

data that now go unrecorded. It will make available out-of-print and rare books. It is adapted to the publication of photographs and other illustrations. Auxiliary publication service (which might be named Docufilm Service) should be auxiliary to established channels of scholarly publication and it should aid and not hinder journals. Editors of journals and institutions should act as intermediaries between the authors and the "Docufilm Service."

This idea has been given an experimental demonstration in America in connection principally with scientific papers. A journal editor publishes as much or as little of a technical paper as he wishes. In the case of a very specialized paper it may be only an abstract or summary. He appends to the notice or article a note saying that the full article with diagrams, pictures, etc., can be obtained by remitting a certain price and specifying the document number under which this full article has been deposited at the central agency operating the auxiliary publication service. Orders are sent by readers directly to this central agency, which is the American Documentation Institute at Washington, D. C. Microfilms of the document are made only if and when ordered. In this way the document is perpetually "in print" but no extensive, space-consuming stocks need be stored, only the document itself and the microfilm negative from which positives are made for distribution. The operation of the plan is simple and uncomplicated and editors may use it when, how and if they find it helpful. No financial participation or guarantees from the editor or author are required.

Docufilm Centers

It is believed that this or analogous techniques can be adopted in other countries, preferably with central agencies serving those countries. If this is done there can be effective exchange of negatives between "Docufilm centers."

While the plan of auxiliary publication suggested could be used with other methods of duplication, microfilm is the least expensive and most universal in that it will handle text and illustration.

Bibliofilm and Docufilm are capable of immediate utilization. They can begin small and be allowed to grow as needed.

Another documentation project of importance to the world is much more formidable and cannot be accomplished without much planning, development and international cooperation. This is the possibility of a world bibliography, beginning in the field of science but

eventually extending to all fields.

The economy and compactness of microfilm gives new hope that a world science bibliography may be accomplished without ambitious hopes and promising plans being drowned in a sea of cards and smothered in a maze of details. It is possible to visualize the creation in some world center of a card file with a card for every article, paper, book or document published in science that is important to the written record.

When it is considered that most of the scientific literature of the world has been listed by title or abstract bibliography somewhere in abstract journals, in special bibliographies or such large card compilations as exist in the Science Museum Library at London, the task while gigantic does not seem impossible. The last and essential link in the possibility is the use of microfilm for

multiplying the cards under various classifications and in copying for distribution. I repeat that this is a large project needing international thought and probably years of gestation. Classification, the technique of bibliography and a dozen other factors in documentation to which many have unselfishly given their lives will find fruition in such a project.

I hope that such mere samples of the great possibilities of documentation development will convince the world at large of the importance of work in this field. Those of you who have organized this congress, and those who have worked for years in the upbuilding of the International Institute of Documentation need no convincing of the importance of this work to intellectual progress. It is a matter of world concern and international effort.

Science News Letter, October 9, 1937

GENERAL SCIENCE

Science Needs Synthesis As Much as Discovery

THE METHODS of scientific advance into new frontiers of knowledge are the methods of all great conquerors of military history; divide and then conquer. This was the message offered by Dr. Nolan Don Carpentier Lewis, director of the New York Psychiatric Institute, at the opening exercises of the Columbia University School of Medicine.

But Dr. Lewis added a pertinent warning. Along with the splitting of difficult problems into their component parts and success in solving the parts there must also be present a clear realization of the significance of what has been learned, and a blending together of all the knowledge. He continued:

"Sometimes I think men are needed who can arrange in synthesis the facts already discovered more than we need new facts. The organized specialists tend to dictate the direction of scientific research toward analysis and mechanism. There seems to be some lack of interest in the art of synthesis."

Even faith enters into the successful pursuit of scientific knowledge, Dr. Lewis pointed out, saying, "Faith also plays a role; not that faith which in the words of Sir Thomas More 'once wedded fast to some dear falsehood hugs it to the last,' but the faith in ultimate success."

"In interpretation," he concluded, "it

is necessary particularly to guard against a dangerous tendency of the human intellect—the tendency to accept as valid a plausible explanation and then look for the facts to support that explanation. No device however perfect yet discovered can wholly deprive the human intellect of its capacity to make mistakes, but many may be avoided by a cruel criticism to control thinking, and the development of a boundless caution in regard to all conclusions.

"Above all never refuse to see what you do not want to see or what might go against the views of authority. If one is naturally prone to form emotional prejudices and realizes it, he may by conscious effort succeed in becoming a shining example of fairmindedness. When a finding or idea is contrary to authority or even to common sense, it may be the clue to follow. Many discoveries are contrary to common sense.

"Uncommon sense is now needed in many situations. We should be stimulated by authority but not paralyzed—admire but not worship. Every advance in science has been at the expense of someone's reputation as an authority. The best plan is to keep the mind free—consciously keep it from crystallizing around formulas of any kind except as working hypotheses which it may be necessary to scrap tomorrow."

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