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Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Agnes Arber

MISS ETHEL SARGANT, F.L.S.

*With the author's
Compliments
& thanks.*

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TO THE EDITOR OF THE TIMES.

Sir,—Miss Ethel Sargant, whose premature death was reported in *The Times* of January 23, is a great loss to English botany. Her work was not only accurate and sound, but it bore on questions of fundamental importance. One may venture to say that she was one of the few women who would undoubtedly have been elected into the Royal Society if the Charter had permitted.

Miss Sargant was a person of strong intellect, with a natural bent for scientific research, which she was happily in a position to follow freely, with excellent results. She took Honours in the Natural Science Tripos at Cambridge, but her career as an investigator began a few years later, when she came to Kew, at the close of 1892, to work in the Jodrell Laboratory. It was then that the present writer first made her acquaintance and was at once impressed by her remarkable capacity for difficult research. She very soon settled down to the study of the details of the process of nuclear division. Several of her earlier papers were on this subject, then, as now, of urgent importance for our understanding of the essential reproductive phenomena, common to plants and animals. But in the meantime she had published, in conjunction with the present writer, an investigation of a very different nature, on a pitcher-plant, *Dioscorea rafflesiana*, in which the pitchers, instead of catching insects, serve to collect water and soil.

After leaving Kew Miss Sargant established a laboratory of her own at home, in which she for some time had the assistance of Dr. Ethel N. Thomas. Her laboratory was admirably equipped with all the appliances for advanced histological research. For a time her work continued to be chiefly concerned with the nucleus. In 1899 she made a communication to the Royal Society, which, though not the discovery of the Russian botanist Navaschin, that fertilisation in the higher flowering plants is double, the combination of food-tissue, as well as the combination of the product of a sexual union of nuclei. This she demonstrated by her own preparations, made during the winter, but then first rightly interpreted in the light of the Russian savant's work.

Concurrently with her later work on cytology, Miss Sargant began a course of investigation, which occupied the remainder of her scientific career, on the comparative anatomy of seedlings. If of less general biological interest, this line of research led to results of more definite importance from a botanical point of view. A joint paper with Mrs. D. H. Scott, on the development of the well-known *Arum maculatum* from the seed, was the first fruits of this work, which soon, however, assumed a wide scope and led to a theory of the origin of Monocotyledons which has exercised a great influence on the minds of botanists. As is well known, the higher flowering plants have long been divided into the Monocotyledons with one seed-leaf and the Dicotyledons with two. There are many other points of difference, especially in the mode of growth of stem and root. The older botanists had generally held that the Monocotyledons were the more primitive group of the two, but Miss Sargant was led to the opposite conclusion, agreeing in this respect with Professor G. Henslow. In this line that author had derived the Monocotyledons from aquatic

ancestors, Miss Sargant attributed their peculiar characters to their being essentially and in origin *geophylous*—i.e., plants with underground stems, such as bulbs or root-stocks. The single cotyledon was interpreted by her as a fusion of the two seed-leaves of the other type, a view which she supported by the analogy of certain Dicotyledons of similar habit, such as the Winter Aconite and the Lesser Celandine, in which there is clear evidence of fusion. The Monocotyledons were regarded as an early offshoot from an ancient and simple Dicotyledonous stock. Among Miss Sargant's various memoirs bearing on this subject may be mentioned her interesting hypothetical "Reconstruction of a Race of Primitive Angiosperms" (1908). Whether the details of the theory are ultimately accepted or not, there can be no doubt that the present views of botanists as to the relative antiquity of the two classes have been largely determined by her observations and reasoning.

In connexion with this work, Miss Sargant, in her later years, paid special attention to the embryology of the grasses, a subject on which she published two papers in collaboration with Mrs. Arber, the latter of which was the last to appear during her lifetime.

Miss Sargant was the first woman to preside over a section of the British Association. Her able address to the botanical section in 1913 is a valuable critical essay on plant-embryology. She wrote vigorously and logically; in style, as well as in argument and accurate observation, she stood very high among contemporary botanists. Two powerful essays of hers on non-technical subjects may be mentioned—such as "Women and Original Research" (1900), and the other on "The Inheritance of a University" (1901).

Personally Miss Sargant was warmly appreciated and will be sadly missed by her many friends, both scientific and private. She was a woman of a generous character and will long be remembered for her many kindly actions. She was particularly loved by children, whom she thoroughly understood.

I remain, Sir, your obedient servant,

D. H. SCOTT.

Miss Ethel Sargant, F.L.S.

ETHEL SARGANT was born in 1863, and was the third daughter of Henry Sargant, barrister-at-law. She was educated at the North London Collegiate School, under Miss Buss, and at Girton College, Cambridge, where she took Parts I and II of the Natural Science Tripos in 1884 and 1886. She came to Kew in October, 1892, and it was here that her career as a botanical investigator began. From 1893 until the death of her mother in 1912 she lived at home, and for some years was able to give most of her time to research work in her own laboratory. Later, her devotion to an invalid sister and to her mother left her little opportunity for continuous work. In 1912 she took the Old Rectory at Girton, where she spent the last years of her life in surroundings which were especially congenial to her. She died at Sidmouth, after a short illness, on January 16, 1918.

By her premature decease, English botany loses one of its ablest and most devoted students, who had accomplished much, and would doubtless have accomplished still more, if life had been prolonged.

When Miss Sargant came to the Jodrell Laboratory in 1892 her exceptional ability in research work at once showed itself. Her first published paper (1893) was a joint one with the present writer, on the pitchers of *Dioscorea Rafflesiana*, chiefly concerned with the physiological anatomy of these organs.

Now, after a long and more characteristic line of work was started—the

and afterwards, Miss Sargant's researches; their firm Gaidard's to the formation are embodied in : sexual nuclei in permatogonia, ribbing agreement

able to confirm schim, of double for many particulars

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Agnes Arber
52 Huntingdon Road
Cambridge

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Agnes Arber
1923-1928

Do this six years also belongs

Monocotyledons. A Morphological Study
(Cambridge Botanical Handbooks) XI V + 253 pp, frontispiece
160 figs. Cambridge University Press. Published Sept-1. 1925

1. On the 'Squamulae Intravaginales' of the Helobieae. Ann. Bot. VI XXVII, 1923, pp 31-41, 5 text figs.
2. On the Leaf-tip Tendrils of certain Monocotyledons. Journ. Indian Bot Soc. 1923, pp 159-169, 3 plates.
3. Leaves of the Gramineae. Bot. Gaz. VI LXXVI, pp 374-380, 3 plates. 1923.
- 4.
4. Leaves of Juglochin. Bot. Gaz. VI LXXVII, 1924, pp 50-62, 3 pl.
5. Dandelion, *Ruscus* - Semelle: A Morphological Study. Ann. Bot. VI LXXXVIII, 1924, pp 225-260, 50 text figs.
6. Myriophyllum - Arpagus: A Morphological Study. Ann. Bot. VI LXXXVIII, 1924, pp 635-659, 46 text figs.
7. On the 'Squamulae Intravaginales' of the Alismaceae & Butomaceae. Ann. Bot. VI LXXXIX, 1925, pp 169-173, 11 text figs.
8. Studies in the Gramineae. I The Flower of certain Bambuseae. Ann. of Bot. VI XL, 1926, pp 447-469, 11 text figs.
9. Studies in the Gramineae. II. Abnormalities in *Cephalostachyum vagatum*, Kunz, & their Bearing on the Interpretation of the Bamboo Flower. Ann. Bot. VI XLI, 1927, pp 47-74, 9 text figs.

No 75, Michaelmas Term,
10. Eltham Sargam. The Jutan Review, 1927 pp 17-26

11. Pigeonry. Times Literary Supplement. Nov 3. 1927

12. Studies on the Gramineae. III. Outgrowths of the Reproductive Shoot,
+ their Bearing on the Significance of Lodicule + Epillem. Ann. Bot.
Vol XL1, 1927, pp 473-488, 8 text figs.

13. On a French Version of the Herbal of Leonard Fuchs. Notes
+ Queries June 2. 1928, pp 381-383.

14. Review of "The Romance of the Apothecaries' Garden at Chelsea" by
F. Danzig Dawkins. Notes + Queries July 1. 1928

15. Review of "The Ferns. Filicales." Vol III by F. O. Bower. Notes +
Queries Oct/Nov 13. 1928

16. Studies on the Gramineae. IV. 1. The Stem Epillets of Gymnosus + Zamantia.
2. Stem-Lodicules: Schyzostachyum. 3. The Terminal Leaf of Sagittaria.
Ann. Bot. Vol XL11, 1928, pp 173-187, 5 text figs.

17. Studies on the Gramineae. I. 1. On Luzula + Dactylo. 2. On Lycopodium
+ Nardus. Ann. Bot. Vol XL11, 1928, pp 391-407, 7 text figs.

18. The Tree Habit in Angiosperms. Its Origin, Meaning. New Phyt. Vol 27, 1928, pp 89-84

19. Review of "The Herbal: Antiquity" by C. Singer. Nature. 1928

ARBER, AGNES
ON THE 'SQUAMULAE INTRAVAGINALES' OF
THE HELOBIEAE.

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2, 3
From the Journal of the Indian Botanical Society, April, 1933.

ON THE LEAF-TIP TENDRILS OF CERTAIN
MONOCOTYLEDONS

BY
AGNES ARBER, D.Sc., F.L.S.

Keddey Fletcher-Warr Student of the University of London.

METHODIST PUBLISHING HOUSE, MADRAS.

3

LEAVES OF THE GRAMINEAE

(WITH PLATES XXVIII-XXX)

AGNES ARBER

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Reprinted for private circulation from
THE BOTANICAL GAZETTE, Vol. LXXVI, No. 4, December 1923

LEAVES OF TRIGLOCHIN

(WITH PLATES VIII-X)

AGNES ARBER

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THE BOTANICAL GAZETTE, Vol. LXXVII, No. 1, March 1924

ARBER, AGNES
DANAE, RUSCUS, AND SEMELE :
A MORPHOLOGICAL STUDY

Digitized by Hunt Institute for Botanical Documentation

ARBER, AGNES.
MYRSIPHYLLUM AND ASPARAGUS: A MORPHO-
LOGICAL STUDY.

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ARBER, AGNES

ON THE 'SQUAMULAE INTRAVAGINALES' OF THE
ALISMATACEAE AND BUTOMACEAE

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ARBER, AGNES.

STUDIES IN THE GRAMINEAE.

I. THE FLOWERS OF CERTAIN BAMBUSEAE.

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ARBER, AGNES.

STUDIES IN THE GRAMINEAE.

- II. ABNORMALITIES IN CEPHALOSTACHYUM VIRGATUM, KURZ, AND THEIR BEARING ON THE INTERPRETATION OF THE BAMBOO FLOWER.

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Ethel Sargent.

(A PAPER READ BEFORE THE GIRTON NATURAL SCIENCE CLUB,
NOVEMBER 5, 1926)

I feel that the task set before me to-night is one of rather special difficulty. I want to try to make you realise something of Ethel Sargent's personality and work—but she played such a large part in my own life that I can hardly bring myself to look upon her with the detachment which is necessary if I am to convey to you any just idea of what manner of woman she was. I will do what I can, and I must ask you to forgive me if I fail.

Ethel Sargent was born on October 28, 1863. Her school life was passed at the North London Collegiate School, under Miss Buss. She came up to this College in 1881, and spent four years here, reading for the Natural Sciences Tripos. She enjoyed college life immensely, and the friends she made in those days remained her closest intimates to the end. She achieved no spec-

NOTE.—Since Ethel Sargent's death the following notices of her life and work have appeared:—by Dr. D. H. Scott, *Annals of Botany*, vol. xxxii, 1918, pp. i-v; *Times Literary Supplement*, Thursday, January 31, 1918, reprinted in *Journal of Botany*, vol. vi, 1918, pp. 115-6; by Dr. E. N. Thomas, *Proc. Linn. Soc.* 130th Session, Oct., 1918, pp. 41-2; by A. Arber in *The Cambridge Magazine*, vol. vii, January 26, 1918, p. 331, reprinted in *The Common Cause*, vol. ix, 1918, p. 567; *New Phytologist*, vol. xviii, 1919, pp. 120-8; *Nature*, vol. ci, 1918, pp. 428-9.

attitude to religion in a little notice of her which I wrote for *The Cambridge Magazine* after her death—so perhaps I ought to say one word about it now, though I am reluctant to tread on this ground. I do not know what she felt about these things in her youth, but in her later years Christian belief, touched with a certain mysticism, played a great part in her life. She regarded religion as lying altogether outside the province of scientific thought, and I remember once hearing her say, in a discussion about Christianity—"I don't require it to satisfy my reason."

As I have already said, home life and some more or less desultory botany occupied Ethel Sargent for a number of years after she went down from Girton. But the die which determined the course of her future life was cast when in 1892 she went to the Jodrell Laboratory in Kew Gardens to work for a time under Dr. D. H. Scott. This was probably the most fortunate event in her career. To those of you who are botanists I need not say that Dr. Scott is of the first distinction as a scientific man—moreover his mind was of a type that naturally appealed to Ethel Sargent, and from him she rapidly learned the art of research in the best and fullest sense. Her period at Kew was not long—I believe less than a year—but when she left she was ripe for

The first lines of Ethel Sargent's reply are these:—

"Tax not the Village Dame with vain expense,
With ill-matched aim weep not for paper'd walls,
The Rich hang papers in their gilded halls
But whitewash should content the Man of Sense—
It purifies his taste and saves my pence.
The wise man shuns the plumber's frequent calls,
Nor ev'n when gutters leak and plaster falls,
Condemns his landlady to indigence."

But this is a digression—and in talking of Ethel Sargent, however much one digresses, one is sure to find oneself brought back time after time to the central fact that her personality was above all things that of the researcher; the pursuit of the unknown was in her blood. She was enthralled by the actual process of investigation. She loved Keats's sonnet, "Much have I travelled in the realms of gold", because it expressed the very essence of discovery. In such lectures as she occasionally gave, she deliberately set herself to be "suggestive, not-exhaustive", and she considered that in writing a scientific book, the essential thing was to lay stress on "what we don't know". She expressed her convictions about the life of research in an article called "The Inheritance of a University", which was published in *The Girlton Review* in the Lent Term, 1901. In reading this paper one must bear in mind that much water has flowed under the bridges in the quarter of a century that has elapsed since it was written. In those days members of this college could look forward to few opportunities of carrying out research work, and the article is largely a plea for such opportunities. But things have changed now, and if that paper had been written to-day, the stress would, I think, have been differently laid. The need as regards research workers is now for quality rather than quantity—indeed the term 'research' has been degraded to such a low level by the wretched stuff turned out in its name, that one has begun to hate the very word. But despite these changes, the spirit of Ethel Sargent's article survives undimmed, and I do not think that I can conclude what I have to say about her more fittingly than by reading you a few of the words in which she expressed her faith:—

The Universities, she wrote, are "the guardians of a great tradition, the temples in which [is] kept alive the sacred flame of scholarship. The many come to them to learn, the few remain in them to teach, but in each generation a little band of picked men devote themselves to the advancement of learning with small hope of reward either in money or in fame. Such men are the soul of a University."

"Among the stream of undergraduates passing through a University, one here and there feels the impulse to pursue knowledge for its own sake. No matter whether his tastes lead him to nice points of classical scholarship or to the investigation of Nature. His true life lies in obedience to this impulse. . . . Now as always the majority value Pegasus as a draught horse, or at best look on him as a well-bred racer. But in the University he is known to be of immortal breed."

AGNES ARBER.

THE TIMES LITERARY SUPPLEMENT.

THURSDAY, NOVEMBER 3, 1927

PIGGESNYE

Sir,—In R. C. A. Prior's "Popular Names of British Plants" (third edition, 1879) Chaucer's word *Piggesnye* or *Piggesmeigle*, about which one of your correspondents inquired in your issue of October 6, is explained as follows:—"It seems to mean a 'Whitsuntide Pink,' from L.G. *Pingsten*, G. *Pfingst*, and *eye*, Fr. *œillet*, L. *ocellus*, the name of these flowers from the circular marking of their corolla. *Pingst* is shortened from Greek *pentecostes*, meaning the fiftieth day after Easter, and *Pingden-eye* has been corrupted into *Piggesnye*." The Whitsuntide pink or clove pink is *Dianthus caryophyllus*, L., the ancestor of our garden carnations; it is described as naturalized on certain old castle walls in this country.

Yours truly,

AGNES ARBER.

ARBER, AGNES.

STUDIES IN THE GRAMINEAE.

III. OUTGROWTHS OF THE REPRODUCTIVE SHOOT, AND THEIR BEARING ON THE SIGNIFICANCE OF LODICULE AND EPIBLAST.

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Literary and Historical
Notes.

ON A FRENCH VERSION

OF THE

HERBAL OF LEONARD FUCHS.

THE great and beautiful folio herbal of Leonard Fuchs—*De Historia Stirpium*, published at Basle in 1542—was the source of a series of reduced and variously degraded French versions. A number of these are dismissed collectively by Pritzl (*Thésaurus Literaturæ Botanicae*, Ed. 2, 1877) as "libelli miserrimi," but although the figures are mostly poor and crude copies of Fuchs's admirable wood engravings, the texts and their provenance might well repay a thorough comparative study. In the present note I propose to consider only a single example of these little herbals—*Histoire generale des plantes et herbes avec leur propriete par M. Leonard Fuchs*, printed in 1580, "A Rouen. De l'Imprimerie de Robert Mallard, rue de l'Horloge à la grand Nef." The British Museum possesses two undated books which are both apparently later editions of this work. One of them (catalogued "1700?") came from the press of another Rouen printer, Jean le Costurier, rue Escuyere, au Champ-au Rouge. The other was printed at Troyes; it is catalogued as "1620?." I have before me an example of the 1580 edition which was formerly in the library of Dr. Edmond Bonnet and then in that of Miss Guelma Lister, to whom I am indebted for help in its study. This copy has been somewhat cut down; the pages now measure about 11.6 cms. in height, and 7.7 cms. in width.

On the verso of the title-page there stands a disarming little poem, addressed by the printer to the reader, who is referred to elsewhere in the book as "amy Lecteur":—

Ce liard'huy t'est, ce livre présenté,
En beau françois proprement traduit;
Aussi, pourras, prendre (si bon te semble),
[Et] guérison, et plaisir tout ensemble;
Car il n'y a de mal aucune espee,
Qui n'ayt icy, sa guérison expresse.
Par ce moyen cognoistras le desir,
De imprimeurs à te faire plaisir.
Dont recevras un profit incroyable.
Estant c'est oeuvre a tes yeux agreable.

This copy of verses is succeeded by woodcuts and text relating to seventy-one herbs, interspersed among which are a few descriptions with no pictures appended. This part of the book occupies 150 pages, and is fol-

lowed by a short section (five pages) treating of Tobacco. This concludes the portion of the little volume which can strictly be called an herbal, but there still remain about an hundred pages of miscellaneous medical recipes, beginning with plague remedies.

Such botanical interest as the herbal possesses, lies chiefly in the descriptions of the plants enumerated; these diagnoses, however, are often curiously sketchy. Così Parsley (Persil), for instance, receives no description beyond the statement that in the month of May the places where it grows are almost entirely white with its flowers; this, though true and picturesque, is scarcely adequate for purposes of identification! But occasionally something more in the modern manner is achieved. In treating of Cyclamen, the translator adds the information that it is to be found in abundance in the forest of Orleans; the description, derived from Fuchs, states that

It has Ivy leaves of purplish colour, and mottled above and below by white blotches, the stem four fingers long, naked and leafless, in which flowers are formed like Roses of purplish colour; the root is black, like to the Turnip.

In the sixteenth century the way in which the phenomena of sex extend to the plant world was not understood, and the words "male" and "female" were used in sense that now seems strange to our ears. In our version of Fuchs's herbal we meet with the old belief that the scarlet and blue varieties of the Pimpernel are respectively masculine and feminine—a belief which also finds expression in the English herbals of Henry Lyte and William Turner. The record runs as follows:—

Il y a male et femelle: qui ne different en aucune chose fors en couleur de fleur le male porte fleur de couleur incarnate, et la femelle de couleur d'azur.

A great part of the herbal is taken up with an account of the "virtues" of the plants; some of the medicines recommended, such as Marsh-mallow for coughs, have survived to the present day. And it is rather a pleasure to find that the practice of giving Chickweed to caged birds is of respectable antiquity—as might, indeed, be guessed from the English name. We read that "les petits oiseaux se delectent à manger de ladite herbe [Marsh-mallow, Chickweed]. Les oiseaux donnent de ladite herbe à manger aux petits oyssillons en cage quand ils ont perdu l'appetit de manger." Another of these survivals is mankind's appreciation of Asparagus; we are told that, when cooked according to the directions given, it is "une grande viande et un

des principaux mets des grands seigneurs. In turning over the pages of the herbal, one is struck by the frequency of the remedies for loss of hair—the Nettle, Vine, Cyclamen Water-lily, and two kinds of Fern are each returned offered for this purpose; it seems to suggest that baldness may have been particularly rife in the sixteenth century. Some of the objects for which medicaments are proposed are, happily, out of date today; we are, for instance, directed to mix Maidenhair Fern with the food of cocks and quails to embellose them, and encourage them to joust an combat.

Quite a large number of the recipes transcend the boundary line between medicine and magic. For instance, one of the herbs recommended for tertian fevers must be gathered with the left hand and with the eyes averted while naming the patient. In the case of Vervain, the third node is to be collected for tertian fevers, and the fourth for quartan fevers; while, if Borage is used, a decoction should be made of a three-stalked plant for tertian, and a four-stalked for quartan fevers. Various herbs are credited with remarkably protective qualities. Wild Angelica, for example, has power "contre enserolemeys ou enchantemens, si on la porte avec soy." Tansy is particularly valuable, as it protects "the king carries it from poisons and with it from sun-stroke, and saves him from feeling any fatigue in travelling. Wild Thyme, when burnt, drives away all serpent and venomous animals, and it is recommended to mix it with the food of harvesters, so that if, perchance, in their weariness they be overcome by sleep, they may rest in security safe from the attacks of poisonous beasts.

Tobacco had not reached Europe where Fuchs produced *De Historia Stirpium*, so the section of our little volume dealing with the herb is a new feature. It includes a woodcut of the Tobacco plant, with a smoked head beside it; I find that the source of the engraving is the rare *Stirpium Adversaria Nona* of P. Pena and M de l'Obel, published by P. Purfoot in London, 1570/71. It is curious thing that in Pena and l'Obel's herbal, the figure of the Tobacco plant did not form an integral part of the book, but at appropriate space was left in the text, so that a detached leaf bearing the picture might be pasted in later. In our little French herbal, the figure of Tobacco is poorly copied from that of de l'Obel, and the smoke is a unrealistic in character as to suggest that the woodcutter had never seen a pipe in use, and was mystified by the lines with which the

places in reversion, which appears to me to be a fraudulent embleme [sic] of the property of the generation to come by that in being; and have sanguine hopes, that it will terminate in one fixed law, operating in the first application of it, by the assignment of the entire emoluments of the clerk of the House of Lords to the person executing the duties of it.

I am not selfish in telling you, as an article of domestic news, that I made a visit of twenty one miles yesterday with impunity, and Mr. Hastings the same, as a matter of course, which is a matter for thanksgiving in both cases.

Mr. Hastings joins with me in best compliments to Miss Baber, and our best wishes to you both.

Your affectionate

WARREN HASTINGS.

To Edward Baber Esq. Park street Grosvenor square London.

H. B.

(To be concluded).

THE KING'S SHIPS.

7. BUILT AT PORTSMOUTH DOCKYARD. In the following table the date given for each ship is that of launch. The tonnage when given in brackets denotes Tons Burkes, otherwise Displacement Tonnage. N.N.L. denotes New Navy Lists, 1841-52, and N.L. Official Navy Lists.

1647. PHOENIX, 38 (414)T. Surrendered to the Dutch, 7 Sept., 1652. Recaptured 25 Nov., 1652. Cut out from Loughorn Roads. Wrecked 1664.

1649. PORTSMOUTH, 46 (463)T. Thomas Eastwood. Surrendered to French and blown up at sea, 9 Aug., 1689.

1653. MARYCOWLE, 5, hoy (42 33/94)T. Sir John Tippetts.

1653. BRISTOLL, 48, 4th rate (870 22/94)T. Sir John Tippetts. Re-built Deptford by R. and J. Castle in 1693, as (770)T. Surrendered and recaptured next day by Lord Dureley 23/24 April, 1709. Sunk 28 April (Sargison).

1654. LYME, 52, 4th rate (836 10/54)T. Sir John Tippetts. Re-named MONTAGU in 1660. Re-built Chatham by Phineas Pett in 1675, as (829)T. Re-built Woolwich by Fisher Harding in 1698. Re-built Portsmouth by Naish as (930)T. in 1716.

1655. DARTMOUTH, 30, was a fireship. 22

The Romance of the Apothecaries' Garden at Chelsea. By F. Dawtrey Drewitt. 3rd ed. (Cambridge University Press, 7s. 6d. net).

DR. Dawtrey Drewitt's charming account of the Physic Garden of the Society of Apothecaries at Chelsea (first published in 1922), has evidently met with a happy reception among those interested in botany and history, for a third edition has now appeared. The Apothecaries' Garden has had a continuous career since 1673; it was said in the eighteenth century to rival the botanical gardens of Paris and Leyden. But in its life of more than two and a half centuries it has passed through many vicissitudes, which make a romantic tale in Dr. Drewitt's hands. There is a special appropriateness in his undertaking the task, since he is a descendant of William Jones, the entomologist, whose house in Chelsea, close to the Physic Garden, became in the late eighteenth century a centre for naturalists.

An interesting feature of the present edition is the inclusion of some hitherto unpublished matter relating to the origin of the Linnean Society. Sir J. E. Smith, in letters to William Jones written in 1786-7, emphasizes the need for an association "for the cultivation of Nat. Histy: strictly," the Royal Society being then much occupied with mathematics. Ex-

perience had led the scientists of those days to fear the danger of acrimony—sometimes amounting to violence—which was liable to be displayed at scientific discussions, and as a precaution, in the early years of the Linnean Society, no remarks were permitted upon the papers read at the meetings.

Many half-forgotten botanical worthies of the seventeenth and eighteenth centuries live again in Dr. Drewitt's pages, which are as entertaining as they are learned. Occasionally complete references to the sources used would be a welcome addition. Dr. Drewitt alludes, for instance, to the well-known story that Sir Joseph Banks, as a boy, bore off a herbal from his mother's dressing-room, and carried it to Eton in order to identify plants; he suggests that this was either "Gerard's" or the copy of the *Herbarius Moguntinus* of 1584, which Banks is known to have possessed in later life. The "Diet. Nat. Histy" definitely refers to the volume in question as Gerard's Herbal, and one would like to know if Dr. Drewitt has any evidence for the alternative he offers; it seems, on the face of it, improbable that the book was the *Herbarius Moguntinus*, which, interesting as it is from the historical standpoint, would have been of next to no value to a schoolboy who wanted to learn the names of plants.

A word should be said as to the Frontispiece, showing the two Cedars of Lebanon which formerly stood sentinel at the gate of the garden; it is far more satisfactory than the smaller and rougher version of James Fyfe's picture which appeared in the previous editions.

The Library.

The Ferns (Filicales). Vol. III. By F. O. Bower. (Cambridge University Press. £1 10s. net).

THE publication, this year, of the third volume, completes Professor Bower's great work on the Ferns, the result of nearly half a century of intensive comparative study. The amount of detailed and largely original information which the volumes contain, and the number and beauty of their illustrations, place all students of morphological botany deeply in the author's debt. The three volumes together contain a thousand pages—a somewhat unnecessary length, which is partly accounted for by a tendency to repetition and a certain cumbersome style; but in a work of such value, minor blemishes may well be forgiven.

'The Ferns' is in several respects unique among systematic books. The author's constant use of anatomical data, in addition to characters derived from the external form, deserves a warm welcome, especially as he does not overstress the importance of structural detail. Moreover, he is in full sympathy with more conservative methods, and preserves the integrity of his material. So often exemplified in the work of the great systematists. Perhaps the most original feature in his treatment of his subject is that the taxonomic criteria used are not taken for granted as axiomatic, but are subjected to an analytical study which occupies the whole of Vol. I, and serves as a basis for the phyletic grouping of the Class. In Vol. II the method explored in the first volume is applied to the more primitive sub-division—the Eusporangiate Ferns. In Vol. III, now before us, the author has had to face the more difficult task of dealing with the Leptosporangiate, formerly called the Polypodiaceae—essentially the Ferns of the present day; and as he modestly says, "A lifetime is too short a period in which to bring such a study to completion." Numerous in genera and species, and advanced and standardised in organisation, the lines of descent of the Leptosporangiate Ferns have become almost inextricably confused, owing to the tendency of distinct phyla to follow similar lines in the later stages of evolution. One of the greatest services which Professor Bower has rendered has been in emphasizing this point; and in bringing home to botanists the importance and frequency of parallel developments in the evolution of related plants. As he has shown, such old comprehensive "genera" as *Polypodium* and *Acrostichum* are not phyletic unities at all. The characters of the reproductive organs upon which these generic names are based really represent states or conditions arrived at by evolution along a plurality of converging lines. He points out that the main phyla of Ferns seem to have maintained their separate identity from long past geologic time to the present day, and to have each progressed independ-

ently along lines which are in many respects parallel. There has thus been a great Class Progression or Phyletic Drift carried out on a number of separate paths whose direction has gradually approximated. In many distinct phyla, for instance, there has been a shifting of the groups of spore-capsules from the margin of the frond to a place on the lower surface. The "slimy" character of the leaves, again, is regarded as a condition which has arisen independently in several quite distinct groups of shade-loving ferns.

A problem of special interest, with which Professor Bower deals in detail, is the nature of the primordial plant type from which in remote antiquity the Class of Ferns originated. From a consideration of early fossils, and by the comparative study of those living forms which there is reason to regard as primitive, the author concludes that the Fern archetype consisted of a simple upright shoot, possibly rootless, bifurcating if it branched at all, and with only an ill-defined distinction between the axis and the leaf, which was repeatedly forked into narrow segments. It is significant that the archetype thus reconstructed presents a similarity to certain plants of the Devonian rocks known as the Palaeophytes, but Professor Bower wisely refrains from attempting to link the Ferns directly to this group. Indeed, as he points out, the theorem of the work is the evolutionary progression within the Class rather than its ultimate origin. 'The Ferns' will long be used and valued for the fresh light which it throws upon this progression.

ARBER, AGNES.

STUDIES IN THE GRAMINEAE.

- IV. 1. THE STERILE SPIKELETS OF CYNOSURUS
AND LAMARKIA. 2. STAMEN-LODICULES IN
SCHIZOSTACHYUM. 3. THE TERMINAL LEAF
OF GIGANTOCHLOA.

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ARBER, AGNES.

STUDIES IN THE GRAMINEAE. V.

1. ON LUZIOLA AND DACTYLIS.
2. ON LYGEUM AND NARDUS.

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THE TREE HABIT IN ANGIOSPERMS:
ITS ORIGIN AND MEANING

BY
AGNES ARBER

FROM THE NEW PHYTOLOGIST, VOL. XXVII, No. 2, 30 MAY, 1928.

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THE NEW PHYTOLOGIST

A BRITISH BOTANICAL JOURNAL

EDITED BY

A. G. TANSLEY, M.A., F.R.S.

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THE NEW PHYTOLOGIST was founded in 1902 to afford a medium for the publication of original papers, critical articles and reviews, especially in those branches of botany undergoing rapid current development. The journal is well illustrated, and is issued each year in five numbers. The standard size of the annual volume is 320 pages 8vo. Annual subscription price £1. 5s. post free. Separate numbers 7s. 6d. each.

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By A. G. TANSLEY

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Nature—Middle Article—I

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Manuscript Herbals.¹ — 342 1861 / 1872

THE herbals which have come down to us from pre-renaissance days offer a vast field for inquiry, as yet imperfectly explored. Dr. Charles Singer's new memoir not only affords invaluable clues to the labyrinth of codices which confront the perplexed student, but also illuminates the subject by treating it on broad lines and relating it to the main currents of thought. Dr. Singer believes that the herbal—or descriptive drug-list of vegetable remedies—had already assumed its definitive form in the fourth century before Christ, though no work so early in date is extant. We owe our first knowledge of Greek herbal literature to the "Historia Plantarum" of Theophrastus. The Ninth Book of this work, which may perhaps date from a period later than the death of the reputed author in 287 B.C., is believed to be a compilation from which we may gain an idea of the nature of the earliest herbals.

The most important work of the period before Christ is, however, that of Kratoeas of Pontus, the medical attendant of Mithridates (120-63 B.C.); Kratoeas was the first author to produce a herbal with figures, and he is thus the father of plant illustration. No actual copy of his work has survived, but Dr. Singer believes that we have the material for restoring a considerable part of it, which seems to have been used some centuries later in association with another *materia medica*—that of Dioskurides. The manuscript, which has so fortunately preserved for us this fragment of the herbal of Kratoeas, is the most illustrious of all the early botanical codices. It was prepared in Constantinople about the year A.D. 512 for a noble lady, Juliana Anicia, the daughter of Flavius Anicius Olybrius, Emperor of the West. For the next thousand years or so it remained at Constantinople, where it suffered various vicissitudes; in 1569 the diplomatist Guier Busbecq, when on a diplomatic mission to that city from the Emperor Ferdinand I., found it in the hands of a Jew, and induced his royal master to buy it for a hundred ducats. For a long period it was one of the chief treasures of the Hofbibliothek at Vienna, but as a result of the War it is now transferred to St. Mark's Library at Venice. The codex includes a picture of Kratoeas engaged in painting a mandrake, which is conveniently held up for his inspection by Epnoia, the Goddess of Intelligence, while Dioskurides sits by, writing an account of the plant.

The text of the manuscript contains, among other matter additional to Dioskurides, an account of the uses of eleven plants, avowedly taken from Kratoeas; these descriptions are accompanied by excellent illustrations, which may reasonably be

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