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CRITICAL ABSTRACTS

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APPLIED MECHANICS REVIEWS

Applied Mechanics Reviews

AMR Report No. 43

CRITICAL ABSTRACTS

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Dr. Howerton, Ladies and Gentlemen:

It is a great pleasure for me to participate in your Institute, and I am very honored that I had been invited to discuss critical abstracts. May I emphasize that I am particularly pleased by the timing of this talk, but please, let me defer the explanation to the end of this presentation. I am affiliated with Applied Mechanics Reviews, at the Southwest Research Institute in San Antonio, Texas. My coauthor is Dr. Ottilie Amminger.

History of Critical Abstracts

In due respect to history, I regret that I cannot tell you that critical abstracts started with the ancient Greeks. It is true that Plutarch in his "Nine Lives" comparing famous Greeks and Romans was certainly critical, but this was the critical review of the life of a person and not a critical review of a publication. So, to go to the birth of critical abstracts, I have to skip a few centuries.

On the slide (Figure 1), we have compiled a short history of critical abstracts. You will notice the first entry is the "Journal des Scavans." This publication started in France and the background is the following: Colbert, the Secretary of Finance and Commerce of Louis XIV, realized that the members of the French Academy were engaged in intensive correspondence with each other and that the scientific material contained in those communications would be useful to others also and could be compiled in some media. The idea was the conception of the first technical journal. The Journal des Scavans contained three kinds of information. In one part, published books were criticized. Another part was, in fact, a collection of obituaries and eulogies of the lives of great scientists and their work. And, last but not least, it also contained descriptions of original research in the field of physics and chemistry.

HISTORY OF CRITICAL REVIEWS*

Year	Publication	Country
1665-	JOURNAL DES SCAVANTS	France
1665-	PHILOSOPHICAL TRANSACTIONS	Great Britain
1845-1918	FORTSCHRITTE DER PHYSIK	Germany
1931-	ZENTRALBLATT FUER MATHEMATIK	Germany
1934-1937	ZENTRALBLATT FUER MECHANIK	Germany
1940-	MATHEMATICAL REVIEWS	USA
1948-	APPLIED MECHANICS REVIEWS	USA
1953-	REFERATIVNYI ZHURNAL MEKHANIKA	USSR
1949-	PHARMACOLOGICAL REVIEW	USA

*Several current critical review magazines not listed

Figure 1

A few months later, the "Philosophical Transactions" were started in Great Britain and, as you know, they were initiated and sponsored by the Royal Society. It is interesting that both the Journal des Scavans and the Philosophical Transactions are still in existence, except that the word "Scavans" is now spelled "Savants." From then on, there was a long pause until 1845, when the magazine "Fortschritte der Physik" was started in Germany. Since the beginning of the 20th century there has been however, continued activity in the field of critical abstract magazines. In Germany, the "Zentralblatt fuer Mathematik" was started in 1931 and "Zentralblatt fuer Mechanik" in 1934. In this country, "Mathematical Reviews" was launched in 1940, and the first volume of Applied Mechanics Reviews appeared in 1948. In the USSR, the Referativnyi Zhurnal Mekhanika, AMR's counterpart, began in 1953. There are quite a few critical magazines which I do not list on the slide. But, just as an example of another kind of review magazine, the "Pharmacological Review" is listed which is different from the others given in the table, insofar as it is an annual evaluation written by one person surveying the specific field and critically evaluating pertinent publications. You will have noticed that the critical review journals are all dealing with the physical sciences, except the last mentioned which is in the field of medicine or life sciences. I would like to mention that workers in life sciences are relying much more on Indexes and Title Listings than on Abstract Services.

Incidentally, it is quite interesting to notice: the Referativnyi Zhurnal Mekhanika is only one of the twenty magazines of the Referativnyi Zhurnal series. The format, printing, etc., of this Zhurnal are exactly the same as the other Referativnyi Zhurnals. There is, however, a great variation with regard to criticality. The difference is the greatest between the chemistry and mechanics section. The first contains plain abstracts; in the mechanics section, however, the abstracts are critical evaluations. The situation thus is somewhat similar to the situation in this country with Chem-Abstract versus Applied Mechanics Reviews. Interesting enough, the criticism is much more pointed in the USSR review journals than in the critical review magazines published in the USA.

What is Reviewed ?

I would like to say a few words about reviews. But reviews of what? First of all, we should include in the listing also unpublished manuscripts which are sent to the editor of a primary journal and which the editor sends to the "referee" or several "referees." The manuscript seen on the slide (Figure 2) is subject to a so-called confidential-type reviewing. This is the most thorough reviewing process, for based upon the opinion of the referee, the paper will either be accepted or rejected. Next, I would mention papers and books (Figure 3). They are reviewed in review magazines, and while book reviews are fewer in number, they are, nevertheless, quite important since they refer to expensive publications. The reader

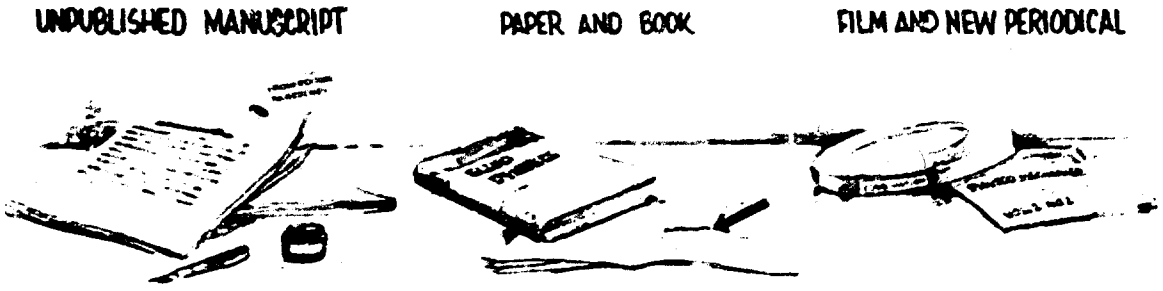

Figure 2, 3, 4,

frequently makes his decision to buy or not to buy based on a review. Then, there are some specialized critical review services such as we have recently started at Applied Mechanics Reviews, as shown on the slide (Figure 4): the critical reviewing of technical films and the critical evaluation of entirely new periodicals, i.e., Volume I, Number 1 of a magazine.

Media for Critical Reviews

Now, let us see what are the media of critical reviews (Figure 5). The medium might be a confidential letter, a critical abstract journal. It might be a primary professional magazine in which mainly original papers are published, but which may also contain critical reviews of books and other important publications.

MEDIA OF CRITICAL REVIEWS

- Confidential Letter
- Critical Abstract Journal
- Primary Professional Magazine
- Survey Articles
- Annual Reviews
- Experimental Data Sheet

Figure 5

Survey articles written by one person on a specific subject or the previously mentioned annual review belong to this category. We also included in this listing a special kind of "publication," namely, the experimental data sheet. A case in point is the practice used at Oakridge National Laboratories. Their experimental data sheets are "critical" in the sense that only those data are listed which are considered reliable.

Nomenclature

Now, let us look into the nomenclature (Figure 6). We call Applied Mechanics Reviews a critical review in the engineering sciences. I would like to compare first the terms "critical" and "evaluative." We have been using the word "critical" but we found more and more that there is, so to say, a slight stigma on it. Some people object to the word "critical" because they think in the narrow sense of the meaning of the word "critical" and consider only the derogatory aspect. We interpret the word "critical" in both ways--to point out what is outstanding, what is not good, or incorrect. In our correspondence, we now use more and more the term "evaluative." As a matter of fact, our new recently printed review form has the overprint "Evaluative Review" as a reminder.

NOMENCLATURE

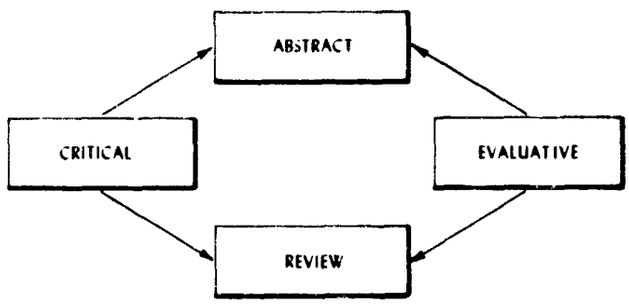

Figure 6

Now, I would like to speak about the term "abstract" versus "review." If you use the word "critical abstract," then you know that this refers to an abstract which also includes criticism either at the end or within the abstract. A few months ago, Dr. Howerton discussed the title of my talk with me and when he suggested "Critical Abstracts" as the title rather than "Critical Reviews," I was quite pleased since the term "review" actually has two meanings, namely, the compilation of reviews of individual papers or a review or survey of an entire field. So, in the following, I am going to speak about critical abstract (even when using the word review).

Purpose of Critical Abstract

What is the purpose of a critical abstract? One of the purposes of a critical abstract is to help the reader who is a scientist or an engineer or a medical doctor to decide whether to borrow, buy or acquire a specific publication (Figure 7). Sometimes, it takes weeks or months to obtain a publication, and if the

Figure 7

person has hope in it and anticipates that it might solve his problems, his disappointment will be great when he finds out that the paper is not what he expected (Figure 8). An additional purpose is to be able to put the new material in the framework of what you already know.

Figure 8

Now, I would like to discuss briefly the organization of a critical abstract (Figure 9). Any abstract gives first the bibliographic information, the "citation," which is followed by the body of the abstract. By the way, I will not discuss the organization of the abstract proper since the afternoon speaker, Mr. Burch, is going to discuss this subject in detail. In the left part of the figure, the evaluation follows the abstract. At Applied Mechanics Reviews, we feel strongly that there should be an additional part which some persons might consider a part of the evaluation, namely, the description of the optimum

ORGANIZATION OF CRITICAL ABSTRACTS

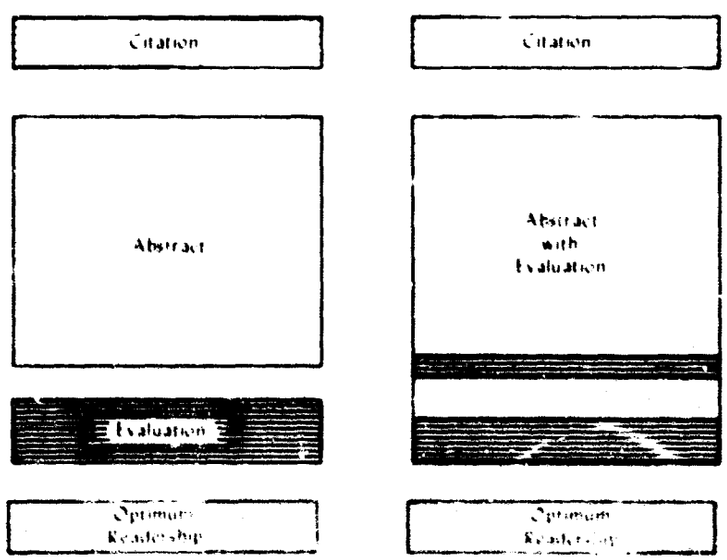

Figure 9

readership. As shown in the left side abstract, its four elements are broken down individually. At the right side of the figure, another format is shown where the evaluative comments are merged with the abstract proper. Both systems have th[illegible]ntages and disadvantages. The right hand format has the advantage that the abstract is mo[illegible]ng to read and the left hand format has the advantage that the user immediately can pin down "c[illegible] and the "readership men[illegible]an."

Time Lag

Now, let us look into the time lag between the publication date of the primary journal and the mention in the secondary journal. The amount of information a user can get from a title listing, an abstract magazine or a critical abstract magazine increases in this sequence. The time lag also increases in the same sequence. It obviously takes more time to evaluate a paper than to simply abstract it. The purpose of the customer decides which type of service he will use, if there is an alternative. While the time lag of a critical review is occasionally considerable, I will later show you how, in the near future, this time lag could be reduced radically.

Organization of the Editorial Operation of a Critical Abstract Journal

I would like to discuss very briefly with you as one example, the operation of Applied Mechanics Reviews which is outlined by the flow diagram in Figure 10. In the left column, the 900 periodicals which we receive from thirty-five countries at the AMR editorial office in the Southwest Research Institute, San Antonio, Texas, are indicated.

AMR FLOW DIAGRAM

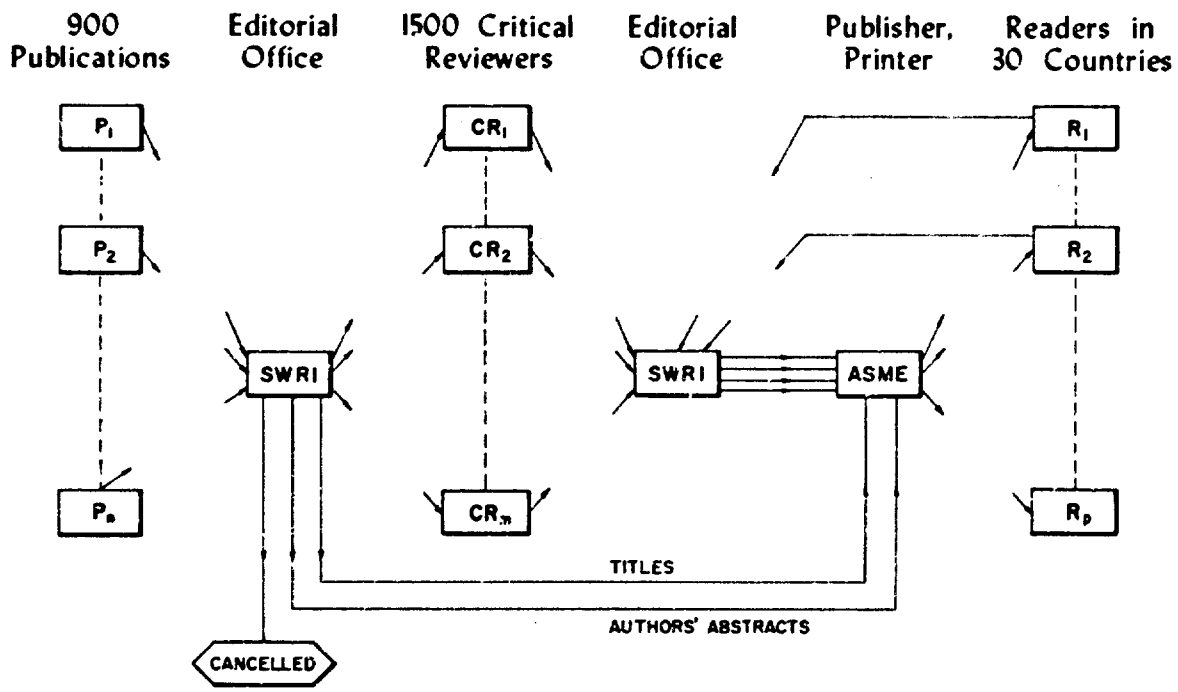

Figure 10

The publications are scanned paper by paper. As a result of this scanning, it is first decided whether to send a paper out for a critical review or to discard it. (A small fraction of papers is given by title only or by author's abstract). If it is decided to send the paper out for review, the proper subject and topicality classification is devised for matching the papers with the reviewers. Eight thousand papers are matched per year with some 1500 reviewers who reside in some twenty-six countries. The reviewers return the reviews to the editorial office and from there the reviews go to the publisher, The American Society of Mechanical Engineers in New York City. From our publisher, through our printer, the monthly issue of AMR, which is printed in 5000 copies, is forwarded to readers in some thirty countries.

I just want to mention that the scope of our magazine is such that we have serious problems due to the growth rate of literature but are still small enough that we can swiftly change our procedures and experiment with new methods without too much expense or complexity. Applied Mechanics Reviews has, for example, an experimental information retrieval project - the WADEX - Word and Authors inDEX, a computer-made index based on titles of magazines. I don't want to speak about the project, for this is not the subject of the talk.

Reviewer Invitation at AMR

The reviewer is really the most important part in the whole operation (Figure 11) and I would like to discuss briefly the invitation system. Reviewers are invited on recommendation of other reviewers. Occasionally, we receive self-solicitations. In this case, we write to other persons in the same geographic area who are our reviewers to get some notion about the person with regard to his standing, his major interests, and the type of work he is doing.

Figure 11

Also, we carefully follow the technical literature and invite as reviewers authors of outstanding publications. But this approach is not always successful. A person might be very interested in publishing, but not necessarily willing to write an adequate number of critical reviews.

Reviewer Assignment at AMR

The purpose of assignments is to match a publication with a reviewer from point of view of subject field, language, and topicality. An ideal assignment also has to take into account the reviewer's available time, major interests, phobias, etc. At AMR, assignments are presently done with a manual card file produced by data processing equipment. Random numbers are used to avoid alphabetic bias. It is recognized that the quality of the critical abstract is, to the greatest extent, a function of the proper selection of a reviewer. To get a good review, the reviewer must be interested in the paper.

The difficulties in making an ideal assignment have to be appreciated. For example, we cannot be immediately aware of changes in the reviewer's working conditions, interests, etc. Even if the specific conditions were well known, the needed response in assignment has to be based either on memory or, in case of computer assignment, on proper coding of the information. An editor of another secondary service commented one time on the difficulty to code information such as the following: one of his critical abstractors is in Viet Nam. He is teaching in the morning, working in the rice fields in the afternoon and fighting at night. He asked, "how can this be coded for the computer?"

Reviewer Motivation

What is the motivation of the reviewers? I think here we should first discuss briefly the compensating and the noncompensating system. The majority of the abstracting or critical abstracting services does not pay the abstractors. Even if they pay, the payment is quite nominal. We feel that if a professional person is spending his time to critically evaluate another person's work, he is not doing it for economic reasons. I think the most important aspect of this kind of activity is that the person feels he is making a contribution to his profession. He knows his name will be printed following the critical abstract. At universities, reviewing frequently counts as a literary, professional activity. Occasionally, we receive requests from reviewers to supply them with a list of the reviews they have written for AMR. Another fringe advantage for the reviewer is that, in many cases, he will receive a publication of interest to him much earlier than otherwise. Last, but not least, the publication becomes the property of the reviewer.

Type of Review Assignment

What kinds of review assignments do we have? We can either assign individual papers or books to a critical abstractor or an entire periodical can be sent regularly to one reviewer. From point of view of the editorial operation, the latter obviously is the simplest, most expedient method, but the evaluation of the individual papers will not be so colorful if only one reviewer is involved who might consistently make one kind of error or have a particular bias. We prefer making the assignments paper by paper. The majority of critical review magazines uses the same practice. Chemical Abstracts, which is a non-critical abstract journal and, incidentally, the oldest and largest, applies both. Many papers are assigned by CA to their abstractors individually, but they also have assignments of complete journals to one abstractor. The latter obviously requires that the periodical have a relatively homogeneous topicality. but even this method, while feasible for an abstract journal, is not advisable for a critical review magazine.

To receive good critical reviews, it is quite important to have a good review-preparation guide. But even if the guide is good and sent with every assignment, it does not guarantee that the reviewer will actually read it every time he is preparing a review. We frequently change the review-preparation guide in style or color of paper, etc., to alert him.

Translation Problems at AMR

What are the translation problems? Translation problems in critical abstracting services are, fortunately, much smaller than is generally believed. The reviewer who is an expert in the field usually reviews the article without first translating the primary publication word by word. By the way, it is estimated by experts engaged in linguistic research that in translation activities, ninety per cent of the time is taken up formulating the sentences with the proper grammar and writing out the translation, and only ten per cent understanding the text, provided the person is proficient in the language and is fairly familiar with the field. Like other critical abstracting magazines, we have problems in certain languages where we do not have an adequate number of reviewers.

Our only translation activity refers to the bibliographic information or citation and is done in the editorial office. We found three kinds of problems in connection with dictionaries: (1) If several persons are using a set of dictionaries to locate a given dictionary of a particular language; (2) If several meanings of a foreign word are given in the dictionary to pick the right one; and (3) When no equivalent term in English can be found for the foreign word. We are trying to improve this situation for our operation and I would like to describe on what we are working now. First, I would like to tell you what the activity is and then give you the name, which is really a joke rather than a proper denomination. We have systematically compiled 1,000 important technical terms in applied mechanics for the project which, from this point of view, is an activity referring to a microdictionary. But unlike other dictionaries, we will have, on the left-hand side, alphabetically merged words in ten different languages and, on the right-hand side, the corresponding English words. Worksheets were sent out to reviewers to supply us with the foreign word equivalents from memory. One and only one equivalent word is to be used. This project is not yet completed. We call it a "Babel's Bible." It is for our own use. We shall give it out also to those who helped us to compile the equivalent words.

Another difficulty of title translations, in addition to the dictionary problem, is that titles are usually very condensed and every word certainly must be properly translated to be meaningful.

Editing at AMR

Besides the usual problems of editing, there are additional problems we have to face: the problem of taking out offending statements, and believe it or not, we have quite a few. While we want to be critical, we do not want to be offending. Also, there is the problem of idiomatic English. Many foreign reviewers are not familiar with the fine nuances of words. This might result in misunderstandings. The editing tries to clarify ambiguities though there is a slight danger that the reviewer's meaning might be misinterpreted in the course of editing.

Evaluation of Critical Reviews at AMR

We state that Applied Mechanics Reviews is a critical review of the world literature in engineering sciences. We are aware that in addition to the published author's abstracts and titles, also some of the signed reviews in AMR are not critical. Therefore, we realized that we should have some method for evaluating regularly published reviews. This evaluation program has started quite recently. We did

not have any experience of our own and to our knowledge, no one else has made a similar survey. Let me describe what we do. We code each review (Figure 12). The code contains the reviewer number (each reviewer is designated by a number for data processing purposes), the volume number of AMR in which the review appeared follows, then the item number and a three digit number. This number represents the coded evaluation of the review which is done by a professional person. The first digit refers to the type of the publication, whether it is a paper or book. The second digit refers to the "degree of criticality," namely, whether the review is noncritical, slightly critical, critical, or critical with irrelevant comments. The last digit refers to the optimum readership, whether it is suggested or not. These evaluations which we have done for all reviews in the AMR issues of 1963, 1964 and 1965,

EVALUATION OF CRITICAL ABSTRACTS

Reviewer No.	Critical Abstract Number		Critical Abstract Evaluation	Explanation of Codes
	Volume	Item		
XXXXX	XX	XXXXX	XXX ABC	A=Publication ● Paper ● Book B=Degree of criticality ● Noncritical ● Slightly critical ● Critical ● Critical with irrelevant comments C=Readership suggested ● Yes ● No
Example: 20556	17	06543	131	

Figure 12

give us an idea where we stand. We can pinpoint reviewers who consistently write noncritical abstracts and those who are critical with irrelevant comments. I do not want to go into a discussion of the result of our survey, but I can assure you even this simple kind of evaluation took quite a bit of time and effort.

Publication Growth

Next, I would like to discuss the question of "literature explosion" which I prefer to call "publication growth." We have recently received a very valuable report prepared by W. Desmond at the Library of Congress (Figure 13) on this subject. In her report, she defines periodicals very conservatively. For the period 1960 to 1969, she estimates a total number of current publications around 50,000. The report

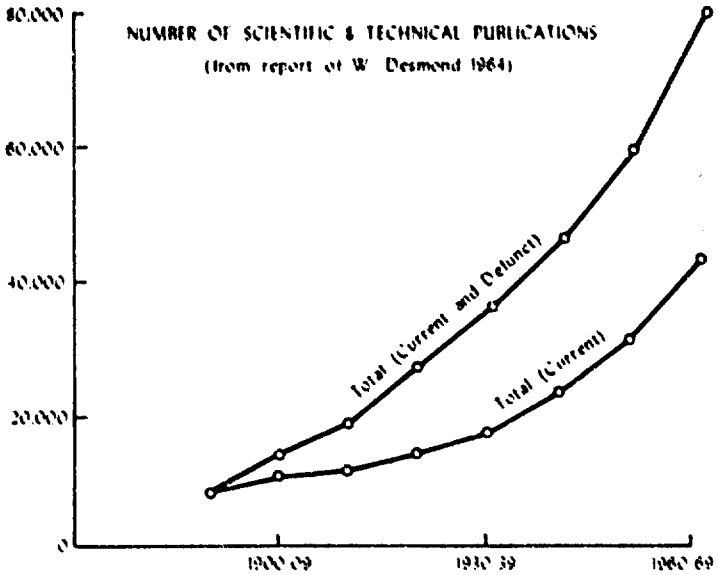

Figure 13

indicates that not only the number of periodicals is increasing, but also that the number and length of papers per periodical are on an upward trend. In addition to the increasing number and size of periodicals, another factor also complicates the situation. It is the proliferation of media available for printed communication of technical ideas. The next slide (Figure 14) gives some idea of the variety of media

SOME MEDIA FOR PRINTED TECHNICAL INFORMATION

- Thesis
- Report
- Technical Note
- Patent
- Company Publication
- Advance Copy
- Paper in Technical Magazine
- Discussion of Paper in Tech. Mag.
- Paper (in bound volume)
- Paper in trade magazine
- Symposium
- Proceedings (publ. regularly)
- Proceedings (publ. irregularly)
- Anniversary Volume
- Advances In----
- Book, Handbook.

Figure 14

for printed technical information. This list suggests that the same information may be published in different media. Unfortunately, this happens quite frequently.

Effect of Critical Abstracts on Literature Explosion

Let me show you how, according to our conviction, critical abstracts can help to curb, to some extent, the "illegitimate" part of the publication growth (Figure 15). The technical literature is exposed

INFLUENCE OF CRITICAL ABSTRACT UPON PUBLICATION GROWTH

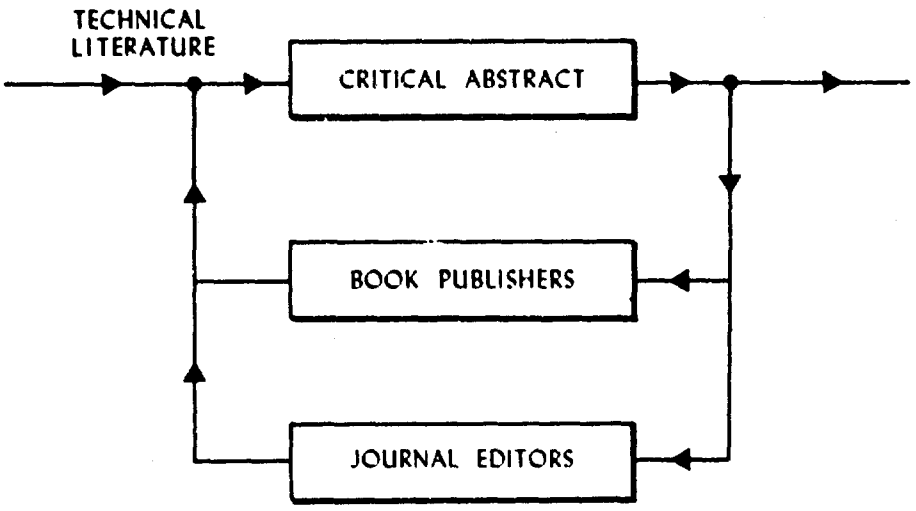

Figure 15

to the critical abstracting process, and what is published in critical reviews influences book publishers and editors of primary journals. Critical abstracts are definitely a feedback to the editors and the publishers on the value of the author's work. As a matter of fact, book reviews are considered so important that there even exists an abstract journal of critical book reviews.

Future

What about the future? No doubt, more use will be made of computers. But this might lead to either one of two extremes. One extreme is the predominant use of SDI (Selective Distribution Information) which means that only those persons who are primarily interested in it will get a particular publication or notification of it. This would lead to a smaller and smaller number of printed technical publications, and eventually result in the death of the technical periodical or journal as it now exists. I think selective information retrieval is a good thing, but I believe also that the death of the technical periodical would be a horrible situation for this would kill the author's initiative. Also, without technical magazines, there is no browsing, cross-fertilization or stimulation.

The other extreme is using computers and instant means of communication. It might sound like a Jules Verne story - what I call the TELE-REVIEW SYSTEM. The next slide (Figure 16) shows what I

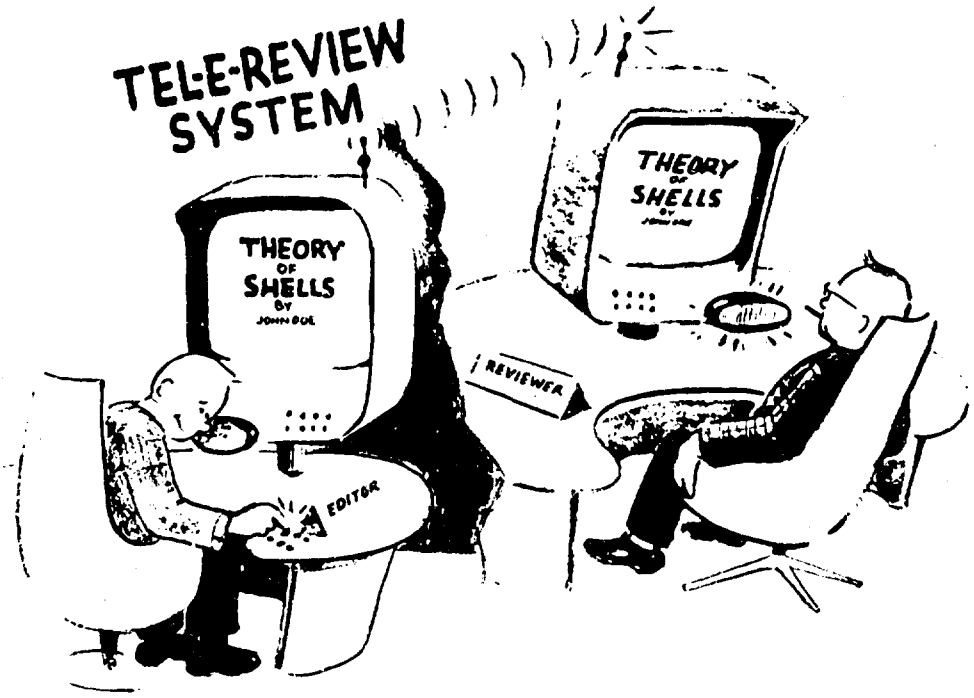

Figure 16

mean by a Tele-Review System. Editor and critical reviewer, each sits in front of a special telewriting-speaking unit. On a call signal, the title and the author's abstract of a paper would be televised from the editor to the reviewer. If the reviewer is interested in preparing a critical abstract, he pushes a button and a hard copy of the entire paper is printed out at his end. He can sperd a day or so looking the paper over. When ready, he calls the editor by pushing a button. Again a button is pushed so that the author's abstract appears once more on each screen. With an electronic pencil, the reviewer erases or adds certain words in the abstract and changes it into a critical abstract. The critical evaluation is added at the end or in the text of the abstract. This writing appears immediately in the typefont in which the critical abstract is to be published. The computer would change the print-out from one typefont to another and also justify the right hand side. The editor watches the whole activity of the reviewer on his screen. If he approves the critical abstract, then a print-out comes out at his end. Obviously, on his screen he can also make additions and deletions, thus they could communicate simultaneously in voice and in writing.

By the way, all hardware components to this dream system are already available. Only the economical aspect of this instant two-way communication has to be solved.

Summary

The purpose of critical abstracts is to help the scientific workers and engineers to decide what to buy, borrow or acquire. By using computers, the time lag of a critical abstract will radically decrease in the future. Despite extensive future use of data processing equipment and computers, the reviewer (critical abstractor) will still remain the key of the operation. Critical abstracts will certainly help to control the literature explosion. It is felt that the actual problem is to find, so to speak, a needle in the haystack. Feedback to the editors and publishers is, I think, a very important facet of critical abstracting.

Epilogue

I would like to finish this discussion by telling you that this month we celebrate the 300th anniversary of critical abstracts which were published for the first time in the Journal des Scavants which, incidentally, was also the first technical magazine.

Acknowledgment

Applied Mechanics Reviews is sponsored by several government agencies such as the National Science Foundation, the Air Force Office of Scientific Research, and the Office of Naval Research.

Dr. Joseph Shipman, Director of Linda Hall Library, helped us to compile the historical data and supplied us with photocopies from the Journal des Scavants and the Philosophical Transactions of the Royal Society. The authors express their appreciation.

Thank you.

Discussion

Chairman (Dr. Howerton): Thank you, Dr. Juhasz. Are there any questions?

Question: What is evaluated by the reviewer? The accuracy of the work, the usefulness of the work, its novelty?

Speaker: We have a checklist of items which a reviewer should consider when preparing his critical review, and I want to cite some of them: originality, sophistication, clarity, conciseness of the paper; thoroughness of investigation, experimental verification of theoretical analysis; mathematical level; errors in concept, errors in derivations; typesetting errors; familiarity with related literature; extent of referencing; mention of optimum readership. Obviously, critical abstract preparation is an art and not a science. When we assign a code number to a critical abstract, this is just to have some guide to the reviewer's accomplishment.

Question: What is the time lag between the publication of the critical abstract and the primary magazine?

Speaker: I want to tell you the two extremes. First, I start with "infinite" time lag. And I am speaking about infinity, since unfortunately in some rare occasions, the reviewer loses a publication which is very hard to obtain, and our efforts to get another copy from the publisher are unsuccessful. The other extreme is that special efforts are made to cut down the time lag as much as possible. Such an occasion presented itself in connection with the International Congress of Theoretical and Applied Mechanics last fall in Munich, Germany. AMR had a big exhibit featuring a flow diagram of Applied Mechanics Reviews, and we made an effort to show the steps involved in actually preparing a critical review. In this case, the time lag between the publication date of the magazine and the publication date in AMR was cut down to three months.

I would say that a considerable amount of our material appears in five to six months. But there is also material one or two years old, mostly critical abstracts of Soviet or Chinese literature, where we are short of reviewers. The time lag is not only a question of the speed of the reviewers and/or the speed of handling in the editorial office. Publishers also delay the procedure. We receive publications from Roumania and Poland, for example, eight to ten months after the actual publication date, and this despite the fact that we are making great efforts and also have voluntary associate editors in these countries.

Question: Would you plan to cover fields other than applied mechanics?

Speaker: Well, let us put it this way. We do not like to do so; nevertheless, we are obliged to a certain extent. For example, from the beginning in 1948, AMR has been covering the field of fluid mechanics. At that time, magnetofluiddynamic dealt only with those aspects of the field which had to do with stars and stellar nebulae. By now, we know it has to do with many topics such as the drag of a satellite or electric power generation. So, while we do not make any effort to go into new fields, we are forced, so to speak, to enter into interdisciplinary areas where one of the fields has to do with the classical applied mechanics proper. We, incidentally, interpret applied mechanics in the broad sense, as you will see from the subject list (Figure 17). This is our own list, and we have found that by using our own topic breakdown, we can adapt the field much faster to any new developments than if we use the Universal Decimal Classification. We know that by not using the UDC system we are depriving ourselves of certain advantages, but we feel that the advantages outweigh the disadvantages.

Question: Do you also publish critical abstracts originally published elsewhere?

Speaker: We are taking some translated abstracts from the Referativnyi Zhurnal: Mekhanika. They refer to papers published in magazines either not available in this country or hard-to-get. Now, I will tell you what the problem is there. The translations are made in Great Britain by the Ministry of Aviation. They have been sending them to us without charge. In earlier days, we gave credit to the source. But after we followed this practice for several years, believe it or not, they informed us that they do not want us to give them credit for translations. It appears that the translations of critical abstracts from the Referativnyi Zhurnal: Mekhanika are mostly prepared by nontechnical persons, and the quality

is often rather poor. In light of the importance of this material, however, we are still using translations from this source. Also, we are taking an insignificant number of critical abstracts from Mathematical Reviews as they, the same way, do from us.

Question: Do you have a criterion in case of adverse criticism, whether to reject a paper or not?

Speaker: If the paper is quite obviously a "rehash" of a previous publication by the same author, and does not contain any new information, and we ascertain that the base publication was reviewed, a critical abstract is not published. This decision might be made by the editors. If there is, however, the slightest doubt, the paper is sent to a reviewer whose opinion is used to tip the scale. If the adverse criticism refers to an inadequacy or indicates the controversial nature of a publication, we will send it out to a second reviewer, whom we internally call a "control reviewer." We will write him: "We have received from reviewer A (without mentioning his name) a review of so and so. Would you please give us your opinion." If reviewer B's opinion coincides with the opinion of reviewer A, then there is no problem and we do not publish a review of the paper. If the control reviewer writes that reviewer A is correct in his adverse criticism but, nevertheless, the paper has some merit, we have to make an editorial decision. Most likely, a combined review will be published. Obviously, in these cases, the time lag increases but these are probably, anyway, less important papers.

Comment: In effect, you are pinning the opinion of the reviewer against the opinion of the author, the editor of the journal, and his referees.

Speaker: Many published papers are not refereed prior to publication. Also, the referees might be of another school of thought than the author. Our reviewers represent a much broader collection of experts, due to the international nature of the reviewer corps.

If the reviewer's opinion is questioned, the "Letter to the Editor" Section allows correction. AMR's policy concerning letters to the editor is the following: When a letter to the editor is received, it is forwarded to the reviewer, and if the reviewer, in light of the author's opinion, is willing to modify his opinion, we will publish the reviewer's retraction or modification. If not, we publish, as a last word, the author's comments. Obviously, we reserve the right to change them, for occasionally, the authors write quite violently, but so might the reviewers.

Question: Do you have abstractors/reviewers actually residing behind the Iron Curtain?

Speaker: We do. We have reviewers in Czechoslovakia, Hungary, Poland and Roumania. As a matter of fact, we also had one person who resided in the United States, but after completion of his graduate study, went to Communist China. We do not have any reviewers in Russia.*

We also publish one original survey article prepared by an internationally recognized expert every month in Applied Mechanics Reviews. We have feature articles from authors in Russia, Czechoslovakia, Hungary. Last fall, I visited Poland and met quite a few of our Polish reviewers there. The standing of the Polish reviewers is quite high. They know English adequately well and their reviews are reasonably critical.

Question: In one of your slides, you have "readership suggestion, yes or no." Would you elaborate?

Speaker: Now, what we mean by "readership mention" is the following: We would like the reviewer to mention that the publication is good for a research worker, for a faculty member, for a graduate student, for an undergraduate student, and so on. For a publication which is good for one class of readership is not necessarily good for another one.

Question: What about slanting of critical abstracts?

Speaker: If the question is asked, "Is this a good critical abstract of this paper?" the question cannot be answered without knowing "what" readership it is addressing. We found again and again that when we used a critical review prepared for Mathematical Reviews by one of our reviewers (we have, namely, some reviewers in common), the reviewer usually complained that his review was written for a

*Since this paper was presented, AMR has established reviewership in Russia, mostly in the field of Automatic Control.

purely mathematically minded readership and not for Applied Mechanics Reviews. "Next time, please ask us." Now we know better. Thus, the quality of the critical review is a function not only of the paper but also the readership.

Question (Dr. Howerton): Do you have much trouble with the transliteration of Russian magazines?

Speaker: I should have mentioned this. There are at least seven kinds of transliteration systems of the Cyrillic alphabet. The National Federation of Science and Abstracting Services, of which our organization is a member, now has a standard system which is nearly identical to the British Standard. Thus, we do not have problems with our in-house transliterations. But we are getting quite a few magazines which are translated cover-to-cover (and thus, also transliterated) in this country such as, for example, the Russian magazines translated by the American Institute of Physics. We also use, as mentioned, translated critical abstracts from the Referativnyi Zhurnal: Mekhanika. This is where the problem starts. Different organizations use different transliteration systems, and even in one organization such as the Ministry of Aviation, which translates the Referativnyi Zhurnal: Mekhanika, different kinds of transliteration systems are used.

I think a real problem is that the Library of Congress, which has such a vested interest in its own system, cannot go over, without enormous effort and expense, to the British system. This is almost like changing from the British system to the metric system, or in England and Sweden to change from left-side driving to right-side driving.

Comment (Dr. Howerton): When I was a CIA, one of my jobs was concerned with the transliteration problem. There is a law, as you know, that the "Board on Geographic Names" has to use one and only one given transliteration system for all the geographic names throughout the world. We were trying to enforce this law within our agency. A very superficial survey showed that nine separate transliteration systems were being used for the Cyrillic alphabet alone, and the situation was still worse with Japanese, Chinese and other non-alphabetic languages. I think this is probably one of the most difficult problems. We also found that in different countries outside the Iron Curtain different transliterations are made. For example, the prominent Russian chemist Chugayev is spelled in eleven different ways, and yet not all of these start with the letter "C." The first letter of his name is transliterated differently by a German, French and American transliterator. If the person who transliterates is a German, he probably transliterates the first letter as "Sh" and the Frenchman transliterates it as "Tch." If the transliterator happens to be somebody in this country, the first letter of the name probably is transliterated as "Ch." Well, you can imagine what this does. It is like indexing the American University under the letter "T".

Speaker: There is another complication, and this is in connection with Chinese and Hungarian names. As you know, in these two languages the last name is printed before the first name. Now, some of the editors try to westernize them and, therefore, disregard this habit and present authors' names in the usual way. The fact that we do not know whether the author's name is cited the usual way or not occasionally causes a horrible confusion. And I do not know what the solution is.

Question: Why is it necessary to transliterate? Why isn't it accepted to use the Russian names as they are?

Speaker: Well, I think this question is really a suggestion and an excellent one. I think as soon as character reading with computers is in operation, we will not have to transliterate, but only to transpose the Cyrillic letters into another typefont. Incidentally, I want to point out that Mathematical Reviews is not translating its German, French and Italian reviews. They are published in the original language. Now, this has, obviously, the advantage that all ambiguity due to translation is avoided, but on the other side, it excludes a part of the readership who does not know the languages.

Comment (Dr. Howerton): Sometimes reverse transliteration becomes a problem; for example, my name starts with "H" in English, and as there is no "H" in the Russian language, it comes out as "GOVERTON" in Russian. And if you try to come back with it then, for example, in a citation index, I would be buried as a "G" instead of being under "H".

Question: How do you treat magazines which are translated cover to cover? Is a reviewer from U.S.A. or abroad selected?

Speaker: Articles appearing in magazines which are translated cover-to-cover are critically reviewed if in AMR's field. Whether the original or translated articles are used depends upon availability of reviewers in the given language and field. In case of reviewing a publication in a foreign language, the selection of a reviewer, whether in this country or abroad, also depends upon availability. Incidentally, the fact that the reviewer is abroad is really not a delay factor as publications sent by airmail can arrive anywhere within 3 or 4 days. Mail to India, Japan and Australia takes a little longer. The only factor you might consider is that if you use airmail, you lose the advantage of the low book rate. Thus, bulky books are not sent too far away for review purpose.

Question: I don't quite understand the criteria you use for refusing to publish a critical review. Can you go over that again?

Speaker: In case of books, their level occasionally is quite elementary and this might be stated by the reviewer. Then his suggestion can be taken as a hint that no critical review should be published. In case of a book in the field of AMR and on AMR readership level, however, a critical abstract will be included in AMR even if the reviewer outlines quite a few shortcomings. In case of papers, no review is published of the paper if it does not contain any novelty, and the fact is ascertained by a "control reviewer," and a review of the original publication has appeared in AMR. Very rarely, papers are excluded which claim originality even if two reviewers of different schools or different geographical areas agree that the paper has erroneous conclusion, faulty derivation, definitions are lacking, etc.

Closing (Dr. Howerton): Thank you, Dr. Juhasz.

SUBJECT LIST

APPLIED MECHANICS Reviews

Editorial Office APPLIED MECHANICS REVIEWS, Southwest Research Inst
Subscription and Production Office: The American Society of Mec
345 East 47th Street, New Y

GENERAL

ANALYTICAL METHODS IN APPLIED MECHANICS
Matrix, vector and tensor analysis
Ordinary differential equations
Partial differential equations
Integral and integro-differential equations
Complex variable theory
Variational principles
Dimensional analysis and similitude
Statistics and probability
Operational calculus
Special mathematical functions and tables

COMPUTING METHODS AND PROGRAMMING
Numerical analysis
Coding and programming of computers
Data processing and radiation

ANALOGIES
Analogies primarily in solid mechanics
Analogies primarily in fluid mechanics
Analogies primarily in heat
Analogies involving mixed fields
Analog simulation

KINEMATICS, RIGID DYNAMICS
Mechanisms, general
Mechanisms, particle motion
Rigid body dynamics
General theory of dynamical systems
Gyroscopic and gyroscopic effects

AUTOMATIC CONTROL
Linear control theory
Nonlinear control theory
Statistical theory of control systems
Stability considerations
Open loop systems
Digital control systems
Sampling and sampled systems
Adaptive systems
Optimizing systems
Controllers
Controlled processes or systems, automation
Questions systems
Control components and instrumentation

MECHANICS OF SOLIDS

ELASTICITY
Nonlinear theory and finite deformations
Two-dimensional problems
Three-dimensional problems
Stress concentration, discontinuity, stress and notch effect
Min. principal stresses and theorems
Torsion and flexure
Contact problems
Anisotropic media
Nonhomogeneous media
Granular media
Elastic dislocations
Experimental techniques and measurements

VISCOELASTICITY
Continuum theory
Nonlinear theory and finite deformations
Creep and stress relaxation
Anisotropic media
Nonhomogeneous media
Physical theory and mechanisms
Experimental techniques and measurements

PLASTICITY
Continuum theory
Limit analysis
Work hardening
Anisotropic media
Nonhomogeneous media
Physical theory and mechanisms
(dislocations, etc.)
Experimental techniques and measurements

STRINGS, RODS AND BEAMS
Strings
Beam bending, torsion
Beams and rods on elastic foundation
Curved beam, rings
Finite deformations, beams
Anisotropic beams
Nonhomogeneous beams
Combined bending
Buckling beams and shafts
Experimental techniques and measurements

MEMBRANES, PLATES AND SHELLS
Membrane theory
Plates, flexure and torsion
Plates on elastic foundations
Shells, flexure and torsion
Stiffeners and sandwich plates and shells
Finite deformations of membranes, plates and shells
Anisotropic membranes, plates and shells
Nonhomogeneous membranes, plates and shells
Thick plates and shells
Bulging discs and shells
Experimental techniques and measurements

BUCKLING
General theory of elastic and plastic stability
Columns and struts
Rings and arches
Framed structures
Plates
Shells
Plates and pressure vessels
Buckling under dynamic loads
Various buckling (creep buckling)
Postbuckling behavior
Experimental techniques and measurements

VIBRATIONS OF SOLIDS
Theory of small oscillations
Theory of nonlinear oscillations
Strings and membranes
Beams
Rotating shafts, critical speeds
Plates, discs and blades
Shells
Structures and foundations
Vehicles, ships and aerospace craft
Machines, machine tools and bearings
Damping, internal friction
Isolation and absorbers
Random excitation
Self excitation
Experimental techniques and measurements

WAVE MOTION AND IMPACT IN SOLIDS
General theory of wave propagation and dispersion
Elastic waves in rods and bars
Elastic waves in plates and shells
Elastic waves in infinite and semi-infinite media
Anelastic waves
Viscoelastic waves
Anisotropic media
Layered and inhomogeneous media
Granular media
Impact, general
Dynamic loads on structures, vehicles, ships and aerospace craft
Shock waves in solids
Fracture due to dynamic loading
Thermoelastic certification
Experimental techniques and measurements

SOIL MECHANICS (FUNDAMENTAL)
Physical and mechanical properties of soil
Soil classification systems
Stress-strain relationship, shear strength
Stresses and displacement in single and multi-layered systems
Plasticity
Dynamics
Mechanical and chemical soil stabilization
Creep
Stability calculations, bearing capacity
Frost and permafrost
Lateral earth pressure
Experimental techniques and measurements

SOIL MECHANICS (APPLIED)
Piling and pile foundations
Spread foundations
Mass, mat and raft foundations
Earth pressure on structures
Earth dams
Highways, runways and railways
Soil trafficability
Field testing and sampling equipment

MATERIAL PROCESSING
Application of plasticity theory
Forging
Extrusion
Rolling
Wire drawing
Deep drawing
Cutting and metals
Casting
Welded structures

FRACTURE (INCLUDING FATIGUE)
Ductile and creep fracture
Brittle fracture
Fatigue
Corrosion fatigue
Stress corrosion
Atomic theory and mechanisms
Experimental techniques and measurements

EXPERIMENTAL STRESS ANALYSIS
Model studies (analogue and scale models)
Photoelasticity
Electrical resistance strain gages and circuits
Mechanical, optical and other techniques
Brittle coating and other surface methods
X-ray techniques
Residual stress measurement
Recording techniques

MATERIAL TEST TECHNIQUES
Axial loading
Flexural loading
Torsional loading
Combined loads
Repeated loading and fatigue
Dynamic loading, impact, etc.
Hardness
High pressure testing
Vacuum testing
Nondestructive testing
Testing equipment

PROPERTIES OF ENGINEERING MATERIALS
Fundamental properties of metals
Wood, wood products, paper, etc.
Concrete
Glass
Rocks
Plastics and polymers
Rubber and elastomers

STRUCTURES (SIMPLE)
Statically indeterminate structures
Reinforced constructions
Prestressed construction
Sandwich construction
Two- and three-dimensional frames
Arches
Residual stresses in structures
Shock mounted elements
Experimental techniques and measurements

STRUCTURES (COMPOSITE)
Bridges
Dams and spillways
Tunnels
Cantilevered structures
Pressure vessels
Piping systems
Filament wound structures
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Ground vehicles
Ships
Aircraft
Space vehicles
Experimental techniques and measurements

MACHINE ELEMENTS AND MACHINE DESIGN
Kinematics of gears
Synthesis of mechanisms
Interference fit and overhange
Bolts, shafts and cables
Cams
Springs
Coupling, clutches and brakes
Gears, gear trains and friction wheels
Gaskets, seals and packing
Linkages
Mechanisms
Theory and philosophy

FASTENING AND JOINING METHODS
Screws, bolts, nuts
Rivets
Welding
Adhesives

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Continuum theory
Statistical theory
Nonnewtonian flow
Volume viscosity
Normal stresses
Secondary flow
Non-brownian
Dynamical behavior (normal stress relaxation in fluids)
Colloids and suspensions
Physical theory and mechanisms
Experimental techniques and measurements

HYDRAULICS
Physical properties of liquids (viscosity, surface tension, compressibility, etc.)
Closed conduit flow
Orifices, nozzles, valves, gates, etc.
Open channel flow, backwater curves and hydraulic jump
Forces on hydraulic structures
Flow around submerged bodies
Cavitation
Experimental techniques and measurements

INCOMPRESSIBLE FLOW (NONVISCOUS)
Irrotational
Rotational
Multiphase
Multifluid
Stratified
Flow with chemical reaction
Secondary
Jets, wakes, cavities
Unsteady
Added mass

INCOMPRESSIBLE FLOW (VISCOUS)
Irrotational
Rotational
Multiphase
Multifluid
Stratified
Flow with chemical reaction
Secondary
Jets, wakes, cavities
Unsteady
Added mass

COMPRESSIBLE FLOW (CONTINUUM AND NONCONTINUUM FLOW)
Subsonic
Transonic
Supersonic
Hypersonic
Shock waves
Condensation
Rarefied gas dynamics (slip and free molecule flow)
Jets, nozzles, ejectors and diffusers
Aerothermochemistry
Unsteady

BOUNDARY LAYER
Laminar, incompressible
Turbulent, incompressible
Thermal, incompressible
Compressible
Hypersonic
Three-dimensional
Unsteady
Transition
Separation
Control
Shock wave interaction
Chemical reaction
Unsteady
Experimental techniques and measurements

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Homogeneous, compressible
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Shear flow in pipe
Shear flow in wake
Diffusion and heat transfer
Experimental techniques and measurements

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Wings
Pressure distribution on airfoils and wings
Control surfaces
High lift devices
Drag
Interference
Performance
Flight path and trajectories
Static stability
Dynamic stability
Gust and buffet loads
Lift

VIBRATION AND WAVE MOTION IN FLUIDS
Vibration in fluids
Theory of wave motion
Finite amplitude waves
Gravity waves
Capillary waves
Pressure waves
Statistical analysis of surface waves
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Interface phenomena
Waves in ducts and on open channels
Surging, pulsating
Water hammer
Impact between solids and fluids
Experimental techniques and measurements

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Cascades of airfoils
Turbines
Centrifugal fans, pumps and compressors
Axial fans, pumps and compressors
Mixed flow compressors
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Hydrostatic flow machines
Propellers acting in liquid
Propellers acting in gas
Hydrogen rotors
Starting effects
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Direction of flow
Viscosity
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Subsonic wind tunnels
Transonic, supersonic and hypersonic wind tunnels
Wind and water tunnel connection
High enthalpy tunnels
Shock tubes
Flight testing techniques and instruments

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Statistical mechanics
Irreversible
Cycles and systems
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Thermodynamic properties of gases and gaseous mixtures
Theory of liquids
Thermodynamic properties of liquids and liquid mixtures
Theory of solids
Thermodynamic properties of solids
Thermodynamics of low temperatures
Heat pumps, refrigeration and air conditioning
Temperature measurement
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Convection without body forces
Convection with body forces
Heat transfer in liquid metals
Heat transfer in gases at high velocity
Heat transfer in gases at low density
Radiation
Boiling and condensation
Combustion
Mass transfer (evaporation)
Mass transfer (ablation cooling)
Heat transfer equipment
Mass transfer equipment
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Regenerators
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Ignition
Laminar flame propagation and inflammability theory
Turbulent flame propagation and stabilization
Interaction of flames and surfaces (quenching, flashback)
Kinetics and mechanisms
Unsteady combustion (combustion dynamics)
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Burners and furnaces
Engines and rockets
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Liquid fuels
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Internal combustion engines, reciprocating
Free piston engines and wave engines
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Ionic, electric and photonic propulsion
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Solar heat
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Rotating flows
Turbulence (continuum approach)
Instability in plasmas
Waves (continuum approach)
Transport phenomena in plasmas
Collision dominated (particle approach)
Interaction of plasmas with external fields
Plasma radiation
Heat transfer in plasmas
Shocks in plasmas
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Lift drag problems
Propulsion problems
Electromechanical energy conversion
Thermomagnetic energy conversion
Liquid metals pumps
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General theory of flutter
Flutter coefficients and tables
Flutter of wings, tails and control surfaces
Flutter of propellers and rotors
Panel flutter
Aerodynamic excitation of turbo machine blades
Aerodynamic damping
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Buffeting and gust response
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Aerodynamic effects on structures
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THERMAL EFFECTS IN SOLIDS
Thermoelasticity (small deformations)
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Thermoelastic stability
Thermal stress in structures
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Thermal buckling
Thermal properties
Thermodynamic properties
Composite materials
Structures
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Experimental techniques

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Seaplanes and flying boats
Gliders
Helicopters
Landing gear, etc.
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Lighter than air craft
Rocketers

ASTRONAUTICS
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Orbit mechanics
Space navigation
Space vehicle
Space Propulsion
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Lunar mission
Interplanetary missions

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Detonation
Line of ballistics
Motion of and near
Guns
Fuzes
Experimental techniques

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Sound generation by
Sound generation by
Aerothermodynamics
Noise
Diffraction, refraction, absorption, orthogonality
Sound in solids
Sound in air
Ultrasonics
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MICROMERITICS
Physical properties of
Shape, size distribution measurement
Characteristics of powders under pressure
Dynamics of powders
Transport of powders
Fluids
Sprays and aerosols
Atomization
Transport of particles
Experimental techniques

POROUS MEDIA
Fluid mechanics of fluids
Seepage in
Non-uniform flow in soil
Flow in bottom of
Flow in bottom of
Dynamics of
Thermodynamics
Heat
Experimental techniques

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APPLIED MECHANICS Reviews

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MATERIAL TEST TECHNIQUES
Axial loading
Flexural loading
Torsional loading
Combined loads
Repeated loading and fatigue
Dynamic loading, impact, etc
Hardness
High pressure testing
Strength testing
Nondestructive testing
Testing equipment

PROPERTIES OF ENGINEERING MATERIALS
Fundamental properties of metals
Wood, wood products, paper, etc
Ceramics
Glass
Rocks
Plastics and polymers
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STRUCTURES (SIMPLE)
Statically determinate structures
Bending of beams
Plane stress, torsion
Simplified construction
Tanks and other containers and cylinders
Arches
Resilient mounts or structures
Shock resistant structures
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STRUCTURES (COMPOSITE)
Bridges
Dams and spillways
Tunnels
Continuous structures
Pressure vessels
Piping systems
Thin-walled structures
Buildings, shear type, membrane, etc
Ground vibration
Ships
Aircraft
Space vehicles
Experimental techniques and measurements

MACHINE ELEMENTS AND MACHINE DESIGN
Kinematics of gears
Synthesis of machine elements
Lubrication, friction and wear
Bearings, journal and rolling
Cams
Springs
Coupling, clutches and brakes
Gears, gear trains and friction drives
Universal joints and packing
Linkages
Flywheels
Theory and philosophy

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Mass transfer (ablation cooling)
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Mass transfer equipment
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Unsteady combustion, combustion instabilities
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Boilers and furnaces
Engines and rockets
Solid fuels
Liquid fuels
Oxidizers
Experimental techniques and measurements

PRIME MOVERS AND PROPULSION DEVICES
Steam engines and turbines
Internal combustion engines, reciprocating
Free piston engines and valve engines
Gas turbines
Combustors and afterburners
Rocket motors
Jet engines
Nuclear power systems
Ion, electric and plasma propulsion
Energy conversion fluids
Solar spin
Experimental techniques and measurements

COMBINED FIELDS AND MISCELLANEOUS

MAGNETO-FLUID-DYNAMICS
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Panel flutter
Aerodynamic excitation of turbo machine blades
Aerodynamic excitation of structures
Nonlinear flutter problems (large amplitude, limit cycle)
Stability derivatives (divergence, control surface reversal)
Buffeting and gust response
Aerothermoelasticity
Aeroelastic effects on flight stability
Experimental techniques and measurements

THERMAL EFFECTS AND PROPERTIES OF SOLIDS
Thermoelasticity (steady)
Thermoelasticity (transient)
Thermoplasticity
Thermoviscoelasticity
Thermal shock and thermal fatigue (unsteady, cycling)
Thermal buckling
Mechanical properties
Thermophysical properties
Composite materials
Structures
Experimental techniques at high temperatures
Experimental techniques at low temperatures

AERONAUTICS
Airplanes
VTOL/STOL aircraft
Seaplanes and flying boats
Gliders
Helicopters
Landing gear, etc
Ground effect machines
Lighter than air craft
Parachutes

ASTRONAUTICS
Celestial Mechanics
Orbit Mechanics
Space Navigation & Guidance
Space Vehicle Stabilization
Space Propulsion
Space Power
Space vehicle design
Artificial earth satellites
Lunar missions
Interplanetary missions

BALLISTICS, EXPLOSIONS
Detonation
Interior ballistics
Morphological and material aspects
Guns
Exterior ballistics, hypervelocity
Explosions, terminal ballistics
Explosion hydrodynamics
Experimental techniques and measurements

ACOUSTICS
Sound generation by moving surfaces
Sound generation by flow
Aerothermoacoustics
Noise
Diffraction, refraction, reflection and dispersion
Absorption, attenuation and acoustic properties of materials
Sound in solids
Sound in liquids
Ultrasonics
Experimental techniques and measurements

MICROMERITICS
Physical properties of particles
Shape, size distribution of particles and measurements
Characteristics of packings (behavior of particles under pressure)
Dynamics of small particles
Transport of particles by liquids and high viscosity fluids
Sprays and drop size
Aerosols
Transport of particles by gas, dust cloud
Experimental techniques and measurements

POROUS MEDIA
Fundamentals of fluid flow in porous media
Seepage, infiltration
Multiphase flow in porous solids
Elastic behavior of liquid filled solids
Plastic behavior of liquid filled solids
Dynamical aspects of liquid filled solids
Thermodynamics, heat transfer and combustion in liquid filled solids
Reservoir engineering (steady state)
Reservoir engineering (transient)
Well logging
Rock mechanics
Experimental techniques and measurements

GEOPHYSICS, HYDROLOGY, OCEANOGRAPHY AND METEOROLOGY
Seismology
Plasticity in geophysics
Heat transfer in geophysics
Experimental techniques and measurements in geophysics
Hydrology
Dynamic oceanography (currents, water, tides, surge)
Experimental techniques and measurements in hydrology and oceanography
Dynamic meteorology
Thermodynamics of the atmosphere
Solar energy and its utilization
Synoptic meteorology and climatology
Applied meteorology (engineering and industrial applications)
Experimental techniques and measurements in meteorology

NAVAL ARCHITECTURE
Ship resistance
Ship motion and dynamics
Ship steering
Hydroelasticity
Ship stabilization
Ship propulsion
Control surfaces
Hydrofoil craft
Submarines
Experimental techniques and measurements

FRICTION, WEAR AND LUBRICATION
Friction and wear
Hydrodynamic and hydrostatic lubrication
Boundary lubrication
Elastohydrodynamic lubrication
Experimental techniques and measurements in friction, wear and lubrication
Dry film bearings
Hydrodynamic and hydrostatic bearings, gas bearings
Rolling contact bearings
Unconventional bearings (electronic, magnetic, vacuum, etc)
Gear lubrication
Experimental techniques and measurements in bearings and gears

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13. ABSTRACT
A brief history of critical abstracts is given. The meaning of the words "critical", "evaluative", "abstract" and "review" is discussed. The media of critical abstracts are outlined. Purpose and organization of critical abstracts are examined. The set-up of the editorial operation of a critical abstract journal such as AMR is described. APPLIED MECHANICS REVIEWS scans 900 technical magazines and relies on the voluntary help of 1500 expert critical abstractors in 30 countries. AMR is edited at Southwest Research Institute, and published by American Society of Mechanical Engineers and sponsored by several government agencies. Even with extensive use of data processing and computers in the future the critical abstractor (reviewer) will remain the key of the operation, but the time lag will be radically reduced. Reviewer invitation, motivation and assignment are discussed, and how APPLIED MECHANICS REVIEWS evaluates the critical abstracts. Discussions during the question and answer period referred to problems of field coverage, time lag, transliteration and slanting of critical abstracts to a certain readership. Critical abstracts have an important role in curbing the unnecessary part of literature explosion.

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