le Jeune, Esq.

(*Read before the Archæological Section on Feb. 11th, 1909*).

This Roman villa, recently uncovered, is at Hemsworth, Dorset, situated on farm lands about a mile and three quarters due north of Badbury Rings, and about a quarter of a mile from the Roman road leading from Badbury to Donhead St. Mary, or about three quarters of a mile from the Via Iceniana or Ackling Way—which is now known locally as the "Wiry Lane"—or the Via connecting Badbury with Sorbiodunum or Old Sarum. The villa, therefore, was within touch of several Roman roads, and was, no doubt, in close connection with that important stronghold, Badbury Rings, which was the meeting place of five roads, and a probable site for the Roman station Vindogladia. As long ago as 1831 Dr. Wake Smart wrote as follows: "On Hemsworth Farm were discovered the foundations of several rooms, in one of which I saw a beautiful representation of a dolphin surrounded with a fine ornamental border all in mosaic work." (Proc. *Dorset N. Hist. Field Club*, vol. ix., p. 19). The fact that Dr. Smart says he saw a mosaic dolphin seems to imply that he only partially saw what we are about to describe as the Venus pavement of one of the rooms of this villa; this has five dolphins in tessera on its border, and we have no knowledge of the dolphin ornamentation occurring on any other floors of this villa. It is, however, very curious that Dr. Smart omits mention of seeing the Venus of the central panel. As far as we have been able to trace, the Dorset Field Club papers contain no other reference to this Hemsworth site. Warne, in his "Ancient Dorset," does not mention Hemsworth in words, but he indicates a Roman occupation somewhere near the site by a red mark on his map. Hutchins at an earlier date is, however, more specific. In his "History of Dorset" he notices extensive irregularities of the surface as suggestive of ancient occupation, and he then proceeds to state that "in an adjoining field were found the remains of a Roman villa consisting of foundations and six pavements three of which were tesselated." As a matter of fact ten pavements on this site have been recently uncovered.

Notwithstanding the remarks of Hutchins, Dr. Smart and possibly others, the villa remained covered up by a few inches of surface soil and became quite forgotten, indeed, the plough or spade must at times have gone dangerously near to breaking it up! Having heard that some small squares of coloured stones had been found thereabouts, I determined to inquire into the matter. Having succeeded in interesting Mr. Linklater, the tenant of the farm, and his friend, Mr. Scott Orr, a search was made for the remains of the villa. Our first efforts to find the spot were not successful, but by the help of an old shepherd whose memory went back more than half a century, we soon hit upon the exact site. Having located the remains about nine inches below the surface, the walls, founda-

tions, floors and pavements of an extensive and important villa were soon uncovered and examined. The principal rooms of the villa were found to have been paved with rich mosaics. The first tesselated pavement displayed was thirteen feet square, having a framework of concentric bands, richly ornamented, which converted the centre of its field into a panel. On this appeared the mosaic figure of a fine human head, full faced, of a swarthy complexion, with short beard and moustache. There were six curious chevron-shaped rays radiating from the back of the head. That this figure was intended as a likeness there cannot be much doubt, nor that so gorgeously embellished a head must have represented some important personage of the Roman power in Britain. It has been suggested with great probability that this head was a representation of the Emperor Severus, who reigned A.D. 193-211. This Emperor was born in Africa, A.D. 146, and died in Britain, at York (Eboracum), A.D. 211, in his sixty-sixth year. In A.D. 201 Severus, with his wife Julia and his two worthless sons, Caracalla and Geta, came to Britain. Leaving his family in South Britain, Severus with his legions went north to the Caledonian War. The profile of Severus on his coins shows slight beard and moustache in harmony with the Hemsworth mosaic—so if this surmise is correct, the date of the pavement may be assigned to the earlier portion of the third century A.D. This pavement has been removed to Crichel House by Lord Alington, the owner of the property, and relaid there.

The second pavement (which we term the "Venus") is of even more beautiful design, and is represented and described on Plate VI, which is reproduced from an excellent coloured scale drawing by G. Brumell, Esq., A.R.I.B.A. This pavement has been removed to the British Museum.

Another pavement of the Hemsworth villa was laid in black and white tiles, $7\frac{1}{2}$ inches square, the white being of marble, the black of Kimmeridge shale, which is a most unusual material, and this is our only known instance of its use for such a purpose, but when waxed and polished it was probably effective and striking in appearance.

Seven other pavements were uncovered, mostly having geometrical designs, but all had been more or less injured by time, etc. A fine specimen of a Roman bath was also found, with its drain. Also the hypocaust was exposed, with many of its bricks and tiles in position, showing the peculiar arrangement adopted for conveying hot air from the furnace to the various rooms of the mansion. In a pit near the Venus pavement were found a collection of broken pots, bricks, tiles, etc. Some of the stone tiles had the rusty remains of nails still sticking in their holes; these tiles were of the elongated hexagonal pattern. All this—and more might be added if space permitted—bears fullest testimony to the luxury of this Roman settlement, for the villa to the conquering Roman was like the squire's hall in our modern times and was furnished with all that artistic skill could achieve or acquire.

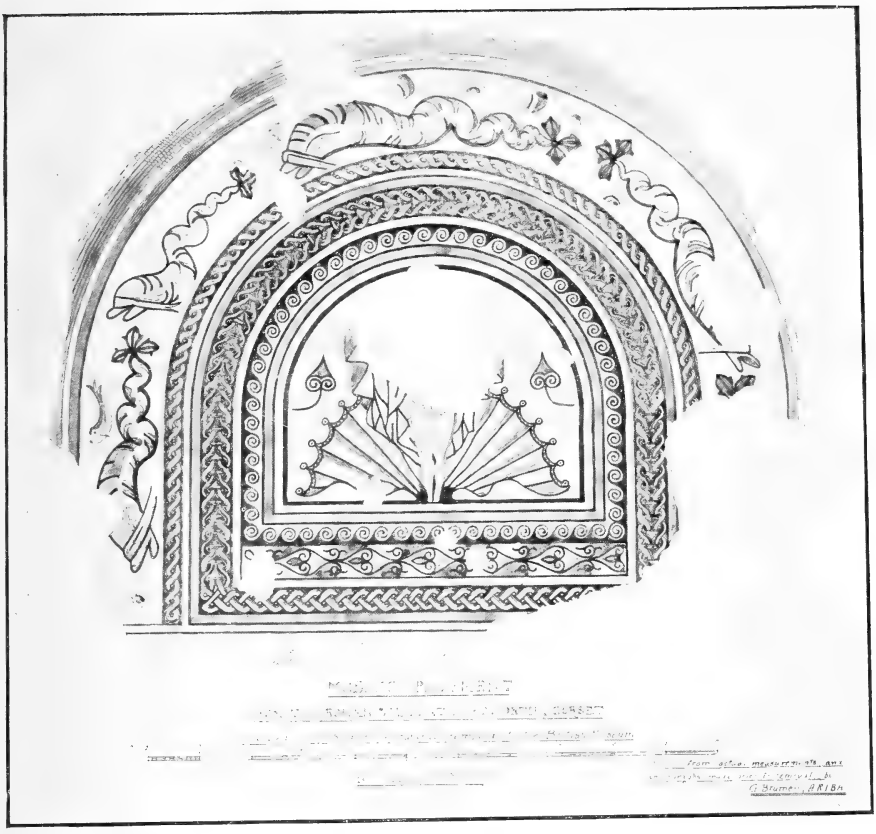


PLATE VI. The "Venus" Pavement found at Hemsworth.

THIS floor is of peculiar shape, in plan like a slightly stilted semi-circle, or an apsidal end, 16ft. long and 12ft. 7in. broad. The central panel, of the same shape as the whole floor, is occupied by an artistic representation of Venus rising from the waves, and screened at the back by an enormous, beautifully-fluted and delicately-coloured shell, the rays diverging from the point where the goddess's feet meet. Unfortunately the head and body have been destroyed, most probably by deliberate intent, as the remainder of the floor is nearly perfect; but the legs remain from the hips downwards. The decorated borders enclosing the panel are varied and beautiful. Besides the cable ornament of two and three strands, the guilloche appears, and there are other elaborate geometrical designs delicately foliated. The broad and main outer band is the most remarkable, for it is occupied by five dolphins delineated with wonderful life and spirit, and with small fish and scallop shells between. The colours in this pavement are more varied than the other, for there are here yellows and browns. Pale blue tesseræ worked into the lower parts of the dolphins' bodies give an effective impression of the gleam of the creatures emerging from the water.

Place Names in Dorset.

Their Association with the Geography of the County.

By W. J. Stanton, Esq.

(Read before the Geographical Section on 24th April, 1909).

Many of the place-names in Dorset may be conveniently arranged under certain geographical heads. First, there are those connected with water; and when, as in Dorset, between a hundred and a hundred and fifty names can be so associated, there can be no doubt in our minds as to where our early predecessors chose to make their dwelling places. Then our forefathers appear to have chosen the valleys rather than the hills for their villages, for a large number of places so derive their names, and these may therefore be placed second. Then there are the names connected with hills, those with woods and forests, others with the soil and agricultural pursuits, and, lastly, a number which have obtained their names in various ways.

Taking those connected with water, we find that the names of most of the rivers of the county come from British words meaning a river, stream, water, &c., and so what were originally common names have become proper ones, *e.g.*, the Stour, formerly called the Sdora or Stora, derives its name from the British word *dour* or *dur*, meaning water, the Trent from *trouent*, a winding river, the Frome from *frau*, a stream, the Wey from *gwy*, meaning water, the Wye in Wales deriving its name similarly, and the Bredy and Brid from *brid*, to spring forth.

Then these rivers have given names to many of the places on their banks. On the Stour itself we have East Stour, West Stour, Stour Provost, the latter part derived from Preveaux in France to the monastery of which place it belonged at the time of the Conquest, Sturminster Newton, originally two separate places, Stourpaine, which at one time belonged to the Paynes, and Sturminster Marshall, the manor during John's reign having been in the possession of the Marshals, Earls of Pembroke. The tributaries of the Stour are responsible for many names. The Lydden gave Lydlinch; the Iwerne supplied Iwerne Courtenay (Shroton or Sheriffstun), Iwerne Minster and Iwerne Steepleton; the Tarrant (torrent), Tarrant Gunville, Tarrant Hinton, Tarrant Launceston, Tarrant Monkton, Tarrant Rawston, Tarrant Rushton, Tarrant Keyneston (Kaynes' town) and Tarrant Crawford, most of these places obtaining the second portions of their names from their ancient owners. Tarrant Monkton, for example, belonged at one time to the abbey which formerly existed at Cranborne. The Winterborne, so called because in the summer it often reaches only as far as Winterborne Clenston gives names to Winterborne Houghton (Hugh's town), Winterborne Stickland (sticel-land, *i.e.*, steep, sloping land), Winterborne Clenston, (Clench was an ancient owner), Winterborne Whitchurch (Whit,

from British *wit*, meaning a wood), Winterborne Kingston (once the property of King John), Winterborne Anderson (St. Andrew's tun), Winterborne Thomson (Thomas' tun), and Winterborne Zelstone (the tun of Sell, a Saxon); the Allen or Wim gives us Wimborne St. Giles (church dedicated to this saint), and Wimborne Minster, that is, the church on the clear stream, the word Wimborne being a hybrid from the Celtic, *Win*, meaning white or clear, and the Saxon *burne*, a stream. It is interesting to note that Winfrith also means the place on the clear stream, but in this case the name is purely Celtic, the first syllable being derived from the same source as that in Wimborne, and the latter from *ffrdd*, a stream. The Crane, so called from its winding, resembling the neck of a crane, gives us Cranborne, and the Moors, West Moors.

Turning to the Puddle or Trent, we have Puddletrenthide (thirty hides of ground), Puddlehinton, Puddletown, Tolpuddle, formerly Tola's Puddle, Tola being a great officer under Canute, Affpuddle (Affa was a Saxon owner), Toner's Puddle (the Toners held it in the reign of Edward I., paying a yearly rental of eight pence to that monarch), and Brian's Puddle, formerly owned by Brian de Turbervill, the ancestor of the family immortalised in Hardy's "Tess."

The Frome gives us Frome St. Quinton (Quintons were the lords of the manor in the reign of Richard I.), Chilfrome (S. *celi*, meaning cold), Frome Vauchurch, Frampton and Frome Whitfield (the Whitfields owned it in Richard I.'s reign).

The Frome has two tributaries, viz., the Cerne and the Winterborne, which supply us with many names. The Cerne gives us Upcerne (Upper Cerne), Cerne Abbas, the latter word referring to the abbey, Nether Cerne (Lower Cerne), and Charminster. The Winterborne gives us Winterborne Abbas, the place formerly belonging to the abbey at Cerne, Winterborne Steepleton, Winterborne St. Martin (church dedicated to St. Martin), Winterborne Monkton, which formerly belonged to the priory of Wost or Le Vast, near Boulogne, and Winterborne Came which was at one time in the hands of the abbey at Caen, in Normandy. From the Wey we get Upwey, Broadwey and Weymouth, names which explain themselves. The Bredy gives us Bridehead, the place where the river rises, Little Bredy, Long Bredy, and Burton Bradstock (S., *stocce*, means a wood). The Brid supplies Bridport, the Char, Charmouth, the Lyme, Lyme Regis, a place formerly in the hands of the Crown, while the Parrot gives us South Perrott.

Many places obtain their names from the fords which existed near them, *e.g.*, on the Stour we have Childe Okeford (S., *cile*, meaning cold, and Okeford because of the oaks which grew near), Okeford Fitzpaine (Robert Fitzpaine owned it in the reign of Edward I.), Blandford and Canford; on the Frome we find Bradford Peverel, Bradford meaning the broad ford and the Peverels having been the ancient owners, Fordington, Stinsford (Stint or Staen was an owner in ancient times), West Stafford, formerly Stanford, or strong ford, and Woodsford, a very famous ford and protected by a

castle, now used as a farmhouse; while near Sherborne we find Bradford Abbas, a place formerly belonging to the abbey at Sherborne, and Thornford, so called probably because of a remarkable thicket of thorns which grew near.

The wells give us Wool or Welle, Ulwell (holy well), Warmwell (Wermund, a Saxon owned the well), Poxwell (Pocca's well), Askerswell (the well of Asker, a Saxon), Holwell (Holywell), and Belchalwell (the beautiful cold well).

From water mills the names of the following places are derived: Fontmell Magna (in Domesday book we read "three mills here pay 11s. 7d.), Corfe Mullen, Melbury Abbas (the place formerly belonged to Sherborne Abbey), Melbury Bubb (the Bobbes or Bolbes were the ancient owners), Melbury Osmund (the church is dedicated to St. Osmund), and Melbury Sampford (the Sanfords were the owners in the reign of Henry III.)

Then we come to a number of places which derive their names from water in various ways. We have Poole (Brit., *pul* or *pol*, a pool), Radipole (the reedy pool), Bradpole (the broad pool), Pulham (a dwelling by a pool), Dorchester (Brit., *dur*, meaning water and *ceastre*, a camp), Fleet (S., *fleet*, a place where the tide comes up), Hamworthy (S., *ham*, a dwelling, and *weorth*, meaning near a shore, and hence the dwelling by the shore), Wyke Regis (S., *wyke*, a curve or reach of the sea, or a winding of the shore), Longfleet, Creekmoor, Sherborne (S., *scire*, meaning clear, pure, and *burne*, a stream or brook), Wareham (either from *wear* or *ware*, meaning a dam, or *var* a river, *re* two, *ham*, dwelling place, and hence the dwelling place between two rivers, in this case the Trent and the Frome), and Witchampton, which means a place on a winding river.

Turning to the surface we get the Saxon word *comb*, meaning a valley, constantly occurring. We find Bincombe (S., *binnan-comb*, means the inside dell), Chilcombe (S., *celi*, meaning cold), the present village is on a hill, but the ancient parish was in a valley, Melcombe Bingham (the Binghams were the owners in former times), Melcombe Regis, Coomb Keynes (formerly held by the same Kaynes who owned Tarrant Keynstone), Compton Abbas (once the property of the abbey at Shaftesbury), Corscombe, Watercombe, Bettiscombe, Encombe (in a valley), Thorncombe, Botcombe, Nether (lower) Compton, Over (higher) Compton, and Compton Valence, which, in the reign of Henry III. was granted to William de Valence, who afterwards became Earl of Pembroke, having married the heiress. Corfe Castle, formerly Corves geat, owes its name to the Saxon word *ceorfan*, meaning to cut, and referring to its situation in a gap, or as it were, a cleft or cut in the hills, while *geat* is the Saxon for gate or entrance.

The hills give us Bindon, Hilton, Church Knowle (S., *cnolle*, meaning the top of a hill or an ascent), Puncknowle, Marnhull (Marl hill), Pentridge (Brit., *pen*, meaning a head or chief part, and *ridge*, the ridge of a hill), Broadwindsor (*broad*, to distinguish it from Littlewindsor, and *windsor*, a winding bank or range of hills), Steeple, from its situation under a steep hill, Swyre which derives

its name from a Saxon word meaning a pillar or cliff, Shaftesbury, which possibly gets its name from the shaft-like shape of the hill on which it stands, and Kimmeridge (Brit., *cymmre*, meaning a place of hills and hollows, Cumberland deriving its name from the same root).

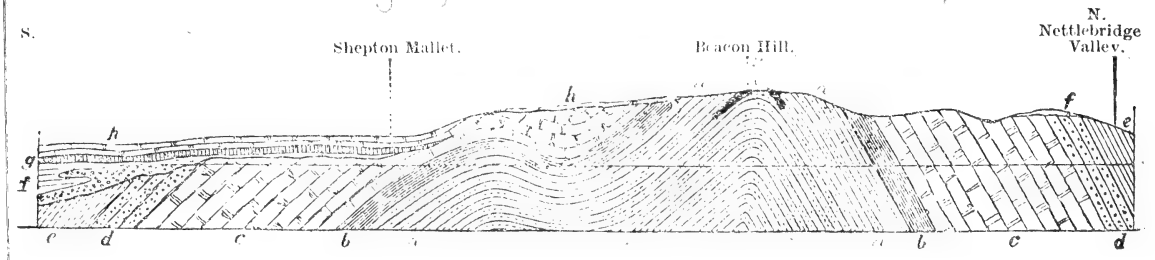
The northern part of the county was formerly occupied by a part of Cranborne Chase and the woods of the Blackmore Vale. We therefore now find many places whose names are associated with woods. We get Glanvilles Wootton (the Glanvilles were the owners in ancient times), Wootton Fitzpaine (held by Robert Fitzpaine in the reign of Edward II), Halstock (holy wood), formerly owned by the abbey at Sherborne and the revenue devoted to holy purposes, Stock Gaylard (S., *stocce*, meaning a stick or wood, and Coyllard the name of a former proprietor), Stoke Wake (the Wakes were the lords of the manor in ancient times, and ancestors of William Wake, a former Archbishop of Canterbury), Stoke Abbott, which formerly belonged to Sherborne Abbey, East Stoke, Powerstock, which may be a corruption of Porcus-stock, Cattistock, Holt, Alderholt, Evershot (eafor's holt, meaning the wood of the wild boar: cf., Eversley in Hampshire), Hooke (oaks), Woodlands, Verwood (fair wood), Woodyates, East Orchard, West Orchard, Hazelbury Bryan (S., *hazl-bere*, meaning a hazel copse, and Bryan, a former owner), Bere Regis (the place belonging at one time to the Crown, a royal manor-house being probably situated there), Rushmore and Farnham, possibly noted in former times for a remarkable growth of ferns.

From the soil and productions a few names are derived. Blackmore Vale was so called, either from the black nature of the soil, or because of the dark aspect of the woods with which it was at one time covered. Fifehead Magdalen obtained the former part of its name from the five hides of land it contained, and the latter part because the church was dedicated to St. Mary Magdalen; while Fifehead Neville at one time belonged to the Nevilles.

Sheep-farming gave us Shipton (Sheeptown) Gorge, Shapwick (S. *sceap*, a sheep, and *wic*, a village) and Bothenhampton (Booth town, the shepherds living in tents there), while the keeping of pigs explains the origin of Toller Porcorum.

Then there are a number of places which cannot be put in any of the classes already dealt with. We have Brownsea (Bruno's Ey or Island), Studland, probably so called because of its proximity to Poole Harbour which is studded with islands, Swanage, formerly Swanwic or Swainwic, because of its association with the Danes, Chesil (S., *cesil*, a pebble), Chesilbourne, Yetminster or Gateminster (the entrance into the Blackmore Vale), Maiden Newton (*mai dun*, meaning a great hill) and Maiden Castle.

The Discovery of Silurian Strata in the Mendips.



Section across the Mendip Hills. Horizontal Scale an inch to one mile.

H. B. Woodward 'Geology of England and Wales.' *Edit.* 2.

h. Lower Lias.
g. Rhætic or Penarth Beds.
f. Red Marl and Dolomitic Conglomerate (Keuper).
e. Coal-measures.
d. Millstone Grit.
c. Upper Limestone Shale and Carboniferous Limestone.
b. Lower Limestone Shale.
a. Upper Old Red Sandstone.

x 20. Diameter.
2. Igneous Rock

PLATE VII. Section across the Mendip Hills.

Silurian Strata in the Mendips.

By Dr. W. T. Ord, Chairman of the Geological Section.

(Presented to the Members attending the Geological Excursion to the Mendips, on July 14th, 1909).

The discovery, by Prof. Reynolds of the Bristol University, of Silurian strata underlying the old red sandstone in the Mendip Hills, is one of the most important and interesting contributions to the geology of England that has been made for some years. The way in which this discovery was made, and the facts which led Prof. Reynolds to identify Silurian beds, affords a striking example of the romance of a science, which many people imagine to be dulness itself and very much the reverse of romantic.

To make clear how this discovery was made, a brief account of the geology of the Mendips must be given; this will be much simplified by a study of the section given in Plate VII. The Mendip Hills consist of four great folds of Carboniferous Limestone, arranged *en échelon* from north-west to south-east. Each fold, called in geological terms a pericline, contains a core of Old Red Sandstone, and probably of Silurian beds beneath, although this has only been demonstrated so far, in the case of the south-eastern pericline, which is known as Beacon Hill, and is the one with which this paper is concerned. This hill has the further peculiarity of exhibiting a series of igneous rocks, which is shown in the section on the Plate. After the close of the carboniferous period in geological times, the sea-bed was raised up, the strata folded and bent up, and finally a great part of the carboniferous rocks and most of the coal measures were denuded off the land. On the planed edges of this strata, after subsequent immersion, horizontal beds of more recent strata, rhætic, lias, and inferior oolite were laid down. These now appear on the surface of the Mendip area, except near the higher grounds, where the Carboniferous strata, and in some parts the Old Red Sandstone crop up. A glance at the plate will make this clear.

We are now concerned with the igneous rocks of Beacon Hill, in connection with which the Silurian strata were discovered. These igneous rocks are shown in the Geological Survey Map (sheet 19) as rising along the ridge of old red sandstone to the north of Shepton Mallet. They were formerly supposed to be lavas which had broken through the adjacent strata from beneath and spread themselves over them, having subsequently been denuded down to their present extent. But Prof. Reynolds has shown that they are probably the remains of volcanic eruptions which occurred at an earlier period, some certainly during Silurian times. These igneous rocks have for years been extensively quarried for road metal, and it was in the Sunny Hill quarry that proof of their age was first found. Amidst the great masses of trap or lava which are

there worked, occur several beds of tuff, or volcanic ash which has by age, pressure, and possibly heat, been solidified into hard rock. Now, although fossils are naturally never found in volcanic lavas, they are occasionally found in volcanic ashes or tuff. Fossils can only be preserved in beds of this nature when the ashes, having originally fallen on the surface of the sea or of lakes, and sunk gradually to the bottom, have enveloped and killed any organisms that were living there at the time, these usually being mollusca, crustaceans, and more rarely sea plants. It occurred then to Prof. Reynolds to carefully examine these beds of tuff, and his search at one spot near the entrance to the quarry where the tuff was softer and more fragile, was rewarded by the discovery of certain shells and crustacean remains, which instead of being of Old Red Sandstone age, proved to be undoubted *Silurian* fossils.

Here then was a great discovery. If this were so, it was evident that the tuff or ash had been thrown up and had descended from a volcano duriug the Silurian period, and long before the Old Red Sandstone rocks had been laid down. Moreover, the igneous or trap rock in which the beds of tuff occurred must also be of the same age, and hence it seemed probable that Silurian strata—which had been formed about the time during which volcanic action was proceeding—would be found close to the position of the eruptive rocks. A very careful search was therefore made in the immediate neighbourhood. On the other side of the road, a few hundred yards distant from Sunnyhill is Moon's Hill Quarry, which has been worked for many years for road metal, but from the Audesite or trap rock quarried there nothing could be learnt. Unfortunately there were no other exposures of strata in the neighbourhood, and it was very difficult to obtain evidence of the extent of the trap, although from the constant occurrence of fragments in hedgebanks and in the fields it seemed probable that the area covered was very considerable. If the edge of the mass of trap could be found and an exposure made shewing the strata it rested upon, this would probably be found to be of Silurian age. Some help was obtained from fragments of stone thrown out from rabbit and mole holes in the fields, and in one spot, 300 yards south-south-west of Tadhill Farm, Prof. Reynolds found tuff with Silurian fossils.

The area between Tadhill Farm and Moon's Hill Quarry is occupied by a mass of coarse ashy conglomerate, which was exposed in 1905 in a temporary quarry between Moon's Hill and a farm a short distance off. This curious conglomerate consists, according to Prof. Reynolds, of a fine-grained ashy matrix similar to that of the normal tuff of the district, embedding blocks and pieces of rock, some as large as 18 inches in diameter, mostly of the local trap rock, and thoroughly well rounded, although a few of the larger are sub-angular, or only partially rounded. No fossils were found in this exposure, but the possible origin of this rock will be referred to later.

Since, however, Prof. Reynolds published his results in a paper entitled "A Silurian Inlier in the Eastern Mendips," in the Quarterly

Journal of the Geological Society, 1907—to which I am indebted for many of the above facts—a new line of rails has been laid from Downhead Quarry to Long Cross Bottom, and in one of the exposures here made the long looked for Silurian strata was discovered, Old Red Sandstone being first met with (quarter mile N.E. of Long Cross Bottom) and conglomerate, whilst two hundred yards further east a fine greenish sandy shale was found of undoubted Silurian age, containing many fossils. There was no sign of tuff in this exposure; it consisted of normal sediments. The fossils were of the commoner Silurian types, mollusca such as Orthis, Lingula and Spirifer, and a few fragments of trilobites, Calamene and Phacops, also Crinoid stem joints. These have been identified as of Llandovery age, and seeing that the Old Red Sandstone lies almost directly on these beds, it seems evident that the Upper Wenlock and Ludlow series of the Silurian age are here missing although in other parts of England they occupy a considerable space between the two.

I had the privelege of going over this area and examining the exposures with Prof. Reynolds, and of hearing from his own lips the account of these interesting discoveries. This ground was visited by some of us in an excursion in July last, and I was enabled to explain the facts as we inspected the exposures. A good few Silurian fossils were obtained by us from this recent cutting on that occasion. Specimens of the other rocks, especially of the coarse ashy conglomerate, collected by Mr. Sherring, have been exhibited at the Society's rooms during the past summer.

In conclusion one may point out the very extensive area occupied by the trap and tuff in this district. The most interesting deposit is undoubtedly the conglomerate, the origin of which it is very difficult to ascertain. It has been conjectured that this material forms the *débris* thrown out from the mouth of an active volcano during the Silurian age, the crater of which may be represented by part of the area so occupied, whilst the adjacent trap is what remains of the lava that flowed during its eruptions; the tuffs were formed by the volcanic ash blown around from the explosions. The blocks in the conglomerate may possibly have been rounded by friction in the vent of the volcano as they were tossed up and down during eruptions. The subject is a very attractive one, and although this explanation has much in its favour, further observations are necessary before the question can be finally decided.

Halley's Comet.

By Col. E. E. Markwick, C.B., F.R.A.S.

(*Read as a General Lecture on 13th March*, 1909).

The following is a much condensed account of the original lecture on Halley's Comet, as exigencies of space will only allow certain portions to be given:—

Halley's Comet interests us in several respects, because it is the first periodic comet whose return was ever predicted; because its period is 76 years, about the average duration of a healthy man's life; because it has returned so many times in the past to the vicinity of the sun, on some of which occasions it is connected with historical events; because it illustrates the marvellous accuracy, and complexity also, of the laws of universal gravitation enounced by Newton; because of the brilliant feats of calculation which it has been the cause of evolving from some of the finest mathematical intellects; and, lastly, it is interesting because its return to perihelion is due next year (1910), and we may all reasonably hope to get a view of this celestial visitant, which has been an object of such deep study to astronomers.

This comet had been observed by Newton, Halley, and their contemporaries in 1682. Halley investigated the orbit, and found that it was identical with comets which had appeared in 1607 and 1531, and he was able to announce boldly "This body moves in an elliptic orbit round the sun, and will return again to the sun in the year 1759." The calculation of the first cometic orbit ever worked out by man was therefore effected by Halley, one of our own countrymen, and in the glory of such a feat posterity all the world over, English or Continental, have always called this body Halley's Comet. Halley did not live to see the fulfilment of his prophecy, but the comet returned to perihelion on the 13th March, 1759, thus verifying the correctness of his work.

The orbit, or track of the comet, is a very elongated ellipse, with the sun in one of the foci. The length of the major axis is about 3,400 millions of miles, so that the comet when in aphelion is a considerable distance outside the orbit of Neptune, the outermost planet of the Solar system. The perihelion distance from the sun is rather more than half the earth's distance from the sun. The plane of the ellipse, or orbit, is slightly inclined at an angle of 17° to the ecliptic.

Plate VIII, illustrates the general position of the orbit in connection with the sun and the orbits of the planets. Certain dates are marked along the comet's track which has been followed since the last nearest approach to the sun in 1835. A selection of these as connected with some historical events follows:—

1835. Comet's perihelion passage on 16th November, the 5th year of King William IV., and 1½ years before the accession of the late Queen Victoria.

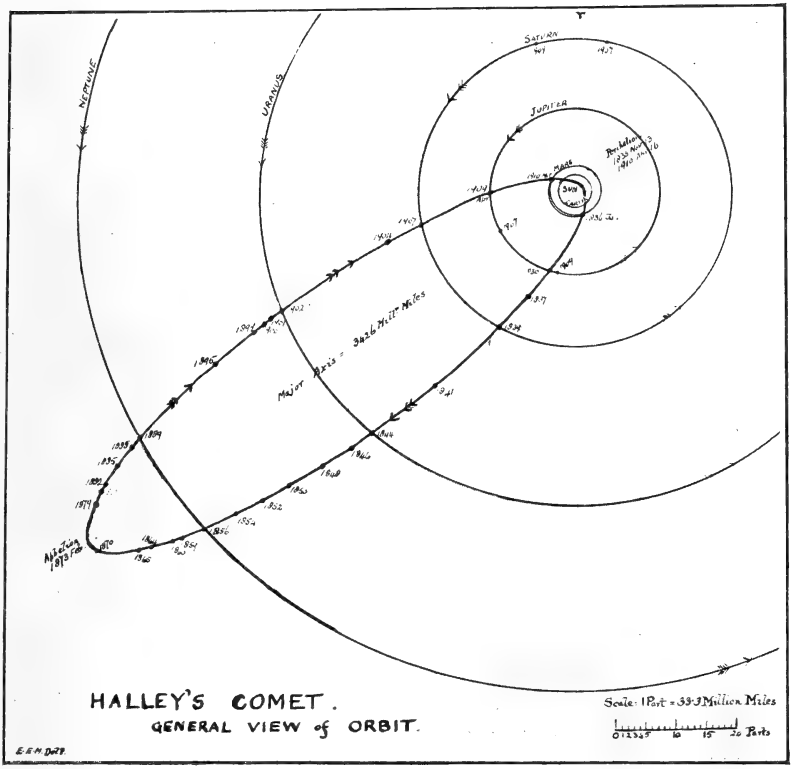


PLATE VIII. Orbit of Halley's Comet.

1836. Mr. Chamberlain born.
1841. Our King born.
1848. Revolution in France.
1852. Death of the Duke of Wellington.
1854. Crimean War.
1857. Indian Mutiny.
1859. War between France and Austria.
1863. Marriage of our King and Queen.
American Civil War.
1866. War between Austria and Prussia.
1870. Franco-Prussian War.
1873. February—Comet in aphelion, or at greatest distance from sun.
1879. Zulu War.
1880. Old Boer War.
1885. Death of General Gordon.
1899. Boer War.
1904. Russo-Japanese War.
1909. Present time—Comet approaching perihelion.

Thus a great deal of history has been made while the comet has been completing its present circuit.

Messrs. Crommelin and Cowell, of the Royal Observatory, Greenwich, have recently made a very laborious investigation into the orbit of Halley's Comet, going far back into the past, as well as looking ahead. In this work they have been assisted by three computers, one of whom, Dr. D. Smart, kindly communicated some valuable particulars to the lecturer. These gentlemen have investigated the recorded appearances of the comet in B.C. 12; A.D. 451, 684, 760, 1066, 1145, 1222, 1301, 1378, 1456, 1531, 1607, 1682, 1759 and 1835. We can only refer to 1066, when it may be called the comet of the Norman Conquest. It is represented in the Bayeux tapestry, and was generally supposed to be a favourable omen for William of Normandy, in his invasion of England, although, as a matter of fact, the comet had come and gone before the battle of Hastings (14th October).

Messrs. Crommelin and Cowell have also published, many months in advance, an ephemeris giving a series of positions in the sky which will be occupied by the comet at its coming return.

In view of the fact that the comet has now been "secured," both by the photographic plate and by visual observation, we must alter the anticipatory tone of the lecture (which was delivered long before the comet was seen), and note briefly the facts of its discovery, or re-discovery. A photographic campaign to catch the stranger at the first possible chance was entered upon at Greenwich Observatory on the 9th September last, when two trial exposures on the calculated place of the comet were made. These plates were not closely examined at the time, and meanwhile it was announced from Germany that Professor Wolf had photographed the comet on the night of September 11th, two days after the first Greenwich photographs were taken. On re-examining the latter, the comet was

detected on both, of course as a very tiny, faint object. One cannot help wishing that the plates had been carefully examined at once, and the announcement of first discovery might have emanated from our national observatory. (*See last paragraph but two*).

The position of the comet, so found, is almost exactly in accordance with the ephemeris mentioned above, and we heartily congratulate Mr. Crommelin on the complete success of his laborious investigation.

Since then the comet has been visually observed in the 40-inch telescope of the Yerkes Observatory in the U.S.A., and just at the time of writing Mr. H. F. Newall informs the "Times" that he has seen the comet in the 25-inch refractor of the Cambridge Observatory; this was on October 21st, and thus the first European observation of it has been made in England. It was then very faint, about the 14th magnitude, and all doubt about it was removed by the fact that its motion among the stars was evident.

Halley's comet will now go on increasing in size and brightness, and at the end of the year it should be well within the reach of moderate-sized telescopes. The date of perihelion passage is anticipated on 1910, April 20th.* The comet will be an evening star in Pisces next January and February, a fairly bright morning star in April, and at its greatest splendour in the evening after the middle of May. It will then be better placed for observers in the southern hemisphere.

Since the above was written, Professor H. H. Turner, F.R.S., has stated in a lecture delivered at Birmingham that the comet was photographed at the astronomical observatory of the Egyptian Government at Helwan on August 24th. If this is so, we may yet congratulate ourselves, as Britishers, that the first discovery was made here, as the observatory is directed by an Englishman.

It may be added as a matter of mutual congratulation that our member, Mr. E. W. Barlow, F.R.A.S., got his first view of the comet on the evening of the 30th November, 1909, in a 4¼-inch refracting telescope. The comet appeared as a tiny ball of nebulosity, and there could be no mistake about it, as it was in its calculated place, very near the bright star Aldebaran, and its motion among the surrounding fixed stars almost immediately proclaimed its cometary character.

I had the pleasure of seeing the comet on the evening of 3rd December in my 8½-inch reflector. It appeared as a very small patch of nebulosity. A second observation, made two hours later on the same evening, revealed its motion among the stars. On 4th December it was again seen, and was unchanged in appearance.

* This differs 4 days from the date given in the Plate, which was inserted from an earlier ephemeris.

The Water Supply of Bournemouth.

By W. Temple Gardner, Esq.

(*Read 6th February*, 1909).

Before the year 1864 all the water used for drinking, domestic and trade purposes in Bournemouth, was obtained from shallow wells and springs, so that every consumer provided his own supply.

In 1864 the Bournemouth Gas and Water Company came into existence, and their first supply of water was derived from the little river Bourne, which gives its name to the town. The water was filtered at the Bourne Valley Works of the company, pumped to a reservoir on adjacent high ground, and gravitated to the town. The daily consumption of water in Bournemouth at this time was between forty and fifty thousand gallons, compared with the present supply which is about two million gallons. This method of procedure soon proved insufficient to cope with the demand due to the growth of Bournemouth, and furthermore the water was of uncertain character. The company consequently decided to obtain another supply, and ultimately settled that the most suitable source was to be found in the gravel beds of the Valley of the Stour, near the small village of Longham. Operations were commenced at Longham in 1886, but ten years later (1896) the company obtained powers to again extend their source of supply in order to safeguard the town for all time. At present the town is supplied from two sources—the gravel beds at Longham and a large, deep well near Wimborne. At one time, besides these, a supply was obtained from a well at Southbourne, but this has been purchased by another company. The Wimborne supply is the more important as it is from there that the greater quantity of water is obtained and softened. The well, which is sunk in a natural basin formed by the chalk hills, has a depth of 207 feet and extends for about 100 feet into the chalk. At the depths of 155 feet and 195 feet respectively, headings or tunnels, six feet in height and four feet in width, extend horizontally 480 feet along the chalk, and serve as feeders to the well. The average diameter of the well is ten feet, and for a depth of 165 feet it is enclosed in an iron casing very similar in construction to the Tube railways in London, except that in the case of the well the position is vertical instead of horizontal. Below the iron tube the chalk is so firm as not to necessitate any strengthening to the walls of the bore-hole. The capacity of the well provides at least four million gallons per day.

The water is brought to the surface by two sets of double-acting pumps, which are situated at the lower end of the well. The engines at the top which work the pumps, transmit the power by means of steel rods enclosed in two steel tubes extending from top to bottom. The compound condensing type of engine is used, and each has an indicated horse power of 110. When the water reaches

the surface it is conveyed directly to the softening plant. In its natural state the water is hard, being derived from the chalk, and impregnated with carbonate of lime, its hardness being reckoned as fifteen degrees, an equivalent to fifteen grains of carbonate of lime per gallon. The purity of chalk water is well known, and the sole objection to its use is on the score of hardness. Many towns in England use a water of twenty-two to twenty-four degrees of hardness. In Bournemouth, the water taken from the chalk is softened to between nine and ten degrees of hardness, resulting in the supply of the most desirable water to be obtained for drinking and all other purpose. The process of softening is effected in three stages. First, there is an apparatus for the continuous production of lime water; second, a reservoir of sixty-two thousand gallons capacity in which the actual softening takes place, by mixing the hard water with lime water in the correct proportion; third, a battery of filters for dealing with the water, after softening, by passing it through a material similar to sail cloth stretched on a framework of metal. In mixing the lime water with the hard water great care has to be exercised to prevent an excess of either. Should the well water be in excess the product would be improperly softened, but on the other hand if the lime water predominates the object in view would be defeated, as there is a possibility of the softening reaction taking place, and the water re-hardening to even a greater degree than originally. The chemical reaction which takes place during the softening process is represented as follows:—

$Ca\,CO_3$ } $H_2\,CO_3$ }	+	$Ca\,OH_2O$	=	$2Ca\,CO_3$	+	$2H_2O$
Calcium Bicarbonate	+	Lime Water	=	Calcium Carbonate	+	Water.

After the process of softening and purification is completed the water is rendered suitable for consumption.

The precipitated carbonate of lime produced in softening the water after having been washed off the filter-cloths, is pumped in the form of sludge to special settling tanks, situate in a field adjoining the pumping station. The softened water is pumped to Alderney, which may be termed the town depot of the water-supply. The water from the gravel-beds at Longham is also pumped to this station, and is then passed through sand-filters, after which it mixes with the Wimborne softened water in the reservoirs. From Alderney the water falls by gravitation into the mains of the town. The average pressure of water in the town is about thirty-five pounds per square inch, which is equivalent to a column of water nearly eighty feet in height.

In 1908 the amount of water supplied from Wimborne was five hundred and thirty-one million gallons, and from Longham two hundred millions, making a total of seven hundred and thirty-one million gallons.

During a dry week in the summer the company has supplied twenty-eight million gallons of water into Bournemouth.

The lime used during 1908 for softening amounted to three hundred and twenty-six tons. A huge mass of putty-like substance is formed by the residuum or sludge resulting from the softening of the water, and this amounts to about one thousand two hundred tons per annum. The only use at present found for it is as a fertilizer for farm land, and the company give permission to farmers to remove as much as they require, free of charge, in order to reduce the ever increasing stock.