F. E. BREDOUW WE. 7996 — 2931 WYANDOHEAS KANSAS CITY 8, ASCIAN 22 THIS SIDE OF CARD IS FOR ADDRESS essor Horbert Weer Deft of mathe Mass. Institute of Jechnology

more than a your ago I sent you a log- scale design, with return postage, for your inspection. If you still have it, will you please return, to save me the worm of completing another? Prof. T. wason a trepatroval at the F. E. BREDOUW trong per sent the log- seals deagn WE. 7996 - 2331 WYANDOTTE & The tas ance returned and an attempt KANSAS GITY 8. W.C. well to made & locate stand and fee & n. X



795 BOYLSTON STREET . BOSTON 16, MASSACHUSETTS

January 22, 1958

Dr. Norbert Wiener
Professor of Mathematics
Massachusetts Institute of Technology
Cambridge, Mass.

Dear Dr. Wiener:

Sincere thanks for your fine speech of last evening before the New England Chapter, American Material Handling Society.

Yours was the most thought-provoking talk our Chapter has had in many years. We're honored that you were able to join us.

Kindest personal regards.

Respectfully,

FPD/rk

Frank P. Dean Assistant Editor

(Public Relations Chairman, New England Chapter, AMHS Henry Kahane University of Illinois Urbana, Illinois

Professor Norbert Wiener
Massachusette Institute of Technology
Cambridge, Mass.

1/22/58

Dear Professor Wiener:

We are including an article with a first, and somewhat hesitant, attempt to reduce our verbal system to a succinct formula. This may be of interest to people working with the problem of mechanical translation.

In addition we are including the reprint of an old article of ours in which we had the pleasure of disagreeing with your father. We had often wondered about this original, unorthodox, and instinctive etymologist and were delighted to learn more about him from your memoirs.

With our best regards,

Very sincerely yours,

Henry and Renée Kahane

114 N. Fourth Ave. Highland Park, N.J. January 22, 1958

Dear Prof. Wiener:

Enclosed is a short paper I have written on inequalities.

I have written several others on inequalities which have been accepted for FUTURE publication.

I am planning eventually to write a book on inequalities.

I have applied for a position as instructor at Rutgers University, New Brunswick, N.J., (Prof. E.P. Starke, chairman of mathematics).

If my paper shows promise, could you please write him on my behalf.

Thank you very much for your kind consideration.

Respectfully,

A.B. Soble.

P.S.

You mention Barnett and Szasz in your two-volume autobiography. I was a student of both.

[oms 1/31/58]

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(Address)	(Accepting employee)	GPO 09-16-12666-8

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January 22, 1958

Mr. B. Ulin
Department of Mathematics
Tradgardsgaten 18
Uppsala
SWEDEN

Dear Mr. Ulin:

Herewith are revised copies of Part II of our paper on "The Prediction Theory of Multivariate Stochastic Processes". We are sorry for the delay in returning this, and hope it can still appear in your next number.

Would you kindly complete the reference to the forthcoming paper in Acta Mathematica of Helson and Lowdenslager made in a footnote on Page 2. Also kindly note that the references at the end of the paper should be as in the manuscript sent to you earlier, which is already in your possession.

A note from Professor Carleson is attached.

Sincerely yours,

P. Masani Norbert Wiener

PM: AD Enc.

benson-lehner corporation applied cybernetics 23 January 1958 Professor Norbert Weiner Massachusetts Institute of Technology Cambridge, Massachusetts Dear Mr. Weiner: Mr. Charles F. Johnson, the Editor of AMERICAN BUSINESS Magazine, has mentioned to me that I would be "literally thrilled" by an address which you gave at Wabash College last fall. Unfortunately, Mr. Johnson gave me no further information on this address, but I would very much like to see it. If this brief note gives you enough information as to which paper of yours he is referring, I would appreciate your sending me a copy of it. Sincerely yours, BENSON-LEHNER CORPORATION Genard S. Benson (18) Bernard S. Benson President BSB/1b

> 11930 West Olympic Boulevard, Los Angeles 64, California BRadshaw 2-3484 GRanite 9-3723 Cable Address: BENSON Los Angeles

[Ma 1/31/58]

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CARTOLINA POS



PROF. NORBERT WIENER

Massachusetts Institute
of Technology

CAMBRIDGE - 39

(Mass., U.S.A.)

"SCIENTIA ..

Via Roncaglia, 4 - ASSO (Como)

Monsieur,

nous avons l'honneur de vous accuser réception de l'article que vous nous avez envoyé et que nous avons passé aujourd'hui même à la Direction.

Nous vous prions d'agréer, Monsieur, nos plus vifs remercîments et l'expression de nos sentiments les plus distingués.

"SCIENTIA,

(Trosti)



HARVARD MEDICAL SCHOOL

Vanderbilt Hall 240 Boston, Mass. Jan. 24,1958

Dear Dr. Wiener:

This is in reference to our telephone conversation of yesterday evening. At that time, I hopefully extended you an invitation in behalf of the Lancet Club of Harvard Medical students to be our dinner-speaker guest on Monday, February 3--- a proposal in which you expressed some interest. We would be deeply honored if you could possibly arrange to come.

Cocktails and dinner begin at approximately 6:00 pm, at Vanderbilt Hall, directly across from the Medical School. I will be happy to call for you by car if you but name the place. You may speak on any subject that strikes your fancy. I was fortunate enough to hear you talk about India at Billy Kidd's party, Christmas eve, and know that whatever choice of topics you make will be enthusiastically received by us all.

Please let me know as soon as possible if you will be able to accept this invitation. I am looking forward to hearing from you.

Sincerely,

om 2283

Gene M. abroms

mr. abroms will pich Prof. Wiener upat the office about 5:45.



Helen Fuller, MANAGING EDITOR

January 24, 1958

Prof. Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Professor Wiener:

Your article has brought many favorable comments from the scientists and administrators we see here in Washington. A conversation yesterday with one of these, a physicist who takes an amateur interest in politics, prompts this letter. Anyone who attends many Congressional hearings these days is soon left with the question: who speaks for the scientists? I assume, after asking a number of them this question, that the answer is noone. But this is not clear to the members of Congress. Most of them, I believe, incline to accept the self-appointed spokesmen who seem to pop up at every hearing as official voices. Would this appeal to you as the subject for another essay which you might write for The New Republic at your convenience?

HF:cg

Telephone: REpublic 7-8656
Cable Address: NEWREPUB

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[ans 1/27/58]

1689 Auburn Road Wantagh, N. Y. January 24, 1958 Dr. Norman Wiener Massachusetts Institute of Technology Cambridge Station Boston, Massachusetts: Dear Dr. Wiener: On occasion when my family and I visit the Austins who live on the other side of Long Island, I made a beeline for Ray's library which contains the most intriguing collection of non-fiction. The last trip netted me the use of your book, The Human Use of Human Beings. On Page 2 in the middle of the second paragraph "The proper evaluation of human beings for their own sake and to their employment as human beings" is what struck a responsive cord in me. I don't recall ever reading such a sentence anywhere before. When I finished the book, I wished that you lived around the corner so I could call on you to talk about it. However, since this is not possible, I hope you will be kind enough to answer some of my questions. What was the public's response to your book? That is, what did those who read it have to say about it. 2. Did you write anything else? If so, what? 3. How come you didn't mention Unions in your book? What do you think a man's chance of being a human being are today? It probably is amusing to you to receive this letter regarding this book eight years after its publication. The truth is at the time of the book's publication our family moved from the city to the country. Six years of it I call hibernation, and the last two years I have been trying to catch up with the times, so to speak. As I read your book, I sensed a keen sympathy for -continued-

January 24, 1958 Dr. Norman Wiener Page two human beings. Perhaps this was because my own sympathy for humans due to my fate in my youth to have shared 7 different homes. Now I am very anxious to know what your ideas are today. Sincerely yours, VL/lp [ans//31/58]

THE UNIVERSITY OF CHICAGO CHICAGO 37 · ILLINOIS DEPARTMENT OF SOCIOLOGY 1126 EAST 59TH STREET January 24, 1958 Dear Norbert Wiener: Periodically since returning from Grinnell I have had it in mind to write you. I wanted to say again how sorry Evey and I were that we couldn't stay to visit with your daughter and her family. We were ourselves quite exhausted by Grinnell and had the "hangover" you spoke of! I hope that if you are out here again for any reason and on any short notice, we could have a chance once more. I liked ever so much your article in the New Republic. In the current issue of Dissent there is an interesting longer piece on similar themes by a scientist named Speyer. Much the same thing is happening, as you know, in the social sciences which are selling themselves as "useful" to Cold War strategist and others. The Bulletin of Atomic Scientists remains one of the few signs of protest and responsibility. How comes the novel? Evey and I look forward to reading the manuscript and hope you will send it to us. It was wonderful to have a chance to talk with you at Grinnell and we have often thought about our talks I send along separately some reprints from both of us that may be of interest. Yours, gratigs, DR/c Professor Norbert Wiener Massachusetts Institute of Technology Cambridge 39, Massachusetts [ans 1/30/58)

January 24, 1958

Mrs. Roman Jakobson 20-A Prescott Street Cambridge, Mass.

Dear Mrs. Jakobson:

Enclosed please find the photograph of Professor Wiener which you requested by telephone. Very truly yours,

> Secretary to Professor Norbert Wiener

Un-4-0753

Holyshe 29 Slaves Dept - Harvard

Joseph for Proprehebonie up Prof. Vienes's books.

S. FRITZ TOBIAS, M.D.
GRASS VALLEY, CALIFORNIA

26 January 1958

Dr. Norbert Wiener
Massachusetts Institute of Technology
Boston, Massachusetts

Dear Doctor Wiener:

Your article "Science: The Megabuck Era" in the New Republic is a very interesting way to look at happenings here. You clearly describe symptoms, but what is the disease? That question seems implicit in your finishing sentences: "Perhaps (underlined by me) a soul-searching in these matters will come when we have been hurt badly enough by present trends to have developed something like a consciousness of sin. As of the beginning of the year 1958 I believe that we have only been pricked and annoyed, but not really hurt, and that we must wait for worse things to come." My thoughts and feelings seem to run in similar channels. In the January 24 edition of the U.S. News and World Report is an article by Professor Arthur Bestor of the University of Illinois about What Went Wrong With U.S. Schools? In a letter to him I concluded: "Your suggestions and prescriptions go via logic, but can a climate be changed by logos? Or is a catastrophe needed to prove whether we still can respond to a challenge? I sometimes wonder."

Sincerely yours,

J. F. Tours

EMERGENCY CIVIL LIBERTIES COMMITTEE 421 SEVENTH AVENUE, NEW YORK 1, N. Y. • OXFORD 5-2863 HARVEY O'CONNOR CORLISS LAMONT Vice-Chairman January 27, 1958 DR. SAMUEL GRUBIN Treasurer ELINOR FERRY KIRSTEIN Secretary (on leave) CLARK FOREMAN Dr. Norbert Wiener LEONARD B. BOUDIN General Counsel Massachusetts Institute of Technology NATIONAL COUNCIL Boston, Mass. **Executive Committee** Dear Dr. Wiener: On Friday, March 28th, the Emergency Civil Liberties

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Bernard Wilkinson, Calif.
Henry Willcox, Conn.
Prof. William A. Williams, Ore.
Prof. H. H. Wilson, N. Y.

Committee will hold a round table discussion on "Scientists, Teachers and Security". I. F. Stone will chair the meeting and Dr. Edward U. Condon has agreed to make the principle talk.

We would like very much to have you participate as a discussant at the meeting, and hope you will be our guest at that time.

Yours sincerely,

Clark Foreman Director

CF:fl

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Rudolf Birchow Medical Society in the City of New York

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ARNOLD T. BENFEY, M. D.
50 PARK TERRACE WEST

Prof. Dr. Norbert Wiener January 27,1958
Department of Mathematics
Massachusetts Institute of Technology
Cambridge, Mass.

Dear Dr. Wiener:

We have just heard of your illness and brought the fact before the Executive Meeting of the Society.

The Society and I personally want to express our best wishes for a complete and speedy recovery so that you may soon be able to resume your activities.

With kindest regards, I am sincerely yours

President (

January 27, 1958

Professor Bruno de Finetti Universita Di Roma Istituto Di Matematica Finanziaria E Attuariale Piazza Borghese, 9 Rome, Italy

Dear Professor de Finetti:

I am highly honored by the invitation to come to Rome to the Istituto Di Matematica and talk on Cybernetics. The situation is, however, a little complicated. Two years ago I had a trip around the world, and I feel that the time has not yet come for me to take another extensive trip. This is for three reasons. First, I feel that it is incumbent on me to proceed further with new research on some ideas that I already have and get them into the form of books. Second, I do not wish to take too much time away from my work at the Massachusetts Institute of Technology particularly in view of the fact that I retire officially in July 1960. Third, my health, while it is not poor, does not permit my subjecting myself to too frequent travel and to heavy strains.

I therefore make the following suggestion. Would it be possible for your invitation to be delayed until the summer or the fall term, preferably the fall term, of 1960? Then my wife and I feel that the time will be ripe for travel and further foreign ontacts.

While I should of course give some talks on Cybernetics and my other mathematical work, I should not wish to be bound to a heavy schedule of any kind. The time has come when I must think of my health and not subject myself to any excessive strains. On the other hand, I should be glad to keep close contact with my Italian colleagues to advise them on useful research and to collaborate with them as far as my strength allows. I have some very active work under way on random functions and their applications to Cybernetics. By 1960 at least two books on this subject should have appeared.

Let us, then, leave matters pending, and if it should suit your purpose let us gradually work toward plans for a trip in 1960. If I should make such a trip it would be better for my wife and myself to settle down for a considerable time at Rome rather than to travel around much, and to have Italian and other European mathematicians come to me and not attempt to be too mobile. There will be no problem whatever about my getting permission to go over.

In the meantime I shall try to put together such material concerning Cybernetics as may be of use to you. Furthermore, I shall be glad to be consulted about your plans for Cybernetics at any time.

Very sincerely yours.

Norbert Wiener

NW: AD

January 27, 1958 Miss Helen Fuller The New Republic 1244 19th Street, N. W. Washington 6, D. C. Dear Miss Fuller: Many thanks for your letter of January 24th. As you suggest, it is clear to me that no one, whatever his official status and whatever his scientific rank, can properly speak in the name of science as such any more than anyone can speak in the name of literature as such, or in the name of art as such. Intellectual and creative activities are where they are to be found, and official recognition by its very nature must lag behind real productivity. I shall be glad to write you a paper on this theme as soon as I have put my ideas together. Thank you very much for the check. Sincerely yours,

NW: AD

Norbert Wiener

THE UNIVERSITY OF KANSAS

WILLIAM ALLEN WHITE SCHOOL OF JOURNALISM AND PUBLIC INFORMATION

January 28, 1958

Dr. Norbert Wiener, 53 Cedar Road, Belmont Sta. Boston, Mass.

Dear Dr. Wiener:

For years, the University of Kansas, justly proud of its record in the sciences, has been trying to expand and intensify interest in the humanities. One of our important efforts has been the Humanities Lecture Series; after ten years of development, it has gained recognition as an outstanding program among Midwest universities. The list enclosed with this letter names some of the distinguished speakers who have lectured here and spent several days with our faculty and students.

We would be greatly honored to have you lecture in our 1957-58 series, and we hope that you will accept this cordial invitation to visit us.

The dates we have reserved for our Humanities lectures are all Tuesdays: March 18 (March 25 is possible), April 15 and April 22. Of course, we have some leeway and might shift a date to fit your schedule if we can arrive at an agreement early.

The plan which we have used during the ten years since we began the Series has been for the speaker to spend one full day and at least parts of two others on our campus. This arrangement has proved most rewarding to the speakers and most beneficial to students and faculty members here. The formal Humanities lecture is delivered on Tuesday evening (traditional). On Monday and Wednesday...and on Tuesday during the day...the speaker may meet with classes interested in his field, confer with advanced students, meet faculty members at dinner or luncheon, and perhaps speak informally at a tea or matinee program.

Every speaker so far has really enjoyed the full acquaintance which the three-day visit gives, and we at Kansas take great pleasure in learning to know our distinguished visitors well. We deliberately have avoided the "speak-and-run" kind of engagement; the University already has plenty of such lectures. The three-day visit gives the visiting scholar opportunity to discuss many aspects of the field in which he is a recognized authority, allows him to get to know Kansas faculty members and advanced students who are interested specially, and gives him an understanding of our continuing effort to spread and intensify interest in the humanities. Actually, many of our visitors are genuinely reluctant to leave when the busy schedule is ended!

Page 2.....1/28/58

Although our budget doesn't allow us to be prodigal, we are able to pay an honorarium which our previous speakers have found to be reasonable. We can offer a stipend of \$450, but state law prevents our paying travel expenses.

Should you find it possible to accept our invitation, our committee would appreciate your listing the topics you'd like to suggest for the main lecture and the kinds of informal gatherings which you would especially enjoy.

Hoping that we shall have the pleasure of a visit from you, I am

Sincerely yours,

Elmer F. Beth, Chairman, Humanities Committee.

amer Dr. Beth

EFB:rs

Enclosure

Some Distinguished Speakers Who Have Appeared On

T. V. SmithSyracuse
Alexander Meiklejohn
Walter R. AgardWisconsin
Henry MargenauYale
Charles MorrisChicago
Henri PeyreYale
Bayard Q. MorganStanford
Virgil ThomsonNew York
Hayward KenistonMichigan
Allan NevinsColumbia
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Nabih Amin FarisBeirut, Lebanon
Brand BlanshardYale
Victor LangeCornell
James Johnson Sweeney New York City, Solomon R. Guggenheim Museum
Leo GershoyNew York University
Otto KinkeldeyCornell emeritus
Ernest L. StahlOxford, England
Howard F. LowryWooster College
John Randall, JrColumbia
Ronald SymeOxford, England
George Heard HamiltonYale
Roland BaintonYale
Bernard WeinbergChicago
Sterling DowHarvard
Alfred Leslie RowseOxford, England
Loren C. EiseleyPennsylvania
Bruno E. WernerLeipzig, Germany
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gar nicht ? das vare schade.
18este briske
Gertrud Matauic
Lagel

Fagel

Jugeslanja

Lapret, 28.I. Jehr verehrter Herr Professor! Threw Vancen lese ich so oft in der Leitung und entocklort neich endlich, fie tu prague, of he mit den østerreiches chere Viener vervandt sind. Ich Leide Gertrud Viewer, stamme and lien bin in Tupodavien verheiralet, / mein lam 1st is bripeus jup der Chemie and Physik! sagen kønnte, darf ich mit den beruhuten Professor Viener ver vandh fin . in the thes, in veil, the Leit ish kurs. Mud entschuldipen tie det ich deutsch schreibe ich kann englisch aber nicht gans perfekt Viellelicht verstehn Lie meinen Brief

gar wicht? das være schade. Beste Briske

Gertrud Matauic'

Zagreb

Volac 8/1v.

Jugoslavija

Lapret, 28.I. Jehr ver ehrter Jan Professor. I hrew Kainsen Mase id so aft in der Luiung und entocklook mid endlik, hi tu propen of the mit den osternei de shee Wiener verwandt sind. Ich fishe Gertrud Viewer, Famme and him tripoolaries recheinalit, / mein Mann 1st is bripeus ing der Gemie and Physik und ich raise seh stole, venu like sagen kounte, day of wit dem behilmten Professor Viener ver rande his in the it raid, the Leit ist hung hud entralulation his beef in deutoch schniste ich kenn englisch aber wicht ganz perfekt Tillelist verstehn tie meinen Brief

[and 2/4/58]

UNIVERSITY OF MICHIGAN ANN ARBOR

THE HARRISON M. RANDALL LABORATORY OF PHYSICS

January 29, 1958

Prof. Norbert Wiener Mathematics Department Mass. Inst. of Technology Cambridge 39, Mass.

Dear Norbert:

As I write this, I am intensely aware of the inadequacy of the printed word as compared with the vehement give-and-take of our conversations -- particularly those of the earlier days of our association, so precious to me now, before I became sucked into a network of confusing and distracting obligations that made it impossible for me to benefit as I should have from Kax the possibility of discussing things with you. If there is any one thing about this Guggenheim year that makes it most valuable for me, it is the leisure to reflect on what it is that I really want, and what I don't really care about. In particular, I realize how a combination of lack of confidence in myself as an original scientist with a misplaced softheartedness and WILLIAM unwillingness to turn down jobs that took my time without any return in unique accomplishment, led to a positive-regenerative cycle with progressive diminution in accomplishment reinforcing the tendency to look for distractions, and distractions leading to further diminution of accomplishment. This, of course, is partly to be attributed to my position in a relatively unknown school & department, with its inadequacies and shortage of competent people, and never-ending crises. But a greater degree of tough-mindedness on my part could, of course, have terminated this draining-away of my energies. Yet there is the rub, of course --- this kind of tough-mindedness requires confidence. Everybody has his own characteristic excuse for lacking confidence; in my case, the lateness of my career development tended to make me timerous. I realize this is not a sufficient cause XX. In any case, the above rather XXXXX turgid paragraph reveals three basic reasons for my indebtedness and gratitude to you: The confidence you always showed in me, the example of tough-mindedness you set (and the good reasons for which I was not always as cognizant as I should have been), and the Guggenheim for which you so loyally supported me, and which is making it possible for me to overcome the mistakes of judgment I have been making in the last few years.

Not that I want to give the impression that these years were entirely wasted---as I am working here, I am building very consciously on the basis of thinking I have done in the past three years, as well as the three years before when I worked so much more intensively with you. But what I lacked was the extra, marginal time and available energy to drive matters to a substantial conclusion.

Perhaps I should give your a brief account of the matters I am engaged in at present. Most intensively at the moment, a study of the exact problem of NAX the fluctuating force and frictional resistance of a massive Brownian particle in a dilute gas---your favorite problem which you described with the simile of a push-ball being buffeted about by a random crowd of people. The purpose of this is to answer some questions about the nature of "noise" in non-linear systems, such as the above pushball when it is going much faster than the mean-square speed of the people in the crowd. There has been a certain amount of half-baked speculation lately about the stochastic description of NAXAN non-linear systems, and the study of at least one actual concrete case might be a valuable check. This is a rather self-contained study, with clear-cut but limited aims. It was suggested by Uhlenbeck.

Then there is one long-range project, only partly under way, involving an extension of the work of Carleman on the Boltzmann equation. Some of his valuable ideas on how to solve this equation were partly vitiated by his use of **XXXX** rigid-sphere molecules, which make the mathematics more difficult in the long run. This is a problem also of Uhlenbeck's, based on advice from Kac.

On my own, I am continuing some speculations about the relations among stochastic differential equations, Fokker-Planck equations and minimum principles of mechanics which I have been indulging in for ever a year already. Although probably still far from yielding any new results, I find this line of thought irresistibly fascinating. Although I have some ever-present fear that it may be a snare and a delusion, I have run across some cute connections lately that give me some feeling that there may really be "something there".

$$y(t,\alpha) = \int \underline{K}_{1}(t-\tau) d\psi(\tau,\alpha) + \frac{1}{2} \int \underline{K}_{2}(t-\tau) d\psi(\tau,\alpha) d\psi(\tau,\alpha) d\psi(\tau,\alpha)$$

I have pretty well succeeded in convincing him that this expansion has a good chance of solving a rather basic problem in this field, and he is already quite enthusiastic about it. I am rather astonished that it has apparently not been tried before; he assures me that this is so. Perhaps you will not be so surprised. It was you, of course, who first showed me this expension.

So, as you can see, I have been enjoying myself. The Guggenheim is a great institution.

Here is something else that will make you happy if it comes through: I wrote to a Japanese physicist mamed Imamura asking for a reprint, and received not only the reprint, but a request for a job as research associate in my department next year. (Talk about MAKKINX casting bread upon the waters; this is a happening unique in my experience). He says he is anxious to work on our quantum theory. Since he is an experienced hand in quantum field theory (judging by a brief examination of his published papers), this might be the golden opportunity for us to apply the quantum work to field theory, mesoms, etc. The trouble is, B. U. does not have the money available for him. I have written to the Air Force, which sponsors my contract, asking if they can furnish the required additional funds. I suppose this is not a hopeless matter, these days——how I wish I had been around to hear your comments during the MAKKA first days of the Sputnick and our ill-fated counterattempt! To get back to the subject——I have written to Imamura asking him to hold tight, and am awaiting a reply from the AFOSR.

We read about your haging a heart attack, in the Belmont Herald (which pursues us even here). We are anxious to hear from you, hoping (as the article seemed to imply) it was a slight one.

Affectionately,

armand

[ans 2/4/58]

January 30, 1958

Mr. and Mrs. Henry Kahane University of Illinois Urbana, Illinois

Dear Mr. and Mrs. Kahane:

Many thanks for your letter and your two articles. I am quite incompetent to express an opinion on the merits of my father's work. Your paper on "The System of the Verb in the Western Languages" looks like a real contribution to the reduction of syntax to definite terms.

As to the entire matter of mechanical translation. I am very skeptical not primarily about the possibility of doing something in that direction but more especially about the use that is likely to be made of it. In every language the clear cut rules are only a part of the apparatus of knowledge that a translator must have whether the translator be a human being or a machine. Idioms will always remain a stumbling block, and it will be very difficult, if not practically impossible, to so program the machine as to take care of all these individual peculiarities. The result is that while it is quite possible to make a machine which will be good for mechanical translation when the text is plain and free from an employment of these idioms, such a machine may thus obtain a degree of confidence which is entirely unjustified when a critical difficulty comes up. Therefore to a certain extent the better a machine is the more dangerous it becomes. In the present public mood of gadgeteers who are disposed to exalt the machine and belittle the human intellect, and who will push all machine work to the utmost limit of its credibility, the result of machine translation may easily become disastrous. It is for reasons of this sort that I have kept myself aloof from work in this field.

Sincerely yours,

Norbert Wiener

NW: AD

January 30, 1958 Dr. Henry Lax 160 East 72nd Street New York City, N. Y. Dear Dr. Lax: Many thanks for your kind letter of January 27th. My illness was not serious, and has left no permanent consequences. As you know, I have a somewhat enlarged heart which requires me to take diuretics. Partly as a consequence of medical advice I had neglected this precaution too long, and the extra strain of a bad evening's driving made my condition catch up with me. It responded immediately to treatment, leaving no signs in the electrocardiogram. At present I am where I was before the attack, and my doctors assure me that the situation is well in hand and that there is no fresh cause for worry. Sincerely yours, Norbert Wiener NW: AD

January 30, 1958

Mr. David Riesman The University of Chicago 1126 East 59th Street Chicago 37, Illinois

Dear Mr. Riesman:

Many thanks for your letter of the 24th. I appreciate it very much.

I shall try to send you a manuscript of my novel in the near future and shall be grateful for any opinion you have to give about it. You must bear in mind that it is going to be gone over completely next summer, and that I am quite aware of its rawness and defects. One particular improvement that I have in mind is to tell the story in the first person from the standpoint of the character Gregory James. This will give a more personal tone to the story, and will serve to mitigate my relative lack of familiarity with the problem of writing good dialogue.

My wife joins me in sending both of you our regards.

Sincerely yours,

Norbert Wiener

NW: AD

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A.H. NEILLY, JR.,
ASST. VICE-PRESIDENT NEW YORK 16, N.Y. MURRAY HILL 9-7630 J. S. BARNES VICE-PRESIDENT January 31, 1958 Dr. Norbert Wiener Massachusetts Institute of Technology

Cambridge, Massachusetts

Dear Dr. Wiener:

When I saw you in the Faculty Club Lounge a week ago today you called my attention to a new Russian book on a subject which I recall had something to do with Random Series and Automatic Control. It was your impression that this was probably an important book and one that might be translated for use in this country.

Would you be good enough to send me the exact title of this volume, the author's name, and by whom published. Of course, whatever additional information you can supply with respect to the content would be helpful. If the book is, in fact, worthy of translation we can take steps toward that end without delay.

Sincerely yours

Vice-President

JSS/ch



I heard recently that you were engaged in some projects to help the blind. I have a particular interest in this field from an unusual standpoint. My husband Morton Sobell whose name may be familiar to you as the scientist who was tried together with Ethel and Julius Rosenberg, and despite his plea of innocence was sentenced to thirty years in prisonment, would like very much to help with such a project. Obviously he had time to devote to it, he has had experience and he is a talented electronic engineer. If he could employ his time on a socially useful project it would make life much more meaningful to him and be constructive in every way.

My husband was particularly interested in working on a reading machine if you know of such a project which could be helped along thru any sort of calculations design work or computations which did not require laboratory facilities, I feel sure we could manage to get it done.

I know this is not an easy problem but on the other hand available "brain power" should be a useful commodity.

I would greatly appreciate anything that you can do. The fact that my husband is an innocent man and has already been subjected to eight years of futile suffering does not mean that he must continue in this pattern.

00 11t

done.

I shall be greatful to you for whatever can be

Very sincerely yours,

Helen L. Sokell

(Mrs. Morton Sobell)

[cm 2//3/58]

HARVARD MEDICAL SCHOOL Department of Psychiatry Philip Solomon, M.D. Boston City Hospital Asst. Clinical Professor of Psychiatry Physician-in-Chief, Psychiatry Service January 31, 1958.

Prof. Norbert Wiener Mass. Inst. of Technology 77 Massachusetts Avenue Cambridge, Mass.

Dear Prof. Wiener:

Plans for the Symposium on Sensory Deprivation have now progressed to the point where a "Revised Provisional Program" may be issued. A copy is enclosed for your records. All individuals named are planning to participate.

At this time we would appreciate having additional information from you. Will you plan to join the Symposium members from out of town in 1.) Dinner at the Harvard Club. 2.) Pops Concert.

and will a family member accompany you at either or both of these and attend any of the other functions in the entertainment program?

With kindest regards,

Very truly yours,

Philip Solomon, M.D.

We are all delighted you are going to be with us!

Please reply to

57 Chatham Street Brookline 46, Mass.

SYMPOSIUM ON SENSORY DEPRIVATION

Sponsored by Boston City Hospital, Harvard Medical School and U.S. Navy.

Revised Provisional Program

General Chairman - Dr. Philip Solomon, Boston

Thursday, June 19, 1958

8:00 P.M 12:00 P.M.	Reception Dr. and Mrs. Philip Solomon
	57 Chatham Street
	Brookline, Mass.

Friday, June 20

9:00 A.M.	RegistrationFaculty Room,		
	Harvard Medical School		

Session I

	Chairman	Prof. Donald Hebb McGill University	
9:15	Intellectual and physiological effects of perceptual isolation.	Prof. Woodburn Heron McGill University	
9:45	Open discussion		
10:05	Experimental interference with reality contact (perceptual isolation).	Dr. Leo Goldberger and Dr. Robert Holt New York University	
10:35	Open discussion		
10:55	Theoretical considerations.	Dr. Lawrence Kubie New York	
11:25	Open discussion and Chairman's closing remarks		
12:00	Leave by private cars for Boston City Hospital		
12:30 P.M.	Luncheon, Vose House, BCH, Host - Dr. John Conlin, Superintendent		
1:45	Leave by private cars for HMS		

	Session II	Faculty Room, HMS
	Chairman	Dr. John Lilly Nat'l. Inst. of Mental Health
2:15	Effects of sensory deprivation upon perceptual and motor skills.	Prof. Jack A. Vernon and Prof. John Hoffman Princeton University
2:45	Open discussion	
3:05	The effects of sensory deprivation upon epinephrin and nor-epinephrin excretion.	Dr. Jack H. Mendelson Mass. General Hospital
3:35	Open discussion	
3:55	Are there common factors in sensory deprivation, sensory-distortion and sensory overload?	Prof. Donald Lindsley Univ. of California
4:25	Open discussion and Chairman's closis	ng remarks
5:00	Adjourn	
6:00	Cocktails, Harvard Club	
6:30	Dinner	
8:30	Pops concert, Symphony Hall	

Session III

	Chairman	Dr. Erich Lindemann Mass. General Hospital	
9:15 A.M.	Sensory deprivation in aviators.	Dr. Michael Bennett RAF, Inst. of Medicine England	
9:45	Open discussion		
10:05	Anaclitic therapy during sensory deprivation.	Dr. Hassan Azima, Dr. R. Vispo and F. Cramer-Azima, M.A. Montreal, Canada	
10:35	Open discussion		
10:55	The cognitive consequences of early sensory deprivation.	Prof. Jerome Bruner Harvard University	
11:25	11:25 Open discussion and Chairman's concluding remarks		
12:00 Buffet lunch, Host - Dr. George Berry, Dean, HMS			
1:00-2:30 P		nairman . Philip Solomon	

Participants:

Prof. Donald Hebb
Prof. Jerome Bruner
Prof. Ernst Gellhorn, Univ. of Minnesota
Dr. Lawrence Kubie
Dr. John Lilly
Dr. Erich Lindemann
Prof. Donald Lindsley

Dr. H. W. Magoun, Univ. of California Dr. Gray Walter, Bristol, England Prof. Heinz Werner, Clark University

DISCUSSANTS

Prof. W. H. Bexton	Dr. Henry Fox	Prof. Austin H. Riesen
Waterloo, Ontario	Brigham Hosp., Boston	Univ. of Chicago
Dr. Grete Bibring Beth Israel Hospital	Dr. Sanford J. Freedman Mass. Mental Health Center	Dr. Norman Rosenzweig Univ. of Michigan
Dr. Carl Binger	Dr. Daniel Funkenstein	Capt. George E. Ruff, USAF
Mass. General Hosp.	Boston Psychopathic Hosp.	Wright-Patterson A.F.B., C
Prof. Edward G. Boring	Dr. Milton Greenblatt	Dr. Elvin V. Semrad
Harvard University	Boston Psychopathic Hosp.	Mass. Mental Health Center
Dr. Mary A. B. Brazier	Prof. Robert G. Grenell	Dr. Jay T. Shurley
Mass. General Hospital	Univ. of Maryland	Univ. of Oklahoma
Dr. Enoch Callaway III	Prof. Robert R. Holt	Major David G. Simons
Univ. Hosp., Baltimore	New York University	Holloman A.F.B., New Mexi
Dr. Stanley Cobb	Dr. Roy G. Hoskins	Dr. Harry C. Solomon
Cambridge, Mass.	Office of Naval Research	Mass. Mental Health Center
Dr. Sanford I. Cohen Duke University	Dr. George S. Klein New York University	Dr. Richard Trumbull Office of Naval Research
Dr. Esther Davidson	Dr. Philip Kubzansky	Dr. Louis Jolyon West
Boston City Hospital	Boston City Hospital	Univ. of Oklahoma
Dr. Derek Denny-Brown Boston City Hospital	Dr. P. Herbert Leiderman Boston Psychopathic Hosp.	Dr. Donald Wexler Boston City Hospital
Dr. Charles H. DuToit	Dr. William Malamud	Dr. Robert W. White
Mass. General Hosp.	Boston University	Harvard University
Dr. Joel Elkes	Dr. Andreas Marcotty	Prof. Norbert Wiener
N.I.M.H., Wash. D.C.	Boston City Hospital	Mass. Inst. of Technology
Dr. Frank Erwin	Dr. Warren S. McCulloch	Dr. Herman A. Witkin
Mass. General Hosp.	Mass. Inst. of Technology	State Univ. of New York
Dr. Charles Fisher New York, N.Y.	Dr. Asenath Petrie Boston City Hospital	
Dr. Joseph M. Foley Boston City Hospital	Dr. David Rapaport Stockbridge, Mass.	

Symposium on Sensory Deprivation

Provisional entertainment program for those accompanying participants.

Thursday, June 19

4 9 kg.

8:00 P.M. - 12:00 P.M.

Reception --- Dr. and Mrs. Philip Solomor
57 Chatham Street
Brookline, Mass.

Friday, June 20

9:30 A.M.

Full-day sight-seeing tour by bus from Somerset Hote

Historic Boston - Old South Church,

Bunker Hill, etc.

12:30 P.M. Luncheon, Harvard Faculty Club, Cambridge

Tour of Harvard Yard, Glass Flowers, Fogg Art Museum, etc.
Mrs. Jack Gardner's Palace.

5:00 Return to Somerset Hotel

6:00 Cocktails, Harvard Club

6:30 Dinner

8:30 Boston Pops, Symphony Hall

Saturday, June 21

9:30 A.M. Boston Arts Festival, Boston Garden

12:30 P.M. Luncheon, Hotel Ritz

Jele

INTERNATIONAL CONFERENCE ON SCIENTIFIC INFORMATION

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NATIONAL ACADEMY OF SCIENCES
2101 Constitution Avenue
Washington 25, D. C.

January 31, 1958

Memorandum for Prospective Conferees

From:

Dr. Wallace W. Atwood, Jr.

Chairman, Conference Committee

Subject: Conference Plans

This memorandum will bring you up-to-date on recent developments relating to the International Conference on Scientific Information which is to be held in Washington, D. C., November 16-21 of this year, at the Mayflower hotel.

After the unfortunate death last June of Dr. Alberto F. Thompson who had served from the beginning as Executive Secretary of the Conference, it was decided to handle the affairs of the Conference through a committee rather than to appoint a new Executive Secretary. Accordingly the Conference Committee was established, consisting of the representatives of the three sponsoring organizations (the Executive Committee) and the chairmen of the several supporting committees. The Conference Committee is a continuation of the previous planning committee and is composed of the following members:

Dr. Wallace W. Atwood, Jr., Director
Office of International Relations
National Academy of Sciences - National Research Council
Represents the Academy on the Executive and Conference
Committees and serves as Chairman of the Conference
Committee

Dr. Burton W. Adkinson, Head
Office of Scientific Information
National Science Foundation
Represents the Foundation on the Executive and
Conference Committees

Prospective Conferees January 31, 1958 Page 2

Dr. Milton O. Lee, Federation Secretary
Federation of American Societies for Experimental Biology
Represents the American Documentation Institute on the
Executive and Conference Committees

Mr. Charles I. Campbell
Associate for Information Services
Rockefeller Institute
Chairman of the Program Committee

Mr. Henry J. Dubester Chief, General Reference & Bibliography Division Library of Congress Chairman of the Local Arrangements Committee

Mr. John C. Green, Director
Office of Technical Services
Department of Commerce
Chairman of the Exhibits Committee

Currently it is expected that there will be approximately 150 active participants in the Conference, either as authors of selected papers or as designated members of discussion panels. It is also expected that approximately 500 persons will attend the Conference as observers. Registered observers may attend all discussion sessions although active participation in these sessions will be limited to members of the discussion panels and the authors of papers for the various areas. However, observers will have the privilege of submitting relevant questions and comments in writing to the discussion panels prior to the opening of the Conference.

Advance registration of observers will be necessary and will include payment of a fee of \$10.00 per person. These funds will be used to defray a portion of the costs of providing preprints of the conference papers. Since it is desirable for observers to register well in advance of the Conference, detailed information and registration forms will be enclosed with our next general announcement.

Prospective Conferees January 31, 1958 Page 3

Papers selected for inclusion on the program by the Program Committee in collaboration with the referees for each of the seven areas of the agenda will provide the nucleus for conference discussions. These papers will not be read at the Conference but will be mailed to participants and observers approximately two months prior to the conference date.

A tentative and incomplete conference agenda is attached. It will be noted that there is no overlap insofar as the scheduling of the seven area discussion sessions is concerned. This schedule will permit everyone to attend the discussion sessions of all the areas if they so desire. Special panelists are being selected to lead the discussions in each of the areas. Participation will be open to selected discussants and authors of accepted papers - area by area.

No brief report on conference plans can properly acknowledge all the valuable contributions made by the many interested persons who have been associated with the organizing groups in one capacity or another in the progressive development of specific plans for a conference of the highest possible intellectual content. The insight, vision, and enthusiastic leadership of the late Dr. Thompson remain an inspiration to those who were privileged to be associated with him in the early stages of this endeavor. others who have substantive contributions in the preliminary planning of the program are: Mr. Scott Adams, Librarian, National Institutes of Health; Mr. Robert S. Bray, Chief, Division for the Blind, Library of Congress; Mr. Verner Clapp, President, Council on Library Resources, Inc.; Mr. William T. Mason, Bureau of Ordnance, Department of the Navy; Mr. Eugene Power, President, University Microfilms, Inc.; and Dr. Mortimer Taube, President, Documentation Incorporated. On the international level, we would like to acknowledge the early contribution of Dr. Eric de Grolier, Chief Documentalist Professor, Institut National des Techniques de la Documentation, Paris, France, and the constant assistance and cooperation extended by Mr. F. Donker Duyvis, Secretary General of the International Federation for Documentation; Dr. J. E. Holmstrom of the Natural Sciences Department of Unesco; Dr. Alexander King, Deputy Director of the European Productivity Agency; and Dr. D. C.

Prospective Conferees January 31, 1958 Page 4

Martin, Assistant Secretary of The Royal Society. Members of the Conference Committee regret the resignation of Mr. J. E. Cummins from the Committee occasioned by his acceptance of an assignment in the newly established International Atomic Energy Agency. We congratulate him on his new post and acknowledge with deep appreciation his participation as a member of our Committee.

Interest in the Conference continues to grow. Approximately 6,000 copies of the conference announcement have been distributed to individuals and organizations in 33 countries. Our next general announcement will be mailed in March to all who have expressed an interest in the Conference. Conference papers should be ready for distribution in September.

It is my personal hope, shared by my colleagues on the Conference Committee, that many of you will be with us next November.

TENTATIVE CONFERENCE PROGRAM

All sessions will be held at the Mayflower hotel

Sunday, November 16 8:00 PM Opening Session
Address by Sir Lindor Brown
Secretary for Biological Sciences
The Royal Society

9:30 PM Official Reception

Monday, November 17

MORNING

Area 1 - Requirements of scientists for scientific literature and reference services: knowledge now available and methods of ascertaining their requirements.

Discussion Panel Leader: Dr. Philip Morse, Professor of Physics, Massachusetts Institute of Technology

AFTERNOON

Area 2 - The function and effectiveness of abstracting and indexing services for storage and retrieval of scientific information.

Discussion Panel Leader: Dr. Elmer Hutchisson, Director, American Institute of Physics

Tuesday, November 18

MORNING

Area 3 - Effectiveness of scientific monographs, compendia, and specialized information centers in meeting the needs of scientists: present trends and new and proposed techniques and types of services.

Discussion Panel Leader will be announced later.

AFTERNOON

Area 4

- Organization of information for storage and search: comparative characteristics of existing systems.

Discussion Panel Leader will be announced later.

EVENING Excursion

Wednesday, November 19

MORNING & AFTERNOON

Area 5 - Organization of knowledge for storage and retrospective search: intellectual problems and equipment considerations in the design of new systems.

Discussion Panel leader will be announced later.

EVENING Banquet

Thursday, November 20

MORNING

Area 6 - Organization of information for storage and retrospective search: possibility for a general theory of storage and search.

Discussion Panel Leader will be announced later.

AFTERNOON

Area 6 and Excursion

Friday, November 21

MORNING

Area 7 - Responsibilities of governmental bodies, professional societies, universities, and research and industrial organizations to provide improved information services and to promote research in documentation.

Discussion Panel Leader: Mr. Verner Clapp, President, Council on Library Resources, Inc.

AFTERNOON Closing Session

EVENING Reception for Conference Participants at the National Academy of Sciences.

Program Committee Members

- Chairman Mr. Charles I. Campbell
 The Rockefeller Institute
 - Area 1 Mrs. Helen Brownson National Science Foundation
 - Area 2 Dr. Dwight E. Gray
 National Science Foundation
 - Area 3 Mr. Joseph Hilsenrath
 National Bureau of Standards
 - Area 4 Miss Mary E. Stevens
 National Bureau of Standards
 - Area 5 Mr. H. P. Luhn
 International Business Machines
 - Area 6 Mr. L. F. Buckland Griffiss Air Force Base
 - Area 7 Colonel Frank B. Rogers
 National Library of Medicine

All correspondence to any of the above listed persons should be addressed through the Secretariat, International Conference on Scientific Information, National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington 25, D. C., U.S.A.

January 31, 1958 Mr. Henry W. Alexander 10-10 166th Street Whitestone. New York Dear Mr. Alexander: It is some time since I have been working on sensory prosthesis, although I expect to come back to the field in the future. Meanwhile, with all sympathy for your distress, I am hesitant to give advice which could be construed as medical in nature. I suppose that you have already brought your daughter's case to the attention of competent neurologists. Why not ask them about possibilities in this direction? Sincerely yours, Norbert Wiener NW: AD

January 31, 1958

Mr. Bernard S. Benson, President Benson-Lehner Corporation 11930 West Olympic Boulevard, Los Angeles 64, California

Dear Sir:

Professor Wiener has received your letter of January 23rd with a request for a copy of the speech which he gave at Wabash College last fall. There are no copies of his speech available, although it is possible that you might obtain one through the college.

Very truly yours,

Secretary to Professor Norbert Wiener

January 31, 1958 Mr. Elmer F. Beth, Chairman Humanities Committee, The University of Kansas Lawrence, Kansas Dear Mr. Beth: I am afraid that I cannot accept your invitation to give a lecture at the University of Kansas. I cannot afford to leave the Institute during term time for three days, and the Institute has first claim on my services. Moreover you are to have a very strenuous schedule, and I am not up to it. Regretfully yours, Norbert Wiener NW: AD

January 31, 1958 Mr. L. P. Dalcher Berlin Schoneberg Kufsteiner Strasse 69 Berlin, Germany Dear Mr. Dalcher: I am enclosing the receipt which you request. I am deeply grateful to you for your kind letter. Sincerely yours, Norbert Wiener NW: AD Enc.

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Mr. Clark Foreman, Director
Emergency C ivil Liberties Committee
421 Seventh Avenue
New York 1, New York

Dear Mr. Foreman:

As you will see by my article in The New
Republic, and by an article which I hope will appear
soon on who Can Speak For Science. I am very much
interested in the questions you are discussing at the
Emergency Civil Liberties Committee and am taking
responsibility in that matter. On the other hand,
I am very busy, and am not a person who acts effectively
on committees or in general meetings. I have therefore

I am very busy, and am not a person who acts effectively on committees or in general meetings. I have therefore decided to confine my activity in this field to articles which I, myself, write over my own name.

However, you have my blessing.

Sincerely yours,

Norbert Wiener

NW: AD

January 31, 1958 Miss Helen Fuller The New Republic 1244 19th Street, N. W. Washington 6, D. C. Dear Miss Fuller: In pursuance of your request for an article concerning the spokesmen of science, I am enclosing the accompanying manuscript. If it meets with your approval please let me know at once. I am deliberately confining my discussion to the fundamental issues and am not going into any detail in discussing the existing situation in Washington which I can well understand but which is only known to me by hearsay. I think it strengthens a paper not to have it too dependent on matters of important news value. Sincerely yours, Norbert Wiener NW: AD Enc.

WHO CAN SPEAK FOR SCIENCE?

By Norbert Wiener

It seems that in various Congressional and other investigations concerning the present crises in science and in invention, a number of people have been called in to speak in the name of scientists and science either because of their official status in the National Academy, the National Research Council, and similar organizations or because of their personal prestige as scientists, or because they have felt themselves as entitled to speak in the name of science. This state of affairs is largely unavoidable, as any inquiry as to the state of science must use whatever evidence is available. Nevertheless, this tendency to speak in the name of science has great dangers, and any statements which are received as evidence should be entertained with a high degree of caution and reserve.

Fundamentally, science, like art or music or literature, is a human constructive undertaking, and is a matter of intellectual performance by individuals who transcend in the importance of their individual work all considerations of official status, prestige, and general acceptance. This does not mean that their work is not subjected to any judgment whatever. There is, of course, at each time a general form of informed scientific opinion and scientific criticism. In the long run scientific work must submit to such a criticism.

However, this quasi-court of science, unlike the law courts, is not to be bound by the precedent of decisions already made. The composition of this court changes even from year to year, and changes greatly from decade to decade. Not only does it change, but the new work which is done each year contributes greatly and essentially to this change.

There are at least two reasons why a piece of work meets with rejection or grudging acceptance at a given time. Here I leave out all extraneous questions of prejudice and personal wrangling, although these constitute an element by no means to be neglected.

One reason for a piece of work to be rejected is that it clearly is incompetent, hasty, or ill thought out. Perhaps this is the most frequent reason for a piece of work to be rejected; but another of at least equal importance is that a piece of work is ahead of its time.

All really great progress in science is based on a fundamentally new point of view. At the time at which this work is done, it comes, and must come, into conflict with accepted ideas and traditions. It does not fit into the education and the habitual modes of thought of the prevailing generation of working scientists. Thus it meets opposition im at least two ways. It may be rejected with active hostility, or it may be ignored. Of these two types of rejection the second, or passive type, is often the most damning.

recognition. If it is fundamentally sound this opposition will in the long run fail to make its point. This very failure will generally bring out the merits of the new idea; and if these are great and real will contribute to its ultimate acceptance. The rejection of work by mere ignoration, on the other hand, does not bring the new work to any test, and very often leads a line of thought to fall into complete desuetude, or at best to wait for independent rediscovery when the time is ripe.

Let me give a few examples. Mendel's Jundamental Investigations of the Daws of Heredity" was published in an obscure place,
and waited severaldecades until its partial rediscovery by Daveries ?
and others to attract the recognition which its importance merited.

Willard Gibbs, who died after years of valuable contributions to statistical mechanics in 1903 even though some of the leaders of the field saw the importance of his work at once, did not come to his own with the general scientific public until after the end of the first World War. This was because his work, instead of constituting a new answer to questions already raised by physicists, derived its importance from the asking of neg questions which were completely foreign to the ways of thought of most of his contemporaries, and even of his early successors. It required many years of failure to achieve substantial progress by asking the conventional questions of his time to convince scientists at large that his new questions were significant, and that he had made great progress in answering them. In fact his real substantial recognition had to await the rise of a completely new generation of scientists who were willing to look at his work without the instinctively negative reaction of those educated in an earlier age of science.

Oliver Heaviside, as far back as the eighties and nineties, introduced a totally new technique in the investigations of problems of the electric circuit. His methods were so new and unconventional that they were the despair of his contemporary colleagues. It was again only after the end of the first World War in 1919 that most of the electrical engineers engaged in communication problems were convinced of the inadequacy of earlier methods, and were willing to give his techniques a fair hearing.

The examples of Gibbs and of Heaviside bring out another consideration which is important in the evaluation of new work.

Neither Gibbs nor Heaviside fully succeeded in making good their new ideas. Gibbs introduced a certain hypothesis concerning dynamical

systems which is known as the ergodic hypothesis. Strictly speaking, this hypothesis is never fulfilled except in trivial cases. In other words, his work is wrong as it stands. Nevertheless, by the use of techniques not available in his lifetime, it has been possible to give a reinstatement to his conjecture in terms which he could not conceivably have stated them, and to establish the correctness and importance of these modified conjectures. Heaviside's formal calculus of operators as he gave it was devoid of a firm and rigorous mathematical basis. Thus after 1919 a considerable group of mathematicians and engineers in England and America and elsewhere were able to rewrite his work in sound mathematical terms.

These two cases bring out a point of considerable importance.

The value of a new contribution cannot be measured exclusively in terms of its literal correctness. On the one hand a piece of work may be free from any technical flaw, and yet may be completely dull and nugatory, being merely an essay in existing methods, leading nowhere in particular and without any true motivation. This is certainly the defect of more than one of the abstract mathematical papers which glut the present literature, even though the modern abstract methods are powerful tools in the hands of scientists able to use them for the development of new ideas. On the other hand, a piece of work may contain blunders which may in the course of time make good the importance of the new ideas.

The point of all this is that it takes time and perspective to develop an adequate evaluation of new thoughts in science, just as it takes time and mature consideration to develop an intelligent attitude to new movements in the arts. The creative thinker is indeed subject to the judgment of a court of public opinion, but this court is the court of history. How long the wheels in the mills of this

judgment may consume in their grinding is very difficult to state in advance. This is particularly true in periods of rapid transition and innovation. Of these periods, the present in which we have many branches of physics, but as yet no universal physics, is one.

When an official policy must be adopted toward science or the arts, one must seek the judgment of experts, and these experts are naturally to be sought in the first instance among those of established position, official or unofficial. What I am cautioning against is the danger of supposing that these judgments are in any way final. I am not pleading for a neglect of the best opinion to be found at any time. I am protesting most vigorously against any policy which takes precedent too seriously and which considers in these judgments a final validity.

How should these considerations affect our policy in the recognition of experts and official science? Case by case, an individual departure from the existing norm of science is more likely to be in the wrong direction than in the right direction. On the other hand, the overwhelming majority of the really significant advances in science will be found among departures from the existing norm. If science is really to progress, it is important that these departures should have an accepted place in the mass, notwithstanding that such a tolerance for them will involve a tolerant consideration of at least a tentative character for many scientific missteps. Thus any attempt to suppress them en masse, notwithstanding its probable justification in any single instance, will lead inevitably to the standard of science and to an eventual depreciation of its level.

This is an almost inevitable consequence of a too ready

recognition of authority in science. The danger of this is real and immediate, particularly at a time where the sense of urgency leads a large part of science to be channeled in the direction of immediately and visibly useful ends. In the long run, a country which does not admit a very appreciable amount of scientific work whose immediate utility and correctness is doubtful, will fall behind its competitors who have a more tolerant and broad-minded policy. This tolerance must of course be exercised with discretion and intelligence. However, this quality of discretion and intelligence is something over and above a competence in the techniques of the existing state of science.

In other words, in the selection of experts to speak for science in matters involving long time policy, it is essential to demand something more than immediate effectiveness and up-to-dateness.

January 31, 1958

Mrs. Violet Loughry 1689 Auburn Road Wantagh, New York

Dear Mrs. Loughry:

Many thanks for your letter of January 24th.

I find myself very busy at present and not in a position to write immediately about the matters concerning which you inquired. However, when I have a backlog of work off, it is possible that I may find the time and the attention to devote to it.

Sincerely yours,

Norbert Wiener

NW: AD

January 31, 1958 Mr. A. B. Soble 114 N. Fourth Avenue Highland Park, New Jersey Dear Mr. Soble: I shall be glad to look over your paper, but I am pretty well rushed with responsibilities so I do not wish to state the time at which you will receive a reply. Thank you for sending it to me. Sincerely yours, Norbert Wiener NW: AD

January 31, 1958 Dr. S. Fritz Tobias Grass Valley California Dear Dr. Tobias: Many thanks for your kind letter of the 26th of this month. Like you, I am not sure how our present difficulties in education in scientific work can be cured, and I do not set myself up to prescribe in this matter. However, I agree with you that the difficulties are deep and serious, and that it will not become worth while to say too much about ways and means until the realization of our plight is more general. Sincerely yours, Norbert Wiener NW: AD