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TECHNICAL REPORTS AND REPORTING AT OAK RIDGE NATIONAL LABORATORY* OAK RIDGE, TENNESSEE

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In a research laboratory, such as Oak Ridge National Laboratory, the main product is presented in printed reports. Many different individuals can contribute to the excellence of this product although nothing anyone else can do can substitute for what is done by the researcher-author. The editor, the illustrator, the typist, the printer can assist but the chief responsibility is at the origin.

One who is engaged in research, in development, in experiment is searching for new knowledge; he is discovering new ways of doing things he believes need to be done. He searches the literature to learn what others know; he plans his program of research and experiment; he keeps accurate records which will stand up under patent examination or in court. He writes reports not only so he may have visible claim to his work and receive credit for it but also so others may learn from his work. In this way the researcher likes to feel he is making a contribution to the society of which he is a part.

After the work is performed in the laboratory, how is it reported? Who are they who participate and contribute to the reporting? What are their responsibilities?

The scientist or engineer must keep careful and adequate records of his work. He should use bound notebooks with all pages dated and signed. To avoid questions it is best to avoid erasures, striking out errors with a single line. (The writer had this brought to his attention very clearly when he was once a member of an engineering party resurveying and checking a large earth-moving contract under controversy. Appreciable payments had to be made because of doubt cast on field notes which had obvious erasures.)

The scientist or engineer must allocate without deviation a reasonable amount of his time to the analysis of his data and to the writing of conclusions. The amount of time will vary, of course, with the individual and the nature of his work.

At least two kinds of reports are commonly prepared — periodic progress reports and topical or subject reports.

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A progress report, as the name implies, reports on the progress of a program. These reports may be weekly, biweekly, monthly, quarterly, semi-annually, annually, etc. The frequency of progress reports varies with laboratories, or with departments in a laboratory, or even with individuals. The contents of progress reports may review to greater or less detail work in progress. If a large laboratory or large program is involved, there may be an effort to report principally on tangible results rather than to spend much time describing procedures.

Progress reports, by their very nature, are difficult to abstract because they not only report incomplete work but report a wide variety of individual activities. It is difficult to retrieve information from progress reports because indexes are difficult to compile in sufficient detail. The names of key investigators can be of great value in locating information in progress reports. As is usually done in literature searching, the writings of known authorities in a particular field of interest are sought.

Topical or subject reports are of various kinds. Sometimes it is important to report information which is incomplete and even transitory. It may be impossible to assess the true value of the information so the discoverer reports his data in a brief "letter-to-the-editor" type report.

Every candidate for a degree in which a thesis is required has experienced the reluctance to interrupt interesting and promising laboratory work in order that he can write his thesis and meet a deadline set for the conferring of his degree. Similar requirements must be imposed on a researcher by his supervisor if subject reports are written and if articles are submitted to journals for publication.

Another danger is the natural disinclination of most to spend much time writing a completion report after a research project has been terminated. One likes to move on to a new program. One large research laboratory withholds pay for the last month spent on a research project until the final report has been submitted. Everyone knows that the longer one delays writing such a report the more difficult it is to do it.

The quality of writing by many scientists and engineers (but not limited to these profession by any means) is sometimes quite poor. This makes it necessary for technical editors either to practically rewrite reports and articles intended for publication or to issue reports of low quality.

Seniors who have the responsibility of directing the activities of others will do well to insist on excellence in reports by the young scientist or engineer early in his career. Individual abilities in report writing can be improved among juniors if they are required to do so. Clearly stated policies and top-level review of all information emanating from a division or department may be necessary if time-consuming work is to be avoided in editing

and printing.

Photographs in a report can add to or detract from a report materially; the printer cannot print a good plate from a poor photograph. Proper lighting and focussing are essential at the scene when the photograph is taken. A professional photographer does this almost by instinct; he sees effects that the novice does not see. The professional achieves good focus and depth of focus because of his superior techniques and equipment.

The Graphic Arts Department of illustrators and draftsmen is provided for the preparation of illustrations for reports, displays, slides, etc. The requester must advise as to the use of the illustrations to assist the illustrator to determine the standards he should follow in his drawing.

For some reports the author can prepare his own diagrams and graphs on duplimats. This is true especially if the report is for intra-laboratory use. Like photographs, all allustrations which are reproduced in reports should carry a Laboratory Records identification number.

Many reports are routed to the Technical Publications Department for editing and typing. A technical editor goes farther than just marking copy for the typist. He is a technically trained reports analyst. He not only detects misspelled words and errors in grammar but he observes where there is ambiguity in meaning. He sometimes questions technical content and discusses his questions with the author. It is almost impossible for a good technical editor to edit a paper without being meticulous and at times he may appear to be picayunish. He tries to read the report as it will be read by many others on the distribution list. He wishes to protect the author and the Laboratory from being embarrassed by careless reporting.

Reports can be typed either on ordinary typewriters or on varitype machines. Typewriters are always used unless the amount of mathematics, chemical formulae and equations warrant the use of Varitype machines. For a limited amount of mathematics changeable keys on the typewriter can be used. If there is a large amount of complex material, changing fonts on the Varitype machine will prove to be faster and more economical.

Varityping does present a more attractive printed page, especially if the right margin is justified (even). However, two typings of every line are necessary to achieve the necessary spacings between letters and words for the justified result. Varityping makes it possible to fit printed material around illustrations, graphs, etc. with less waste space. Varityping may also contribute to fewer pages in the final report.

Quality of paper is of importance; it not only contributes to a good first impression on the reader but paper of high quality is necessary for high quality printing. Whiteness of paper makes it possible to achieve proper contrast in photographs, especially photomicrographs. Surface of the paper is important for good

half-tones. In fact, Laboratory "coral" finish paper achieves an effect in printed photographs as a beaded-glass screen does in slide projection.

After printing, reports which are to receive external distribution are first distributed within the Laboratory to permit review

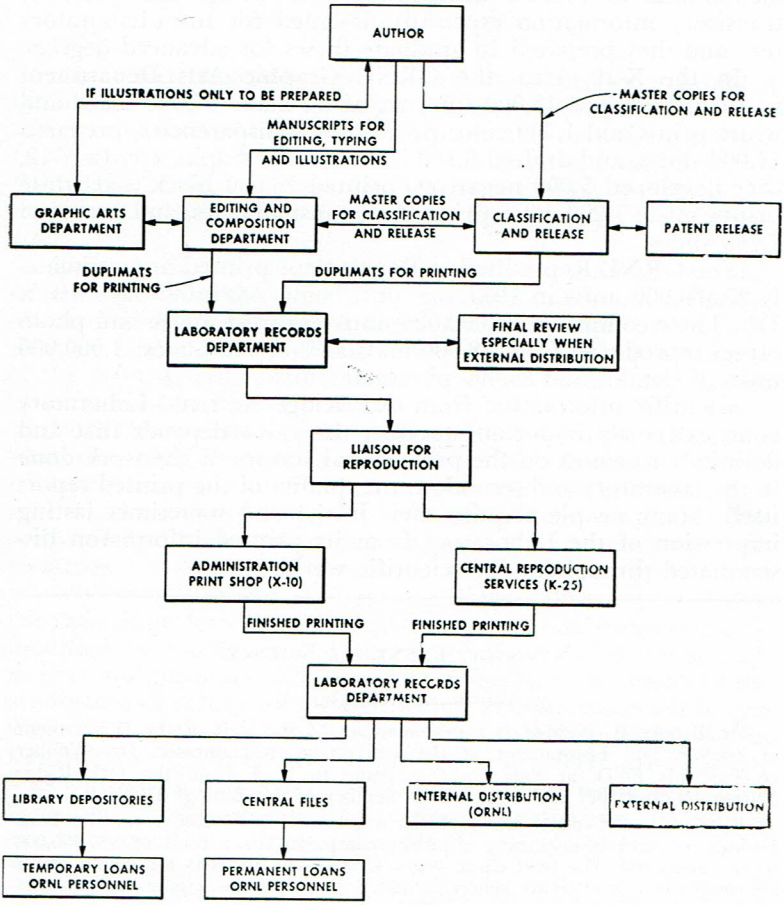

Fig. 1 Flow Chart for ORNL Reports and CF Memoranda.

for possible correction and revision. One week is allocated to internal review. Delay can be avoided if all reports are assembled and bound at one time before internal distribution. If the author has reasonable confidence that major corrections will not be necessary, he can instruct on his Reproduction Order that all copies of the report be assembled and bound prior to internal review.

A chart (Fig. 1) illustrates the flow of reports and memoranda at Oak Ridge National Laboratory.

In the calendar year 1959 staff members at Oak Ridge National Laboratory published 350 articles in the open literature; they issued 154 unclassified reports; they presented 466 papers at scientific meetings; they issued 1,581 unclassified Central File memoranda of limited distribution containing incomplete or transitory information especially designed for intra-Laboratory use; and they prepared 18 graduate theses for advanced degrees.

In the X-10 Area, the ORNL Graphic Arts Department in 1959 developed 13,000 film negatives, made 96,000 black and white prints and 1,300 color prints and transparencies, prepared 11,000 slides, and drafted 6,100 illustrations, graphs, etc. In Y-12, they developed 5,000 negatives, printed 25,000 black and white prints, made 1,200 color prints and transparencies, and prepared 2,750 slides.

The ORNL Reproduction Department printed approximately 27,300,000 units in 1959, one unit being a printed page 8½"x 11". These comprised 26,000,000 units of direct image and photo off-set reproduced from 78,000 mats and 15,000 plates; 1,000,000 units of Ozalid; and 85,000 photostat units.

Scientific information from Oak Ridge National Laboratory is an extremely important product. Its value depends first and definitely foremost on the professional stature of the work done in the laboratory and second on the quality of the printed report itself. Many people acquire their initial and sometimes lasting impression of the Laboratory from its printed informaton disseminated throughout the scientific world.

News of Tennessee Science

(continued from page 4)

Dr. Brooke B. Webber is a new member of the staff of the Department of Zoology and Entomology at the University of Tennessee. Dr. Webber received his Ph.D. at Yale and has come to U T from the Oak Ridge National Laboratory where he was a member of the Biology Division.

Vanderbilt University has received a grant of $4,000,000 from the Ford Foundation and is beginning a public campaign for a total of $30,000,000 to be raised over the next three years. One of the projects for which funds are sought is a new science center to house several of the science departments of the University.

Robert T. Lagemann of Vanderbilt University is co-author of a new textbook for secondary school physics published by the J. B. Lippincott Company.

In September, 1960, the following additions were made to the staff of the Biology Department of Vanderbilt University: David Nunnally and Luckett Davis, Instructors; Howard F. L. Rock, Assistant Professor.

Vanderbilt University has been awarded the following grants: from the National Science Foundation, for the expansion of greenhouse facilities and the establishment of a cytotaxonomy research laboratory, $13,600 — to be

(continued on page 59)