

and a portion of their extensive botanical library have been presented to the University of Michigan by Parke, Davis and Company, of Detroit. This adds to the herbarium a collection of approximately 15,000 Michigan plants made by Dr. O. A. Farwell during the past thirty years. It is also rich in early collections of historic and taxonomic importance. Among others are specimens of Buckley, Chapman, Mohr, Bigelow, Shuttleworth, Heller, Rusby, Curtis, Nash, Lemmon and Sukdorf from the United States; of Rusby, Bang, Morong and Triana from South America; of Pringle, Palmer, Oreutt, Tuereckheim and Schaffner from Mexico and Central America; of Teyssmann, De Vriese, Korthals, Duthie, Hooker, Wallich, Meissner and Mez from the East Indies and British India; of von Mueller, Maiden and Morrison from Australia; of Heller from Hawaii; of Boissier, Schimper, Schweinfurth, Schlechter and Burchell from the Levant and Africa.

THE late Alexander Legge, first chairman of the Federal Farm Board, left \$900,000 to found an organization "devoted to the general welfare of the farming population of the United States and improvement of the conditions of rural life." Mr. Legge was president of the International Harvester Company.

ACCORDING to *Museum News*, the Public Works Administration has allotted \$16,500 for repairs to the major ruins in Mesa Verde National Park, Colorado, and \$17,175 for repairs to the Aztec Ruins in Aztec Ruin National Monument in New Mexico. In the Mesa Verde, stabilization work is planned at Cliff

Palace, Balcony House, Square Tower House, Far View House and Pipe Shrine House to check disintegration of walls, to secure the preservation of these buildings without further extensive repairs, and to contribute to the safety of visitors. The need for these repairs had become acute because of settling in the loose fill on which Cliff Palace is built and because of seepage getting at the base of the retaining walls at Balcony House. At the other ruins wall strengthening, drains and certain capping of rooms is needed. At Aztec Ruins the work will include restoration as well as protective measures for certain parts of the ruin, especially the great Kiva.

A NEW farm tillage laboratory, in which studies will be made to find the types of machines best suited economically to the soils of the Southeast, will be built by the U. S. Department of Agriculture, at the Alabama Polytechnic Institute, Auburn. The Federal Bureau of Agricultural Engineering will construct nine shallow pits, each 20 feet wide, 250 feet long and 2 feet deep. Into each pit will be dumped 10 carloads of topsoil, a sample of one of the agricultural soils of the Southeast, ranging from sand to tight clay. In these parallel pits practical comparative tests of plows and cultivating machinery will be made at one location, working under controlled conditions. R. B. Gray, chief of the mechanical equipment division of the bureau, will supervise the new laboratory work. John W. Randolph, a bureau engineer, will have charge of experiments and will work in cooperation with M. L. Nichols, head of the department of agricultural engineering at the Alabama Institute.

## DISCUSSION

### UNIVERSITY PATENTS

SINCE the publication of my communication on "University Patents" in the number of *SCIENCE* for March 10, 1933, I have learned that there were inaccuracies in the following sentences from that article which invalidate any inferences that the patent in question was being exploited as a source of revenue for profit or research, or that there was the intent to control the patent for any other purpose than ensuring the quality of the product controlled by the patent:

Without the aid of newspaper files many medical scientists can recall a trial which is reported to have cost the defendants \$80,000. Duly skeptical of such a figure, I should, however, assume that the patentees did not use all their takings that year for research. Shortly after the trial they were told by a spirited chief of one city health service that he was going to use their process anyhow and on a large scale, for which he proposed to pay them just one dollar, and if they wanted to refuse this

offer and bring suit, maybe they'd win, but the city was right and had good lawyers.

A well-known American patent for the treatment of an important infectious disease is protected in one country abroad by a clause which forbids its use in research directed to its improvement.

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### THE EXPANDING LITERATURE<sup>1</sup>

IT is perhaps not unnatural that as the universe expands under the watchful tutelage of Sir Arthur Eddington to a point where few persons other than he can comprehend its vastness, the scientific literature about its contents should also expand to an extent such that most scientists are utterly unable to cope with more than a fraction of that covering any one branch of knowledge. We are inevitably driven to

<sup>1</sup>With apologies to the author of "The Expanding Universe."

read more and more about less and less. We are specialists.

But, even in our specialized narrow fields, the literature has expanded till one can keep pace with it, if at all, only by dint of considerable sacrifice of time that other people spend in some respite from the daily grind. This pressure of the literature is the direct result of a general expansion of research activities during the past fifteen years. It indicates in some measure the rapidity of the forward march of science, and is therefore to be welcomed. The deplorable thing is that the scientist must waste a certain portion of the all-too-short time available for reading in covering a literature unnecessarily cluttered up with inconclusive progress reports and with material re-hashed under two or three different titles and published with variously modified trimmings in as many different journals.

The first line of defense against the rising tide of literature is established by the abstracting journals. Though they provide no substitutes for the original papers, they do guide the research worker to the literature in his field. The more quickly and efficiently they do so, the more is the time available for actual research and the less is the waste of effort from unnecessary duplication of research. The difficulties faced by the abstracting journals are obviously matters of concern to all who use them. The following discussion of some of those difficulties in a recent editorial in *Nutrition Abstracts and Reviews*<sup>2</sup> is so pertinent that it might well be brought to the attention of workers in all fields of science:

In many cases essentially the same material is published in two or more journals. When the papers, including the titles, are identical, no confusion is caused. In many cases, however, the results of the same experiments are published under slightly different headings, and even published separately by the different authors who have collaborated in the research. This increases the already almost impossible task of readers who try to read the original papers on their subject. As far as this journal is concerned, it involves duplication of abstracting, which increases the work and cost of producing the journal, without adding to its value. It is suggested that duplicate publication is usually unnecessary, and should be avoided. In cases where it is considered justifiable to write up the same material twice, it should be made clear at the beginning of the article, or in a footnote to the title, that the results have already been communicated and the original reference should be given.

Another cause contributing to the present enormous output of literature is premature publication of results. This frequently leads to the appearance of a series of papers while the work is still in progress, involving considerable repetition in the description of procedure and the statement of partial findings. This custom is of no

<sup>2</sup> Vol. III, No. 1, 1933.

lasting advantage to the worker, and from the point of view of the advancement of knowledge it is to be deprecated. The premature publication of undigested data and hastily reached conclusions, which require subsequent revision, results in the confusion rather than the clarification of knowledge. The reputation of workers and the convenience of readers would be better served if authors could be persuaded to defer publication until the work was reasonably complete and ample time had been given to the study of data. The Editors venture to suggest that senior workers, who they are confident share these opinions, should take the opportunity of impressing them upon those working under their supervision.

Apart from relief for the abstracting journals, it is obvious that elimination of unnecessary publication would simplify the literature problem for the individual worker, for the libraries that aid him and for persons and departments attempting to compile card indices covering special fields. Equally important is the fact that any reduction in the flood of manuscripts now entering nearly every editorial office in the country would automatically shorten the periods of imprisonment for papers now waiting from six months to a year or more for their release.

The paragraphs quoted above happened to meet the writer's eye at a time when he had just finished reading the third of three papers presenting the same data under three different titles. The present outburst is the result. It is in no sense directed at the volume of research but solely at the unnecessary and expensive publication which makes a difficult task almost impossible. The editors of *Nutrition Abstracts and Reviews* render a valuable service in pointing out that relief from this undesirable situation lies in the hands of scientific workers themselves.

F. B. H.

#### THE NEED OF ADEQUATE PROVISION FOR THE QUANTITY PRODUCTION OF DEUTERIUM WATER

THE recent work of G. N. Lewis,<sup>1</sup> of Crist and Dalin,<sup>2</sup> of Bonhoeffer and Brown<sup>3</sup> and of Oliphant<sup>4</sup> has shown that metathetical reactions involving the two isotopes of hydrogen must be of very general occurrence. This of course means that the preparation of many chemical compounds containing deuterium substituted for all or part of the hydrogen atoms will be comparatively simple as soon as pure deuterium water is available in quantity. To transform an ordinary hydrogen compound into the corresponding deuterium compound, one has evidently only to bring the compound into metathetical equilibrium with successive portions of pure deuterium water. Its replace-

<sup>1</sup> *Jour. Am. Chem. Soc.*, 55: 3502, 1933.

<sup>2</sup> *Jour. Chem. Phys.*, 1: 677, 1933.

<sup>3</sup> *Z. physik. Chem.*, 23: 171, 1933.

<sup>4</sup> *Nature*, 132: 675, 1933.