author showing both destructive and constructive phases.

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THE STANFORD RESEARCH INDEX CARD

IN 1816 George Crabb introduced his now famous book, "English Synonymes," with the words: "In the prosecution of my undertaking, I have profited by everything which has been written in any language upon the subject; and although I always pursued my own train of thought, yet whenever I met with anything deserving of notice I adopted it, and referred it to the author in a note." Every research worker, no matter what the subject of his investigation, would like to be able to use these words in introducing his paper or book to the public.

To-day, with somewhat more than twenty thousand scientific periodicals *at our disposal*,[1] the finding of what has been written on any certain subject and the digging out of what is deserving of notice are projects whose completion, as a usual thing, can be only approximated. It is indeed the rare instance where an author feels this sublime assurance that he has "caught everything." I have no solution to offer for this predicament of the researcher of the present as he tries to arrive at a proper ratio between laboratory and library work. Chasing literature is of course almost certain to "pan out" in the long run or average run, and it is only justice to those who have labored that we should take some pains to know what they did, but this point of view seems to provide one with what amounts to a full-time job. We are dazed at the thought of the automobile traffic of the future and likewise at its scientific literature problem. In scientific papers of the next century how will it be possible to give each individual his due right of way and protection from extinction! Even now we need any comfort and aid in this work that can be discovered.

A familiar line that is apt on the matter of reference research is the phrase: "When found make a note of it." This suggestive advice should be supplemented by the emphatic commentary: "And make enough of a note." The time and energy spent in relocating articles, which have been seen but were not "noted," or which were noted inexactly or too briefly, is a begrudged and particularly irritating expenditure. This item of loss can not be wholly avoided, but possibly it can be largely reduced.

[1] World List of Scientific Periodicals, 1900–1921, Oxford University Press, 1925. This list actually gives 24,128. These are supposed to be the living ones. But dead periodicals have to be looked after and then too the birth-rate in this realm shows no sign of decline.

We use blank forms with economy in almost numberless situations in the business world. We use them likewise in gathering our scientific data and in the classification and working up of such data. Is it not possible to do the same in the matter of gathering scientific references and abstracts? Research, no matter what the laboratory or the subject, involves a certain scheme that is more or less evident in all scientific articles, especially those that report experimental work. This likewise constitutes the basis for most good scientific abstracts. This formula is as follows: name of worker, statement of problem, description of material (phenomena or subjects) worked upon, discussion of method or apparatus used, the results and conclusions and the place of publication. Obviously such a schematic arrangement is not difficult to provide for in a simply printed form, and this may serve as a convenient frame on which to place, in an orderly manner, all sorts of scientific content. The 4 x 6 inch card reproduced herewith has been developed from this standpoint and is offered as an aid in the organization of working abstracts of scientific literature.[2]

The upper part of the card is divided vertically so that it may be conveniently filed under author or topic. In addition to the author's name there is space to indicate if desired: the year when the work was actually done which sometimes is importantly different from the publication year; pertinent information about the author, such as his training, special competency, position, other articles or what not, and his address. "Lecturer" is used as alternate to author in the belief that one's index on a certain topic should contain a card for an important or special lecture, interview or conference, that he may have listened to on the subject.

The date when the reference was noted and the name of the abstractor may be entered in the upper right-hand corner. The file number or notebook number and page of location for fuller abstract or related material are provided for. There is space to note who cited the work if one is unable to consult or see it himself, to record in what library it is available and the call number. This latter is often a time saver.

The title line gives enough "area" for most authors to announce what they are writing about. If the card stands for a book the next line will be used in naming the publisher, city, date and perhaps price. If it is an article this line will carry the name of periodical with the date, volume and page. It seems worth while to devote one line to a general characterization expressing the abstractor's analysis from the standpoint of type of article, and his appraisal of its merit or

[2] These cards may be had from the Stanford University Bookstore.

AUTHOR OR LECTURER | TOPIC | DATE NOTED

DIVISION | NAME

YEAR DONE | CONCERNING AUTHOR | FULLER ABSTRACT FILE NO. | NOTEBOOK NO. | P

RELATED MATERIAL

CROSS INDEXED

CITED BY

ADDRESS | AVAILABLE AT | CALL NO

TITLE

JOURNAL OR BOOK PUBLISHER

PRICE | CITY | DATE | VOL. | PART | PP

CHARACTERIZATION | MERIT RANK

TABLES | FIGURES | BIBLIO. | FEATURES

SPECIFIC PROBLEM

DATA COLLECTED BY

MATERIAL OR SUBJECTS

METHOD OR APPARATUS

RESULTS AND CRITICISM (OVER) STANFORD RESEARCH INDEX CARD

A form for use in the making of abstracts of scientific literature.

importance. The makeup of the article as a presentation of scientific material is indicated by way of number of tables, figures, size of bibliography and any special features. It may be one specific part of the article or problem that is of interest, in which case this may be stated. Possibly the abstractor can word the problem more accurately than the title of the paper gives it. The data are not always collected by the author of the paper; hence the short line provided for a note here. The card is so arranged that "material" or "method" may expand into more space if necessary. The back is for the statement of results, criticisms or whatever is pertinent.

A space for everything, but no need to fill in every space! Gaps in such a case are worth while; they provide room to add something later; the having of space for certain notes makes for more careful analysis of the materials under review. Different things will be filled in at different times. First the author and journal may be discovered probably in some topical bibliography. Later, perhaps, the exact title, and the page and volume items will be checked when the periodical is actually consulted. Gradually there is produced a rather complete working abstract, accurate in details concerning the article, with not too much trusted to memory. Uniform arrangement makes for ready reference when using the cards on lectures or otherwise. On printed forms abstracts are more understandable to a second party.

The card described may aid librarians who have charge of scientific collections as well as assist the student or research worker in making "enough of a note" as to save repeats in looking up references. It will promote the making of more exact and practically useful abstracts and perhaps may thus reduce a little the scientific literature burden.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

ABSOLUTE MEASUREMENT OF AVERAGE SIZE OF DROPLETS OF THE DISPERSE PHASE OF AN EMULSION

IT was desired to find a method for measuring in absolute units the average size of droplets of the disperse phase in a permanent emulsion of the oil-in-water type. It was found that if a single drop of an emulsion of this sort is deposited on the surface of clean water in such a way as not to break the surface film, it will spread on the water like an oil. The spreading takes place with extreme rapidity and may be considered as being almost a two-dimensional explosion.

The mechanism of the spreading is not yet entirely clear, but if the concentration of the emulsion is suf-