

and 12. Professor Herbert Freundlich, of University College, London, will be the guest speaker and will open the symposium. It is planned to hold the sessions in the Chemistry Building of the university on June 10 and 11, and then to drive to Rochester where the papers of the last day will be given at the Mayo Clinic. The sessions there will be devoted to papers of a bio-colloidal nature. Opportunity will be given to spend some time in visiting the Clinic Building and the research laboratories connected with the Mayo Foundation. The program for the symposium is rapidly being filled and it is suggested that authors, wishing to have papers considered for the meeting, should write at once to Professor H. B. Weiser, The Rice Institute, Houston, Texas. The local committee making arrangements for the symposium consists of D. R. Briggs, Geo. Glockler, R. A. Gortner, I. M. Kolthoff and L. H. Reyerson, chairman.

THE attention of scientific workers is called to the Theobald Smith award established by Eli Lilly and Company and approved by the council of the American Association for the Advancement of Science at the Minneapolis meeting. The conditions of the award as recommended by the executive committee after study of the situation and as adopted by the council are given in *SCIENCE* for July 26, 1935, p. 75. Members of the committee of award for 1936-37 are: Drs. Edwin G. Conklin, *chairman*; Anton J. Carlson, Howard T. Karsner, Chauncey D. Leake and Hans Zinsser. This committee will serve until it reports at the Denver meeting. By request of the committee and with the approval of the council all correspondence in the matter should be addressed to the Permanent Secretary and not to the individual members of the committee.

THE National Research Council announces that in the administration of its fellowships in the natural sciences, consideration will be extended to applications for fellowships of post-doctorate grade for the coming year in the fields of geology, paleontology and physical geography. The basic stipend will be \$1,600 per year. Requests for application blanks should be addressed to the Secretary, National Research Fellowships Board in the Natural Sciences, National Research Council,

2101 Constitution Avenue, N.W., Washington, D. C. Applications to be considered should be returned to the Research Council by April 1.

At the recent Atlantic City meeting both the Ecological Society of America and the American Society of Zoologists passed resolutions condemning the so-called "vermin" campaigns that are destroying some of our most interesting animals by the hundreds of thousands. The former society appointed one of its members to write certain articles for publication and wide distribution to call the attention of those interested in nature to what is being done.

SOIL survey reports and maps are in great demand and in many instances all available supplies are exhausted. Dr. Henry G. Knight, chief of the Bureau of Chemistry and Soils of the U. S. Department of Agriculture, urgently requests that any one having copies of these reports for which they have no further use send them to the bureau for distribution to people needing them. Upon request Government blanks will be forwarded for the purpose.

E. L. PACKARD, of Oregon State College, writes that the Oregon State Board of Higher Education has announced the establishment of the Institute of Marine Biology at Coos Head, on an eighty-five acre tract acquired for the purpose from the Federal Government through Congressional Acts of 1931 and 1935. Preliminary studies are said to indicate an abundant and diversified fauna and flora within the waters of Coos Bay and that the life of the open ocean shows a mingling of both northern and southern forms. The extensive marine fisheries include the salmon and the pilchard centering in this region, and the industries based upon crabs, clams and oysters afford many opportunities for basic researches in these fields. This station is organized to serve all the institutions of the State System of Higher Education of Oregon, and cooperatively others within the state and elsewhere, as a center of biological research relating primarily to the life of the sea and as a training ground for future biologists and teachers of biology.

## DISCUSSION

### DISSEMINATION OF SCIENTIFIC LITERATURE BY MEANS OF MICROFILMS

BECAUSE of the rapidly increasing volume of scientific literature, its classification and dissemination to those who use it is becoming an ever increasingly complex and costly problem. Aid of this character to research is usually rendered by means of abstract

journals, but these require the cooperation of many persons, and their publication is very expensive.

It is believed that microfilms may serve both to supplement existing abstracts and, in cases where necessary, provide a more economical means of acquainting scientists with the work of others.

Although abstract journals enable the research worker to learn what papers have been published upon a given problem, they can give but few details in regard to each research. It is, therefore, usually necessary to consult the original paper, and this may be done only by those having access to well-stocked special libraries.

Another manner of acquainting workers with the literature of their subjects is by the publication of classified catalogues of the titles of scientific papers appearing in the journals of the world. Although the title alone certainly gives less information than can be included in an abstract, it is a question whether such additional information is really worth its far greater cost. Those concerned with furnishing such service to research workers are faced with the question as to whether, at an approximately equal expenditure of effort, it is preferable to provide a completely classified catalogue of the titles of scientific papers in a given field or abstracts of only those papers selected as worthy of the attention of research workers. A decision of this question will be influenced by the availability of the original papers to those who need them. Certainly no one who can consult the original paper would be content with the abstract; consequently it may be expected that a service which provides a highly classified list of scientific papers and also furnishes at very low cost photographic copies of the original papers themselves will be preferred by many to even the most perfectly organized abstracting service.

Thanks to the perfection in recent years of apparatus for the production and reading of microfilms, it is suggested that such equipment may be adapted to providing the kind of complete service to research workers mentioned above.

The organization of a service of this kind, based on microfilms, falls into two divisions: that of providing a classified and indexed catalogue of titles of papers and that of furnishing microfilm copies of the papers themselves. The establishment of such a service would also result in the gradual accumulation of complete microfilm collections (filmothecs) of scientific literature. In this connection, the question arises as to whether it is preferable to develop services and build up collections in the separate branches of science, or undertake the organization of a single all-embracing service and filmothec of science. Due to the immensity of the latter plan, it seems preferable to confine attention at this time to filmothec service in single branches of science.

Even in the most restricted field of research, and certainly in the larger ones, it would first be necessary to establish subclasses of the subject. These would be given abbreviated distinctive descriptions as well as numerical (decimal) designations. A widely published

key to these descriptions and corresponding numerical designations might eventually make it possible to rely exclusively upon the numerical classification just as is done at present in the arrangement of books upon the shelves of libraries in accordance with the Library of Congress classification.

In the operation of a "Filmothec Service," there would be required only such trained scientists as would be needed to assign correct classifying designations, and choose the best indexing words for the original papers published in the current scientific periodicals. When this was done and the corresponding numerical designations and indexing words stamped on or affixed to each article, all other steps in the process could be executed by persons without special technical knowledge.

The current journals, after having their constituent original articles provided with the classifying designations, would be delivered to the photographic laboratory and each article successively photographed with its identification numbers and indexing words. The finished band bearing these microfilm copies would then be cut in lengths corresponding to each separate article. These individual microfilm strips would be filed in appropriate folders, each bearing the designation of the subclass and having serially arranged pockets to receive the serially numbered individual strips. By this means the articles in a particular branch of science would automatically be collected together and serially numbered. When a given folder was filled or at such periods of time as chosen, the titles and designation numbers of the articles in each folder would be typewritten in their regular numerical order, and an index of the selected words of each title prepared. These typewritten copies of the contents of each folder would be assembled and prepared for distribution to research workers in whatever form was most economical. For a very large and active branch of science, these lists would undoubtedly be printed and distributed in editions of many thousands. For more restricted fields of research, the lists might be reproduced by offset printing or even by duplicating machines.

By means of these highly classified lists of titles of articles which would be indexed in accordance with the particular subject treated in each article, the individual worker would be able to choose those articles which he considered of most interest to him. To obtain copies of these, he would only have to send the designating numbers of the articles he desired to the office in which the master microfilm copies were on deposit. Upon receipt of such orders, the desired original microfilm strip would be removed from the folder and sent to the photographing laboratory for making positive film copies of the original, or enlarged photoprint copies, if preferred. This process is extremely simple

and can be carried out at considerably less cost than making the photographic copy direct from the journal. The positive copies thus made would be sent to those requesting them, and the master negative returned to its proper pocket in the folder in which it is kept.

In the above brief outline of the general organization of a Filmothee Service, it has not been possible to go into detail in regard to the several mechanical operations. The experience so far gained, however, with microfilm cameras shows that no serious difficulties may be expected. It is simply a question of the systematic organization of the work and the application of ordinary ingenuity in perfecting systems of identification markings for the film strips and properly constructed folders for filing and preserving the master negatives.

The technical directions necessary and the cost of making the original microfilms by directly photographing the periodicals should not greatly exceed the cost of preparing the card catalogues of original papers which would be necessary as the basis for the preparation of catalogues of scientific literature. The cost of making positive copies from negative microfilm strips is certainly far less than making microfilm copies directly from the journals.

This plan also has the advantage that complete filmothees of scientific literature would be gradually built up, and with succeeding years, there would be a greatly increased amount of literature of which positive copies of desired papers could be supplied at an exceedingly low cost.

The one objection which may be offered is that no one library receives all the journals which must be consulted in the preparation of complete catalogues of titles of papers in a given field of science. Although this is true, there has developed such a spirit of co-operation between American libraries that by choosing two or three of the most important, and setting up microfilm cameras in these, the few journals which would still be necessary could probably be secured by loan or by purchase. Furthermore, this is a plan which lends itself especially well to making collections and disseminating literature for the benefit of research workers in very restricted branches of science. There are, for example, certain very special journals which, in addition to publishing original articles in their fields, also furnish abstracts of papers published elsewhere. This is, of course, a distinct service, but certainly of considerably less value than would be the providing to their subscribers of microfilm copies of the original articles chosen for abstracting.

It is evident that the suggested plan of using microfilms for the dissemination of scientific literature is capable of first being tested on a very limited scale, and if its value is demonstrated by such experience,

may be expanded as rapidly as the results justify. It offers possibilities which are worthy of serious consideration by those concerned with the more perfect utilization of scientific literature.

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### MICRO-PHOTOGRAPHY OR PHOTO-MICROGRAPHY?

RECENT issues of SCIENCE have brought suggestions on scientific nomenclature and the use of English. In this connection I would suggest for relegation to oblivion that horrible hybrid "photo-micrography." I have never been able to see the reason for coining this cacophonous misnomer—surely the term micro-photography is descriptive enough. One shudders to think what would happen if the precedent set by photo-micrography were followed consistently: we should then have to drop color photography and celestial photography in favor of photo-chromography and photo-uranography. If we sanction photo-micrography astronomers will be at a loss to know whether chronograph refers to an instrument used in measuring time or to a picture of Saturn, and we may, perhaps, look forward to the day when the studio photographer who specializes in portraits will announce himself as an expert in photo-prosopography.

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### A VASOPRESSOR LOCAL ANESTHETIC

DR. RAYMOND L. OSBORNE and his associates are to be congratulated for the successful synthesis of a vasopressor local anesthetic, as described in SCIENCE, (85: 105, January 22, 1937). A brief historical account is included in the report. The reasons are given for attempting the synthesis of a chemical agent which combines the local anesthetic actions of the alkamine esters of para-amino benzoic acid with the vasoconstrictor effects of the phenylethylamines. Since the report does not refer to any other attempts to synthesize such a compound, it gives the impression to the uninformed that it is the first report on this matter to appear in scientific literature. This is unfortunate. Other efforts, more or less successful, of this same sort have been made by Kubota,<sup>1</sup> Takeda,<sup>2</sup> Hartung, Munch and Kester,<sup>3</sup> and in a particularly exhaustive manner by Alles and Knoefel.<sup>4</sup> The latter discuss 29 compounds of this type which were deliberately prepared

<sup>1</sup> Kubota, *Jour. Pharm. and Exp. Ther.*, 12: 361, 1919.

<sup>2</sup> Takeda, *Jour. Pharm. Soc. Japan*, No. 426, 691, 1917, through *Chem. Abs.*, 11: 3241, 1917.

<sup>3</sup> Hartung, Munch and Kester, *Jour. Amer. Chem. Soc.*, 54: 1526, 1932.

<sup>4</sup> Alles and Knoefel, *Arch. Internat. Pharmacodyn. Ther.*, 47: 96, 1934.