may be considered good evidence that in so far as scientific literature is concerned, the limitations of microfilm copying imposed by copyright is negligible.

There is, however, another angle of the subject which has been suggested as of perhaps greater importance than the legal aspect. That is, the effect which the general distribution of the material printed in current journals may have upon their circulation. It can not be denied that certain ones, devoted to narrow fields of learning, do have great difficulty in securing and earning the support necessary for their existence. In these cases it is possible that some individuals and even libraries would not subscribe to them, if the papers they contained could be obtained in the form of microfilms for less than the cost of the subscripiton. These, therefore, might be damaged by unrestricted microfilm copying.

This situation, however, raises the question whether the printing of journals which fail to command sufficient support to pay their way is economically justified. There is little doubt that the present system of publishing certain very highly specialized research is extremely wasteful. In the case of journals of interest to a very limited number of workers the expense and effort necessary for their editing, printing, distributing, cataloging and conserving in libraries should be weighed against the advantage to the small group of persons capable of making use of them. Of course if publication by printing was the only means by which the results of highly specialized research could be brought to the attention of persons capable of making use of it for the advancement of science, there would be no question of paying the cost, no matter how great. Fortunately, however, the development of microfilms has introduced a far simpler and more economical plan of distributing such reports to other workers. This is by what has come to be known as auxiliary publication. By it, the author publishes in the widely circulating printed journals only such details of his work as are necessary to acquaint others with its scope and conclusions. He prepares for an authorized depository a detailed description of his experiments, accompanied by tables, charts, illustrations or anything else needed to convey to others a thorough comprehension of his work. This complete report serves for the preparation of microfilm copies which are given an identifying number corresponding to the number which accompanies the printed summary of the work. Those who read this brief account in the widely circulated journal and desire the complete paper simply order a microfilm copy of it by number from the authorized depository at a very modest price. Only the number of microfilm copies that are ordered are made, and only one repository is charged with keeping the original paper. Thus the cost of printing, distributing and conserving in libraries voluminous detailed reports of research, of interest to only few workers, is completely avoided.

This plan of publication also has another very important advantage. The rising costs of printing and increasing number of papers submitted have forced the publishers of practically all scientific periodicals to insist on the greatest possible condensation of the papers they print. This results in the publication of many papers in such an abbreviated form that their value to others is diminished. Auxiliary publication by microfilm distribution avoids this and insures that the work of every investigator is brought in its most complete form only to those investigators who are able to make best use of it.

From the above it follows that even though microfilm copying may adversely affect the publication of certain small numbers of highly specialized journals it provides a substitute plan for the diffusion of scientific research which is far superior and much more economical than the system of publication solely by printing.

Finally, attention should be called to the fact that library collections contain not only current periodicals the contents of which are subject to greater diffusion by the medium of microfilms, but the accumulated mass of scientific literature over many years which microfilms can also place at the disposition of those workers not having access to such collections. Thus, the question of copyright restriction and possible adverse effect of microfilm copying upon a relatively few journals should have little weight in appraising the tremendous service which microfilm copying in libraries can contribute to the advancement of learning.

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AN EASIER METHOD FOR MAKING AN INDEX

"AN easy method for making an index," described in the issue of SCIENCE for January 20, involves cutting innumerable strips, handling slips of varying sizes which would be awkward to alphabetize, working with adhesive tape and typing twice. Sticking the entries on 11-inch tape would hamper editing, cross-referencing and possible transfer of material from one heading to another, all of which has to be done after the alphabetizing has been completed. Thus it appears that indexing by the proposed method would consume more time than it would save. When the work is done by the usual one-card-per-entry method there is but one typing, alphabetizing is easily done, there is no messing with tape or time-consuming cutting, and the easily numbered cards can be readily bundled and sent to the printer. No typing on sheets is necessary.

If even a quicker method is desired the following is

suggested: Use typewriter paper on which perforations divide each sheet into ten sections. Or, better still, use rolls of paper 4 inches or 5 inches wide, with perforations 3 inches apart. Type one entry on each section, and when the index is completed tear the sections apart and arrange the slips alphabetically. These slips are a handy working size, can readily be edited and rearranged, and then may be sent directly to the printer. This method avoids putting a card or slip into the typewriter and taking it out for each entry.

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EVIDENCES OF A PRE-CERAMIC CULTURAL HORIZON IN SMITH COUNTY, KANSAS

A CULTURAL horizon, buried some ten feet or more below the top of a twenty-one foot terrace along the banks of a small intermittent stream in Smith County, Kansas, has been under investigation by a University of Kansas field party under the direction of Dr. L. C. Eiseley, assistant professor of sociology and anthropology at the latter institution. The archeological material recovered consists of numerous flakes and rejects, a few scrapers and a single point. The material is intermixed with the charred and fossilized remains of bison and other animals. Although the material suggests more than a casual occupation of the site, no evidences of pottery or agriculture were secured.

According to Dr. H. T. U. Smith, assistant professor of geology at the University of Kansas, who conducted geological investigations at the site, the geomorphic changes which have taken place involve the following stages: First, a deposition of over ten feet of alluvium above the site; second, a lowering of the local base level and the formation of a flood plain fourteen feet below the top of the fill; third, a second lowering of base level and the development of a new flood plain twenty-one feet below the top of the original fill. This flood plain has a width of a hundred yards and is entering middle maturity. The geological evidence suggests that these changes could not have taken place much under a minimum of five thousand years ago, and the site may actually be older.

Inasmuch as the point recovered is not Folsom, but a well-worked artifact of a size suggesting its use with the bow, and as, in addition, there is no reason to refer the bison remains recovered to an extinct species, it seems reasonable to assign the site a dating later than the Folsom culture, but predating by a considerable margin the appearance of agriculture in the central plains. The importance of the site lies in its contribution of additional evidence of the existence of nomadic bison hunters in the central plains below the recognized ceramic cultures, but evidently later in time than the Folsom horizon, judging both from the probable use of the bow and the associated remains of a living species of bison. At the same time, because of its genuine geological antiquity, the site is an added check on the postglacial, early Recent fauna associated with man in the Plains region.

LOREN C. EISELEY

SCIENTIFIC BOOKS

TRAVELS OF A PLANT EXPLORER

The World was my Garden. Travels of a Plant Explorer. By DAVID FAIRCHILD, assisted by ELIZABETH and ALFRED KAY. Chas. Scribner's Sons, New York and London. Pp. 494. Many illustrations. 1938.

A MORE charming and interesting autobiography could scarcely be imagined. Fairchild is not known to the world from any great discovery or generalization, such as those of Darwin, Mendel and the Curies; but taken all together, his contributions to horticulture and thus to human welfare have been so great that he deserves to rank with those who have done most for their country and the world. The present book, giving a connected account of his activities, is especially valuable as showing what has been done, not only by Fairchild but also by those who cooperated with him, to all of whom full and generous credit is given. The results of all this work may be found in every part of the United States, where introduced plants are growing and producing increasingly valuable crops. It would be impossible to estimate the value of the products which have been made available to us through Fairchild, or to say what limit there may be to their increasing value, as they become better known, and the conditions of their cultivation better understood.

How are such men produced? Fairchild says:

> Going back through the mists of sixty-odd years, I realize that I both had the suitable heredity and was born into an environment adapted to the development of a naturalist or horticulturist. In other words, my path was almost predestined at my birth. I do not believe that I consciously chose its direction, but rather wandered down its attractive way unconscious where I was going. . . . Had I the choice of a place to be born, a family to be born into, and an environment with which to surround myself, I could hardly have chosen more wisely than Fate chose for me in 1869 when I was born at Michigan State College. My parents belonged to the class to whom the intellectual future of this country meant more than anything