



Hunt Institute for Botanical Documentation
5th Floor, Hunt Library
Carnegie Mellon University
4909 Frew Street
Pittsburgh, PA 15213-3890
Telephone: 412-268-2434
Email: huntinst@andrew.cmu.edu
Web site: www.huntbotanical.org

The Hunt Institute is committed to making its collections accessible for research. We are pleased to offer this digitized item.

Usage guidelines

We have provided this low-resolution, digitized version for research purposes. To inquire about publishing any images from this item, please contact the Institute.

About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

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.

M.A. Wallace A.A.
p582

THE INDIAN P.E.N.

Poets **E**ssayists **N**ovelists
laywrights

A World Association of Writers

ARTICLES

- Homage to Mickiewicz
The Indian Copyright Bill
The Kerala Literary Workshop
Bishub Milan
Lalan Shah

POEM

Zippary Tackett p582

REGULAR FEATURES

- The Literary Scene Abroad
The Literary Scene in India
Book Reviews
New Publications of Our Members

Vol. XXII No. 6



JUNE 1956

M.A. Wallace A.A.
p582

THE INDIAN P.E.N.

Poets **E**ssayists **N**ovelists
laywrights

A World Association of Writers

ARTICLES

- A Question of Policy
A Profession of Faith
Can Creative Writing Be Taught?
Deepavali Issues in Marathi
Narsinh Mehta
The Late Yashwant Pandya
A P.E.N. "At Home"

POETRY

Four Oriya Poems
At The End p52

REGULAR FEATURES

- The Literary Scene in India
The Literary Scene Abroad
Reviews
New Publications of Our Members

Vol. XXII No. 2



FEBRUARY 1956



Copy of A.A.'s article in "The North London
Collegiate School, 1850-1950". Oxford 1959
pp. 68-69.

Miss Arber.

18, Sherlock Close

Sherlock Rd

Cambridge.

The North London Collegiate School 1850-1950. Essays in Honour of the Centenary of the
Frances Mary Burt Foundation. Oxford, 1950. pp. 65-69
Agnes Robertson (Mrs. Arber), F.R.S., Linnæan Medal 1948.
left school 1897

My initiation into North London life took place at the preparatory classes in Camden Road when I was eight years old. Miss Buss occasionally visited us, but even the fact that she had been known to bring sweets did not mitigate the awe which she inspired in us, a feeling which continued to the full in later years. When, in her accustomed four-wheel cab, she passed North Londoners on their way to school in the morning, she was in the habit of stopping and calling them to her, in order to divert them of their heavy satchels, which were placed on the roof of the cab. It was not her fault that, though the physical relief was great, the embarrassment aroused in a shy child by being hailed from the cab window by the Headmistress, outweighed the sense of her kind thoughtfulness. In 1889 I went on to what we called 'the big school,' beginning in the lowest form, which was under the gentle guidance of Miss Fawcett. The place which surrounded her recalled the atmosphere of the preparatory classes, and it was not until I passed from her care into succeeding forms that I was exposed to the real rigour of the school life of that date.

Rules and regulations abounded, we were put on ~~our~~ our honour to report ourselves. This self-reporting was disregarded by the more robust spirits, while the more conscience-stricken did it with anguish of mind, and then became piggish about it. The extreme of polysyllabic-repression was

reached, to think, in a notice once put up in the dining-hall which read: "No unnecessary circumambulation allowed."

One of the many good features of the actual classroom life was that prizes were given to everyone who attained a certain percentage of marks; the sting was thus taken out of competition. Unfortunately an over-strenuous atmosphere was induced in other ways, mainly by the excessive stress laid on outside examinations, beginning with 'Junior Cambridge'.

In comparison with the girls of the present day, our energies were sapped by the weight and cumbrousness of our clothes. On drill days we had the added

burden of a ~~voluminous~~ voluminous pale blue sash round the waist to give some appearance of uniform. How remote the atmosphere of my school time was from that of the present day may be gauged by one significant detail; 'department' was included in the dancing-classes. We were instructed in walking round the room, with our hands neatly folded upon the front of our persons, and we were taught to bow when passing the dancing mistress, so that we should acquire the correct manner of greeting our acquaintances in the street.



Extra copies of *Putnam's*
Agnes Fy
Kemp Smith

Digitized by Hunt Institute for Botanical Documentation

DR. AGNES ARBER,
52 HUNTINGDON ROAD,
CAMBRIDGE.

B1

THE TIMES

THE TIMES PUBLISHING COMPANY, LIMITED
PRINTING HOUSE SQUARE
LONDON, E.C. 4

TELEPHONE CENTRAL 3000

August 22, 1958.

MISS AGNES FRY

Miss Agnes Fry, a daughter of the Right Hon. Sir Edward Fry, P.C., G.C.B., died on Friday at the age of 89. Dr. Agnes Arber writes:—

Agnes Fry's varied interests centred primarily in natural history, but her knowledge in this field was not only scientific and factual; she had a capacity for feeling herself into the life of animals and plants, which perhaps owed something to the mystical strain in the Quaker tradition. This capacity reveals itself in her verses, which seem to say, but her personal friends, and it finds perhaps its most vivid expression in the lines:—

"Dear Daphne turn again we pray
Once more a living maiden be
And in our human language say
Just how it feels to be a tree."

MISS AGNES FRY

Miss Agnes Fry, a daughter of the Right Hon. Sir Edward Fry, P.C., G.C.B., died on Friday at the age of 89. Dr. Agnes Arber writes:—

Agnes Fry's varied interests centred primarily in natural history, but her knowledge in this field was not only scientific and factual; she had a capacity for feeling herself into the life of animals and plants, which perhaps owed something to the mystical strain in the Quaker tradition. This capacity reveals itself in her verses (little known to any but her personal friends), and it finds perhaps its most vivid expression in the lines:—

"Dear Daphne turn again we pray
Once more a living maiden be
And in our human language say
Just how it feels to be a tree."

Mr. E. G. Rowland, who was author of books on Snowdonia which were widely popular, died yesterday.

Mr. Ernest Blundell, chairman of Blundell Brothers, proprietors of the *Wellington Evening Post*, died at Wellington yesterday, our Correspondent there reports. He had a long and prominent connexion with newspaper administration and was a past chairman of the New Zealand Press Association.

Dr. David O'Leary, formerly vicar-apostolic of Johannesburg, has died in that city at the age of 77.

Colonel George Bentham Leathart Rae, D.S.O., who has died at the age of 74, was High Sheriff of Cheshire in 1949.

PROF. N. KEMP SMITH

Dr. Agnes Arber writes:—

In connexion with your obituary of Professor Norman Kemp Smith, may I recall the fact, to which attention has been drawn by an American scholar, that Schopenhauer was eager to translate Kant, and attempted unsuccessfully to interest an English publisher in his project. In making his offer he ventured to predict that a century might pass before anyone else appeared who was as well qualified as he felt himself to be for this particular task. This prophecy was fulfilled with singular accuracy. When Professor Kemp Smith produced his definitive version of the *Critique of Pure Reason* in 1929, a hundred years had passed since Schopenhauer's letter was written.

Mr. A. H. Lakeman, founder and managing director of the Heidelberg Printing Machine Company, Ltd., collapsed and died on Friday at London Airport after returning from a visit to Germany.

*Trm
Sept 15. 1958*

Robert Sharrock (1630-1684): a precursor of Nehemiah Grew (1641- 1712) and an exponent of "Natural Law" in the plant world

By Agnes Arber*

AT THE TIME when I was occupied with an earlier study of the work of Nehemiah Grew and of Marcello Malpighi,¹ I was, I regret to say, ignorant of that of the Rev. Robert Sharrock, which, though trivial in comparison with the massive and highly original output of these two writers, is yet worth recalling as showing a certain small-scale affinity with their achievement.

Sharrock's contemporaries would have been acquainted with his name mainly in a legal and clerical context, since he was a D.C.L. of Oxford and a Fellow of New College, who held country livings and became a Prebend and ultimately Archdeacon of Winchester. If we may judge by the record of the Greek, Latin, Italian, Spanish, French, and English books in the library accumulated by him and his son (Robert Sharrock of the Inner Temple), he was a man of wide cultivation. After his son's death the library was sold. It is unfortunate that, except in the case of works published after the father's lifetime, we cannot tell from the sale catalogue which books were chosen by the father and which by the son. The joint *Bibliotheca Sharrockiana* is described as "Consisting in Divinity, History, Philosophy, Phytology, Physick, Civil and Canon-Law; and several Classical Authors." The titles enumerated show that it was a rich and varied collection, comprising over two thousand volumes.

Sharrock was at home not only in a scholarly atmosphere; he also led a scientific life, if not a very conspicuous one. The Oxford group of the "Invisible College" (the nascent Royal Society, which received its charters from King Charles II in 1662 and 1663) met for a time in the lodgings of the Hon. Robert Boyle, who resided mainly in Oxford from 1654 to 1668.² Sharrock does not appear to have been included in this distinguished company, but that

* Cambridge, England.

¹ References as follows: "Nehemiah Grew and the Study of Plant Anatomy," *Science Progress in the Twentieth Century*, 1906, 1: 150-158; chapter on Nehemiah Grew in *Makers of British Botany*, ed. by F. W. Oliver (Cambridge University Press, 1913), pp. 44-64; "Tercentenary of Nehemiah Grew," *Nature*, 1941, 147: 630-632; "Nehemiah Grew and Marcello Malpighi," *Proceedings of the*

Linnaean Society (London), 1940-1941, pp. 218-238; "Nehemiah Grew: a correction," *Proceedings of the Linnaean Society* (London), 1941-1942, p. 166; "The Relation of Nehemiah Grew and Marcello Malpighi," *Chronica Botanica*, 1941, 6: 391-392; "Nehemiah Grew and Marcello Malpighi, An Essay in Comparison," *Isis*, 1942, 34: 7-16.

² T. Birch, *The Life of the Honourable Robert Boyle* (London, 1744), pp. 84, 109.

Digitized by Hunt Institute for Botanical Documentation

Digitized by Hunt Institute for Botanical Documentation

game. In August 1938, a 3-foot transect was located and photographed in the center of one of these enclosure plots, and another an equal distance on the opposite side of the fence where the grass had been subject to continuous grazing. Again in April 1940, similar transects were photographed at the same location. The following table compares the results:

SOIL-COVER INDICES OF VEGETATION INSIDE AND OUTSIDE ENCLOSURE PLOTS.		
	Aug. 1938	Apr. 1940
Inside plot:		
Horizontal	100	100
Vertical	83	96
Average	91	98
Outside plot:		
Horizontal	100	69
Vertical	63	75
Average	81	72

To test the significance of soil-cover indices obtained by this method, investigation along two lines is needed:

(1) To determine for different kinds of vegetation the correlation between soil-cover indices and other measures of vegetation densities; and (2) To determine the correlation between soil-cover indices and soil and water losses on different soils and slopes.

If significant correlations are found in these tests, it would then be valuable to determine the average soil-cover indices for different kinds of vegetation, both natural and cultural, at different seasons.

U. S. SOIL CONSERVATION SERVICE,
ARLINGTON, TEXAS.

SPRING 1941.
AGNES ARBER: Recent Work on the History of Botany in the Old World.—Contributions to the history of botany published during the last year or two take the form of scattered studies of subjects ranging over a period of more than 3000 years. They are best considered in roughly chronological order. Very early work has been brought to notice by F. E. WEISS in his account of the so-called "botanical chamber" attached to the banqueting hall of THUTMOSIS III (1501-1447 B.C.) at the east end of a great temple at Karnak (*J. R. Hort. Soc.* 66: 51-54, 1941). On the sandstone blocks lining the chamber, plants are represented in bas reliefs, which are sometimes very beautiful. These perennially interesting decorations were analysed in 1919 by G. SCHWEINFURTH (*Engler's Bot. Jahrb.* 35:464-480), and WEISS does not go beyond his findings; indeed, unless the reader also returns to SCHWEINFURTH, the later account may leave a slightly misleading impression, since WEISS takes the attractive view that these outlines represent in actual fact the plants and animals which THUTMOSIS, who was a great military adventurer and conqueror, brought to Egypt from Syria. But SCHWEINFURTH states, on the authority of BREASTED, that the hieroglyphic inscription upon which WEISS relies, does not declare that the plants portrayed were brought by the king from Syria; it merely says that they were there, and that the king found them. It seems most likely that the designer, without having either plants or

sketches to go upon, was commissioned to represent as best he could an exotic flora which he had never seen; possibly he looked for inspiration to any foreign plants available to him which were then cultivated in Theban gardens. This view is disappointing, as it reduces the interest of the "botanical chamber", but it appears that it must be accepted, since it is borne out by the fact that the only six plants which are definitely recognisable in the reliefs are not now native to Syria: *Nymphaea caerulea* Sav.; *Punica granatum* L.; *Arum italicum* L.; *Dracontolobium vulgare* Schott; *Kalanchoe* sp.; *Iris* sp.

THUTMOSIS, though he lived more than a thousand years after the botanical chamber of THUTMOSIS III was decorated, is often known as the Father of Botany. Modern detailed studies have revealed that his work is of even finer quality than one might suppose at first glance. G. SENN, for instance, has recently worked over the oak galls mentioned by THUTMOSIS (*Trans. R. Soc. Edinb.* 60: 343-354) and he considers that, though formerly scholars have concluded that these galls are hardly capable of identification, nine of the ten to which THUTMOSIS alludes can in fact be named with certainty today. SENN's illustrated account should be very useful to students of the history of cecidology.

Passing over a period of 1500 years, the next contribution we have to notice relates to a Chinese printed herbal, which much predated any herbal printed in Europe (HUMMEL, A. W., *The Printed Herbal of 1249 A.D.*, *Isis* 33: 439-442, 1941; reprinted from *Ann. Rep. of the Lib. of Congress*, Washington (for 1940) 1941: 155-157; with editorial note by SARTON). The printing of herbals in China began before 1000 A.D. The book of 1249, which HUMMEL has described, is a very fine example of early printing. Its ancestry can be traced back to a herbal compiled towards the end of the eleventh century, which was itself based upon earlier works. HUMMEL reproduces the figures of *Euphorbia pekingensis* Rupr. from the 1249 herbal; they are astonishingly similar to certain European illustrations of much later date (cf. CHON, 7:240).

A slight sketch by ARBER of the *Gramineae* in herbal literature is included in the volume "Homenaje a LORENZO R. PARODI" (*Darwiniana* 5: 20-30, 1941).

One of the most famous of the early botanical gardens, that of Montpellier, is the subject of an historical study by D. MAW (*J. R. Hort. Soc.* 66: 121-128, 1941, and 158-164). P. R. DE BELLEVAL (ca. 1564-1632) initiated the garden in the last decade of the sixteenth century. He had pleaded that the students tended to abandon the school of medicine at Montpellier, in favour of those Italian universities which already possessed botanic gardens, and in 1596 HENRY IV was moved to order his treasury to find a site and to pay the wages of a gardener. BELLEVAL anticipated modern methods by imitating natural conditions for marsh, water and rock herbs; he is also remembered for his introduction of the cul-

RAVEN
for the
ed by
ic was
have
college,
ellow-
fy he
nce he
nd be-
at his
oms in
in one
L. RAY
hips at
y, and
is thus
verage
feeling
in con-
bulary,
expres-
come
at that
some
mother
w and
Latin
sh ver-
doubt
tinent,
for all
sh and
is fully
d have
acular.
treat in
shed in
udy of
o hun-
portant
eteenth
tion of
ved of
related
tion at
enance
selves
could
le local
him to
de and
himself

tivation of the mulberry tree into Languedoc. The success of the garden is shown by the fact that, two or three years after its foundation, 1332 species were being grown. But less than a quarter of a century later, much of BELLEVUE's enthusiastic work was tragically undone. It was decided to increase the fortifications of the town, since conflicts between the Catholics and Huguenots had broken out, and the garden, being on slopes essential to the new defenses, was doomed to demolition. The town, indeed, suffered a siege, but when this phase was over, BELLEVUE did all that was possible towards restoring the garden. In MAW's memoir, interesting information is given about BELLEVUE's successors, the chief stress being laid upon the adventurous career and botanical travels of P. M. A. BROUSSONNET (1761-1807).

The tricentenary of NEHEMIAH GREW's birth fell in 1941. Certain aspects of his work and of that of MALPIGHI have been discussed by A. ARBER (CHRON. 6: 391-392, 1941; NATURE 147: 630-632, 1941; Proc. Linn. Soc. Lond., Session 153: 218-235, 1941; *Isis* (forthcoming)).

Among recent works on eighteenth century topics, special value attaches to S. SAVAGE's scholarly "Synopsis of the annotations by LINNAEUS and contemporaries in his library of printed books" (*Cat. of MSS in Lib. Linn. Soc. Lond.*, Part III, 1940). Of the 1600 works at present constituting the library of LINNAEUS, between one-fifth and one-quarter contain written notes. All these have been scrutinized by SAVAGE, and his record forms an important source for students of LINNAEUS.

In 1941 two writers, independently, produced studies of *The Botanic Garden*, published 150 years earlier by ERASMUS DARWIN, CHARLES DARWIN's grandfather (EMERY, C. *Isis* 53: 315-325; HALL, A.D., *J. R. Hort. Soc.* 66: 24-27). This poem, composed in heroic couplets, though pompous and often deliciously absurd, is by no means negligible. With the voluminous notes appended to it by the author, it throws considerable light upon the state of botany at the end of the eighteenth century, and also occasionally foreshadows more recent developments.

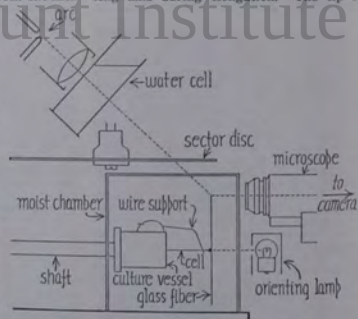
WILLIAM FORSYTH (1737-1804), who was gardener to GEORGE III, and after whom *Forsythia* was named, is the subject of a notice by A. SIMMONDS (*J. R. Hort. Soc.* 66: 319-324, 1941). In 1782 FORSYTH became one of the founders of the Society for Promoting Natural History—a less successful precursor of the Linnean Society, to which its funds, books, and collections were even-

tually transferred. He was also one of the seven men who attended a meeting in 1804 from which the Royal Horticultural Society took its origin.

The centenary of the Royal Botanic Gardens, Kew, was commemorated by TURBILL in CHRONICA BOTANICA 6: 414-417, 1941. A short notice of the first Director, Sir WILLIAM HOOKER, by A. W. HILL, appeared in *J. R. Hort. Soc.* 66: 154-157, 1941.

Finally three papers by W. T. STEARN may be mentioned, since, though their intention is primarily bibliographical, they contain a good deal of historical information: SCHNEEVOGT and SCHWEGMAN's "Icones Plantarum Rariorum", *J. Bot.* 78: 66-74, 1940; LEBEROUX's "Flora rossica", "Icones plantarum novarum", and "Flora altaica", with a note on PALLAS' "Flora rossica", *J. Arnold Arboretum* 22: 225-230, 1941; BONPLAND's "Description des plantes rares cultivées à Malmaison et à Navarre", *J. Arnold Arboretum* 23: 110-111, 1942. CAMBRIDGE, ENGLAND. May 1942.

EDWARD S. CASTLE: A Technique for Making and Recording Measurements of Sub-microscopic Increments of Growth of Single Plant Cells at Very Short Intervals of Time: Growth of a single plant cell has been measured at intervals as short as 0.2 sec. by the following method. The mature sporangium of *Phycomyces* exhibits helical growth, twisting about its long axis during elongation. The tip of



this long, tubular cell which bears the sporangium is rotated through approximately 360° for every millimeter that the cell elongates. A fine glass wool fiber (diameter 20μ, length 6 to 8 cm.) is cemented at its midpoint to the distal pole of the sporangium, the fiber running at right angles to the cell axis. The glass fiber attached to the sporangium is also

[Extracted from the PROCEEDINGS of the LINNEAN SOCIETY of LONDON, Session 154, 1941-42, Pt. 2, 10 February, 1943.]

NO. 96
SPRING
1943

as obscure, but RAVEN owed it to a fund for the scholars, administered by After two years he was here he seems to have than in his first college, as elected into a Fellow- pains to identify the d as a Fellow. Since he little spot of ground be-

"—it appears that his in one of two rooms in he Great Gate, in one afterwards lived. RAY, holding lectureships at ck. Mathematics, and nt as a scholar was thus rom that of the average and his natural feeling dly fostered. RAVEN contin "the rich vocabulary, style, the ease of expres- sion which only come knowledge." Latin at that t RAY's academic sense him to use his mother of NEHEMIAH GREW and ies. He adhered to Latin except the English ver- his use of Latin no doubt station on the Continent, countries, it must for all influence. British and y are certainly less fully c than they would have write in the vernacular. o any lack of interest in mpled and published in glish Words, a study of who edited it two hun- d as the most important before the nineteenth ogether a Collection of), which has proved of

is, so far as they related ound full satisfaction at s no official countenance ars concerned themselves

bridge. Exactly how a university career was
C. F. RAVEN, *John Ray Naturalist: His Life and Works*. Cambridge, England, 1942. See also "New Light on JOHN RAY." *Proc. Linn. Soc. Lond.*, 154th Sess. (1941-2), pp. 3-10.

so little with outdoor observation, that he could find no one to help him to identify even the local plants. It was after an illness that obliged him to rest from more exacting tasks, and to ride and walk in the country, that he threw himself

THOUGH IT is more than 300 years since the birth of JOHN RAY, he has not hitherto been made the subject of really comprehensive study; but this state of affairs is now being effectually remedied. HUGH MACDONALD's bibliography of RAY and WILLUGHBY is to be published, when conditions allow of its completion, by the Oxford Bibliographical Society; while RAY's life and the content of his writings are treated fully by CHARLES E. RAVEN in the memoir before us.¹ Among the many features of this book which call for gratitude are a detailed analysis and evaluation of all the scattered sources, and also a dated outline of the events in RAY's life, which helps the reader to steer his way through the abundance of detail which the author provides. Professor RAVEN's study of RAY is the outcome of a burning enthusiasm for the man and his work, which has impelled his biographer to trace out all the minutiae of RAY's career, and to follow in his footsteps in the field, collecting nearly every plant, bird, and insect that RAY records for Britain, and often in the same localities. RAVEN brings to his task a combination of qualities which seem to predestine him to write RAY's life. As an expert field naturalist, both on the zoological and botanical sides; as a Latinist; as a theologian, deeply influenced by the Cambridge Platonists of the seventeenth century, and closely concerned with the relation of biology and divinity; he offers so many parallels with RAY, that it seems scarcely too fantastic to regard him as, in certain aspects, a modern re-incarnation of his naturalist-hero. The fervour of his admiration has, however, the serious drawback that it sometimes makes him less than just in his estimate of biologists contemporary with RAY, and even of those who preceded and followed him. One cannot but regret this tendency the more, because RAY's reputation needs no artificial enhancement; there is no necessity to dim the greater luminaries in order to allow him to shine.

Still standing at Black Notley in Essex, adjacent to the disused forge, is the timber and plaster cottage in which in 1627 the blacksmith's son JOHN WRAY (or RAY, as he eventually spelt the name) was born. He received his early education at the Baintree Grammar School, and then at sixteen he was sent to Catharine Hall, Cambridge. Exactly how a university career was

secured for him remains obscure, but RAVEN thinks that he must have owed it to a fund for the maintenance of poor scholars, administered by the vicar of Baintree. After two years he was transferred to Trinity, where he seems to have been more in his element than in his first college, and where, in 1649, he was elected into a Fellowship. RAVEN has been at pains to identify the room which RAY occupied as a Fellow. Since he had a small garden—"a little spot of ground belonging to his chamber"—it appears that his habitation must have been one of two rooms in the neighbourhood of the Great Gate, in one of which ISAAC NEWTON afterwards lived. RAY became an active teacher, holding lectureships at different times in Greek, Mathematics, and Humanities. His equipment as a scholar was thus of a very different type from that of the average man of science of today, and his natural feeling for languages was effectually fostered. RAVEN considers that RAY has in Latin "the rich vocabulary, the dignity and clarity of style, the ease of expression and the sense of rhythm which only come with long and intimate knowledge." Latin at that period was declining, but RAY's academic sense was too strong to permit him to use his mother tongue after the fashion of NEHEMIAH GREW and others of his contemporaries. He adhered to Latin in all his scientific works, except the English version of the *Ornithology*. His use of Latin no doubt helped to extend his reputation on the Continent, but, in English-speaking countries, it must for all time have lessened his influence. British and American biologists today are certainly less fully acquainted with his work than they would have been if he had chosen to write in the vernacular. His choice was not due to any lack of interest in his own language. He compiled and published in 1673 a *Collection of English Words*, a study of folk speech which SKEAT, who edited it two hundred years later, described as the most important work done in this field before the nineteenth century. He also put together a *Collection of English Proverbs* (1670), which has proved of permanent value.

RAY's tastes and talents, so far as they related to literature, no doubt found full satisfaction at Cambridge, but there was no official countenance for natural history. Scholars concerned themselves so little with outdoor observation, that he could find no one to help him to identify even the local plants. It was after an illness that obliged him to rest from more exacting tasks, and to ride and walk in the country, that he threw himself

¹ C. E. RAVEN, *John Ray Naturalist; His Life and Works*. Cambridge, England, 1942. See also "New Light on JOHN RAY," *Proc. Linn. Soc. Lond.*, 154th Sess. (1941-2), pp. 3-10.

had little capacity for original thought. His great gifts lay in another direction; he was distinguished by an intense flair for the whole field of natural history in the widest sense, joined to a talent for laborious and effective compilation. Through and through he was indeed a naturalist, and he was peculiarly fortunate in having been able, under the guidance of the Cambridge Platonists, to link

up his studies of the plant and animal worlds, with his religious conceptions, in a way that completely satisfied his whole mental and emotional nature. The unity thus achieved gave his personality full integration. WHICHOTE'S saying, which became RAY'S by adoption—"every grass in the field declares God"—struck the keynote of his life.

GOLDSMITH'S DEGENERATE SONG-BIRDS AN EIGHTEENTH-CENTURY FALLACY IN ORNITHOLOGY

By JOHN ROBERT MOORE

I

IN ROBERT GRAVES' recent historical novel, cast in the form of a fictitious journal,¹ one of the minor realistic details is Sergeant Lamb's repeated complaint of the absence of song-birds in the American Colonies. In the eighteenth century such a complaint was not peculiar to Sergeant Lamb; it was usual in English literature and in European writings on ornithology.

The strident song of the caged cardinal (Virginian nightingale) is probably glanced at in a passage in Sheridan's opera, *The Duenna*. Don Jerome has praised his daughter's singing, in his conversation with Isaac, her wealthy suitor:

... if you could prevail on her to sing, you would be enchanted—she is a nightingale—a Virginian nightingale.²

When the duenna appears disguised as her young mistress, Isaac damns her singing in an ironic aside:

Very like a Virginia nightingale!³

Whatever SHERIDAN meant to imply, there is no doubt that GOLDSMITH represented American song-birds as inferior to those of Great Britain. In picturing the desolate swamps of Georgia to which the unhappy emigrants from the Deserted Village were bound, he made the absence of song-birds one of the horrors of exile:

The various terrors of that horrid shore;
Those blazing suns that dart a downward ray,
And fiercely shed intolerable day;
Those matted woods where birds forget to sing...

GOLDSMITH'S conception of Georgia as a semi-tropical wilderness would account for the excessive heat and the terrors of the wild beasts. But whence came the idea of a degeneration of species?

¹ *Proced*, Sergeant Lamb (New York, 1941).

² II, i.

³ II, ii.

⁴ LI, 346-49.

in the New World, causing birds to lose their original powers of song? The question has some interest in itself, and it throws light on the eighteenth-century controversy regarding development and degeneracy of species.

II

In part, European ignorance of North American song-birds was due to one obvious fact: the specimens which naturalists saw in Europe were either caged or dead. JOHN RAY wrote of seeing "an Indian Mockbird dried." Of the cardinal, which he may have seen in a cage, he wrote with some enthusiasm: "It is brought into England, out of Virginia; whence, and from its rare singing, it is called, *The Virginian Nightingale*."⁵ GEORGE EDWARDS was dependent on stuffed specimens.⁶ M. BRISSON, leaning heavily on the English authorities, CATESBY and SIR HANS SLOANE, drew his only first-hand evidence from stuffed birds "dans le cabinet de M. RÉAUMUR."⁷

The early explorers who actually visited America (conquistadors, buccaneers, missionaries, or colonists) had little time for ornithological observations. For instance, WILLIAM DAMPIER (in so many ways a scientific observer) described the plumage of many birds, but he was interested not in their song but in their flesh:

The Noddy is a small black Bird, about the bigness of the English Blackbird, and indifferent good Meat.⁸
... they are called Tropick-Birds. They are very good Food...

⁵ *The Ornithology of Francis Willoughby*... Translated into English and enlarged with many additions (London, 1678), p. 245.

⁶ *A Natural History of Uncommon Birds* (London, 1743-51); *Gleanings of Natural History* (London, 1758-64).

⁷ *Ornithologie ou Méthode contenant la Division des Oiseaux en Ordres* (Paris, 1760).

⁸ *A New Voyage round the World* (Argonaut Press, London, 1927), p. 45.

⁹ *Ibid.*, p. 46.

VOL.
XXXIV
PT. 5

Bonpl
remar

ISIS

NO. 97
SUMMER
1943

Spongy & Boettcher
One used f Σ

for Botanical Documentation

had little capacity for original thought. His great up his studies of the plant and animal worlds,

Bonpl
reman
traits
editor
curiou
ode to
"D'ou
Grec
This
priate.

⁴⁶ The
nover, al
Bonflan
Papier in
⁴⁷ In th
quoted th
them. Co
1790-1877

VOL.
XXXIV
PT. 5

ISIS

NO. 97
SUMMER
1943

CONTENTS

Main Articles (4)

- G. SARTON.—Fifth Preface to Volume XXXIV. AIMÉ BONPLAND (1773-1858)
(9 figs.) 385
- AGNES ARBER.—SPINOZA and BOETHIUS..... 399

SPINOZA AND BOETHIUS'

By AGNES ARBER

MUCH has been written about the sources of Spinoza's thought,¹ and special importance attaches to Professor Wolfson's authoritative survey, based upon a wealth of new material, of the "composite picture of the salient features of traditional philosophy," which must have formed itself in Spinoza's mind through his reading.² There is, however, one small work, to which no reference seems hitherto to have been made by students of the subject, but which may conceivably have exerted some slight influence upon Spinoza's writings, and to which it may be worth while to draw attention, though the part it played in the intellectual climate of his time was no doubt a minor one. This is the *De Consolatione Philosophiae* of BOETHIUS, a book which was widely read throughout the Middle Ages and later, and which was one of the channels by which certain elements of Platonism reached Western Europe.³ In England it became known through translations made by King ALFRED and by GEOFFREY CHAUCER.⁴ Opinions differ as to the degree of originality

to be ascribed to its author; H. F. STEWART and E. K. RAND, in their preface to the Loeb edition,⁵ maintain that the development of the argument is all his own, while others see nothing in his work but compilation. For our present purpose, however, the question of exactly how much BOETHIUS owed to his predecessors is immaterial. SPINOZA's acquaintance with Greek philosophy was slender and imperfect, and, if *De Consolatione Philosophiae* was known to him, and had any value for him, that value would have been none the less because the book offered him an exposition of the views, not only of BOETHIUS himself, but of earlier and greater writers.

There is no initial improbability in the idea that SPINOZA may have been acquainted with BOETHIUS' book. Editions of *De Consolatione* were published at Amsterdam in 1625, 1640, and 1653,⁶ so that if, as seems likely, the earliest expression of SPINOZA's philosophy—*A Treatise on God, Man, and his well-being*—was written between 1658 and 1660,⁷ either one of these editions, or one

¹ The writer wishes to acknowledge with gratitude the helpful criticism which she has received from Professors SARTON and WOLFSON during the preparation of this article.

² For bibliographies see especially S. von DUNIN BORKOWSKI, *Spinoza nach dreihundert Jahren*. Berlin, 1932.

³ WOLFSON, H. A. *The Philosophy of Spinoza unfolding the latent processes of his reasoning*. Cambridge, Mass., Harvard University Press, 2 vols., 1934.

⁴ BARRETT, H. M. *Boethius: some aspects of his times and work*. Cambridge, England, 1940.

⁵ STEWART, H. F. *Boethius: an essay*. Edinburgh and London, 1891.

⁶ The quotations from *De Consolatione Philosophiae* in the present article are taken from this edition. Loeb Classical Library, London and New York, 1918; the English text is a translation by "I. T.," dated 1609, revised by H. F. STEWART. Since this is a short book, in which it is easy to trace the treatment of different topics, page references are not given.

⁷ Brit. Mus. Gen. Cat. printed books, vol. 21, 1918.

⁸ This work is known to us only in Dutch versions; the title is *Korte Verhandeling van God, den mensch, en denzelv welstand*. The passages from it quoted in the present article are taken from A. WOLFF, *Spinoza's Short Treatise*, London, 1910, which gives a translation (to which the page references re-

¹ *Ibid.*, p. 46.

² *Ibid.*, p. 46.

FRANKLIN'S EXPERIMENTS ON HEAT ABSORPTION AS A FUNCTION OF COLOR

By I. BERNARD COHEN

I

OF ALL FRANKLIN'S non-electrical experiments, those which he conducted with a view to determining the relation of color of material to heat absorption and thermal conductivity are the best known. And, incidentally, these have been most subject to criticism.

The usual source of information concerning these experiments is a letter which FRANKLIN wrote to Miss MARY STEVENSON¹ on September 20, 1761. This letter was introduced by FRANKLIN into the fourth edition of his *Experiments and Observations on Electricity*² and was reprinted in the fifth edition. The portion relating to these experiments reads as follows:

As to our other Subject, the different Degrees of Heat imbibed from the Sun's Rays by Cloths of different Colours, since I cannot find the Notes of my Experiment to send you, I must give it as well as I can from Memory.

But first let me mention an Experiment you may easily make yourself. Walk but a quarter of an Hour in your Garden when the Sun shines, with a part of your Dress white, and a Part Black; then apply your Hand to them separately, and you will find a very great Difference in their Warmth. The Black will be quite hot to the Touch, the White still cool.

Another. Try to fire Paper with a burning Glass. If it is White, you will not easily burn it; but if you bring the Focus to a black Spot, or upon Letters, written or printed, the Paper will be immediately on Fire under the Letters.

Thus Fullers and Dyers find black Cloths, of equal Thickness with white ones, and hung out equally wet, dry in the Sun much sooner than the white, being more readily heated by the Sun's Rays. It is the same before a Fire; the Heat of which sooner penetrates black Stockings than white ones, and so is apt sooner to burn a Man's Shins. Also Beer much sooner warms in a black Mug set before the Fire, than in a white one, or in a bright Silver Tankard.

My Experiment was this. I took a number of little square Pieces of Broad Cloth from a Taylor's Pattern-Card, of various Colours. There were Black, deep Blue, lighter Blue, Green, Purple, Red, Yellow, White, and other Colours, or Shades of Colours. I laid them all out upon the Snow in a bright Sunshiny Morning. In a few Hours (I cannot now be exact as to the Time), the Black, being warm'd most by

¹MARY STEVENSON later became Mrs. HEWSON. She is also known as "POLLY" STEVENSON [or HEWSON]. An account of FRANKLIN'S relationship with her may be found in CARL VAN DOREN: *Benjamin Franklin* (New York, the Viking Press, 1918).

²The fourth edition was printed in London in 1769, the fifth in London in 1774. A new edition of FRANKLIN'S book on electricity has just been printed, edited with an introduction by the present writer: *Benjamin Franklin's Experiments, a new edition of Franklin's "Experiments and Observations on Electricity"* (Cambridge, Mass., Harvard University Press, 1941). Chapter IV of the Introduction contains an account of the various eighteenth-century editions of FRANKLIN'S book.

the Sun, was sunk so low as to be below the Stroke of the Sun's Rays; the dark Blue almost as low, the lighter Blue not quite so much as the dark, the other colours less as they were lighter; and the quite White remain'd on the Surface of the Snow, not having entered [sic] it at all.

What signifies Philosophy that does not apply to some Use! May we not learn from hence, that black Cloths are not so fit to wear in a hot Sunny Climate or Season, as white ones; because in such Cloaths the Body is more heated by the Sun when we walk abroad, and are at the same time heated by the Exercise, which double Heat is apt to bring on putrid dangerous Fevers! That Soldiers and Seamen, who must march and labour in the Sun, should in the East or West Indies have an Uniform of white! That Summer Hats, for Men or Women, should be white, as repelling that Heat which gives Headachs to many, and to some the fatal Stroke that the French call the *Coup de Soleil*? That the Ladies' Summer Hats, however, should be lined with Black, as not reverberating on their Faces those Rays which are reflected upwards from the Earth or Water? That the putting a white Cap of Paper or Linen under the Crown of a black Hat, as some do, will not keep out the Heat, tho' it would if placed without? That Fruit-Walls being black'd may receive so much Heat from the Sun in the Daytime, as to continue warm in some degree thro' the Night, and thereby preserve the Fruit from Frosts, or forward its Growth!—with sundry other particulars of less or greater Importance, that will occur from time to time to attentive Minds! I am
Yours affectionately,
B. Franklin³

Until now, this has been the sole source of information concerning FRANKLIN'S experiments. No one has discovered the original "Notes" of the "Experiment," to which FRANKLIN refers in the first paragraph quoted above. Nor do his other letters or his "Autobiography" give any clue as to when the experiment was made, whether in the 1750's, the 1740's, or even in the 1730's.

Mr. CARL VAN DOREN called my attention to an item in the "Miscellaneous Papers" in the Franklin Collection of The American Philosophical Society Library, described in the Calendar⁴ as follows:

By ————, 1736-7, January 25.
Experiments with various colours to show which imbibes and which repels the sun's rays. Diss. 1 p.

From the description, it seemed at once that this was the page of "Notes" referred to by FRANKLIN.

³The portion of the letter which I have printed above follows the version printed by A. H. SMYTH [editor]: *The Writings of Benjamin Franklin* (10 vols., New York, the Macmillan Co., 1905-07), Vol. IV, pp. 111 ff., since SMYTH'S version is a transcript of the original letter, then in the possession of T. HEWSON BADFORD, M.D., a descendant of MARY STEVENSON'S husband, Dr. WILLIAM HEWSON.

⁴I. MORIS HAYS [editor]: *Calendar of the Papers of Benjamin Franklin in the Library of the American Philosophical Society* (5 vols., Philadelphia, The American Philosophical Society, 1908), Vol. IV, p. 173.

Reprinted from *CHRONICA BOTANICA*
Vol. 9, 2/3, pp. 94-106, Autumn, 1945

AGNES ARBER: **Sir Joseph Banks and Botany***.—Sir JOSEPH BANKS (1743-1820), whose bicentenary has been commemorated recently (1), stands as a link between the two centuries in which his life was passed. Amongst his countless acquaintances of earlier date were Mrs. DELANY, who was born in 1700; Dr. SAMUEL JOHNSON, at whose funeral he was a pall-bearer (2); and the naturalist, THOMAS PENNANT, the correspondent of GILBERT WHITE. On the other hand, amongst the botanical associates of his old age we find such relatively modern names as that of JOHN LINDEY, who survived until 1865. Moreover BANKS'S life overlapped with that of the son of his friend W. J. HOOKER—JOSEPH DALTON HOOKER—whose death did not occur until 1911. BANKS thus had personal connections, in the world of science and letters, with people whose lives covered more than the whole range of the eighteenth and nineteenth centuries. His extensive influence upon his own and subsequent periods is reflected in books by a number of authors dealing exclusively or incidentally with various aspects of his activities (3), but a study aiming at completeness, and accurately documented, is still lacking. A large amount of unpublished material at the British Museum (Nat. Hist.), at Kew, and also in Australia and elsewhere, still awaits a thorough overhauling, and when the authorita-

* *Symbioses Phytobionticae*, No. 6.

(1) See for example DAVIES, J. D. GRIFFITH (1943): Sir JOSEPH BANKS, P.C., K. C. B. *Nature*, Vol. 151, pp. 180-3.

(2) BOSWELL, J. (1904): *Life of JOHNSON*, Oxford, Vol. 2, p. 648.

(3) The information used in the present essay has been derived from a comparison of the printed sources only; I have not been able to undertake research into the Banksian MSS and collections. In addition to the works mentioned in later footnotes, those upon which I have drawn most freely are HOOKER, J. D. (1896): *The Journal of the Right Hon. Sir JOSEPH BANKS during Captain COOK'S First Voyage in H.M.S. Endeavour in 1768-71*. London; JACKSON, B. D. (1908): *Sir JOSEPH BANKS, Dict. Nat. Biog.*, Vol. 1, London; MAIBEN, J. H. (1909): *Sir JOSEPH BANKS: The "Father of Australia"*. Sidney; SMITH, E. (1911): *The Life of Sir JOSEPH BANKS*. London. Since the present article was in print, a translation of the account by Dr. A. H. UGGLA of JONAS CARLSSON DYVANDER (for the Swedish Dictionary of National Biography) has been read before the Linnean Society (March 9, 1944). This paper will appear in *Proc. Linn. Soc. Lond.*, 156th Session. By the courtesy of Mr. SPENCER SAVAGE, to whom I also owe other valuable help in preparing this article, I have had the advantage of seeing Dr. UGGLA'S manuscript, and I further express my indebtedness to Mr. A. E. ROCHIE, and to the Librarian of the Royal College of Surgeons, for their kindness in answering my enquiries.

Chronica Botanica, Volume 10, Number 2

AGNES ARBER, D.Sc., F.R.S.

*Author of 'Herbals', 'Water Plants: A Study of Aquatic Angiosperms',
'Monocotyledons: A Morphological Study', 'The Gramineae':
A Study of Cereal, Bamboo, and 'Grass', etc.*

GOETHE'S BOTANY

Single copies
of this number
\$2.00



Issued
Summer
1946

the Chronica Botanica Co., Waltham, Mass., U.S.A.

New York City, G. E. STECHERT AND CO.; San Francisco, J. W. STACEY, INC.; Ottawa, THORBURN AND ABBOTT, LTD.; México, D. F., AXEL MOBIEL SUCRE.; Bogotá and Medellín, LIBRERIA CENTRAL; Lima, LIBRERIA INTERNACIONAL DEL PERU; Santiago de Chile, LIBRERIA ZAMORANO Y CAFFERAN; Rio de Janeiro, LIVRARIA KOSMOS; São Paulo, LIVRARIA CIVILIZAÇÃO BRASILEIRA; Buenos Aires, ACME AGENCY; London, WM. DAWSON & SONS, LTD.; London, H. K. LEWIS AND CO., LTD.; Uppsala, A. B. LUNDEQUISTSKA BOKH.; Groningen, N. V. ERVEN P. NOORDHOFF; Paris, LIBRAIRIE H. LE SOUDIER; Torino, ROSENBERG & SELLIER; Lisbon, LIVRARIA SÁ DA COSTA; Moscow, MEZHODUNARODNAYA KNIGA; Calcutta, Bombay and Madras, MACMILLAN AND CO., LTD.; Johannesburg, CENTRAL NEWS AGENCY, LTD.; Sydney, ANGUS AND ROBERTSON, LTD.; Melbourne, N. H. SEWARD, PTY., LTD.

Digitized by Hunt Institute for Botanical Documentation

on
rt
utors
efore
peat
frith
t
Thenoe
iod
the
py, took
ine years
uch,
n
the
y the
ed,
the
el was
joyed
sistant
ransferred
ge,
ompelled



ANALOGY
IN THE
HISTORY OF SCIENCE

By
AGNES ARBER

7 8 Vacation Legs

lon
rt
utors
efore
spect
ffith
it
Thence
iod
the
py, took
ine years
rch,
s
the
ly the
ed,
the
el was
i
joyed
sistant
ransferred
ge,
ompelled

OBITUARY

THE LADY Isabel Browne, who died on 8 June 1947, will be missed deeply, both as a botanist and as a friend. She had a special regard for the Linnean Society of which she became a Fellow in 1909. From time to time, after consulting with the Librarian she sent books which she found were absent from the collection.

Born in London on 6 November 1881, Isabel Mary Peyronnet Browne was one of the twin daughters of the third Marquess of Sligo, by his third wife, a daughter of Baron (afterwards Viscount) Jules de Peyronnet. From the time that Lady Isabel and Lady Mary were five years old, their father was a semi-invalid, and it was thus their mother whose influence upon their minds and characters was paramount. Lady Sligo had a vivid and charming personality, and was celebrated for her gallic wit; markedly individual herself, she encouraged mental independence in her children. Her feeling for literature was ardent, and in her youth she, with her sisters, had carried through the considerable task of translating several of Trollope's novels into French. She read Shakespeare to her twin daughters from the time they were seven or eight years old; at a later date Lady Isabel developed a passion for Milton, which endured throughout her life. Her taste, even in childhood, was for reading of an unusually solid kind; when only about nine or ten, she was capable of being absorbed, for hours together, in that massive work, Lamartine's *Histoire des Girondins*. Before she was nineteen, she had immersed herself in French history and politics of the post-1815 period, and this interest was a permanent one. She and her mother never let pass the anniversary of Napoleon III's coup d'état—which Lady Sligo could remember, though faintly—without a smiling glance at one another, and the words, "Ah! le 2 décembre". Lady Mary Browne, to whom I am indebted for much of the material for this notice, has suggested that Lady Isabel's unusual capacity for weighing evidence may have been, in part, an inheritance from the galaxy of lawyers among her forbears, for nearly all the men of her mother's family were of this profession; her great-grandfather, Pierre Denis, Comte de Peyronnet, held various judicial posts, and was Garde des Sceaux in the last Cabinet of Charles X of France.

8 Victorian Legs

lon
rt
utors
efore
spect
ffith
t
Thence
lod
the
py, took
tine years
arch,
m
the
ly the
ed,
the
el was
joyed
sistant
ansferred
ge,
ompelled

HERBAL, a treatise which aims at enabling the reader to identify and use medicinal plants, has a long history. In searching among herbs of the field for sources of food, primeval man must have discovered in course of time, that some plant products alleviated physical ills. The knowledge which thus incidentally accrued was at first transmitted by word of mouth alone, but eventually committed to writing. The best known of the manuscript herbals embodying such folk-lore is the *Materia medica* of Dioscorides, a medical man born in Asia Minor, in the 1st century A.D.; it is based in part on the earlier work of Krates. The overwhelming authority exercised by the *Materia medica* is a central feature of herbal history; some sixteen hundred years after it was written, it was described as 'the foundation and grounds-work of all that hath been since delivered'. In the renaissance period, exposition of this work was the main concern of many botanists; perhaps the most influential of such commentaries was that of the Italian writer, Pierandrea Mattioli (1501-77). Since he belonged to southern Europe, he was familiar with the type of flora known to Dioscorides, whereas botanists in central and northern Europe wasted much energy in the forlorn attempt to identify all the plants of their native countries with those of the *Materia medica*. When the existence of geographical distinctions between floras came to be recognised, it stimulated the botanists who lived north of the Alps to more direct study of their own native plants. A second stimulus emanated from the men who made the drawings to illustrate plant books. For hundreds of years the manuscript herbals had been decorated with pictures of late classical tradition, slavishly copied and recopied for generations, until they often became wholly conventional and unmeaning. In the 16th century, when familiarity with printing, and with the use of wood blocks, had altered the approach to book-production, good artists were readier to draw for the wood engraver. These draughtsmen revolutionized herbal delineation by portraying plants direct from nature in a way that was at once realistic and artistically satisfying. The artists employed by the three German fathers of botany—Otto Brunfels (d. 1534); Leonhard Fuchs (1501-66); and Jerome Bock or Tragus (1498-1554)—affected the history of botany as much as did the writers with whom they were associated. In the general European movement initiated by the Italian and German herbalists, the part played by Britain was inconspicuous. Gerard's *Herball* (1597), for instance, was based on the writings of Dodonaeus, a botanist of the Low Countries, and the pictures were also from continental sources. An earlier herbalist, William Turner (d. 1568), was more original; his book is a pioneer effort in the study of the plants of Britain.

Though herbals at first had an exclusively medical aim, the botanical aspect gradually assumed more importance, until, by the 18th century, such works had largely given place to non-utilitarian treatises on systematic botany.

General: E. H. F. Meyer, *Geschichte der Botanik* (1854-7); G. A. Pritzl, *Thesaurus Literaturae Botanicae* (1872-7); (on William Turner) C. E. Raven, *English Naturalists from Nicotian to Ray* (1947). For references: A. Arber, *Herbals* (ed. 2, 1938). A. Ar.

in Sachs's laboratory. In 1882 Scott succeeded Dr. F.O. Bower as assistant to Daniel Oliver at University College, London, but in 1885 he was transferred to the Normal School of Science (later Imperial College), taking charge, under T.H. Huxley [q.v.] of all the botanical work. Scott was not compelled

Chamber's
Encyclopaedia
(article written
1948)

S. W. L. Legg

London

Gilbert

by tutors

any before

ic aspect

G. Griffith

plant

tion. Thence

at period

er on the

roscopy, took

some nine years

st Church,

s years

nd, at the

o study the

e worked,

2) in the

n Goebel was

tal in

had enjoyed

NATURE

Macmillan & Co. Ltd., St. Martin's Street, London, W.C.2.

We trust you will be interested in
the attached cutting from our issue
for 4 JUN 1940

Another Little-known History of Botany

In *Nature* of May 7, p. 732, Dr. Jules Brunel inquires about the "L.G." who was responsible for the "Précis de l'Histoire de la Botanique", the last of the seventeen volumes of "Le Règne Végétal" by O. Réveil, and others, Paris, 1870-71. The work in question is not accessible to me; but I find that, in the catalogue of the Library of the British Museum (Natural History), "L.G." is identified as "L. Gérard". I do not know on what evidence this is based; I have been unable to trace any botanist of this name who might be the writer of the "Précis". L. G. Gérard is too early in date, as he was born in 1733. Dr. Brunel's tentative identification with L. Guérin is perhaps more probable, but it can hold only if the work is considered to be within the compass of a man who does not seem to have been a botanist. This is possible, as the "Précis" describes itself as "Biographique et Bibliographique". As another alternative—though a speculative one—I should like to suggest Lazare Garreau, who was professor at Lille. He was born at Aulun in 1812, and published papers on physiological botany in the decade 1850-60. He was apparently still living when the second edition of Pritzel's "Thesaurus literature botanica" appeared (1872).

52 Huntington Road,
Cambridge,
May 18.

AGNES ARBER

10
-1940. Ed. by L.S. Watkinson
196-7

anist, was born in London
s of (Sir) George Gilbert
Scott was educated by tutors
took to field botany before
the more scientific aspect
nary (1854) of J.W. Griffith
on was directed to plant
e his main occupation. Thence
orks, which at that period
s W.F.B. Hofmeister on the
ain efforts at microscopy, took
then a period of some nine years
ormant. At Christ Church,
his he spent three years

stirred again, and, at the
, Scott decided to study the
anical world. He worked,
f years (1860-1882) in the
, to whom Karl von Goebel was
nd, was instrumental in
arch, such as he had enjoyed

in Sachs's laboratory. In 1882 Scott succeeded Dr. F.O. Bower as assistant
to Daniel Oliver at University College, London, but in 1885 he was transferred
to the Normal School of Science (later Imperial College), taking charge,
under T.H. Huxley [q.v.] of all the botanical work. Scott was not compelled

*Dictionary of National Biography. 1931-1940. Ed. by L.S. Watson & J.S. 11
Oxford University Press. 1949, pp. 796-7*

SCOTT, DUKINFIELD HENRY (1854-1934), palaeobotanist, was born in London 28 November 1854, the youngest of the five sons of (Sir) George Gilbert Scott [q.v.], by his wife, Caroline Oldrid. Scott was educated by tutors at home, and under the influence of his mother took to field botany before he was fourteen years old. He soon passed to the more scientific aspect of the subject through the Micrographic Dictionary (1854) of J.W. Griffith and Arthur Henfrey [q.v.], whereby his attention was directed to plant structure, the study of which eventually became his main occupation. Thence he proceeded to a number of technical German works, which at that period were becoming available in translation, such as W.F.B. Hofmeister on the Higher Cryptogamia. All this study, and certain efforts at microscopy, took place before Scott was sixteen, but there was then a period of some nine years during which his interest in botany remained dormant. At Christ Church, Oxford, he read classics (1872-1876); after this he spent three years training as an engineer.

In the autumn of 1879, botanical fervour stirred again, and, at the suggestion of (Sir) W.T. Thiselton-Dyer [q.v.], Scott decided to study the subject in Germany, then the centre of the botanical world. He worked, intermittently, over a period of two and a half years (1880-1882) in the university of Würzburg, under Julius von Sachs, to whom Karl von Goebel was then assistant. Scott, on his return to England, was instrumental in creating in this country an atmosphere of research, such as he had enjoyed in Sachs's laboratory. In 1882 Scott succeeded Dr. F.O. Bower as assistant to Daniel Oliver at University College, London, but in 1885 he was transferred to the Normal School of Science (later Imperial College), taking charge, under T.H. Huxley [q.v.] of all the botanical work. Scott was not compelled

THE TIMES LITERARY SUPPLEMENT FRIDAY

CHILDREN IN EARLY
PRINTING SHOPS

Sir,—In Abraham von Werd's woodcut of a printer's office, reproduced in your Book Production Section (February 10), a small girl is seen in the background. She does not appear to be an irrelevant figure, but to be occupied seriously upon the matter in hand. One wonders whether this is an indication that children were, in the seventeenth century, employed in printing works. That such employment did, in fact, exist

in the previous century—though it may have been a rare occurrence—we know from Christophe Plantin's statement. In a letter to Cayas, "Secrétaire d'Etat du Roy," he writes on November 4, 1570, that four of his daughters, when they were between four or five and twelve years old, were employed in reading proofs in all languages. In his own words, "je leur ay fait alors tellement apprendre à escrire et à bien lire que, depuis l'age de quatre à cinq ans jusque l'age de douze ans, chacune . . . lire les espreuves de l'imprimerie en quelque esriture et langue qui se soit offerte pour imprimer." These little girls must have led a strenuous existence, for in their "heures vacantes" they were instructed in fine needlework, and they were also expected to help their mother in her "affaires domestiques."

I know of no later parallel to the part played by these children in book production, except that, in the eighteenth century, botanical woodcuts and engravings were sometimes hand-coloured by team-work in orphanages.

AGNES ARBER.

MARCH 10 1950

Digitized by Hunt Institute for Botanical Documentation

THE TIMES LITERARY SUPPLEMENT

FRIDAY MARCH 9 1951

PERMISSION TO QUOTE

Sir—As one of the many who must be grateful to Mr. Ivor Thomas for his letter in your issue of February 16, I should like to emphasize that his point applies especially to citations from translations of the Classics. For those who are not classical scholars it is obviously better to quote authoritative translations (of course, with due references) than to give amateur, and probably defective, versions of one's own; it is a pity that so much difficulty should be put in the way of such citation being made. Surely writers—translations which are often largely based upon previous work—does not come into quite the same category as property in original writing.

AGNES ARBER

xxxv 9
A History of Biology: A General Introduction to the Study of Living Things. By CHARLES SINGER. Second edition. [Pp. xxxiv + 579, with 194 figures.] (London: H. K. Lewis & Co., Ltd., 1950. 35s. net.)

Dr. SINGER's *Short History of Biology*, published by the Clarendon Press in 1931, has been widely used and valued, both in its original edition, in an American reprint as *The Story of Living Things*, and also in French and Spanish translations. It is now reissued, from the United States, in a revised form, and with a modified title. Written lucidly and freshly, and with infectious enthusiasm, it well repays study, especially when it is read on the wider background of the same author's *Short History of Science* (Oxford, 1941).

Dr. SINGER's treatment of biology in its historical aspect brings to mind some of the more difficult questions which the historian of science has to face. The general study of the history of mankind, being an ancient discipline, has, in the course of time, differentiated itself to such an extent that historians writing today approach their task with the most varied views as to the philosophy of their subject, and as to the technique which should be employed. The history of science, though it is a relatively recent branch, has been pursued so actively during the twentieth century that it, likewise, has become elaborated from a number of standpoints, and it is treated by its various exponents on the most divergent lines. Like general human history, it can be dealt with in a fashion that aims at completely impartial objectivity, or, if treated selectively, it may be confined to those lines of thought which lead directly to the questions with which we happen to be concerned at the present moment. Dr. SINGER's book comes into the second of these categories. He describes it as "a critical survey of the historical development of biological problems"; and this treatise is planned to culminate in a discussion of heredity, which, in 1950 as in 1931, he regards as "the outstanding topic of current biology." There is much to be said for such an attitude to historical studies, since it enables a thread of coherence to be introduced into a subject which is otherwise liable to degenerate into a disjointed enumeration of facts. It may be held, however, that a history of a science, integrated in a way that depends upon contemporaneity, demands rewriting at short intervals, as the focal points of the subject shift with the changes in the intellectual atmosphere. This is evidently not Dr. SINGER's view, for he has revised his book without in any way altering its general scheme; but even those to whom his highly personal outlook and standards are somewhat alien will recognise the usefulness of his provocative technique in suggesting themes for lively controversy in the seminar discussions of advanced classes. From the point of view of such students, it is unfortunate that no references are given to the works of other historians of science; it is especially to be regretted that no mention is made of Erik Nordenskiöld's great *History of Biology* (English translation, 1929). It would be a good plan to study this work at the same time as Dr. SINGER's account, since Nordenskiöld's method is more objective, and he includes much more critical factual matter. Dr. SINGER refuses to explore "the bypaths and blind alleys of the subject." Many of these are traced by Nordenskiöld in a way that will awaken the reader to the truth that it is sometimes the so-called bypaths which have led to goals which the beaten track has failed to reach. Many of Dr. SINGER's omissions, and his forced transitions from one topic to another, which leave the reader unsatisfied, are merely the inevitable result of the limited scale of his book, as compared with that of Nordenskiöld; they in no way detract from the stimulating quality of his exposition, to which the wealth of beautiful illustrations lends a special charm.

AGNES ARBER.

An Introduction to the Embryology of Angiosperms. By P. MAHESHWARI. [Pp. x + 453, with 216 figures.] (New York, Toronto, London: McGraw-Hill Book Co., Inc., 1950. 55s. 6d. net.)

From time to time biological opinion has varied as to exactly what phases of the life-history should be included under the term embryology. Unlike most zoologists, who regard the study as beginning with the fertilised ovum, Prof. Maheshwari looks further back, and traces the origin and development in plants of the male and female gametes, and the history of fertilisation and of the endosperm, with the result that he does not reach the embryo itself until the eighth of his thirteen chapters. There is much to be said for his scheme, but perhaps some term, other than embryology, might define its scope more exactly.

The book begins with a useful historical survey, which stresses the harm done by Schleiden's ill-starred theory (1837), according to which the embryo is a product of the pollen-grain, being formed in the tip of the pollen-tube, while the embryo-sac is a mere incubator. As a footnote to Maheshwari's account, it may be recalled that the "Spermatists," in the late seventeenth century, had inculcated a corresponding error in connection with animal embryology. Schleiden's mistake is thus more excusable than it seems at first glance, since he was following, though belatedly, in zoological footsteps—a mistaken procedure of which many botanists have been guilty. His error was corrected by Amici and by Hofmeister, who produced decisive evidence for the development of the embryo from a vesicle already present in the ovule. The stage was thus set for the detailed examination of the megasporangia and gametes, the process of fertilisation, and the development of the embryo—a study which has continued with ever-increasing vigour to the present day. An account of the modern position of so widely ranging a subject must be, to a great extent, compilatory, but in the book under review the material is vivified by the fact that the author and his pupils have themselves contributed largely to our knowledge of its various aspects. The clearness of Maheshwari's digests is emphasised by more than 200 illustrations—well chosen and well reproduced—these, and the literature lists accompanying each chapter, set the reader easily in touch with this whole field of study.

Among the special topics with which Maheshwari deals is the relatively new subject of experimental plant embryology. Many of its strikingly ingenious techniques have been inspired by the need to solve economic problems. The demand for seedless fruits, for instance, has been met by hormonal methods.

In a final chapter the author considers the bearing of his survey upon phylogenetic questions. After a judicial balancing of the evidence, he concludes that, although embryology does not throw any light upon the ancestry of the angiosperms, it indicates that the group is probably monophyletic.

Perhaps in a later edition Prof. Maheshwari will place botanists still more in his debt by adding a broad comparative treatment, bringing out the further significance of some of the mass of detailed information which he supplies. Why is it, for instance, that, although haustorial structures are rare in plant tissues in general, examples have been recorded from the most various components of the future seed—the megaspore, the embryo-sac, the antipodals, the endosperm, the suspensor, and even the pollen-tube?

AGNES ARBER.

PROF. F. W. OLIVER, F.R.S.

By Dr. AGNES ARBER, F.R.S.

Digitized by Hunt Institute for Botanical Documentation

From *Science Medicine & History, Essays in honour of Charles Singer*, ed. G.
E.A. Underwood. Oxford University Press, 1953.

FROM MEDIEVAL HERBALISM TO THE BIRTH OF
MODERN BOTANY*

by

AGNES ARBER

FROM the earliest times plants must, through sheer necessity, have compelled the interest of man, because of their usefulness in providing both food and protection. The incidental discovery that herbs had various effects in curing or mitigating the ills the flesh is heir to, must also date from the remote past. This discovery was, indeed, of the first importance in promoting plant study, for any herb, even those that had no other obvious use, might prove to be of medicinal value; thus the need to recognize those that, on trial, had proved effective, resulted in the gradual building up of a body of botanical knowledge. In the Middle Ages, although the accepted religious picture of the Universe, as limited in space and time, had an inhibiting influence upon scientific study in general, the Church fortunately never discouraged a knowledge of the herbs used in the arts of healing.¹ For Western Europe this knowledge found its record in a long series of herbal manuscripts, of which the sources date largely from the classical period. To Professor Charles Singer we owe an illuminating study of these works.² They continued to be copied and recopied by hand up to the time of the invention of printing, when some of them started a revived career in printed form. At the beginning of the sixteenth century there was thus in existence a considerable corpus of writings representing a tradition dating back to the Greek physician Dioscorides, who lived in the first century of the Christian era. These writings were, it is true, limited in scope, but they bore within themselves many of the seeds of that vast development in the systematic knowledge of the flowering plants which took place in the sixteenth and seventeenth centuries.

Side by side with the study of medicinal herbs through the literature, acquaintance with them was being kept alive continuously on the less sophisticated plane of folk medicine. The chief repositories of this kind of knowledge seem to have been country-women,³ who handed down their lore from mother to daughter, and to them the learned sometimes express their debt. At the end of the thirteenth century Simon Corda of Genoa acknowledged that he was taught the Greek names of plants and their virtues by an old wife of Crete.⁴ More than two hundred years later, Otto Brunfels alludes in his herbal to *vetulas expertissimas*,⁵ 'highly expert old women', while Euricius Cordus, writing soon after Brunfels, says that he had in his

* In preparing this essay, use has been made of a lecture given on 29 January 1944, for the History of Science Lectures Committee of the University of Cambridge.

¹ Charles Singer, *A short history of science*. Oxford, 1941, pp. 154-5.

² *idem*, 'The herbal in antiquity', *Journ. Hellenic Studies*, 1927, xvii, 1-52.

³ T. A. Sprague, 'The herbal of Otto Brunfels', *Journ. Linn. Soc. Lond., Bot.*, 1928, xlviii, 79-124; cf. p. 82.

⁴ Lynn Thorndike, *The Herbal of Rufinus*. Chicago, 1946; cf. p. xiii.

⁵ Otto Brunfels, *Herbarum vivae vicines*. Argentorati, apud Joannem Schottum, 1530-6, vol. iii, p. 13.

belongs of having initiated modern scientific botany. The subject, as they visualized it, formed a world of experience on a wholly different plane from the tissue of medieval lore preserved in *The grete herball*, which was the starting point of the present study.

THE TIMES TUESDAY DECEMBER 15 1953

MANDRAKES

TO THE EDITOR OF THE TIMES

Sir.—When the classical legends about the mandrake penetrated, with other herbal lore, to Britain, the reputed magical and medical qualities of this south European plant created a demand which the druggists could hardly satisfy, so they sought an adequate-looking substitute, and found it in the roots of the white bryony (*Bryonia dioica* Jacq.), which became known as English mandrake. Growing the root in a mould has sometimes been resorted to, to force it to take a bifurcated "human" shape. It may be that the "strange roots" which your Correspondent (whose article you published recently) saw in the arms of the old man on Hungerford Bridge belonged to this plant. Their poisonous character is said to have earned them in France the name of Devil's turnips.

Yours faithfully,

AGNES ARBER,
52, Huntingdon Road, Cambridge, Dec. 12.

Digitized by Hunt Institute for Botanical Documentation

Agnes Arber

BIOLOGIE UND METAPHYSIK

Am Beispiel der Morphologie der Pflanze

In der Gegenwart ist man stark geneigt, an die Botanik und Zoologie vorwiegend von der physikalischen und chemisch-wissenschaftlichen Grundlage aus heranzugehen und die Struktur der lebendigen Schöpfung mechanistisch zu erklären. Über den enormen Fortschritt, den diese Methoden erzielt haben, kann kein Zweifel bestehen. Sie führen zu einer riesigen Anhäufung von Tatsachenmaterial, sie haben vielen verborgenen Prozessen des organischen Lebens ihr Geheimnis entrisen. Aber am Ende wird damit nur die Frage nach dem Wie, nicht aber nach dem Warum beantwortet.

Im Folgenden sei auf jenen biologischen Weg verwiesen, der versucht, uns über die physikalisch-chemischen Disziplinen hinauszuführen, und der sein Ziel mehr in der Deutung als in der mechanischen Beschreibung sieht. In einem engeren Sinn steht er der Philosophie ebenso nahe wie der Wissenschaft; er verdankt jedwöglichen Fortschritt mehr dem Denken als der Beobachtung und Technik des Experimentierens. Diese Art zu schauen war in der Sphäre des Intellekts vor der Periode der gegenwärtigen äußersten Spezialisierung viel mehr anerkannt als heute. Im Altertum und sogar noch in der Renaissance war die Wissenschaft mit der Philosophie und Dichtung weit enger verbunden als in der Gegenwart. Aus der Rück Erinnerung dieser früheren Haltung haben wir, bei gleichzeitiger Erkenntnis und Vermeidung ihrer Gefahren, noch viel zu lernen.

Die Ansichten, die ich hier zum Ausdruck bringen möchte, erwachsen allmählich aus Studien auf einem Spezialfeld der Botanik — nämlich der Erforschung der morphologischen Beziehung zwischen Einzelteilen des Pflanzenkörpers. Es scheint mir möglich, diesen oder jeden anderen Zweig der Biologie als Mikrokosmos anzusehen, in dem sich die wesentlichen Charakterzüge der gesamten Biologie widerspiegeln, die ihrerseits wie ein Nebenfluß in den breiten Strom allen Denkens mündet.

Da die Morphologie ein Studium des Organismus unter dem Aspekt der Form ist, so hängt der ganze Inhalt dieser Disziplin von der Bedeutung ab, die wir diesem Wort beilegen. Seinen vollen Inhalt versteht nur, wer im Auge behält, daß Form und Funktion nicht antithetisch, sondern als eine Einheit betrachtet werden müssen, deren statischer Aspekt die Form und deren dynamischer Aspekt die Funktion ist. Die Formidee vermittelt uns vor allem unser Gesicht- und Tastsinn; unter dem Eindruck dieser Sinnesempfindungen bildet sich der Geist ein Wahrnehmungsbild und davon einen mehr abstrakten Begriff, der mit anderen Begriffen in Beziehung gesetzt werden kann. Da wir in der Morphologie die organische Form, wie sie der menschliche Geist erfährt, studieren, liegt es auf der Hand, daß wir unseren Betrachtungsgegenstand vor den Hintergrund der Gesamtentwicklung des menschlichen Denkens überhaupt stellen müssen, denn gerade in der Geschichte der Biologie und Philosophie offenbart sich die innere Natur dieser Disziplinen am stärksten.

Die Morphologie ist ein Zweig der Biologie, der sich leicht historisch behandeln läßt, da seine Entwicklung früh begann, was darauf zurückzuführen ist, daß er ohne hochentwickelte technische Fertigkeiten eingehend studiert werden konnte. Das Werk des klassischen Zeitalters der Griechen zeigt, wie weit die Erkenntnis von Menschen vor-

DUKINFIELD HENRY SCOTT
(1854-1934)

By Dr. AGNES ARBER, F.R.S.

(Reprinted from Nature, Vol. 174, p. 992, November 27, 1954)

Digitized by Hunt Institute for Botanical Documentation

Letters to the Editor

DRYDEN AND COWLEY:
"STAR-SLIME"

Sir,—May I draw attention to a small point which seems relevant to Harold F. Brooke's discussion of the relation of Dryden and Cowley in your issue of April 1957. It is that the use by both poets of imagery founded on the idea that falling stars on reaching earth became degraded into jelly, is not necessarily an echo from one to the other; it was a current folk-tradition with which they, and also their readers, may well have been familiar. It had been observed from time to time that gelatinous masses were liable to occur quite suddenly on turf or soil; the suddenness of these appearances was explained—plausibly to those who prefer any explanation to none—on the supposition that the jelly represented a shooting star, which had landed on the earth during the preceding night. Such a belief is said to have survived, both in this country and in New England, into the nineteenth century. The "so-called" "Star-slime" is now known to be an alga, usually *Noctua*, which is unnoticeable to the casual eye in the dry state, but which, after a rainy night, swells into a conspicuous gelatinous mass, producing a glittering effect if it happens to grow on gravel.

AGNES ARBER.

Prof. Pierre Bugnon

PIERRE FÉLIX Bugnon was born on January 14, 1886, and died on May 11, 1957. After holding academic posts at Caen and Rennes, he was, until his retirement, professor of botany at Dijon. In his student days he worked at botany, zoology and geology at the Universities of Caen and Lyons. In 1910 and 1911 he was Octave Lignier's pupil, and he later became his colleague at Caen. Lignier's mind had more than a touch of genius, and his intellect and insight were the determining factors in the primary orientation of Bugnon's researches. Lignier recommended him to make himself proficient in the morphology and anatomy of modern plants before turning to the problems of fossil botany, and it was, in the end, the structure and phylogeny of the plants of to-day to which Bugnon gave his allegiance, though he retained his interest in palaeobotany.

Bugnon obtained his Paris doctorate in 1921 for a thesis on the leaf in the Gramineae, in which he gave special attention to the phylogenetic evidence derived from the peculiar seedling structure of this group. He developed different aspects of his thesis in the succeeding years, his memoir on the ontogeny of the conducting system in the Gramineae being specially notable. Eventually his work branched out from these and related topics to studies of many other problems arising out of the morphology of the flowering plants. In a brief note such as this, no adequate idea can be given of the scope and variety of his own large output, or of the work of the research students whom he directed and inspired. He often dealt, lucidly and incisively, with controversial questions; even when one disagreed with his interpretations, his memoirs were always found to be thoughtful and thought-provoking. He had the French capacity for absorption in the things of the mind, controlled always by a deep respect for the facts of experience. His standards were high, and he was entirely without pretension; he once said to me, "Je suis barbare, moi", but this description of himself was belied completely by his own sensitive verbal expression, and by his horror at those minuses of language in which quiet appropriateness is lost through over-emphasis.

Though they were merely side-issues among Bugnon's preoccupations, his enthusiastic contributions to the field botany of Normandy deserve mention. Late in August, 1927, my daughter and I spent an unforgettable day walking under his guidance in the region of the joint estuary of the Douve and the Vire to see the cord-grass fields. We were accompanied by Louis Corbière, who had detected *Spartina tomentosa* here for the first time in 1906, when 15-20 tufts were observed in one place, and another small stand elsewhere. Twenty-one years later, when we saw it during this walk in the full beauty of its anthesis, it had succeeded in clothing some two thousand acres of what had formerly been sterile mud flats.

Pierre Bugnon's son, François, known for his work on morphology and anatomy, began his botanical career in his father's laboratory, and thus, indirectly, under Lignier's influence. A research tradition of

quality and individuality, which might have been extinguished by Lignier's premature death, has thus been transmitted to further generations of botanists through Pierre and François Bugnon and their students.

AGNES ARBER

Nature

June 22, 1957

Vol. 179 p. 1246

(Pug)

THE TIMES FRIDAY AUGUST 22 1958

MISS AGNES FRY

Miss Agnes Fry, a daughter of the Right Hon. Sir Edward Fry, P.C., G.C.B., died on Friday at the age of 89.

Dr. Agnes Arber writes:—

Agnes Fry's varied interests centred primarily in natural history, but her knowledge in this field was not only scientific and factual; she had a capacity for feeling herself into the life of animals and plants, which perhaps owed something to the mystical strain in the Quaker tradition. This capacity reveals itself in her verses (little known to any but her personal friends), and it finds perhaps its most vivid expression in the lines:—

"Dear Daphne, turn again we pray
Once more a living maiden be
And in our human language say
Just how it feels to be a tree."

THE TIMES

THE TIMES PUBLISHING COMPANY, LIMITED
PRINTING HOUSE SQUARE
LONDON, E.C.4

TELEPHONE: CENTRAL 3000

September 15, 1958.

PROF. N. KEMP SMITH

Dr. Agnes Arber writes:—

In connexion with your obituary of Professor Norman Kemp Smith, may I recall the fact, to which attention has been drawn by an American scholar, that Schopenhauer was eager to translate Kant, and attempted unsuccessfully to interest an English publisher in his project. In making his offer he ventured to predict that a century might pass before anyone else appeared who was as well qualified as he felt himself to be for this particular task. This prophecy was fulfilled with singular accuracy. When Professor Kemp Smith produced his definitive version of the *Critique of Pure Reason* in 1929, a hundred years had passed since Schopenhauer's letter was written.

Digitized by Hunt Institute for Botanical Documentation

Digitized by Hunt Institute for Botanical Documentation