[March 1962]

Dear Prof & Mrs. Wiener,

Again a few pieces of mail. — Hope all is well with you & that you are soon in Naples. After such a trip, you must nevertheless be looking forward to some rest!

I have been very busy & also had an eye infection which is a very unpleasant thing.

Otherwise things are fine.

Best regards from Onesto, Marcus, Rebel & of course, from me.

E. R. Ritter

[ca March, 1962]

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CAMBRIDGE 39, MASS.

DEPARTMENT OF MATHEMATICS

Thursday

Dear Prof. & Mrs. Wiener,

Enclosed are those pieces of mail which will interest you or are important. There are also 2 Christmas cards — one from Mrs. van der Pol — which I shall forward by Sea Mail to Naples, because you might like to see them.

3 more invitations to speak - which I shall handle - and that was all.

Incidentally, I shall share the office with a guest, Prof. Voronoi from Woodshole, and his coming in will be arranged so that I shall not disturb him.

My very best to both of you; have a very pleasant trip!

Sincerely yours,

Eva-Maria Ritter

SECOND INTERNATIONAL CONGRESS OF CYBERNETIC MEDICINE

AMSTERDAM 16TH – 19TH APRIL 1962

All correspondence should be addressed to
Dr. J. P. SCHADÉ, Secretary-General,
Netherlands Central Institute for Brain Research
Mauritskade 59b, AMSTERDAM, the Netherlands

Amsterdam, March 1962.

Dear participant,

Enclosed you will find a map of the city of Amsterdam. We have indicated with a green cross the building of the Royal Academy of Sciences where the meetings are to be held.

You will receive the final program and the abstracts of all the papers at the registration desk which opens on Monday morning, April 16th, at 9 o'clock.

We would like to remind the speakers to submit the manuscripts during or shortly after the conference.

Wishing you a nice trip to Holland,

yours sincerely,

Dr J.P.Schadé,
secretary-general.

CHARLES BARAFF

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Dear Dr. Wiener:

I am reading your book "I am a Mathematician", and am intrigued by the fresh, candid approach revealed therein.

My background in patents includes Southworth, Townes, Guillemin + your own contributions to network theory, - also Georg.

However, my interests are more general - I studied with Prof. Gamow + Teller, who oriented me into a life interest in nucleonics + astrophysics.

If on occasions some of your brilliant ideas can be transformed by "continuous groups" to financial gain, give me a call or drop me a line.

I would at present appreciate reprints of your most significant papers or contributions — i.e. a sampling thereof.

With kindest regards,

C. B.

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DOBBS FERRY, NEW YORK

Telephone:
WADSWORTH 6-6690
RES.: DOBBS FERRY 3-0175

March 1, 1962

Dear Dr. Wiener:

I believe you know that the Council of The Royal Society of Arts decided, at its November 1961 meeting, that in the future the Benjamin Franklin Medal of the Society should be awarded in alternate years, to a citizen of the United States, and to a citizen of the United Kingdom who in the opinion of the Society has, in contributing to the encouragement of Arts, Manufactures and Commerce, forwarded the cause of Anglo-American understanding. This year the first recipient under these new arrangements is Lord Rootes, "for his work in the furtherance of Anglo-American Commerce".

In accordance with this decision the Benjamin Franklin Medal will be awarded in 1963 to an American citizen. May I therefore ask you as a Benjamin Franklin Fellow of the Society, to nominate an American citizen who in your opinion should be recommended to the Council for this award.

The name you suggest will be forwarded to the Council.

I will be grateful if you can send me this information before April 10th.

Most sincerely,
Simon Gilling

[ans 3/20/62]

TELEGR. METANODOTTI - MILANO
CASELLA POSTALE 3757 MILANO

TELEFONO: 5353

SNAM

SOCIETÀ PER AZIONI CON SEDE IN MILANO
CAPITALE L. 15.000.000.000 INTERAMENTE VERSATO

MILANO 2 Marzo 1962
S. DONATO MILANESE

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In relazione alla Vostra lettera del 26 febbraio scorso nella quale ci richiedete una proposta di programma per il Prof. Wiener, Vi prospettiamo le seguenti 2 possibilità:

1° programma

sabato 3 Marzo
ore 9.00 - partenza per Torino in auto.
ore 11.00 - arrivo a Torino e visita alla città.
ore 13.00 - colazione a " 'l caval 'd brons " P.za S. Carlo 157.
ore 15.00 - proseguimento visita alla città.
ore 20.00 - Pranzo al Ristorante Cambio P.za Carignano, 2.
- Pernottamento all'Hotel Principe di Piemonte.

domenica 4 Marzo
ore 9.00 - Partenza per Stresa e colazione sul lago a piacere.
ore 15.00 - Proseguimento per Intra. Traghetto per Laveno, trasferimento a Varese-Como, visita a Como e lungo lago.
- In serata rientro a Milano.

2° programma

sabato 3 Marzo
ore 8.00 - Partenza per Venezia.
ore 12.00 - Arrivo a Venezia e sistemazione al

./.

l'Hotel Danieli. Pomeriggio visita alla città e pernottamento a Venezia.

domenica 4 Marzo

ore 10.00 - Partenza per Sirmione.
ore 13.00 - Arrivo a Sirmione e colazione sul lago.
- Gita sulla Gardesana Occidentale.
- Rientro a Milano in serata.

Restiamo a Vostra disposizione per ulteriori dettagli in caso di accettazione di uno dei due programmi indicati.

Distinti saluti.

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(Dott. F. de Peverelli)

Cassia Road from Florence to Rome

Rome to Naples via Appia Route

1 MAR. 1962

Prof.
Norbert WIENER
Massachusetts Institute of Technology
CAMBRIDGE 39, MASS.
(U.S.A.)

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phone/locust 4-4400 cable/currcon twx/ph 803

March 2, 1962

Dr. N. Wiener
Massachusetts Inst. of Technology
Cambridge 39, Mass.

Dear Dr. Wiener:

The Institute for Scientific Information is engaged in a research project with the support of the National Institutes of Health. The project is briefly described in the enclosed reprint which appeared in the Journal of Heredity.

Also enclosed are a few reprints discussing the general idea of citation indexes. Finally, there is also enclosed some experimental computer tabulations based on recent experiments we have conducted.

We would sincerely appreciate any comments you would wish to make concerning this work and your thoughts as to the potential value of a citation index in your own work.

We would be glad to send you any additional citation index listings you may request for any specific authors in whom you are interested.

Sincerely yours,

Eugene Garfield

Eugene Garfield
Director

EG/SS
Encls.

[ans 5/31/62]

Reprinted from SCIENCE, July 15, 1955, Vol. 122, No. 3159, pages 108–111.

Citation Indexes for Science

A New Dimension in Documentation through Association of Ideas

Eugene Garfield

"The uncritical citation of disputed data by a writer, whether it be deliberate or not, is a serious matter. Of course, knowingly propagandizing unsubstantiated claims is particularly abhorrent, but just as many naive students may be swayed by unfounded assertions presented by a writer who is unaware of the criticisms. Buried in scholarly journals, critical notes are increasingly likely to be overlooked with the passage of time, while the studies to which they pertain, having been reported more widely, are apt to be rediscovered." (*1*)

In this paper I propose a bibliographic system for science literature that can eliminate the uncritical citation of fraudulent, incomplete, or obsolete data by making it possible for the conscientious scholar to be aware of criticisms of earlier papers. It is too much to expect a research worker to spend an inordinate amount of time searching for the bibliographic descendants of antecedent papers. It would not be excessive to demand that the thorough scholar check all papers that have cited or criticized such papers, if they could be located quickly. The citation index makes this check practicable. Even if there were no other use for a citation index than that of minimizing the citation of poor data, the index would be well worth the effort required to compile it.

This paper considers the possible utility of a citation index that offers a new approach to subject control of the literature of science. By virtue of its different construction, it tends to bring together material that would never be collated by the usual subject indexing. It is best described as an association-of-ideas index, and it gives the reader as much leeway as he requires. Suggestiveness through association-of-ideas is offered by conventional subject indexes but only within the limits of a particular subject heading.

If one considers the book as the macro unit of thought and the periodical article the micro unit of thought, then the citation index in some respects deals in the submicro or molecular unit of thought. It is here that most indexes are inadequate, because the scientist is quite often concerned with a particular idea rather than with a complete concept. "Thought" indexes can be extremely useful if they are properly conceived and developed.

In the literature-searching process, indexes play only a small, although significant, part. Those who seek comprehensive indexes to the literature of science fail to point out that such indexes, although they may be desirable, will provide only a better *starting point* than the one provided in the selective indexes at present available. One of the basic difficulties is to build subject indexes that can anticipate the infinite number of possible approaches the scientist may require. Proponents of classified indexes may suggest that classification is the solution to this problem, but this is by no means the case. Classified indexes are also dependent upon a subject analysis of individual articles and, at best, offer us better consistency of indexing rather than greater specificity or multiplicity in the subject approach. Similarly, terminology is important, but even an ideal standardization of terminology and nomenclature will not solve the problem of subject analysis.

What seems to be needed, then, in addition to better and more comprehensive indexes, alphabetical and classified, are new types of bibliographic tools that can help to span the gap between the subject approach of those who create documents —that is, authors—and the subject approach of the scientist who seeks information.

Since 1873 the legal profession has been provided with an invaluable research tool known as *Shepard's Citations,* published by Shepard's Citations, Inc., Colorado Springs, Colo. (*2*). A citation index is published for court cases in the 48 states as well as for cases in Federal courts. Briefly, the Shepard citation system is a listing of individual American court cases, each case being followed by a complete history, written in a simple code. Under each case is given a record of the publications that have *referred* to the case, the other court decisions that have affected the case, and any other references that may be of value to the lawyer. This type of listing is particularly important to the lawyer, because, in law, much is based on precedent.

Citation indexes depend on a simple system of coding entries, one that requires minimum space and facilitates the gathering together of a great volume of material. However, a code is not absolutely necessary if one chooses to compile a systematic listing of individual cases or reports, with a complete bibliographic history of each of them. Thus, it would be possible to list all pertinent references under each case with sufficient com-

Mr. Garfield is Director of the Institute of Scientific Information, 1122 Spring Garden Street, Philadelphia 23, Pa.

pleteness to give the index more of the appearance of a bibliography. However, this would result in an extremely bulky volume.

There are analogies in bibliographic operations. For example, in cataloging books for booksellers' or library catalogs, an attempt is made to find references to each book in one or more authoritative bibliographic sources, such as the catalogs of the British Museum (BM), Bibliothèque Nationale (BN), or the Library of Congress (LC). The "authority" card used in cataloging sometimes looks like a Shepard entry.

Another example is a book-review digest, in which one finds for each book title a series of references and selections from published reviews, critical and otherwise. Certain indexing publications perform a similar function.

Some time ago I became concerned with the problem of developing a citation code for science. This was necessary for the efficient manipulation by mechanical devices of entries to scientific indexes. In the course of this research I developed a very simple system for identifying an individual scientific article that had appeared in the periodical press. The resulting numerical code consisted of two parts. The first part was a serial number, used instead of an abbreviation, to identify each periodical; it was similar to the serial numbers employed in the *World List of Scientific Periodicals*, by no means a new idea. For example, *Die Bibliographie der fremdsprachigen Zeitschriften Literatur* has for many years used such a system to save space.

The second part of the code number was also a serial number, assigned to each article in a particular publication, starting with 1 and continuing throughout all volumes. The code thus gives no indication of year or volume number, a serious shortcoming. The article number is also not unique, having been used by the *Proceedings of the Society for Experimental Biology and Medicine* since its inception. These two serial numbers taken together, it can be seen, can identify any published periodical article. It soon became apparent, after such codes had been utilized on an experimental basis, that the use of the codes would facilitate the compilation of a citation index. (Other coding systems would be equally applicable.)

A citation index to science would have the following main characteristics. First there would be a complete alphabetic listing of all periodicals covered, in addition to the code number for each periodical. This list would be similar to the *World List*, but without the library holdings information. The main portion of the citation index would list in straight numerical order the code numbers for all the articles covered. Under each code number, for example, 3001-6789, there would be listed other code numbers representing articles that had *referred* to the article in question, together with an indication of whether the citing source was an original article, review, abstract, review article, patent, or translation, and so forth. In effect, the system would provide a complete listing, for the publications covered, of all the original articles that had referred to the article in question. This would clearly be particularly useful in historical research, when one is trying to evaluate the significance of a particular work and its impact on the literature and thinking of the period. Such an "impact factor" may be much more indicative than an absolute count of the number of a scientist's publications, which was used by Lehman (*3*) and Dennis (*4*). The "impact factor" is similar to the quantitative measure obtained by Gross (*5*) in evaluating the relative importance of scientific journals, a method later criticized by Brodman (*6*) but used again by Fussler (*7*).

Other advantages would also obtain. In a way such listings would provide each scientist with an individual clipping service. By referring to the listings for his article, an author could readily determine which other scientists were making reference to his work, thus increasing communication possibilities between scientists. It is also possible that the individual scientist thus might become aware of implications in his studies that he was not aware of before.

Most authors like to see how their works are received. Bringing together all book reviews and abstracts is very important, for it is not possible for an author to keep up with the thousands of publications in which his contribution might be reviewed. This applies equally to publishers. It would not be impossible to include books in the citation index. Indeed, as a first suggestion, the use of Library of Congress card numbers as the identifying code for books would seem appropriate.

It is necessary next to discuss some realistic questions concerned with the realization of such an index. Bitner (*8*) has estimated that 30,000 cases are covered by *Shepard's Citations* in 1 year, the cases and articles appearing in not more than a few hundred publications. In 1953 about 1 million citations were added—close to 40 citations per case.

What is the prospect in scientific literature? The last published edition of the *World List of Scientific Periodicals* contained more than 50,000 titles in science and technology. It is variously estimated that between 1 and 3 million new scientific articles are published each year. The *Journal of the American Chemical Society* alone publishes more than 3000 per year, including approximately 2000 original articles. The order of magnitude is therefore potentially from 50 to 100 times as great as it is for *Shepard's Citations*.

However, not all of these 50,000 publications are being covered in our present indexing activities, and yet this has not prevented us from continuing indexes of standard type or from starting new ones. Lack of complete coverage is not necessarily an argument against a citation index. It is in fact an argument in its favor. Coverage could perhaps be limited to the list of periodicals covered by one of the leading indexing services. This approach would, of course, have an immediate disadvantage. Such a *subject* selection would mean that less directly related subjects of interest would be excluded, and these are the publications that the individual is least likely to cover in his own research. It would be necessary to consider all the pros and cons in a selective approach and then to determine the possible utility of such a tool. For example, would a citation index to the 1500 periodicals covered by the *Current List of Medical Literature* be of real value, or, similarly, a citation index to the 5000 periodicals covered by *Chemical Abstracts?* The *Current List* would, in fact, offer a good starting point, since it already provides a unique code for the 100,000 items indexed by it each year. Presumably these are the most significant contributions in the covered fields for the year. If 10 is the number of references in the average article, then about 1 million citations would be involved. The preparation of that number annually is not unreasonable. Shepard's has already used well over 50 million citations in its publishing activities.

The ultimate success of a citation index would depend on many factors. For example, if each periodical would assign unique code numbers to the articles published, it would be possible for authors to list these numbers in their bibliographies and, thus, to save the work of coding on the part of the citation index staff. It is unlikely that such a development could take place in less than 5 or 10 years, but it is comparable to the problem of getting publishers to include Library of Congress card numbers in their publications.

When such a large volume of data is to be handled, mechanical devices of high speed and versatility could be used to great advantage and would probably determine success or failure. Once the coding is done, compilation itself is quite mechanical. This could be done by means of conventional filing slips; the Shepard organization itself has used them successfully for 80 years. However, it would be facilitated by a mechanical approach using punched cards.

The utility of a citation index in any field must also be considered from the

point of view of the transmission of ideas. A thorough scientist cannot be satisfied merely with searching the literature through indexes and bibliographies if he is going to establish the history of an idea. He must obviously do a great deal of organized, as well as eclectic, reading. The latter is necessary because it is impossible for any one person (the indexer) to anticipate all the thought processes of a user. Conventional subject indexes are thereby limited in their attempt to provide an ideal key to the literature. The same may be said of classification schemes. In tracking down the origins of an idea, the citation index can be of real help. This is well illustrated by an example from my own experience.

Many years ago the Radio Corporation of America developed a reading-aid for the blind (*9*). This device had an electronic system for converting printed letters into recognizable sound patterns. Using the device, a blind man could scan a printed page; in a set of headphones he could hear a series of sound patterns, each letter having its own recognizable sound pattern. In effect, the words were spelled out, letter by letter, in code. I was particularly interested in this device because I had been independently working on a device that would *copy* print, letter by letter, and reproduce it for bibliographic and other purposes. The two devices had something in common in that they both employed scanning devices. I then wanted to learn whether anyone had ever suggested that the RCA reading-aid could be used for this purpose. It will be apparent that if anyone had known of the RCA device and had thought of adapting it for copying purposes, a reference to the article might have been made. This reference could easily have been included in an article or patent that was not at all related to the problem of reading devices. A citation index would have given me just what I was after. Nothing could substitute for extensive reading, but a great deal of time could have been saved by bringing the appropriate works to my attention.

In the course of my reading I did find a few references to this device, one in a book (*10*), and several others in periodical articles, one of which was a German article on the mechanization of philological analyses and concordance building. The latter article (*11*) did not discuss my own special interest in copying devices, but it did show the similarity between the author's and my own thinking from the point of view of letter-recognition devices, which is what the RCA device attempts to be. In other words, both of us were interested in this device as a letter-recognition device for the analysis of text.

In another instance the RCA article was unexpectedly cited in the journal *Electronic Engineering* in an article on information theory (*12*) that I was reading because of an entirely different interest. No subject indexer could have anticipated this crossbreeding of interests. Perhaps there are many other articles and books unknown to me that have made similar references to this device. How can they be located when the main subject matter of the article is, on the surface, so unrelated in nature?

One might say that it would be possible to index articles more thoroughly to achieve the same results. For example, the article on information theory, if thoroughly indexed, might have included an entry under reading devices for the blind. Yet if this were done, our periodical indexing services would clearly become hopelessly overloaded with material that is not necessary to lead us to the micro unit—the entire article or one of its major sections. Although it might be said that no scientist interested in the greater comprehensiveness to be found in a citation index would object to having such a great mass of references in a subject index, this is impracticable. It would require an army of indexers to read the articles and identify the exact subject matter of every paragraph or sentence. Yet this would be necessary. To illustrate, it is only in the very last paragraph of the article on information theory that one would find a reference to reading devices for the blind.

Were an army of indexers available, it is still doubtful that the proper subject indexing could be made. Over the years changes in terminology take place, that vitiate the usefulness of a standard subject index. To a certain extent, this is overcome through the citation approach, for the author who has made reference to a paper 40 or 50 years old has interpreted the terminology for us. By using authors' references in compiling the citation index, we are in reality utilizing an army of indexers, for every time an author makes a reference he is in effect indexing that work from his point of view. This is especially true of review articles where each statement, with the following reference, resembles an index entry, superimposed upon which is the function of critical appraisal and interpretation. To the indexer this has its advantages as well as its disadvantages (*13*).

To determine in a practical way what the citation index could offer, it was decided to track down the citations made in one journal to a single significant article, in order to compile a sample entry for the citation index. At the suggestion of Erich Meyerhoff, I selected Hans Selye's famous article on the general adaptation syndrome (*14*). A systematic search was then made of all papers that were published in the *Journal of Clinical Endocrinology* subsequent to Selye's paper up to 1951—a period of 5 years, including well over 500 articles. Every bibliography in each of the 500 articles was checked for a reference to Selye's article. Twenty-three articles were found to make such reference; each of them was then checked for the character of the information provided.

Examination of the citation list (Table 1) shows the great variety of subject matter included. One thing became quite clear, even to the uninitiated—that is, the influence of Selye's article has been quite pronounced. Such evidence is extremely valuable to the historian.

It is interesting to note that, although all the articles cited were indexed in *Quarterly Cumulative Index Medicus*, not one is to be found there under the heading "Adaptation." In fact, it is surprising not to find any articles from this journal under this subject heading.

It also becomes quite obvious that many references to Selye's paper were general and contribute little or nothing

Table 1. Index sample based on article by Hans Selye, "General adaptation syndrome" [*J. Clin. Endocrinol.* 6, 117 (1946)]. The code number for this journal in the *World List* is 11,123a; the article number is arbitrarily taken as 687; and the code number for the article is 11123a-687. The 23 articles that cited Selye's article are listed, followed by *A hypothetical citation index entry for Selye's article*: *R*, review article; *A*, abstract; *O*, original article.

1. Williams, R. H.: Thyroid & Adrenal Interrelations, 7: 52–57 (1947).
2. Venning, E. H.: Glycogenic Corticoids, 7: 79–101 (1947).
3. Forbes, *et al.*: 17-Ketosteroids in Trauma and Disease, 7: 264–288 (1947).
4. Talbot, *et al.*: Excretion of 11-Oxycorticosteroids, 7: 331–350 (1947).
5. Castillo, E. B. del, *et al.*: Syndrome of Rudimentary Ovaries, 7: 385–422 (1947).
6. Forsham, P. H., *et al.*: Pituitary Adrenocorticotropin, 8: 15–66 (1948).
7. Pincus, G., *et al.*: Rhythm in Biped Excretion, 8: 221–226 (1948).
8. LeCompte, P. M.: Width of Adrenal Cortex in Lymphatic Leukemia, 9: 158–162 (1949).
9. Wolfson, W. Q.: 17-Ketosteroids in Gout, 9: 497–513 (1949).
10. Stein, H. J., *et al.*: Hormonal Response to Heat and Cold, 9: 529–547 (1949).
11. Davis, M. E.: Eosinophils in Pregnancy and Labor, 9: 714–724 (1949).
12. Conn, J. W.: Na and Cl of Sweat as Cortical Index, 10: 12–23 (1950).

13. Recant, L., *et al.*: Effect of Epinephrine on Eosinophils, 10: 187–229 (1950).
14. McArthur, J. W., *et al.*: Urinary Excretion of Corticosteroids in Diabetic Acidosis, 10: 307–312 (1950).
15. Bors, E.: Fertility in Paraplegic Males, 10: 381–398 (1950).
16. Grossman, S., *et al.*: Idiopathic Lactation following thoracoplasty, 10: 729–734 (1950).
17. Cooper, J. S., *et al.*: Metabolic Consequences of Spinal Cord Injury, 10: 858–870 (1950).
18. Hioco, D.: Adrenal Metabolites in Bronchial Asthma, 10: 1570–1578 (1950).
19. Jailer, J. W.: Pituitary-Adrenal System in Infants, 11: 186–192 (1951).
20. Deane, H. W.: The Adrenals in Experimental Hypertension, 11: 193–208 (1951).
21. Hioco, D., *et al.*: Epinephrine and ACTH in Bronchial Asthma, 11: 395–407 (1951).
22. Schaffenberg, C. A., *et al.*: p-Hydroxypropiophenone (PHP) and other so-called pituitary inhibitors, 11: 1215–1223 (1951).
23. Talbot, N. B., *et al.*: Urinary Water-Soluble Corticosteroids, 11: 1223–1236 (1951).

Citation Index Entry

11123s-687

464-9789(R)
869-3366(R)
1105-9876(A)
1123-4432(R)
a11,123-0752(O)
-0779(O)
-7264(O)
-7331(O)
-7385(O)
-0866(O)
-8221(O)
-9158(O)
-9497(O)
-9529(O)

to the readers' enlightenment, since exact page references are not provided. In several cases the Selye article is even cited but not referred to in the text. Selye's influence on all of these authors is quite apparent. In particular instances the citations are of value in locating confirmatory evidence of some of Selye's claims.

Thus, in the case of a highly significant article, the citation index has a quantitative value, for it may help the historian to measure the influence of the article—that is, its "impact factor." With regard to a less significant work, one would suspect that the bibliographic advantages might be increased, because the scientist or librarian would be provided with references not to be found in conventional indexes. The preliminary evidence presented indicates that the citation index offers interesting possibilities for another approach to bibliographic control.

The next step in compiling the index for the Selye article would be to seek out additional references to it in more peripheral journals, but obviously the farther away you get from the immediate subject area of the main article, the fewer the references to it you will locate. Yet these may well be the most useful references of all, for the cross-fertilization of subject fields is one of our most important problems in science literature.

It will be well to close with a brief description of how the citation index might be compiled. The first step would be the selection of the particular group of periodicals to be covered; next, the period to be covered, say, only that since 1900.

The problem actually has two facets: the selection of periodicals to be covered in order to obtain citations, and the selection of those articles for which we want a citation record. For example, all *articles* in journals in the *Current List of Medical Literature* that have remained in continuous publication since 1900 might be coded, in which case the *Journal of Clinical Endocrinology* would not be included. However, we might include as citation sources all *journals* covered by the *Current List*. Thus, the bibliographies appearing in articles in the *Journal of Clinical Endocrinology* would supply references to the basic group of articles.

Each coder would be assigned a group of articles in a particular journal. The first step would be to number each article in the journal in ascending order, by utilizing a complete table of contents of that journal from its inception.

Once a code number has been assigned to each article, the proper codes may then be assigned to each periodical. This might be the number given in the *World List*, with new numbers for any periodicals not to be found there.

Actual coding starts with the first article in a particular periodical. The coder prepares a 3- by 5-in. card for each citation made in the article. Each card should give (i) the code number for the citing article, (ii) the code number for the article cited, and (iii) a classification of the citing article as an original contribution, review article, abstract, and so forth.

Many references will be excluded by the limits of coverage set up. Thus all references to articles not in the prescribed list of journals would be excluded.

All books would be excluded unless otherwise specified, in which case the reference card would carry the code for the citing article and the code for the book (its LC card number).

After all the articles had been coded, it would next be necessary to sort the cards by the code numbers for the items cited. This would yield a group of cards for each cited article. These would then be sorted by code numbers for the citing articles. This completes the coding and sorting. The next step would be preparation for the printer.

From this description it will be apparent that, although a great volume of material is to be covered, relatively unskilled persons can perform the necessary coding and filing. Professional supervision would still be required, because certain decisions require skilled judgment, for example, when *ibid.* or *loc. cit.* must be carefully interpreted. Footnotes tend to make coding somewhat cumbersome. The code I have described is merely an example used to illustrate the method in principle. If the system were adopted, then in the future every author ought to be required to include the serial number of each item he referred to, so as to facilitate not only the compilation of citation indexes but also other operations such as requests for reprints (*15, 16*).

In a certain sense a citation index is not very different from a compendium like *Beilstein*, which gives a rather complete record of a compound, compiled by a similar method. A citation index for the literature of chemistry would undoubtedly make the preparation of such works as *Beilstein* much easier than it is at present. The new bibliographic tool, like others that already exist, is just a starting point in literature research. It will help in many ways, but one should not expect it to solve all our problems.

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INSTITUTE FOR SCIENTIFIC INFORMATION

RESEARCH scientists will soon be consulting a more precise and specific literature index that links together subject material that would never be collated by usual indexing systems. Concerned with new starting points for scientific literature searches, the unique concept uncovers sometime-buried associations, relating important works and authors, yet keeps the researcher abreast of the masses of current published scientific information. This new approach to information retrieval is called the Citation Index.

A $300,000 grant extending over a three-year period has been awarded to the Institute for Scientific Information, Philadelphia, Pennsylvania, to study the practicability of citation indexes and to test their techniques of preparation. The project, under joint sponsorship of the National Institutes of Health and the National Science Foundation, is aimed at producing a unified citation index for science including the publication of a genetics index.

Dr. Eugene Garfield, director of ISI, explains the simplified citation index this way. If this article you are now reading were processed for citation indexing, it would be called the "referant." All the items in the bibliography would be called "references." A list of these references, each of which is followed by its associated list of referants, becomes the citation index. By using a citation index, the researcher finds out what works have cited a particular reference following its publication.

By focusing on the individual citation rather than specific subjects, the citation index signifies a more sophisticated method of scientific documentation, as well as a growing bibliographical aid. Because the scientific researcher is generally aware of one or more particular papers already published in the area of his specialized interests, he will use the citation index as a starting point, rather than the specific topics found in conventional indexing.

Better scientist-to-scientist communication is expected, for authors can see at a glance what literature has been published since their works, in their own and related fields, that refer back to their own works.

By virtue of its different construction and purpose, the citation index complements indexes like Beilstein, Chemical Abstracts, Biological Abstracts and is not intended as a substitute.

"Experimental studies on systems for extracting and processing citations will soon be completed," Dr. Garfield reports. It is estimated that approximately one million references will be processed during the next six months on a high speed magnetic tape computer. According to Dr. Garfield, "approximately three million citations, from scientific literature published in the five-year period 1959 to 1963, will be processed during the life of the project."

As a guide to the project and aid towards refining concepts of the methodology, an advisory committee of scientists has been established. Members of this board are Dr. Gordon Allen, National Institute of Mental Health; Dr. Joshua Lederberg, Stanford University; Dr. George LeFevre, Harvard University; Dr. Joseph Melnick, Baylor University; Dr. Sol Spiegelman, University of Illinois.

CITATION INDEXES — NEW PATHS TO SCIENTIFIC KNOWLEDGE

EUGENE GARFIELD

The Institute for Scientific Information
1122 Spring Garden Street, Philadelphia 23, Pennsylvania

CONVENTIONAL methods of documentation were, relatively speaking, satisfactory for the classical specialties. *Chemical Abstracts* (CA) still does an excellent job of covering the literature. Each year, however, the number of abstracts increases. The problem is accentuated by the increasing number of specialties which relate to chemistry. Serpinsky claims that the Soviet counterpart of CA selects articles from more than 9,000 journals, of which over 5,000 regularly contain articles of chemical interest. (1) CA's latest list contains over 5,500 titles.

New approaches to chemical documentation may offer some amelioration to the problems created by this mass of publication. The Citation Index is one of them. In addition, the Citation Index can open entirely new paths to scientific knowledge never demanded of the indexes to CA or Beilstein.

In conventional indexes the "access points" are subject headings—specific topics or compounds. The access point in the Citation Index is the individual citation. Having found a citation in an article, book, or index the user would turn to the Citation Index to find all those subsequent articles or books which have cited the work in question.

Citation Index listings consist of the citation for a particular paper followed by its bibliographical *descendants*. In conventional bibliographies one usually finds the bibliographical *antecedents* of the paper in question.

In the Citation Index bibliographical arrays are generated according to the user's frame-of-reference—not the indexer's. The starting point in a search would not be a rubric but a designated article or group of articles. Thus, the Citation Index permits each scientist to establish the degree of specificity he requires by the association-of-ideas embodied in individual citations, i.e., titles, and particularly the set of ideas which gave birth to the citation.

The Citation Index is not a substitute for indexes like Beilstein or CA. It complements such indexes admirably. It would be interesting sometime to compare their relative utility in literature searches. However, the scientist does not necessarily use indexes when conducting "searches." Frequently he locates a few reprints and consults the bibliographies therein. The Citation Index listings for these references, if available, would provide *leads* to information difficult to obtain by searching under established index headings. This is particularly true when trying to locate derivatives and/or intermediates for known chemical substances.

Recently (2) I reported how a Citation Index to chemical patents brought together material not correlated by CA indexing or by Patent Office classification. It was also shown how the Citation Index helps to overcome the problem of changing terminology, time, and the other inherent limitations of *a priori* indexing. The beauty of the citation index is that it achieves *a posteriori* indexing because a citation is *experiential*. The "logic" of all conventional scientific classifications has inevitably broken down with experience. Aristotelian logic has been a chain around the neck of the scientist and classifier alike. Since the Citation Index is an arbitrary construct rather than a "logical" one, it can stand the test of time. Citations are permanent and unique, as are the works they identify. The significance of men's writings may change, but their identities are fixed.

The dissemination and retrieval of information are inextricably linked. The abstracts section of CA is a device for dissemination while the index is for retrieval. An intriguing application of the Citation Index is its potential use in disseminating scientific information as well as for retrieval. Bernal (3) proposed some time ago that a centralized reprint clearing house be established. Each scientist would then regularly receive papers in designated areas of interest. The proposal is excellent in its simplicity. Its execution is not so simple. How would one spell out his interests? By decimal class numbers of index headings or specific compounds? In time any conventional system of classification would break down even if the individual did decide on class numbers or headings. However, a reprint distribution plan based on the principle of the Citation Index could overcome this difficulty. The flow of reprints to each scientist would be reasonable and geared to his individual specialized needs. His changing frame-of-reference would not periodically disrupt the entire classification scheme. For example, it is not surprising, though perhaps immodest, that I would be interested in regularly receiving reprints of all subsequent papers which cite this one. This service would systematize a practice common among many authors who send reprints to other scientists they have cited. A decided advantage here, which is inherent to the Citation Index, is that one would become aware of segments of papers which might never be indexed otherwise. Further, these papers might appear in journals one could not hope to cover in his regular reading. It would, in effect, be a scientific clipping service. The Citation Index could thereby help resolve what Oppenheimer has said is: "The problem of a coherent civilization is the problem of living with ignorance and not being frustrated by it, so that you find occasionally a man who knows two things, and that intersection may be a great event in the history of ideas. Occasionally, a man may think that something is relevant or exciting which no one before thought concerned him professionally." (4)* The Citation Index would also achieve "An encyclopedic integration of scientific statements . . . which is the maximum we can achieve." (5) "The new Encyclopedia so aims to integrate the scientific disciplines, so to unify them, so to dovetail them together, that advances in one will bring about advances in the other." (6)

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For a more complete discussion of the Citation Index the reader is referred to:

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* I am indebted to Dr. Robert Feinstein for calling this quotation to my attention.

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CITATION INDEX PROJECT
SECOND EXPERIMENTAL SORTS AND PRINTOUTS

February 2, 1962

The attached sheets are printouts of our second experimental sort of 400,000 reference citations taken from approximately 25,000 referant articles.This sample is still heavily biased in chemistry and material from general science journals. However, it contains much more biological material than first sample of January. Over 465 different referant journals are represented. Over 133 are represented by two or more issues. A small number, about 40, represent more than half of the 1389 journal issues that were processed. These include titles like Nature, Science, JACS, JCS, JBC.

This sample does include some references to non-journal material such as books. In the author citation index journal abbreviations have not been standardized as the author sorts were run first in order to have material available by target date. There are two possible formats for the author citation index, both very similar. In format A the referant authors are printed on the right side, whereas in format B the referant authors are printed on the left as in a conventional bibliography. However, in the journal citation index a "journal edit" was performed in which a single abbreviation for each journal has been assigned to the many possible variations. In the first sample(January 7)citations to the same journal could appear in several parts of the journal citation index. No attempt has yet been made to standardize spelling of authors names. We have still only processed senior authors names.

In the attached samples the cited(reference) author is on far left. On the same line to the right is the reference citation of the paper which has been cited. On the next line or lines, slightly indented, is the citation for the referant(citing) paper or papers. In format A the citing journal is printed first followed by volume, page and year and finally citing author. In format B the citing author is printed first and then the citing journal followed by volume, page and year.

The sorting pattern is the same as in the first sample. The cited author is the main sort key, then the year, volume, and page. Of course, in the journal citation index the journal is the main sort key. Upon examining some of the preliminary author citation indexes it was deemed desireable to sort further by the referant authors. This is particularly useful for frequently cited articles. In this way self-citations are grouped together as are all citations by the same referant author. This was considered more desireable than sorting by referant journal. In the future it may be desireable to sort by citing author in the author index and by citing journal in the journal index as part of a computer routine to eliminate self-citations by authors or journals.

Repetitive printing of the cited authors name has been suppressed. In this sample a single punched-card generates two lines of print--one for the reference citation and another for the referant. If more than one article cites the reference, however, the reference line is printed only once. This is known as group-indication. In subsequent samples, citations will be "squeezed" together to eliminate the empty spaces between elements.

WIEN M	Z PHYSIK		32	545	31
EIGEN M	JACS	82	5952	60	
WIEN R	BRIT J PHARMA C		6	611	51
MARLIER R	ARCH INT PH	129	371	60	
	BRIT J PHARMACO		7	534	52
BIEL J H	JACS	82	2204	60	
	J PHARM EXPTL T	11		53	54
BIEL J H	JACS	82	2204	60	
WIENER	J CHEM PHYS		26	906	57
MAS. BAN. J	JCS	1959	1288	59	
WIENER A S	J GENET		29	1	34
BRILES C O	GENETICS	44	955	59	
	J IMMUNOL		34	11	38
WIENER A S	AM J PH ANT	18	301	60	
	J IMMUNOL		45	229	42
WIENER A S	AM J PH ANT	18	301	60	
	SCIENCE		96	407	42
COHEN B H	AM J HU GEN	12	180	60	
	AMER NATURALIST		77	199	43
WIENER A S	AM J PH ANT	18	301	60	
	PROC SOC EXP BI		58	133	45
COHEN B H	AM J HU GEN	12	180	60	
	SCIENCE		102	177	45
WIENER A S	AM J PH ANT	18	301	60	
	AMER J OBSTET G		56	717	48
BEAVEN G H	BR J HAEMAT	6	201	60	
	BLOOD		4	1014	49
WIENER A S	AM J PH ANT	18	301	60	
	PEDIATRICS		8	117	51
KILLANDER A	BR J HAEMAT	6	223	60	
	J IMMUNOL		66	287	51
STIMPFLI. J J	IMMUNOL	85	530	60	
	AM J HUMAN GENE		4	363	52
SUSSMAN L N	AM J CLIN P	33	406	60	
ROSENFI. RE	AM J HU GEN	12	147	60	
	BACTERIOL REV		16	69	52
RASMUSEN B	GENETICS	45	1405	60	
WIENER A S	AM J PH ANT	18	301	60	
	BLOOD		8	1024	53
COHEN B H	AM J HU GEN	12	180	60	
	AMER J PHYS ANT		11	39	53
WIENER A S	AM J PH ANT	18	301	60	
	ANN EUGEN		18	1	53
WIENER A S	AM J PH ANT	18	301	60	
RAWSON A J	J IMMUNOL	85	640	60	
	J AMER MED ASSO	158	1444	53	
WIENER A S	AM J PH ANT	18	301	60	
	MOD MEDICAL MON			9	54
GLENCHUR H	PROC SOC	101	422	59	
	SCIENCE	119	734	54	
WIENER A S	AM J PH ANT	18	301	60	
	EXP MED AND SUR		13	204	55
WIENER A S	AM J PH ANT	18	301	60	
	ANN INTERN MED		44	221	56
MARSH W L	NATURE	188	753	60	
	J PEDIAT		49	381	56
KILLANDER A	BR J HAEMAT	6	223	60	
	J AMER MED ASSO	164	2036	57	
WIENER A S	AM J PH ANT	18	301	60	
	AMER J FORENSIC		3	493	58

WIENER A S AM J PH ANT 18 301 60
J FORENSIC SC 4 351 59
SUSSMAN L N AM J CLIN P 33 406 60
JAMA 169 696 59
ZOUTENDYK A NATURE 187 790 60
AMER J OBST AND 79 567 60
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WIENER AS J EXPTL MED 44 221 56
KUNKEL HG ANN NY ACAD 86 966 60
PROC SOC EXP BI 71 96 59
STRATTON F NATURE 190 240 61
WIENER D N A J ABNORM SOC PS 46 3 51
MEEHL P E J CONS PSYC 24 375 60
WIENER G J BIOL CHEM 185 163 50
HOARD D E BIOCH BIOPH 40 62 60
J AGRIC SCI 43 123 53
JAMES J W J GENET 56 55 58
WIENER H J AMER J MED SCI 196 211 38
WRIGHT P H BRIT MED B 16 219 60
WIENER M J EXPER MED 83 259 46
LIEF F S J IMMUNOL 85 483 60
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CASE G C US AFMJ 11 1408 60
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RASHEVSKY N B MATH BIOP 12 359 50
ACTA MATH 98 111 57
MASANI P CR 251 318 60
SCIENCE 131 1355 60
TAUBE M SCIENCE 132 555 60
SAMUEL A L SCIENCE 132 741 60
WIENER O ABH MAT SAECH G 32 507 12
BENDET I J NATURE 187 781 60
ABH SAECHS GES 32 509 12
GIBBONS R A BIOCHEM J 73 217 59
WIENER R J CLIN ENDOCR 15 1131 55
FREGLY M J ACT ENDOCR 34 411 60
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HUMMEL J P JBC 234 1517 59
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SCHEINBE. S GENETICS 45 621 60
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OGURA H J ORG CHEM 25 679 60
BER 65 1461 32
LIWSCHITZ Y JCS 1959 1308 59
WIENHAUS H ANN 439 38 24
COTTING. RW J ORG CHEM 25 1473 60
BER 69 2202 36
LEWIS J B J ORG CHEM 25 1206 60
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6 JAFFE W G ARZ-FORSCH 10 1012 60
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CALMAN R M BRIT MED J 5217 1933 60
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NEW ENGL J MED 243 597 50
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J BIOL CHEM 191 707 51
RICHARDS. K JBC 236 1280 61
KORNBERG H NATURE 185 153 60
J BIOL CHEM 197 733 52
MEHTA R JBC 234 625 59

59-D Garden Road,
Karachi. Pakistan.
3rd March 1962.

Dear Dr. Wiener,

Could there exist a possibility for a BRILLIANT mathematician of about 60-65 years of age to come to M.I.T this September '62 on a teaching job in the Maths department, or RESEARCH JOB, which would also pay for his tuition fees and other expenses?

I am not writing this for myself but for a former Professor of mine who has been Principal of a number of Science Colleges and even acted as VICE CHANCELLOR of one of the Universities in Pakistan, and is Principal of a Science College at Karachi.

I am about 24 years old, have been Lecturer in Mechanical Engineering at the Engineering College Karachi, have a brilliant record to my credit and MAY come over on a Research Assistant at the Mechanical Dept. of M.I.T. this September.

I went over to this Professor in order to have a good understanding of "$\frac{dy}{dx}$", "δx" and "dx", "δy" & "dy". I have been trying to understand these things well, but do not have a very good understanding. My friend helped me a lot and in the process of conversation with him, I realised that he was himself keen on further study and Research under very able Professors, but had sort of resigned to fate.

I am writing this letter without his knowing it. Maths has been his subject thro'out his life. If it is possible for him to get a job at the M.I.T and study there, it should be commensurate with his age and experience if possible.

If his coming can be possible please write me so that I may then tell him of my plans for

Did not answer

him and send you his records and
Then also pinpoint his special subject
in Maths. I do not know whether
he has a doctorate or not, but Masters
he does have. THE GRAND PREVILEGE

I saw your article and your
photograph in the magazine
AMERICA - intellectual life yesterday
and at once decided to write you
about my former Principal.

With best wishes,

Looking forward
to an early reply.

Yours sincerely

~~Akbar Ahmed~~.

(AKBAR AHMED)
FORMER LECTURER IN MECHANICAL
ENGINEERING.

Please reply
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Karachi.

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DR. NOBERT WIENER
PROFESSOR OF MATHEMATICS,
M. I. T.
CAMBRIDGE - 39
MASSACHUSETTS - U.S.A.

First fold here

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To open cut here

BETHANY COLLEGE
BETHANY, WEST VIRGINIA

DEPARTMENT OF SOCIOLOGY

March 3, 1962

Dear Prof Wein -

I am urgently asking your help on the case described herein from the Cleveland Plain Dealer.

Would you write to Governor DeSalle of Ohio, asking him to reconsider his decision to extradite Lee Mallory on the basis of the new evidence in the newspaper article. You would need to write at once.

At the time he made his decision, none of us were fully acquainted with the situation in Monroe, North Carolina.

In addition to the newspaper articles, Jack Day, Cleveland Attorney of the America n Civil Liberties Union, whom I know and respect has told me that he checked up on the village and that no Negro has been acquitted of any offense if charged in the history of the court house.

As I understand it, such a letter would only ask him to reconsider the evidence and it involves our taking no stand on the evidence whatsoever.

Very truly,
Richard L. Schanck
Richard L. Schanck
Chairman, Dep't. of Sociology

Mallory Case

Mrs. Willie Mae Mallory lost her battle yesterday to stave off being taken back and tried for kidnaping in North Carolina . Common Pleas Judge Thomas J. Parrino denied her a writ of habeas corpus. He canceled her bail and sent her to County Jail. Ohio law gives him no way to spare the Brooklyn (N.Y.) Negro rights fighter, said Judge Parrino. But he did let into the court record some Freedom Riders' stories of Ku Klux Klannish beatings in Monroe, N.C., on which the 34-year old woman can appeal. Her lawyer, Public Defender Gerald S. Gold, will try to get her out on an appeal bond today. Judge Parrino pledged he would hold off extradition to let her test his ruling in higher courts. Being led toward her jail cell, Mrs. Mallory looked back at a Negro adsistant county prosecutor who had helped to get her locked up for North Carolina authorities. "I'm sorry for that colored prosecutor," she said. "I'm sure that 20 years ago in Nazi Germany there was a Jew who had to do the same thing." Judge Parrino sympathized aloud with "nonviolent, millitant acts to secure full rights that under our laws are guaranteed to all." But he said his court had no power to rule even that a state which dealt out cruel and unusual punishment is bound to be unconstitutionally brutal in the future. Mrs. Mallory had to give up her argument that North Carolina had the burden of proving her identity as one who detained Mr. and Mrs. G. Bruce Stegall, a middle-aged white couple , during the nasty fracases of Aug. 27 at Monroe. To prove that integrationist pickets and Negroes got slugged, kicked and bloodied, either without police protection or with police connivance, she had two Freedom Riders there to testify. This was to show she could not be safe or get a fair trial if returned to Monroe. But Freedom Riders were teachers before they got into bus rides and picketings for race equality. The first was Richard Paul Griswold, 35, of Brooklyn, N.Y. He had taught social sciences and been a New York City welfare worker. He is white. He came to Monroe fresh from serving a 40 day jail term in Jackson, Miss., for breach of the peace - namely, by entering a bus station in company with Negroes. Griswold got roughed up for taking pictures of Monroe police and a crowd of white townspeople scuffling over the picket lines, he said. Later he was put in a cell with a prisoner, Howard Stack, a six-footer, who he said punched him bloody for a half and hour on alleged promises from police that this would win Stack leniency when his own case came up. Then James Forman, former teacher of eighth grade language arts in Chicago, said a Monroe policeman seized a Negro's shotgun and gave it to a white civilian, who cracked his head open with it, after the downtown Monroe demonstration. He said he had asked Monroe Police Chief A.A. Mauney, as well as U.S. Department of Justice attorneys in Washington, to asure protection to the peaceful pickets. But rocks and fists flew and blood flowed, according to his story. Forman is executive secretary of the Student Nonviolent Coordinating Committee, a national organization based in Atlanta. Griswold is a member of CORE, which stands for Congress of Racial Equality. He is an upstate New Yorkers who said he first got interested in integration in 1946 while studying at Cornell University. One Monroe native, Raymond Johnson, 18, also bore witness to race violence in Monroe. He told of a Ku Klux Klan terror caravan of cars which came honking and shooting through Newtown, the Negro section, in 1957. He said police escorted the automobile raiders. Monroe is the Klan regional headquarters, Johnson said. He named a Don Keziah, and quto dealer there, as the Klan boss.

THE PLAIN DEALER, FRIDAY, MARCH 2, 1962

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

IN REPLY REFER TO

LEWIS RESEARCH CENTER
21000 BROOKPARK ROAD
CLEVELAND 35, OHIO
TELEPHONE: WINTON 1-6620 TWX: CV 520

March 5, 1962

Professor Norbert Wiener
Massachusetts Institute of Technology
Department of Mathematics
Cambridge 39, Massachusetts

Dear Sir:

The Lewis Library is interested in obtaining the following material:

Your paper, entitled:
Fourier transforms in the complex plane.
(American Mathematical Society - 1934

Should the above be available without charge, it would be helpful to us if the carbon copy of this request were returned to identify the material.

Yours very truly,

Dorothy Morris
for George Mandel
Chief, Library

C-525b (3-11-58)

March 5, 1962

Dr. D. C. Spencer
Dept. of Mathematics
Princeton University
Fine Hall
Box 708
Princeton, New Jersey

Dear Dr. Spencer:

Thank you for your letter of February 14 in which you requested an interview with Professor Wiener for Mr. Egbert G. Leigh, Jr.

Professor Wiener will be away for a year -- until January 1963 -- and this fact unfortunately makes it impossible for your promising student to see him. Should he, of course, be admitted to the MIT Graduate School, I am sure that Professor Wiener will be delighted to talk to Mr. Leigh.

Sincerely yours,

Eva-Maria Ritter
Secretary

March 5, 1961

Mr. Francis Bradley Morrison
7 Douglass Circle
Norwood, Mass.

Dear Mr. Morrison:

The invitation to the Private Reception in honor of the Fellows of the Society of Arts which, in Professor Wiener's name, I should like to acknowledge herewith, has unfortunately escaped my attention due to my very irregular office hours.

Professor Wiener is away for a year and would not have been able to attend. I should like to thank you for this invitation -- in his absence -- and apologize for not letting you know sooner.

Sincerely yours,

Eva-Maria Ritter
Secretary

The President and the Council of the
National Academy of Design
invite you to a
Private Reception
in honor of
Fellows of the Royal Society of Arts
residing in the United States
to be held on
Wednesday, February 28th, 1962
from half-past four until seven o'clock
in the Huntington Room of the
National Academy of Design
1083 Fifth Avenue, New York 28, N. Y.
between 89th and 90th Streets
The 137th Annual Exhibition of the
Academy will be on view.
Refreshments

R. S. V. P.

This Invitation admits two Persons

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
LINCOLN LABORATORY
LEXINGTON 73, MASSACHUSETTS

March 7, 1962

VOlunteer 2-3370

Professor Norbert Wiener
c/o Professor E. Caianiello
Instituto di Fisica Teorica
Universita di Napoli
Mostra D'Oltremare
Naples, Italy

Dear Professor Wiener:

In behalf of The Electrochemical Society, I would like to invite you to deliver a talk on a subject of your own choosing at the Society's banquet on Tuesday evening, September 18th, 1962. The banquet will be held during the Society's annual fall meeting, which this year will be in Boston. These annual meetings are attended by scientists with a broad spectrum of interests from many parts of this country and from many foreign countries.

We appreciate your very busy schedule, and we would be most honored if you would accept our invitation. There will be an honorarium of $300. for this address.

I am looking forward to hearing from you and will be happy to answer any questions you may have with regard to this matter.

Sincerely yours,

Harry C. Gatos

Harry C. Gatos, Chairman
Phenomena at Interfaces Symposium

HCG: bcp

PLAYBOY • 232 east ohio • chicago 11, illinois

March 9th, 1962

Mr. Norbert Weiner
53 Cedar Road
Belmont, Mass.

Dear Mr. Weiner:

Enclosed is the April, 1962 issue of PLAYBOY which contains the second article in the series by Arthur C. Clarke, YOU CAN'T GET THERE FROM HERE.

Cordially,

Jack Kessie
Managing Editor

JJK/mgp
encl.

P. S. Again, we would appreciate your comments.

michigan 2-1000

Since I just read it today, I haven't answered yet. Would you please?

C. BERTELSMANN VERLAG

C. Bertelsmann Verlag · Gütersloh · Postfach

Verlagsgruppe Bildung und Wissen

Herrn
Prof. Norbert Wiener

53 Cedar Road

Belmont, Mass.
U.S.A.

Lexika · Wörterbücher · Atlanten
Sprachführer und Sprachkurse
Populärwissenschaft
Bildbände · Jugendbücher
Praktische Ratgeber
Steckenpferdbücher
Fachbücher und -zeitschriften

Ihr Zeichen	Ihre Nachricht vom	Unser Zeichen (Bitte bei Antwort angeben)	Haustelefon	Gütersloh · Eickhoffstraße 14-16
		CBP/Gt/Te	2494	12. März 1962

Sehr geehrter Herr Professor!

Vor einiger Zeit erschien in unserem Verlag das Werk "Wo stehen wir heute?", in dem 20 bekannte Persönlichkeiten aus Kunst und Wissenschaft eine Diagnose unserer Zeit zu geben versuchten. Dieses Buch fand beim Publikum eine so große Resonanz und wurde durch die Kritiker so außergewöhnlich stark gewürdigt, daß sich der Verlag entschlossen hat, in einem folgenden Band auch den amerikanischen Geistesbereich unter dem Titel "Abenteuer des Geistes" zur Sprache kommen zu lassen. "Abenteuer des Geistes" geht auf die bekannte Essayserie in der "Suturday Evening Post" zurück, in der 21 führende amerikanische Persönlichkeiten versuchten, die wesentlichen Gedanken ihrer Arbeitsgebiete und das Neue und Besondere dieser Arbeitsgebiete verständlich zu machen. Auch dieses Werk fand beim Publikum eine überaus gute Aufnahme. Wir erlauben uns, Ihnen mit gesonderter Post je 1 Exemplar dieser Werke zu übermitteln.

Ermutigt durch diese Erfolge sowie durch zahlreiche Leserzuschriften, entstand der Plan, einen 3. Band folgen zu lassen, der sich mit den Quellen beschäftigt, aus denen der Mensch heute lebt. Diese so entscheidende Frage kann in ihrer Bedeutung und Breite wohl nur durch ein Symposion von Beiträgen der wichtigsten Lebens- und Wissenschaftsgebiete beleuchtet werden. Es wäre uns eine große Freude, von Ihnen, sehr geehrter Herr Professor, eine Antwort auf diese gestellte Frage zu erhalten. Wir dachten an einen Beitrag von etwa 12 - 15 Schreibmaschinenseiten lt. beiliegender Probeseite. Da wir das Buch in diesem Herbst herausbringen möchten, sollte uns das druckreife Manuskript bis spätestens Ende April 1962 vorliegen. Senden Sie uns doch bitte außer dem Originalmanuskript einen Manuskriptdurchschlag. Für Ihren Beitrag steht uns ein einmaliges Pauschalhonorar von DM 1.000,-- zur Verfügung.

Die Frage, aus welchen Quellen die Menschen heute ihre Kraft zu leben schöpfen, beschäftigt uns seit Jahren. Woher holen Sie persönlich, woher

Fernsprecher: Gütersloh 2651 Ortskennziffer für den Selbstwählidienst 05241
Fernschreiber: 0933868
Drahtwort: Bertelsmann Gütersloh
Bankverbindungen: Investitions- und Handelsbank, Frankfurt, Konto 6600 Postscheckkonto des Kommissionshauses Buch und Ton Frankfurt 10700
Auslieferung und Kontenführung: Kommissionshaus Buch und Ton Gütersloh, Friedrichsdorfer Straße 75 Postschließfach 709
0517

holt die Gemeinschaft oder eine Wissenschaft ihre Kraft, um Problemen und Anforderungen gerecht zu werden?

Einmal steckt in diesem Thema natürlich die ganz persönliche Frage, aus welchen Kräften heraus der um einen Beitrag gebetene Wissenschaftler, Künstler oder Politiker lebt. Solche Antworten können in unserer Zeit - um so persönlicher sie sind, um so besser - vielen Menschen helfen. Nicht immer wird die unmittelbare persönliche Aussage zu erhalten sein, sondern der Befragte wird allgemein auf die Quellen des Daseins und auf die Kräfte, die seine Disziplin speisen, eingehen. Schließlich liegt es nahe, daß die Antwort auf die Kraftquellen, die seine Wissenschaft für jeden Menschen und die Gemeinschaft bereit hält, hinweist.

Wenn "Wo stehen wir heute?" eine großangelegte Zeit-Diagnose war, so soll der neue Band die heilenden und helfenden Kräfte zeigen, also eine Art Therapie und Lebenshilfe sein - um im Bilde zu bleiben?

Zu allererst aber ist die Frage so persönlich wie nur möglich gestellt, und die Leser werden für eine ganz persönliche Antwort von Herzen dankbar sein. Auf die hier gestellte Frage werden Sie aus Ihrem eigenen Leben gewiß eine ganz persönliche Antwort mit vielen eindrucksvollen Beispielen geben können. Wenn Sie den immanenten Gedankengang dieses Buchplanes und Ihres Beitrages durchdenken, werden Sie gewiß mit uns der Meinung sein, daß Ihre persönliche Antwort vielen Lesern Kraft, Zuversicht und Mut geben kann, und das scheint uns für Autor und Verleger hier und heute eine dringend notwendige Aufgabe.

Wir würden uns sehr freuen, mit Ihrer Mitarbeit rechnen zu dürfen und sehen Ihrer Stellungnahme mit großem Interesse entgegen.

Mit dem Ausdruck vorzüglicher Hochachtung

C. Bertelsmann Verlag
Redaktion Wissenschaft und Allgemeinbildung
i.V.

(Herbert Gottschalk)

[ans 4/11/62]

OST- UND ZENTRALASIEN

Die Länder Ost- und Zentralasiens nehmen eine Fläche ein, die insgesamt eineinhalbmal größer ist als Europa zwischen dem Ural und dem Atlantischen Ozean und fast doppelt so groß wie die Vereinigten Staaten von Amerika. Sie erstrekken sich vom nördlichen Eismeer bis an den Rand der Tropen und vom Pamir bis zum Stillen Ozean. Obwohl dieser gewaltige Raum im Westen und Nordosten einige der ödesten und menschenärmsten Landschaften der Erde umschließt, enthält er im chinesisch-japanischen Siedlungsgebiet die größte Bevölkerungsverdichtung der Menschheit, lebt doch in den hier umrissenen Ländern der inner- und ostasiatischen Welt mehr als ein Viertel aller Menschen unseres Erdballs. So außerordentlich mannigfaltig auch im einzelnen diese riesige Fläche in Natur und Kulturformen sein mag, sie hat doch in den vergangenen Jahrtausenden, von jeweils verschiedenen Randgebieten abgesehen, durch China eine politische und kulturelle Zusammenfassung und Überforderung erfahren, deren Ein- und Nachwirkungen auch dort noch zutage treten, wo die politischen, kulturellen oder siedlungsmäßigen Einflüsse des chinesischen Volkes wieder ganz oder weitgehend verebbt sind. Wie von Europa aus Siedlungsströme, Zivilisationselemente und Wirtschaftsformen sich in mehr oder weniger starkem Ausmaß seit einigen Jahrhunderten nach allen Kontinenten ergossen haben, so ist seit mehr als zweitausend Jahren von den chinesischen Kernlandschaften aus eine auf- und abwogende Welle von Siedlern, Kulturgut und wirtschaftlichen Gepflogenheiten in die ungeheure Weite und Vielfalt des ost- und zentralasiatischen Raumes geflutet und hat ihm in mindestens gleicher Stärke Züge der Zusammengehörigkeit verliehen, wie sie ähnliche Vorgänge und andere Völker im abendländischen und indischen Kulturkreis geschaffen haben. Dieses Gemeinsame verwischt jedoch keineswegs die charakteristische Eigenart der verschiedenen Völker und Einzelkulturen, wenn es auch als Leitmotiv immer wieder entgegenklingt, sei es in den Oasen des Tarimbeckens oder der Inneren Mongolei, in den Steppen der Mandschurei oder in den koreanischen Bergen, in den Stromlandschaften der chinesischen Mitte oder in den Dörfern und auf den Reisfeldern am Fuße der japanischen Vulkane. Selbst in den fernöstlichen Randgebieten der Sowjetunion, ist an so manchen Stellen noch ein Widerhall der Zusammenhänge dieser großartigen Kulturgemeinschaft zu spüren, die in ihren Grundfesten vom chinesischen Volke getragen wird.

Küsten, Ebenen und Gebirge

Wie reich diese Welt an Einzelzügen in Natur und Kultur ist, verdeutlicht bereits ein allgemeiner Überblick. Der außergewöhnlichen Meeresferne und Kontinentalität des Tari-Beckens und des westlichen Tibet stehen die wunder-

volle Verquickung von Land und Meer im japanischen Inselstaat und die innige Durchdringung von Gebirge und See im südlichen China gegenüber. Neben Flachküsten, wie in den inneren Buchten des Gelben Meeres oder bei Schanghai, finden wir inselgesäumte Riasgestade an der chinesischen Südostküste, neben der nebelumwallten und kalten Umrahmung des Ochotskischen Meeres die sonnenüberfluteten Uferlandschaften des südlichen Japan. Auch in der Reliefentwicklung sind die Gegensätze von eindrucksvoller Größe. Im Norden Chinas und in der Mandschurei dehnt sich viele Hundert Kilometer weit stromdurchfurchtes Tiefland, auf den japanischen Inseln schmiegen sich nur kleine Ebenheiten an den Saum von Gebirge und Meer. An der chinesischen Ostküste in den japanischen Landschaften sind die Berge von Regen zerwachsen und von Tälern zerschnitten, im Innern der Mongolei und in Sinkiang ertrinken vielfach die Gebirge in ihrem eigenen Abtragungsschutt. Den höchsten Gebirgswällen der Erde, den weit über 8000 m hohen Eishäuptern am tibetischen Südrand und den Riesen im Kunlun und Tienschan, stehen in Zentralasien echte Depressionen gegenüber, und im Baikalsee, dessen Boden mehr als 1000 m unter dem Meeresspiegel liegt, weist der hier behandelte Raum die überhaupt tiefste Einsenkung der Festlandoberfläche auf.

Der Monsun

Über dem Herzen des Kontinents, in Zentralasien, aber auch im anschließenden Ostsibirien, entwickelt sich in den Wintermonaten das bedeutsamste und dauerhafteste Hochdruckgebiet der Erde, während die sommerliche Erwärmung der Luftmassen über die Mongolei und dem Tarimbecken ein Minimum entstehen läßt, das weithin Einfluß besitzt. Durch diese im Gegensatz zu den im Osten und Süden vorgelagerten Meeresweiten stehende Luftdruckverteilung kommt es im Zusammenwirken mit andern Faktoren zu einem eindrucksvollen jahreszeitlichen Luftaustausch zwischen Meer und Festland, zum Entstehen der Monsune, die, in Verbindung mit wandernden Tiefdruckgebieten, für Wirtschaft und Lebensweise Ostasiens von bestimmender Wichtigkeit sind. Der vom Meer her wehende Sommermonsun führt feuchtwarme Luftmassen in die Randgebiete, im Winter aber stürzt sich kalte, trockene Luft aus den Hochdruckgebieten des Binnenlandes den wärmeren Gestaden entgegen, im Norden Chinas mit innerasiatischem Staub beladen und nur dort, wo sie gezwungen ist, auf weiteren Strecken über See zu streichen, wie in Teilen Japans, Niederschlag bringend. Während des Monsunwechsels treten im Frühjahr und besonders im Herbst in den Randmeeren Ostasiens verheerende Wirbelstürme auf, die Taifune der Chinesischen Meere, die an den Küsten Chinas und Japans in wenigen Stunden furchtbare Verheerungen verursachen können.

Gerard Piel / 133 West 72nd Street, New York 23, N. Y., SC 4-4214

March 13, 1962

Dear Mr. Weiner:

I am writing to you to ask you to join with me in celebrating the happiest recent development in the life of our democracy: the arrival of Assemblyman Mark Lane.

He first captured my admiration by his bold and imaginative opposition to the fall-out shelter hoax at Albany. On this issue he displayed not only humanity and courage but a refreshing talent for political satire. We have been reminded for the first time in years that we have an Assembly, and our Assemblymen have been made uncomfortably aware that they have constituents! During the next week or two, Mark Lane will be teaching his colleagues to read -- to read, at least, the 500 to 700 bills they are accustomed to enact to the cadence of the Speaker's gavel in the last three hours of their hitherto private proceedings in the Capitol.

I am equally impressed by what I have learned about his pre-Albany career: As a trial lawyer he has defended minority groups and "unpopular" causes. He has led tenant groups in demonstrations to Albany and City Hall for stronger rent control laws and better housing. He has taken the Freedom Ride to the South; he has upheld the First Amendment against HUAC.

These are talents that we need in Washington! It is good news, therefore, that Mark Lane has announced his candidacy for the seat in the newly Gerrymandered 19th Congressional district.

I invite you to join with me in a group of 100 people to support his candidacy. On Tuesday evening, April 10th, we will hold a dinner in his honor at the Hotel Astor. I hope your name will appear along with mine on the invitation.

Please sign the enclosed card thereby letting me know you will lend your name and support to this venture.

Sincerely,

Gerard Piel

Gerard Piel

answered inquiry.

Ans Swered

Rural Route #1
Rockton, Illinois
March 13, 1962.

Dear Dr. Steiner:

I am a ninth grade student at Keith Country Day School in Rockford, Illinois. Our biology class is making projects for the science fair. Mrs. Barbara Powers, my biology teacher, and former graduate of M. I. T., recommended you to me. She saw your book about cybernetics. My report is on electrical anesthesia, electric shock therapy, and their effects on the brain. If you have information, or know where I can get any, I would appreciate it. Also, we have to make displays and demonstrations. I'd be grateful for any ideas on this.

Thank you very much.

Sincerely yours,
Cheryl Spiese
Box #179 R.R.#1
Rockton, Illinois

Naples
281 Via Posillipo
Napoli
Italia

CIGA

HOTEL PRINCIPE E SAVOIA
MILANO

March 14, 1962.

Dear Mr. Ritter,

While our 2 or 3 postcards on the way from Lesbon to Naples have kept you posted on our progress, this letter is the final proof that we have arrived safe and sound, if rather tired. We arrived here on March 7 and found several letters from you awaiting us. The package of letters sent by sea mail has not come yet. We hope it arrives soon, since at least one of our bank statements the January one, which is sent out by the bank on the 3rd or 4th of February should be in it. I cannot balance my check book until it comes. The envelope is generally a light brown longish one, which I think only has Post Office Box 2, Cambridge 38, Mass. in the upper left-hand corner, so you could not tell that it is from the Cambridge Trust Co. If you are in doubt, you might check with the bank if the statements were sent out.

after this, please include any letters from the bank in the air mail.

The lectures in Milan came off well. We found the people at the Scuola Umana delightful and better than their word. We had car and chauffeur at our disposal the whole time we were there, and when I was a bit under the weather the last two days of our stay, they insisted on sending the driver with us to Naples to spare me the strain of driving. By that time I was willing to hand over, though I could have made it in 3 days instead of the 1½ days with the driver.

We found an apartment ready for us this time down by the sea, with a bay of our own. It is much better as far as rooms and furnishings are concerned than the last one, the view is different but equally enchanting. I shall try to get a picture taken. The dashing of the waves against the shore have a soothing quality, except in a storm.

We can see big and small boats going by all day long. As soon as it gets warmer we can sit out on the balcony and even have our meals there.

Our Italian is coming back fast after having been somewhat submerged and confused by our stay in Spain.

·2/

CIGA

HOTEL PRINCIPE E SAVOIA

MILANO

My husband gave his first lecture in Italian yesterday and has been asked to continue, as it appears to be clear and good enough.

In a month from today we shall start for the Congress in Amsterdam. I am getting settled rather quickly knowing my way about already, and I find I can still shop in Italian.

Now that the long drive is behind me I feel rather pleased with myself (forgive me) and even surprised that it came off so well.

If you have occasion to speak with the American Express Co., you might tell them that we always buy their checks. Their addresses I sent you were given me by the Purser's office on the Vulcania. I shall try, if possible, in the future to find friends or institutions to send our mail to.

If you haven't heard from our income tax adviser by now about the last due

to Massachusetts for Unemployment Insurance and Federal Estimated Tax please contact him.

We hope your eyes are alright again, and that you have found an agreeable employer. — The letter from Morton Bromfield's partner was a bit of a surprise. I rather expect that Bromfield himself might write to us. I wonder?

Thank you for both of us in keeping us posted on what is happening around Tesh and for looking after our affairs.

Tonight we are going to a Mozart performance. I can't make out the name of it. Remember our visit in Hannover?

Best wishes all around.

Robert and Margaret Oliver

My husband will answer Abib's letter soon.

accountant's name and address.

Robert P. Weld
36 Hopkins Road
Arlington, Mass

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CAMBRIDGE 39, MASS.

DEPARTMENT OF MATHEMATICS

March 14, 1962

Dear Prof & Mrs. Wiener,

Thanks very much for your card. I am glad that all went well in Barcelona and that you had an interesting time. How did you do all the driving? Wasn't it quite tiring?

Enclosed various self-explanatory things; also - I'm sorry to say - the bill for the telegram to Barcelona. — I have various bills here which I am sure are duplicates of things I forwarded earlier & I shall ask you to check if this is so & if perhaps you have already paid:

Waverley News Co. —	$ 6.17
Esso Statement	16.10
Harv. Coop. Society	59.95
MIT Fac. Club	15.03
Dr. Gundersen	10.00
Sage Food Co.	14.64

After all these figures, I hesitate to add one of my own. From the time you left until the end of February I worked 8 30 hrs = $ 21.25

You may send it to me as it is convenient for you. —

— 3.99 M. Tax

.66 S. Sec.

$ 16.99

Sprinkle must be very busy today & tomorrow in Europe now, but also here it is rush time with Easter-Passover RUSH

DIVISION OF SOCIAL STUDIES
UNION COLLEGE
SCHENECTADY 8, N.Y.
PHONE: DICKENS 6-3426

March 16, 1962

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Professor Wiener:

Would you be available for a visit to Union College next year? We would like to hear you speak on a topic of general interest and perhaps to meet informally with a small group of students as well as a public lecture.

A fall date would be desireable for us. From mid-October to mid-November is best (excluding November 7). If you have an agent, would you please refer this letter to him with a request that we be provided with information on your usual honorarium?

Very truly yours,

Henry Ferguson

Henry Ferguson
Chairman
Lectures Program

Answered with form letter

ASSOCIATION INTERNATIONALE
DE CYBERNÉTIQUE
A. S. B. L.

Secrétariat :
13, Rue Basse-Marcelle
NAMUR (Belgique)

Tél. (081) 279.83

N°.....

Namur, 16th March 1962.

Dear Sir,

We have pleasure in informing you that our Association is about to publish the Proceedings of the IIIrd International Cybernetics Congress, held at Namur from 11th to 15th September 1961.

The Proceedings will appear in the form of a single bound volume of first-rate quality comprising approximately 900 pages, 25 x 16 cm. (10 x 6 1/4 in.).

A subscription has now been opened, confined to those who attended the Congress, to members of the International Association for Cybernetics, and to individuals and firms that have shown an interest in our activities. It will be closed on 31st August 1962.

The rate of subscription has been fixed as follows :

Members of the Association : 600 Belgian francs

Other individuals and organisations: 1.000 Belgian francs

After 31st August 1962 the followingrates will hold :

Members of the Association : 900 Belgian francs

Other individuals and organisations: 1.300 Belgian francs

We are arranging for the publication of the Proceedings during the first half of 1963. We are convinced that they will be of great value to you. Indeed, there is unanimous agreement that the work done at this IIIrd Congress has delimited the sphere of Cybernetics with greater precision than ever before.

I am sure you will be anxious to obtain these important documents at the favourable rates offered. I should be obliged therefore if you would be good enough to forward the subscription form attached, if possible by return of post.

Yours faithfully,

J.LEMAIRE
Deputy Director.

During 1962 our activities will be mainly directed to the following objectives : publication of the Proceedings of the 3rd Congress; publication of Volume V of "Cybernetica"; participation in the Colloquium at Royaumont concerning information in modern science and organisation of a Colloquium devoted to Legal Documentation and Cybernetics.

You will note that, despite its modest means, our Association gives evidence of plenty of vitality and makes an effective contribution to the propagation of ideas concerning Cybernetics.

We are pleased to inform you that, following the decision of the Annual General Meeting held at Namur on 16th September 1961, members' subscriptions for 1962 have been kept at the same level as for 1961 - i.e. 200 Belgian francs (£ 1-9-0) for individual members.

We take the liberty of drawing your attention to the advantages accruing to our members : reduction in the price of our publications and in Congress fees.

You will find attached for your convenience :

1) A renewal form for membership of the Association, which we should be pleased to receive, duly completed, by return of post. This includes an order form for our various publications now available which you may wish to obtain;

2) A membership subscription form (and for renewal of your subscription to "Cybernetica" for 1962, if desired).

Yours faithfully,

J. LEMAIRE.
Managing Administrator.

ASSOCIATION INTERNATIONALE DE CYBERNÉTIQUE

A. S. B. L.

Secrétariat :
13, Rue Basse-Marcelle
NAMUR (Belgique)

Tél. (081) 279.83

N°.....

Namur, 28th February 1962.

Dear Sir,

The International Cybernetics Association has just completed its fifth year of existence.

Having met and overcome the initial difficulties, it has rounded off this first phase by the successful organisation of the 3rd International Cybernetics Congress. The work of this Congress has delimited the sphere of Cybernetics with greater precision than ever before, as can be seen from the contents of the papers read there.

The publication of the Congress Proceedings is to take place shortly.

The Proceedings of the 2nd International Cybernetics Congress appeared during 1961. This publication aroused a gratifying amount of interest both on the part of members of the organisation and on that of numerous Institutions and Societies that are not members.

The quaterly review, "Cybernetica", whose columns are open to our members, sets out the results of the most recent work in the field of Cybernetics. It is just ending the fourth year of its existence and is enjoying an ever more marked success. The slight delay in publication refered to above will very shortly be made up.

./..

INSTITUT FÜR TECHNISCHE ELEKTRONIK
DER TECHNISCHEN HOCHSCHULE MÜNCHEN
DIREKTOR: PROF. DR. M. KNOLL
ARCISSTRASSE 21 · TEL. 5592/576, FERNSCHR. 05-22854

Dr. Norbert Wiener
Professor of Mathematics
Massachusetts Institute of
Technology
Cambridge 39, Massa.
USA.

Munich, March 16, 1962

Dear Professor Wiener:

I hope that your legs are well again after the terrible shock you had last fall. I admired your complete negation of pain in favour of our discussion which was enlightening for me in many respects and for which I thank you very much.

During my visit you mentioned that you possibly would be able to give a lecture at the Munich Technische Hochschule on sience and religion. We and in particular Prof. Sauer will be very glad if this could be possible. Therefore we are asking you whether you could come during this summer and which date would be convenient for you.

We hope that you are well again.

Sincerely yours,

Max Knoll

Istituto di Fisica Teorica
Universita di Napoli
Mostra d'Oltremare, Pad. 19
Napoli, Italia
March 18, 1962

Professor L. LeCam
Chairman, Department of Statistics
University of California
Berkeley 4, California
U.S.A.

Dear Professor LeCam:

Your letter of February 7, in regard to Professor Barankin just reached me here in Naples where I shall be this year, hence the delay in my answer.

I have known Professor Barankin for some years on my visits to the University to the University of California at Berkeley. He has always impressed me as an alert and understanding mathematician. I definitely think that he is a man of very considerable abilities and possibilities and a good candidate for further advancement and recognition. I am glad to hear of your efforts in his behalf. In addition, I have always found him personally agreeable and pleasant.

Sincerely,

Norbert Wiener

Naples, Italy
March 19, 1962

Prof. Dr. J.F. Schouten
Institut Voor Perceptie Onderzoek
Insulindelaan 2
Eindhoven
Netherlands

Dear Dr. Schouten:

Your letter of February 6, just caught up with me here in Naples where we arrived about ten days ago. As you perhaps know the Second International Congress of Cybernetic Medicine will be held in Amsterdam from April 16-19, this year. My wife and I expect to be there, and we should like very much to get in touch with you during or directly after the congress.

There are a great many things, both scientific and personal, I should like to discuss with you. I should like very much to visit your institute and give the lecture you mention if the time is suitable.

One field of research I am engaged in at present in the United States has to do with the cybernetics of protheses. A considerable amount of work in this field has been done in Russia recently. My group wants me to find out about similar work being done both in sensory prothesis and motor prothesis in other countries.

Margaret and I are having a delightful time in Naples where I shall be for a year with the Istituto di Fisica Teorica, Universita di Napoli, Mostra d'Oltremare, Napoli. My job will be to organise or rather help with the organisation of a course in cybernetics leading to a doctorate.

With best wishes from house to house, and hoping to hear from you soon, I am,

sincerely yours,

Norbert Wiener

Ente Nazionale Idrocarburi

E.N.I.

SCUOLA DI STUDI SUPERIORI SUGLI IDROCARBURI

prot. 20328

San Donato Milanese
Tel. 53.53

20th March 1962

Prof. Norbert WIENER
c/o prof. Edoardo Cajaniello
Istituto di Fisica Teorica
via A. Tari

NAPOLI

Dear Prof. Wiener,

as agreed upon, I send you the texts of the two conferences you delivered at our School.

As soon as you will give me back the correct version, I will arrange for it to be published on our review "La Scuola in Azione".

I thank you once more for your precious contribution, ad am,

yours faithfully

(Ezio Camatini)

E. Camatini

ANABACO

OIL AND GAS PRODUCERS

FIRST NATIONAL BUILDING

OKLAHOMA CITY 2, OKLAHOMA

20 March 1962

JOHN P. DOWDS

Dr. John R. Pierce
Bell Telephone Laboratories
Murry Hill, New Jersey

Dear Dr. Pierce:

Your excellent new text, "Symbols, Signals and Noise" arrived at the Oklahoma City Library the first of this year, and I have appreciated reading it. The book does a fine job of elucidation on the topic of information theory, and will be very useful for people who were unable to understand some of the more difficult, abstract references that preceded yours.

In February of 1960, I wrote the article that I am sending you a reprint of for World Oil. After editing, reorganizing and deleting, it finally appeared in the September 1961 issue of that magazine. In order to popularize the paper some of the important math and definition was lost, but enough still remains to introduce a reader to the subject.

In your book on pages 24 and 80, and in the chapter titled "Information Theory and Physics", you warned the readers not to confuse the entropy of information theory with the entropy of thermodynamics. In the reprint article for World Oil, you will see where I present subsurface exploration maps for oil and gas by making use of communication theory entropy, and the entropy of statistical mechanics.

I believe such problems in petroleum geology can be satisfactorily approached by the use of this brand of math and physics, and this type of study should be catagorized under the topic of geophysics in the earth sciences. Perhaps this fusing of the two entropies is what you have described as "informed ignorance" on page 108. However, if I have been too long on imagination, and too short on scientific rigor, the result has been some extraordinarily useful exploration maps for helping an oil producer decide where to drill a hole in the earth.

Continued -

Some of the maps included in my World Oil article were completed about 6 years ago. At that time it was predicted that a success ratio of 50% to 80% would be obtained if the wells yet to be drilled were located properly in certain areas. The statistics released for the year 1961, which is 5 years after the original study, shows that Beaver County had a 50% wildcat success ratio, and a 78% ratio in development wells. A total of 267 wells were drilled in that county alone in 1961.

I noticed that you dedicated your book to Dr. and Mrs. Shannon. Of the 30 references that should have followed my article in the bibliography, Dr. Shannon was one of the two names that survived. Professor Wiener and his text "Cybernetics" was also left out. I am sending those two men copies of this letter and the World Oil article to M. I. T.

Sincerely yours,

ANABACO

John P. Dowds
General Manager

JPD:hva

Enclosure

cc: Dr. Norbert Wiener
Dr. Claude E. Shannon

DANIEL SILVERMAN, M. D.
269 SOUTH 19TH STREET
PHILADELPHIA 3, PA.

KINGSLEY 5-5356
RES., MELROSE 5-2534

March 20, 1962

HOURS BY APPOINTMENT

Professor Norbert Weiner
Department of Mathematics
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Professor Weiner:

Each year for the past ten years the Eastern Association of Electroencephalographers has invited an outstanding scientist to deliver the Kershman Memorial Lecture at its Annual Meeting in December. Because of the wide interests of Dr. John Kershman, the Association decided that this memorial lecture is not to be restricted to the field of electroencephalography but rather is to include related areas of investigation. The Association would be honored to have you deliver the 1962 Kershman Lecture.

The 1962 Annual Meeting will be held on Wednesday, December 12th, at the Lennox Hill Hospital in New York city. The Lecture is the first address in the afternoon session, immediately after lunch, at 2:00 P.M.; it is planned to be approximately 45 minutes in length, with the possibility for a 10 minute period of questions or discussion. There is a $200 honorarium plus travel expenses.

We hope that your schedule will permit you to address the Association this year.

Sincerely yours,

Daniel Silverman

Daniel Silverman, M.D.
President, Eastern Assoc. of EEG

DS/trs

CC: Dr. Paul F. A. Hoefer, Program Committee Chairman
Dr. John Hughes, Sec'y-Treasurer

Don't form le Net

P.S. If there is any need to put my resignation before the board of directors, be kind enough to do so.

Istituto di Fisica Teorica
Mostra d'Oltremare, Pad. 19
Naples, Italy

March 20, 1962

Mr. Morton Bromfield
175 Huntington Avenue
Boston 15, Mass.
U.S.A.

Dear

I have recently received a rather disturbing letter from Mr. Jack Ferner, the production manager of Formulast. You must certainly be familiar with its content, so there is no need to go into it. Since I have not heard from you anything that might enlighten me, I think the time has come for me to write to you.

As you remember, at the time you asked me to become one of the directors of Formulast I had serious doubts as to my suitability for such a responsibility in view of my comlete lack of experience in the business world. The letter I received from Mr. Jack Ferner makes me aware more than ever of my inadequacy of dealing with such problems. May I therefore ask you to a. if I am not yet legally a director of the companyto leave me out of consideration, b. if I have already become a director to accept my resignation.

You will understand that I am not writing this out of any lack of personal regard for you, but that the difficulties which I to some extent anticipated and had already discussed with you have become actual. I repeat that I am no businessman and ought not to mix with affairs that I do not properly

[ans 4/4/62]

understand. Sincerely.

P.S. If there is any need to put my resignation before the board of directors, be kind enough to do so.

Naples, Italy
March 20, 1962

Professor Simon Lissim
The City College
Convent Avenue and 139th Street
New York 31, N.Y.
U.S.A.

Dear Professor Lissim:

Your letter of March 1, asking me to nominate an American citizen for the Benjamin Franklin Medal/ of the Royal Society of Arts has just reached me here in Naples, where I shall be until early February 1963. Away from my files and my home ground where I could make further inquiries, I find myself at a loss to answer your letter in a positive way. Any answer I could give now would be perfunctory and unsatisfactory. I must therefore ask to be excused .

Sincerely,

Norbert Wiener

Istituto di Fisica Teorica
Mostra d'Oltremare, Pad. 19
Naples, Italy

March 20, 1962

Miss Valerie M. McCallum
Appointments Officer
The University of New South Wales
Box 1, Post Office,
Kensington, New South Wales
Australia

Dear Madam:

Your letter of February 9, asking me for comment on the qualifications and experience of Mr. Michael Arbib, who is applying for an appointment as Visiting Lecturer, School of Mathematics at your University, has just reached me here in Naples, hence the delay in my reply.

Mr. Arbib is at present working for a doctorate under me on the bases of statitical mechanics. I am in continual contact with him in the progress of his work. I have known him at M.I.T. for more than a year. In spite of his youth he is a mathematician of great insight and I look confidently forward to his development in the future. I can recommend him with a clear conscience as a visiting lecturer, and I think very favorably of him for his desire to put his sevices at the disposal of his own country. He is going to be heard of, and I am sure that will be a credit to Australia. In particular, he has a thorough knowledge of delegation and function space, and I am counting on him to help me in the development of this field.

He is a friendly, sincere, modest young man whom I am proud to have as my student.

Sincerely,

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
RESEARCH LABORATORY OF ELECTRONICS
Room 20B-221
CAMBRIDGE 39, MASS.

CENTER FOR
COMMUNICATION SCIENCES

March 21, 1962

Professor Norbert Wiener
c/o Professor Cajaniello
University of Naples
163 Via Manznoi
Naples, Italy

Dear Professor Wiener:

I trust that you and Mrs. Wiener have enjoyed your trip. Elaine and I would love to be with you, but it was unquestionably necessary that I remain here. The job of setting up a reliable system to compute the power spectrum of the EEG is complicated and time-consuming, no matter how one goes about it.

Completion of the computational aspect of the work is just around the corner. Unfortunately, the corner keeps receding. All I can report at this time is that flip-flops and squarers, etc., are tricky gadgets and that neither Professor Rosenblith, Dr. Barlow nor I have lost courage. They continue to give me encouragement, guidance and full backing.

I have seen Professor Margenau's response, but I do not feel that I shall be prepared to initiate correspondence for quite some time.

Please give my regards to Mrs. Wiener and to Professor Cajaniello.

Sincerely yours,

Charles E. Robinson

Charles E. Robinson

CER/bm
cc. Dr. John S. Barlow
Professor Walter A. Rosenblith

[ans 5/10/62]

BASIC RESEARCH FILM PROJECT

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March 23, 1962

Mr. Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Mr. Wiener:

Your name has been given us as a possible source of the information we are seeking. We wish to locate the scientists in this country who are working in the field of bionics and will sincerely appreciate any assistance you may be able to give us in finding them.

A return envelope is enclosed for your reply in the event you are able to tell us of the names and laboratory locations of any such scientists.

We will be very grateful for your help.

Sincerely yours,

Dorothy Looker

e
encl.

[ans 3/30/62]

Naples, March 23, 1962

Professor A. Masturzo
Via Roma
Napoli

Dear Professor Masturzo:

My wife and I are once again in Naples, where we arrived two weeks ago, and are now comfortably settles in an apartment at 281 Via Posillipo. This time we expect to stay one whole year giving us a real chance to know this beautiful city better. We also expect to attend the Second International Congress of Cybernetic Medicine in Amsterdam in April. If possible, I should very much to see you sometime soon to talk over matters of interest to both of us.

With best wishes to you and Mrs. Masturzo from both of us, I remain,

Sincerely yours,

Norbert Wiener

March 23, 1962

Dr. J. P. Schade, Secretary-General
Netherlands Central Institute for Brain Research
Mauritskade 59b
Amsterdam, the Netherlands

Dear Dr. Schade:

After my arrival here in Naples about two weeks ago I am now sufficiently organized to make definite arrangements for my trip to Amsterdam to attend The Second International Congress of Cybernetic Medicine. I hope that my sending in the application form so late will not cause too great an inconvenience.

At present I am planning to arrive by train on Sunday, the 15th of April. Do I make my own hotel reservations or will they be made for me? Could you be kind enough to let know. My wife will accompany me.

We are both looking forward to our visit to the Netherlands which we have not visited for some years and seeing our friends, old and new, again.

Sincerely,

Norbert Wiener

P.S. If there are any payments or deposits necessary in advance, please let me know.

Michael Arbib,
Mathematics Department,
M.I.T., Cambridge 39,
Mass., U.S.A.,
March 24, 1962.

Dear Professor Wiener,

I wrote to you nearly a month ago. Since I have not received an answer, I fear my letter may have gone astray, and so will abstract from it a number of questions which I should be most grateful to have you answer:

a. Questions on the last 2 chapters of your "Nonlinear Problems" book: (Page by page, so I hope you have a copy handy)

119: You define phase space in the Gibbs sense in par2. However, every subsequent usage, starting with that of par3 would indicate that by phase space you mean the 6 dimensional (x,y,z,u,v,w) space. Is this so? Also, u, v, w are used in the sequel both as velocities and as momenta. Do you prefer velocities (cf., e.g., equ (15.1))?

120: You say "We wish to confine ourselves to additive functionals that are not changed under an identical translation of the position coordinates of all ponts." Would you please explain why we wish this.

121: I follow the arguments on p.120, but cannot see why this implies (14.7). And what happened to u,v,w. Should the argument in (14.7) finish off $\ldots,u_n,v_n,w_n,u,v,w)$? And should F in (14.8) also depend on alpha? cf.(14.14)

122: In the first line after (14.11), there should be a w in the arg of ro.

124: Should (15.8) be $\int \varphi(t)\, dx(Tt,\alpha) = \int \varphi(t)\, dx(t,S\alpha)$?

On 4th line after (15.8), du not dn. "We see that the infinitesimal change of x and u generates an infinitesimal measure transformation on alpha." Should that read "measure preserving transformation on alpha"? And I must confess I dont see it - would you please explain?

125: I do not follow (15.12), and I do not see how the left hand side of (15.13) comes out of it. Why is (15.14) different from (14.14)? Is (14.14) your preferred form?

126: Could you please give me the reference for the work of Kolmogoroff mentioned on the last line?

127: In (15.18) is K really our old friend the F of (15.2)? I think (15.18) only expresses the dynamical change - where does it express the change due to change in the variable alpha with time?

Why is (15.19) expressed with different signs from (15.15)?

b. A discussion of what I understand your methodology to be (I should like you to remove any misconceptions I may have as soon as possible):

We work in a phase space μ of 6 dimensions. A system, which we shall index by the symbol α, is then to be represented by a density function $\rho(x,y,z,u,v,w,\alpha)$ defined for the whole phase space, which is to be interpreted as the density of material of the system located at (x,y,z) in space and having (u,v,w) for velocities. (It seems to me that the advantage of specifying density is that we can immmediately deduce the kinetic energy of the system α to be

$$\tfrac{1}{2}\int_{\mu}(u^2+v^2+w^2)\,\rho(x,y,z,u,v,w,\alpha)\,dx\,dy\,dz\,du\,dv\,dw$$.)

But this very transition to a specification by density means that we lose our finite number of discrete particles and so have a continuous gas. But because of equipartition of energy we see that we need to regain the idea of a finite number of degrees of freedom. And it is

for this purpose that you want to study systems in which the space harmonic analysis has a finite radius - for the finite number of the dummy variables appearing in the thus truncated expansion will then be the desired finite number of degrees of freedom (this means that we shall be dealing in expansions with about 10^{24} terms!!).

Just as Gibbs determines an ensemble by distributing points in Γ-space, we will determine an ensemble by distributing x along the real line. Our averages will then be taken over the ensemble using the approach of your non-linear theory.

As a system evolves in time, its density function changes. But this just means that it gets a density function of our ensemble with a new index. Hence the mechanical motion of our system may be regarded as a transformation of our x line which leaves the statistical distribution (which determines the ensemble) unchanged. We strive to build up such transformations in terms of measure-preserving infinitesimal transformations.

I eagerly look forward to your reply. I shall welcome all the suggestions you have to make and all the help you have to offer.

With best wishes,

Yours sincerely,

Michael Hebb

Jim Moloney
5301 Shirley Ave.
Tarzana, California

March 29, 1962

Dr. Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts.

Dear Doctor Wiener:

First, I just completed reading, "The Human Use of Human Beings." Thank you very much for a milestone in my life.

I realize that you must be bombarded with mail from individuals like myself and I certainly don't want to impose on you, so I would like to say now that if you don't feel this letter warrens an answer, I will understand.

Indeed the only reason for my presumption might be blamed on Gordon Pask in, "An approach to Cybernetics." In his opening statement he states, "Its (Cybernetics) interdisciplinary nature character emerges when it considers economy not as an economist, biology, not as a biologist, engines, not as an engineer." I have taken the next step, cybernetics, not as a cybernetician... and a rank amatuer at that. However, a couple of ideas have occured to me and I wanted to get your opinion(again, if an opinion is warrented.)

I have arrived at two hypothesis, both, I believe, somewhat interrelated:

A. That the human mind learns best when it is fed (or taped) input accurately (memorized). And it is that taped material that the sub-conscious draws from in its I.Q. development.

I don't wish to imply that this is the only factor in I.Q. development...just, perhaps, an important possibility.

B. That the speed of assimilation of input in computers is in direct proportion to the speed of assimilation of input by the locus of complexity of the human mind. In other words, the more complex the mechanism(human mind) the longer it takes to assimilate.

Whereas Hypothesis A is obviously kind of academic, I would like to explain the evolution of B.

Dr. Bridgeman started me thinking about it(The Way Things Are). In his preface he said, "I have become increasingly convinced that there is something radically wrong in the way civilized man uses his brain...that there is some fundemental ineptness in the way that we all handle our minds."

McCollock's

I was thinking about that when Hypothesis A. struck me. Maybe the trouble is the way we feed ourselves information. (Here, I had Ross Ashby's Networks of Formal Neurones in mind). I'm sure(and, dammit, I am sure(from intuition(I can't spell intuitively?) because I really don't know) that if we fed a computer as sloppily as we feed out own minds, they wouldn't do nearly as well as we do. With this possibility in mind, I started memorizing Gordon Pask's book in toto...I'm up to chapter three, and I am astounded by all of the ideas that have progressively started banging around in my mind. I then decided that it wasn't really necessary to memorize all of the material, but only the scientific facts which had to accurate...on that basis, I'm through chapter three in Bridgemans book and chapter five of your book.

The next thing that stuck in my mind was Bridgeman's statement, "There are still many new and revolutionary things to be said which have escaped us because they are so close, ubiquitous, and constant that we have not been able to see them." My two hypothesis have been fun for me(and new and exciting...no matter how acedemic they might in reality turn out to be) and so Dr. Bridgeman is also responsible for my presumtion.

Anyway, my thinking regarding B went this way.

1. Computers recieve-oops, i before e except after c(a good argument for proper taping of the mind?), receive input considerably faster than the human mind.

2. (I'm using my tape here--from Pask) "In particular(McColloch) he and Pitts showed that plausible networks of the formal neurones were automata capable of many gambits--such as LEARNING, ELABORATION OF GESTALTON, AND EMBODIMENT OF UNIVERSALS.

3. (to quote you--same tape) The work of Dr. W. Ross Ashby is probably the greatest modern contribution to this subject insofar as it concerns the analogies between living organisms and machines. Learning, like more primitive forms of feedback, is a process which reads differently forward and backward in time. The whole conception of the apparently purposive organism, whether it is mechanical, biological, or social, is that of an arrow with a particular direction in the stream of time rather than that of a line segment facing both ways which we may regard as going in either direction.

4. Now during the third annual New York University Institute of Philosophy(Washington Square, New York, 1959)---you were there and delivered "The Brain and Machine(Summary)", Arthur C. Danto raised the question, "Suppose all the physical discrepancies between the human brain and currently most highly developed servomechanisms were someday over come, and that machine turned out to be conscious...In the proposition 'A machine M becomes conscious when it reaches a point p of complexity' of the same kind as 'Water boils at 100 C'...But philosophers might temporize, on the grounds that while we are reasonably clear about the predicate 'is boiling' we are far from clear on conscious...we will hardly know what to look for when M has been brought to P.

5. Well, my next thought was back to you. It seemed to me, from a point of view of entropy and the Gibbsian Contingency that he sure as hell wouldn't find 'what to look for' by putting the old cart before the horse. A better approach would be to determine some characteristic in the organisation of the human mind which could(possibly)denote that the brain is at that locus, conscious. (and thus, at the same point, the nascline too-)

6. Thus came my Hypothesis B.

As I said in the beginning, I'm well aware that these great thoughts of mine are not so damn great after all and to expect an answer from you could very well be an imposition...but seeing I've gone this far, I might as well go all the way. I'm coming to New York next week to meet with MCCann-Erickson(with one of their brain trust, Joe Culligan) about an association with them...for, I'm beginning to suspect, some kind of a perverse reason I have been trying to affect this relationship for over a year and not getting very damn far(I think Marion Harper could do with a little thinking about himself as Watt's governor..for a research agency, I can't help but think they need to overhaul their feedback apparatus). Incidentily, as you probably know, they quote the hell out of you--- so I assume you probably have a personal relationship to some of them...if you do, I would appreciate it if you wouldn't mention the above comment...the request, presumption number two(Why in hell would you mention it anyway!) Which brings me to Presumption number three...New York being so close to Cambridge, I would very much like to drop up your way, if you could find time in your heavy schedule to join me for a couple of Martinis and dinner...I should say my wife and I(her folks are from Boston...so she'd insist upon coming along). My racket(until I became fixed on the McCann association) has been as a 'Hollywood Agent', my wife's an actress(in the family tradition, her father was a silent film star, Pat O'Malley) and we might contribute(in an academic way)some interesting socialogical observations on this strange animal called Hollywood...or at least we'd try hard.

If the suggestion intrigues you, you might have your secretery drop me a line in care of Joe Culligan, 485 Lexington Ave. (McCann-Erickson) with your phone number...I'll give you a buzz and we'll set it up.

Without fear of being redundant, I will certainly understand if time pressures prevent an answer...once again my sincere thanks for "The Human use of Human beings".

Warmly,

Jim Moloney

Jim Moloney

SECOND INTERNATIONAL CONGRESS OF CYBERNETIC MEDICINE

AMSTERDAM 16TH – 19TH APRIL 1962

All correspondence should be addressed to
Dr. J. P. SCHADÉ, Secretary-General,
Netherlands Central Institute for Brain Research
Mauritskade 59b, AMSTERDAM, the Netherlands

Amsterdam, March 29, 1962.

Professor Norbert Wiener
Istituto di Fisica Teorica
Università di Napoli
Mostra d'Oltremare, Pad. 19
NAPELS (Italy).

Dear Professor Wiener,

I was very happy to receive your letter, informing us that you will be able to attend the Second International Congress of Cybernetic Medicine. All participants will undoubtedly benefit very much from your presence who have been a pioneer in this field.

Could you let me know whether you like to give an introductory lecture or a summary statement during the symposium of cybernetics of the nervous system, or whether you prefer to participate in the discussion and not give a lecture at all ?

I will take care of your hotelreservation. We would like to regard you as a honorary guest of the conference, so you will not have to pay the registration fee. Could you let me know at what time you are arriving at the station in Amsterdam because I would like to meet you at the station.

It will be a real pleasure meeting you in Amsterdam.

Yours sincerely,

Dr J.P.Schadé,
secretary-general.

Encl.

ECOLE PRATIQUE DES HAUTES ETUDES

LABORATOIRE DE PALÉONTOLOGIE
des VERTÉBRÉS
Directeur: R. LAVOCAT

Institut de Paléontologie
8- Rue de Buffon
PARIS Ve
FRANCE

POR. 09-29

Paris, 29 Mars 1962

Dear Professor Wiener

I have the pleasure to send you a reparate of a short paper written by myself two months ago. I receive only now reparates.

It should be a great honour for me if you could spend some short instants to the reading of this paper. I am not a man of mathematics, but a paleontologist and also a man of philosophical thinks, but I think that the general theories of information could be very helpfull for the understanding of the process of Evolution and tried to tell what I thought.

Perhaps you will find that my ideas are not too much ridiculous, and that some new

elaboration on their basis could be interesting.
It should be very important for me to have the
opinions of cybernecians, because I am afraid
that the specialists of Evolution will not always
agree with my ideas. Perhaps I am wrong, but
I think that the main analysis on these problems
cannot be accomplished only by the traditional ways
of the general theories of genetics, which should have
to be improved.

If it is not to much to ask that from you
who are certainly very busy, I should be glad
to know your advice about my paper.

Very sincerely yours.

Dr. Saunders, Dorid. Schrad. H.S.E.Sanders.

[ans 6/2/62]

March 29, 1962

Don't worry about date

Dear Mrs Ritter.

We have received several letters with enclosures from you. The postmark from the U.S. is often so faint that it is hard for me to tell what date the letter was mailed, but the last letter in a brown envelope arrived here March 27. I believe that we have received everything so far. We have decided to leave our official address at the Istituto di Fisica Nucleare where our mail will either be kept or forwarded by our authority, should we be away at any time. However, you should also have our home address here:

281 Via Posillipo
Napoli, Italia.

Unfortunately we have no telephone there, and it is too difficult to attempt to get one for the one year. However, in case of any emergency, the Institute in Naples knows where to find us.

I hope you have my last or rather first real letter by now. The bank statements were more than welcome. Please don't delay sending

Do not write us at the university or call us by telephone

them as soon as they arrive, also the envelopes, longish and white, which contain deposit slips and are important for me to have. Some of these in your last letter must have been on your desk for a month or more. Also some of the other letters. When there is already a delay in these being forwarded twice, once from Belmont and then by you, it is too much.

Tell Mr. Arbib that my husband is working on an answer to his questions. We also have Chuck Robinson's letter and glad to hear from him.

On April 14 we leave for Amsterdam, by train, over night. We shall be away for a week, unless we have reason to go to England. We hope to see Dr. Schouten at Eindhoven, too.

Spring is on the way, but there is still too much uncertain weather.

Did you get my letter from the boat, asking for copies (perhaps 6) of my husband's biography, publications and photos? We need them badly and have had to take the paper covers of his two books we took

2/ along to supply pictures for the lectures. There must be mimeographed copies in the files. Have extra pictures made and send us all these by air mail. Postage to be charged to us. — There was one request from the Lincoln Labs. from a Mr. Gatos for a Sept. 18 date lecture. You sent the letter but did not indicate if you had replied, since we won't be at Tech during 1962. Please set us straight on this.

That, I believe, takes care of the business side of the letter except for the check for $50.00. This will give you a surplus to draw on so you don't have wait for a small check each month. all bills sent have been taken care of.

I am writing to the White Fuel Co. asking why the oil I ordered delivered by January 31, to leave a full tank for our tenants was not done, also why a new motor installed for our oil burner five years ago and, which had been serviced 2 X a year by them,

should have to be replaced in a comparatively short time, notwithstanding the so-called one year guaranty. I am also writing to Prof. McCarthy at our house. I don't blame them for being upset at the "cold" reception. I am giving you this information so you may know what has been done.

Have you got in touch with Mr. Robert Weld, our tax accountant? If an answer to all these questions is already on the way, don't bother to write them again.

We are nicely settled by now and our Italian is coming back as well as recovering from the setback it got in Spain. It is gradually warming up and soon we shall be able to sun ourselves on our balcony facing the Sea.

Best regards all around.

Margaret and Norbert Wiener.

P.S. Please call up the bank and ask them to send our statements, etc. directly to M. I. T. until further notice.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CAMBRIDGE 39, MASS.

DEPARTMENT OF MATHEMATICS

March 30, 1962

Dear Prof. & Mrs. Wiener,

Enclosed, as usual, the mail. There has not been much in the way of forwardable mail and thus you haven't heard from me for a while.

Spring is here & MIT is nearing the end of its Spring vacation. It's absolutely beautiful outside - what a lift for one's spirits!

After my very tough job at the Center for International Studies where I worked (hard) for a lady from the UN who told me on the first day that she didn't like the Germans (for good reason, however), but with whom I got along very well after 2-3 weeks, I am again in Chemistry till May 1. (I am substituting for the wife of one of our Math. instructors). The last job was a pressure job; this is a rather relaxing one - so one jumps from one extreme to the other.

This weather makes me homesick and stirs up my "wanderlust", but I think it's pretty nearly impossible. I'll just have to wait a while.

I talked to Dr. Barlow today. All is well with him & he sends best regards.

So do I! As ever,
Eva-Maria R.

March 30, 1962

Miss Dorothy Looker
Science Service
1742 Church Street, N. W.
Washington 6, D. C.

Dear Miss Looker:

As Professor Wiener is away in Europe for a whole year and frequently on travels, I am afraid that your request to find out the names of scientists in this country who are working in the field of bionics will not get to him too soon. Also, I am not too sure that he will be willing to give out names if he does know of people working in this field. However, I shall forward your letter to him.

Sincerely yours,

Eva-Maria Ritter
Secretary

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH
GENETICS AND BIOMETRY RESEARCH UNIT

18/1, Barrackpore Trunk Road,
P.O. Belghoria (West Bengal),
India.

No: H/338

March 31, 1962.

Dear Norbert,

I am sorry you could not come on here from Bombay. Here is one of the more cybernetic problems before me at the moment. If an area is divided into "niches", each of which will furnish material for the growth of one seed, but not for that of two or more, then if the density of seeds scattered at random is x per niche, the frequency of seedlings per niche is xe^{-x}, not exceeding e^{-1}. This agrees very well with the survival of blowfly larvae on finite amounts of meat.

If, at very low density, a population with separate (e.g. annual) generations, can increase by R (say R =200 for some blowflies), then if x_n is the density in year n (on a suitable scale,

$$x_{n+1} = Rx_n e^{-x_n}$$

$$= x_n e^{\rho - x_n} \qquad (1)$$

$\rho > 0$, for blowflies $\rho \sim 5$, for the most fertile annual organisms $\rho \sim 20$.

$x_n = \rho$ is a stable equilibrium (fixed point) of (1) if $\rho \leq 2$. For $\rho > 2$ there is no stable equilibrium, but there are stable periodicities, $x_{n+2} = x_n$ is a possible periodicity for all $\rho > 2$, maximally stable at $\rho = 2{\cdot}2553$, and unstable for $\rho > 2{\cdot}7944$.

Triennial oscillations are possible for $\rho > 3{\cdot}11675$;

Quadriennial oscillations are possible for $\rho > 3{\cdot}6$, etc

I conjecture that there is a small range of ρ for which each oscillation is stable in a sufficiently vast population. But in fact by the time $\rho = 4$ one would get oscillations reducing x to 10^{-8} or so.

I wanted to ask you if all this is very well known. As soon as generations overlap one gets an integral equation, and though no pupae may hatch on some days,

P.T.O.

oscillations of 2 generations are in fact stable even with p=5. However as Kronecker said "God made the integers", so I am starting on them.

My colleague S. D. Jayakar and my wife are having a wondrous time getting the fairly complete record of the foundation of the nest of a social wasp (Polistes sp.) recording all journeys for food and "paper", and feeds of larvae. She sometimes lays an egg in the dark. It involves about 13 hours a day watching, and may last a month. But nobody has ever done it before, and it is worth doing. The statistics will take longer to work out than the observations. Luckily Jayakar is rather a good statistician.

Yours sincerely,

J. B. S. Haldane

(J.B.S. Haldane.)

Prof. Norbert Wiener
Massachusetts Institute of Technology
Brookline
Mass. U.S.A.

R. MOSORIAK
1267 NO. SAN GABRIEL BLVD
SOUTH SAN GABRIEL,
CALIFORNIA.

3/31/62 (23. April)

Dr. Norbert Wiener

Sent from letter

Dear Dr. Wiener,

I realize you are a busy man but wished to intrude myself upon your attention to tell you I read your I Was a Prodegy, and another work, for lay people with great interest.

Because I was associated for 12 years with a magazine for "collectors" of art works (and trivia), I knew partly the story of L. Seidman, for we carried his till-forbidden advertisements seeking transportation tokens and transfers. The tragedy was thus brought to me doubly strong - by his ads, and then your book's mention of him.

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I share with you concern over two opposing forces, in the world bent on destruction ... one of the other ... and the treasure and effort expended to that end. It seems the madness goes on - apace, ... to the point of despondency. (It discouraged ME.)

Some 20 years ago a work of

mine was published, — CURIOUS HISTORY OF MUSIC BOXES, — a first book on the subject, and my last work.

During the research for information I corresponded at length with Alfred CHAPUIS, Professor at Neuchatel, Switzerland. He had a corollary interest in automata and androides and appreciated what he had done in those subjects historically.

He mentioned that you and a Neurologist of Illinois had founded the new science of Cybernetics, and I might be interested to review the latest efforts along the line of machines to do the work of men.

My research interests stopped in 1949 after a nervous breakdown and I have been compelled to do much less intellectual work and much more physical work for my own wellbeing.

Before I came to that bitter decision, I distributed my small collection of rare and scarce books

to places where they would do the most good.

Accordingly, M.I.T.'s Library now contains Alfred Chapuis' and Edouard Gelis's "Le Monde des Automates" in 2 buckram-bound volumes. I had them specially bound in tough buckram so the contents would "last." Only 1,000 serially-numbered copies of that work were produced, on subscription only. I was fortunate to get a set for my use, and your Librarian of the time was overjoyed to have them after I finished with them, for the Library had no set.

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Dr. Chapuis is now dead. I wished you to know that he regarded your Cybernetics work highly. You may have been a correspondent of his yourself, for all I know, for his colleagues were many, and his collaborators or books also numerous. While he

was a professor of Geography, his deep interest in other subjects of Horology etc, were such as to qualify him as an "authority."

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Please pardon these rubrications of a pleasant set of memories. In a way, I can sympathize completely with L. Leidman, and still appreciate the value of being able to do intellectual work and to seek out, discover, and set down what appears to be "truth."

Cordially,
Roy Mooderick

[I was also a correspondent and friend of Rupert T. Gould England (History and Development of The Marine Chronometer) and at this distance helped him in his projected HISTORY OF THE TYPEWRITER, the ms. of which was unfinished when he died.]

(4) Sic transit . . .