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CORRESPONDENCE Nov. 1-16, 1959

N. WIENER - MC 22

[ca. Nov, 1959]

Robert E. Shaw
1037 South 52nd Place
Birmingham 6, Alabama

Dear Professor Wiener,

As a college senior at Birmingham Southern College majoring in mathematics and philosophy I have become deeply and genuinely interested in the new science of cybernetics.

This seems to be a vast area of endeavor open to and in need of research scientists. However information and advice in this matter is difficult to come by.

I hope sir, that it would not be presumptuous on my part to ask you to advise me in choosing a course of studies which will prepare me for study and research in this field. My knowledge of the subject has been restricted to the five books available at the public library. These have only given me a very general

knowledge of what is expected for preparation in this science. My desire is to pursue graduate work which will best equip me for this work and assist, where possible, in reducing the tendency for compartmentation of the sciences which tends, in this day and time, toward maximum entropy.

Thank you for your valuable time and consideration in this matter.

Yours truly,
Robert E. Shaw
1031 South 52nd Place
Birmingham 6, Alabama

[ans 11/16/59]

[Ca. Nov, 1959]

Review of Volume V of Third Berkeley Symposium
on Mathematical Statistics and Probability

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Proceedings of the Third Berkeley Symposium on Mathematical
Statistics and Probability. Volume V. Edited by J. Neyman.
University of California Press. 1956. viii + 184 pp. \$5.75.

The Third Symposium arranged by the Statistical Laboratory at the University of California was held in two parts, at Christmas, 1954 and in the following summer. Since the papers presented were of greater number and variety than before, they have been published in a series of volumes, of which the one under review (the last of the set) is devoted to econometrics, industrial research, and psychometry.

The first of the econometric papers, by Kenneth J. Arrow and Leonid Hurwicz, is a very technical consideration of the problem of reducing a constrained maximum to a saddle-point problem. The authors take a result of Kuhn and Tucker, which appeared in a paper on non-linear programming in the previous Berkeley Symposium, giving conditions for $f(x)$ maximal subject to $g(x) \geq 0$, $x \geq 0$, where x is an N -dimensional and g an M -dimensional vector. The conditions relate to nonnegative saddle-points of $\varphi(x, y) = f(x) + y'g(x)$ where the Lagrange multiplier y is an M -dimensional vector. This involves convexity assumptions, i.e., that f and all the g 's are concave functions. Arrow and Hurwicz consider the problem of relaxing these conditions and find that it involves a modification of the Lagrangian expression φ .

The other three econometric papers deal with fundamental questions of utility, probability and decision-making. Economics is now approaching the position reached in physics a hundred years ago-deterministic macro-dynamics. I say "approaching" since it is only quite recently that the macro-economic problem has yielded to attempts to give it an empirical content and since the difficulties (both conceptual and statistical) are by no means overcome, as Theil's work on aggregation problems demonstrates. Certainly little real use has yet been made of the theory of value and of consumer behavior, the "quantum theory" of economics. Despite "the terrible struggle of recent years to make something effective out of this kind of theory... the struggle

has not brought us very far," to quote Professor Barankin (p. 25). At the same time, and without specific econometric applications in mind, statisticians have been tying themselves in knots over the concept of probability and decision theory. The time will come when all this converges on the practical and econometrics will take, as physics has done, a great step forward.

C. West Churchman considers, in his brief paper, the bases on which decision theory must rest, maintaining "that there can be no theory without measurement, and that we have no method as yet of performing measurements relative to decisions" (p. 53). The measurements inevitably must be in terms of values or preferences. In another paper, that by Patrick Suppes, a defence is put up on subjective probability and utility, following Savage's Foundations of Statistics (1954) and the much earlier work of F. P. Ramsey. He also stresses the importance of methods of measurement in decision theory.

Edward W. Barankin will have nothing to do with the subjective approach and his paper on an objectivistic theory of probability is perhaps the most important of the papers in this volume, diffuse and wide-ranging as it is. I would guess that he has shown the way for an advance by making utility a set-function, and not a point-function as hitherto, by taking utility as dependent on "personality" as a stochastic process. This would link utility and probability firmly together, as has been the tendency in much recent work. "Speaking on behalf of the individual himself, we say he has certain utilities which motivate his acts; speaking for the rest of the world, we say there are certain probabilities that underlie his acts. We have thereby said the same thing in two ways" (p. 40). Exit determinism (e.g. von Mises' frequency theory of probability) and bring in the "quantum theory" of economics. Barankin has much to say on mathematics, induction and statistics, and on language. For example, he makes the point that single words in the language describe complex stochastic processes, whereas it is necessary to use extensive and carefully designed verbal constructions to describe basic processes of behavior. This is certainly a paper which deserves to be widely read and pondered.

BETH ISRAEL HOSPITAL
BROOKLINE MASS

appt. made for
Thurs., Nov. 19, 1959

NOVEMBER 2, 1959

Dear Dr. Weiner,

As chance would have it, I bought "The Tempter" at the Coak just before unexpectedly entering the hospital; I read the second half while receiving a transfusion.

I just finished watching your interview on Channel 2. While you may deny identifying yourself with any of the characters, I can't help but conclude that at least the principles of yourself and Woodbury are synonymous.

My initial interest in "The Tempter" was the moral battleground you chose — patent position development.

As the enclosed recent reprint from Barron's (marked out in red) would show, I am developing a patent position relative to a very rapid process of shoemaking which sees done in 27 minutes what normally takes 3-6 days.

Apart from my own attorney's appraisal, United Shoe's top management referred me to an attorney they considered the best in the shoe art — "worth millions" was their independent appraisal. An empirical formula of patent worth from Berle & DeKamf's book would establish a value of 125 million for U.S. rights alone. I am applying for protection in 19 countries and have received U.S. notices of allowance on 3 of the 5 patents.

The downright confidence of the attorneys is the most disturbing part of my position. I am told that my position is unassailable with no prior art even close. Yet I can't help feeling as you so aptly put it "... a strong patent in weak hands is poorer than a weak one in strong hands." The type of skullduggery of "The Rempter" would appear to be underway by at least one of the biggest shoe companies. Your fictional world appears to be far more real than the confident world of these attorneys.

Would it be possible for me to visit with you briefly when I come out? Your down-to-earth understanding could serve as a much needed compass.

Respectfully,
Marta Bronfield

BARRON'S

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National Business and Financial Weekly

SEPTEMBER 28, 1959

The Makers of Shoe Machinery Are Taking Rapid Technological Strides

BY THE STAFF OF BARRON'S

EARLIER this year, the International Shoe Co., largest manufacturer of footwear in the U. S., introduced something entirely new — an all-plastic shoe, turned out in less than a minute on a single machine. Leather shoes, by contrast, require anywhere from two days to a month to go through the usual 150 to 200 operations performed by hand or by various combinations of the 250 types of standard shoe machines. The new plastic footgear, casuals and play-shoes known as *Amigos*, retail for only \$1.98 to \$4.98, and have sold out rapidly in many variety chain stores. They are made for International, as U. S. sales agent, by Utrilon Corp. of Sydney, Australia; London, and Puerto Rico. Utrilon, a privately-owned Australian concern, announced last month plans for building a shoe factory and a plant to make molds and molding equipment in Hazelton, Pa.

While it is still too early to assess the ultimate impact of the plastic shoe, its arrival on the scene is symbolic of many changes that are taking place these days in a normally unchanging industry, shoe manufacturing. In particular, the century-old craft of making shoe machinery is taking on a new and more modern look. For one thing, to put their business on a sounder economic footing, the machinery makers are venturing into many another field, from adhesives to electronics. At the same time, within their own traditional occupation, a good deal of progress is afoot. The fact that production and sale of footwear in the U. S. is expected to climb to an all-time peak in 1959 can only lift their sales and earnings. Meanwhile, an intensified stress on research is enabling the industry to step up its technological advances. All in all, the companies that turn out shoe machinery are striding briskly ahead these days.

The shoe-making section of the U. S. machinery industry, it should be noted, is more important than its size alone would suggest. Aside from the companies concerned with equipment for making plastic footwear, the U. S. boasts fewer than two dozen companies which produce shoe machinery. Specifically, these concerns turn out the equipment on which leathers and fabrics are cut, stitched, skived, cemented, folded, perforated, laced, lasted, formed, bottomed, nailed, scoured, polished and otherwise worked, to make the nation's shoes. Some of them make only one or two kinds of shoe machinery. The majority also import various types. In 1958, their total revenues — from leased equipment and from sales of shoe supplies and of American and European machines — amounted to some \$100 million.

"A steadily increasing percentage of our business is on machines and products developed in recent years. Shipments of machines during 1958 show that 40% were new models added to our line since 1952."

— Sidney W. Winslow, Jr.,
Chairman,
United Shoe Machinery Corp.

Most of the companies that shared this revenue are privately owned. Among them are Allied Shoe Machinery Corp. of Haverhill, Mass.; Herman Schwabe, Inc., of Brooklyn, N. Y.; Welco Shoe Corp. of Waynesville, N. C. (one-third owned by Atlas Corp.); and International Shoe Machinery Corp. of Cambridge, Mass. The publicly-owned concerns concentrating primarily in the business are Compo Shoe Machinery Corp. of Waltham, Mass.; and the industry giant, United Shoe Machinery Corp. of Boston.

* * *

Allied makes auxiliary machines used in soling. It also imports various types of equipment. Herman Schwabe, Inc., a 25-year-old concern, makes a sole-attaching machine which, it says, is used in 75% of U. S. shoe factories. The company also turns out hydraulic equipment for the industry and imports shoe machinery from Germany, Italy and Denmark. All told, it handles more than 40 types of machines.

Like newcomer Utrilon, Welco Shoe Corp. produces both shoes and shoe machinery. The company is controlled by the Rollman family, which for three generations prior to World War II operated factories in Europe. Heinz Rollman and his family, in partnership with Atlas Corp., acquired the concern in 1948. The company's research and development, process engineering, licensing and production of machinery are carried on by a subsidiary, Ro-Search, Inc., which has licensing agreements and management contracts with some 60 companies in almost as many nations.

International Shoe Machinery Corp., third largest in the industry, manufactures lasting equipment. In that specialty, it is the only major domestic competitor United ever has had. The family-owned concern was founded in 1937 by J. S. Kambourian, Sr., who invented a machine which used cement instead of metal tacks to hold the sides of uppers down tight over the last. The machine combined two or three operations, speeded production and cut costs; it subsequently has contributed to the development of the ballerina and California types of shoes, which retail at \$4 to \$14.

International now also makes a toe-lasting machine, some soling equipment and thermoplastic adhesives for the shoe and automotive markets. Since World War II it has operated a plant in Canada, and more recently it has begun to manufacture in England and Brazil.

For the publicly-held companies, sales and earnings have been climbing almost steadily in recent years. Even the 1957-58 recession gave them only slight pause. Indeed, despite a modest decline in U. S. shoe output for the year, Compo was able to increase its 1958 income from sales and leases to a record \$6.1 million, up 17% from the previous year. Its net, meanwhile, rose by 31% — to \$313,624, or 81 cents a share, from 56 cents in 1957 (and 12 cents in 1956). Today the pace is even faster. For the first six months of 1959, Compo's sales and revenues totaled \$3.5 million, up 25% from \$2.8 million a year earlier. Earnings rose about 40%, to \$210,028, or 55 cents per common share, as against \$148,168, or 38 cents a share, in the same months of 1958.

As for United Shoe Machinery, its gross operating income for the year ended Feb. 28, 1959, fell slightly, to \$90.1 million, from \$91.1 million, and earnings for the year tumbled to \$9.2 million, or \$3.85 a share, from \$9.8 million, or \$4.08 a share, the previous year. Since then, however, its fortunes have improved. In the first quarter of the current fiscal year, ended May 31, gross operating income climbed from \$21.4 million a year earlier to \$24.8 million. Net for the three months rose from \$1.5 million, or 62 cents a share, in the 1958 quarter, to \$2.4 million, or \$1.01 a share, this year.

* * *

The business of the machinery producers naturally tends to rise and fall with that of their customers, the thousand shoe manufacturers in the U. S. And recently the latter have been making remarkable strides (*Barron's*, May 18). As might be expected, per capita production in the U. S. is the highest in the world — today, about 3½ pairs. True, output of men's footwear, on a per capita basis, has been going downhill fairly steadily, from a 1923 peak of 2.66; it now stands at only 1.6. On a happier footing, though, are women's shoes, which account for 47% of all production, and are being turned out at a pace of 4.36 pairs per capita. Output of children's shoes, as any parent can testify, is biggest of all, at 4.82 per capita.

Last year, despite the recession, the industry sold 589 million pairs of shoes and slippers, and another 65 million pairs of rubber-soled canvas shoes, on which U. S.

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On Their Toes

consumers spent some \$3.7 billion. This year, as the whole economy gained momentum, production in the first seven months was stepped up by 11.5%. The manufacturers now feel confident that in 1959, for the first time in history, they will turn out more than 600 million pairs of non-rubber shoes.

Significantly, their production to date has been accomplished in plants which are generally the antithesis of the highly automated ones increasingly in vogue in other industries today. To make a pair of shoes, as noted, may take over 200 operations, half of which sometimes are done by hand. Each machine operation takes only a few seconds, and total working time usually adds up to no more than two hours. From start to finish, however, a pair of shoes may require a month to turn out. The delay stems partly from the practice of letting uppers dry out on the lasts for hours, or even days. It results also from the age-old transportation methods — hand-loaded, hand-pushed racks — still used in most of the industry's plants.

Here a brief look at a typical shoe factory may be in order. It usually is divided into eight departments: the cutting room, where dies are used to cut the leather or fabric parts for the uppers; the upper fitting room, where the parts of the upper and lining are assembled and stitched into a complete component; the stock fitting room, where outsoles, insoles, welting, counters (heel reinforcements), heels and box toes are made or assembled; the lasting room, in which the upper and lining are drawn down tightly to the wooden last and attached to the insole; the bottoming department, where the outsole is attached permanently to the upper; the making room, in which the heel is attached and the sole trimmed; the finishing room, where soles are scoured, bottoms polished and the lasts pulled; and treeing, where shoes get their final dressing and inspection.

* * *

All these processes, clearly, require a good deal of machinery. The business of producing it in the U. S. goes back over a century, to 1858. United, founded in 1899, has remained consistently the industry leader. Its first major competition arose in 1929, when Compo was organized, to make and sell what was then a revolutionary new type of equipment for attach-

ing soles to uppers. The Compo process, which achieved a stronger and more durable bond by substituting cementing for stitching, nailing or tacking, since has become the dominant method of U. S. shoe manufacture. It was applicable at first only to lightweight shoes for women, but as improved adhesives were developed, Compo in 1950 extended the process to children's shoes and finally in 1958 to men's as well. Last year, some 308 million pairs of U. S. shoes, more than half of all non-rubber footwear, were made by the cement process.

The real turning point in the development of competition in the industry, however, was 1954. In that year, United Shoe Machinery lost an important anti-trust case in the U. S. Supreme Court. The company was ordered henceforth to sell as well as rent its machines; to shorten the terms of its leases from ten years to five; to permit the return of leased machines after one year; to make separate charges for service; and to refrain from distributing factory supplies made by any outside company, unless it had 20% control of the latter.

* * *

According to George R. Brown, president of United, it is still too soon to tell what the long-range effects of the decree will be. On the one hand, it prompted International, Compo and nine other machinery companies to file triple damage suits against United. Compo later settled for \$1.4 million and certain cross-licensing agreements, but the first of the remaining suits finally may come to trial this year.

On the other hand, some observers have called the anti-trust decree one of the best things that ever happened to United. One immediate effect was to increase sharply both its sales and earnings, as shoe manufacturers with leased machines exercised their newly acquired options to buy them. In the fiscal year ending in February, 1956, for example, its sales of such machines totaled \$14.2 million, boosting its gross to an all-time record of \$104.2 million. Earnings on those sales alone amounted to \$9.6 million, while total earnings reached \$18.8 million, or \$7.97 a share. (In fiscal 1954, total earnings had been only \$7.9 million.) Since that time, sales of leased machines have tapered off.

So, for that matter, have leases. In fiscal 1959, only 28% of United income came from

this business, which five years before had accounted for the great bulk of the company's volume. Over the years, naturally, the number of machines outstanding on lease has declined, to about 50,000 today, only half as many as before the decree.

There are, however, offsetting factors. For one thing, some 25,000 of the machines now on lease are new, and thus subject to increased rates, which reflect today's higher costs. Those higher rates have helped cushion the dip in overall lease revenues. Then, too, since lease payments are on a royalty basis, last year's drop stemmed in part from the decline in shoe production for the year. This year, as noted, shoe output is climbing again. Finally, as leasing has slackened, other sources of revenue have picked up. Thus, in addition to selling \$4 million of formerly leased machinery in 1959, United sold nearly a thousand new machines, plus parts, plus thousands of items to supply the shoe industry, for a total of \$37.2 million.

* * *

In quest of still broader markets, all the major U. S. shoe machinery makers in recent years have been looking abroad. Immediately after the anti-trust decision, Compo took advantage of the more freely competitive market to negotiate sales agreements with several foreign manufacturers. These called for exchange of technical data, exclusive distribution of their equipment in the U. S. and Canada, and enlarged distribution of Compo products abroad. Most important was a pact with Maschinenfabrik Moenus A.G., the largest shoe-machine company in Europe, which gave Compo entry for the first time into that important section of a shoe factory, the lasting room.

United, too, has gained strength from its overseas operations. The unconsolidated sales of its foreign affiliates in fiscal 1959 amounted to about \$82 million, and United's equity in the net was approximately \$6 million, of which it received \$2.6 million in dividends. Companies in the sterling area accounted for \$44.1 million of the foreign volume, continental European concerns for another \$23 million, Canadian affiliates for \$10.8 million and those in Latin America, for \$4.1 million.

Not wanting to stick to just one last, the industry in the past five years also has speeded efforts at diversification. About a year and a half ago, for example, International took its first major step in this direction. At that time, it began producing an edge-folding up-

holstery machine used for making interior automobile panels, card table tops, chair backs and the like. The company is planning further steps, which it intends to finance privately. International already has an embryonic electronics division set up to make consumer products.

As for Compo, it has been making its own adhesives and coatings since 1949, when it purchased a chemical plant. These products, incidentally, also are sold to the textile and wood products industries. The company's chemical line has been broadened by reciprocal agreements with foreign manufacturers, including Atlas-Ago of Wolfgang, Germany.

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In 1953, Compo became a producer of shoe components, with the acquisition of the United Wood Heel Co. This purchase was followed by the acquisition of certain assets of Wood Products, Inc., of Nashville, Tenn., used in making wood heels; by the purchase of the Quirk Machinery Co., makers of wood heel equipment; and by the construction of a lumber mill in Canada. When fashions changed, the heel subsidiary switched to molded plastic heels and to extremely high wood-and-aluminum heels. Compo also has expanded into the distribution of parts and supplies, such as nails, tacks and solvents. Last year, for example, it became a distributor to the shoe industry for Minnesota Mining & Manufacturing Co.'s shoe tapes and coated abrasives, and for Torrington's Co.'s needles and awls.

For United, one of the major effects of its legal defeat was to persuade management of the need for broader diversification. Now, after four years of effort to this end (though the company did not start quite from scratch), 21% of its income comes from industries which have nothing at all to do with shoes. In fiscal 1959, its sales outside the industry came to \$18.9 million, more than a third of the total volume of the merchandise it sold.

In pursuit of diversification, the concern a few years ago acquired the A. Kimball Co. and its National Tag Co. affiliate, which produce data-processing systems and product-identification materials. United thus entered the field of business machines. Another subsidiary, B. B. Chemical Co., produces adhesives for the shoe industry, and for a variety of other end uses, including fabrication of inflatable survival gear, the conversion of film and paper in packaging, and the assembly of plastic parts.

Perhaps most significant of all, the industry of late has

stepped up its outlays for research and development. The result has been a speeding of its technological progress. In this area, the shoe machinery makers had done no more than inch their way forward for nearly a century. Aside from Compo's cemented process, there had been no radical developments in all that time. Of late, however, two significant advances have occurred: the growing use of vulcanization, and the development of conveyor systems for shoe factories.

The history of vulcanizing's gradual spread through the industry goes back quite a way. According to Heinz Rollman, president of Welco, companies in Germany owned by his family originated the direct vulcanizing process, which long has been used abroad. The first such patents, a generation ago, covered direct vulcanizing of rubber soles to fabric uppers; the process was used by the Rollmans in Germany to make slippers and by their licensees in manufacturing in other European nations and in South America.

* * *

In 1932 the Rollman & Mayer company began work on a process for vulcanizing rubber soles to leather uppers. Conventional vulcanizing—a relatively simple, fast and inexpensive method of attaching sole to upper—required an hour and a half in an autoclave or curing oven. Though it worked well in bonding rubber soles to canvas uppers, leather uppers could not stand the prolonged heat. However, a young Hungarian engineer, Andrew Szerenyi, at Rollman & Mayer's behest, managed to cut the curing time to five minutes, an exposure which leathers would tolerate.

The new process, "Paraflex," eliminated some 20 operations from rubber-soled leather footwear production. By 1933 Rollman & Mayer itself was producing 5,000 pairs of Paraflex shoes a day. It subsequently licensed other European producers. Today, the Paraflex patents have run out, and several European manufacturers currently are making direct vulcanizing equipment for the world market. In the U. S., International Vulcanizing Corp., for instance, is importing German machinery, and C.I.C. Machinery, Inc., is bringing in English equipment.

International and two smaller companies, too, have started direct vulcanizing activities. The high cost of the molds makes the process uneconomical for rapidly changing fashion footwear, but efficient for standard items such as military or work boots.

Meanwhile, in 1951 Welco

sold Genesco (then General Shoe) molding equipment which the latter still is using to make slippers and casuals with sponge rubber soles. Welco itself is producing similar items. Research has developed and patented new equipment which permits bonding to a wide variety of upper thicknesses. It has built such equipment for several foreign plants and for its U. S. affiliate, the Georgia Shoe Co., which now is using it to turn out work boots. Welco currently is organizing a new affiliate, the Gro-Rite Shoe Co., to make children's footwear by the same process.

Equally promising are recent developments in factory conveyor systems. The conventional way to move shoes from operator to operator is by a truck or rack, usually holding 36 shoes, each of which is unloaded at every station, worked on, replaced and pushed on—all by hand. Handling normally consumes much more time than the actual work; indeed, the shoe rack has been described as the most expensive machine in the plant. The traffic and handling problem becomes most acute in the fitting or stitching room, where variations in the number and types of operations required for a wide range of styles compound the difficulties.

Numerous attempts at a solution have been made. For instance, the Stetson Shoe Co., a few years ago called in Singer Manufacturing to try to smooth out its stitching-room operations. Singer came up with a newly rationalized work flow and some specially designed hand-propelled trucks—the whole known as the Synchro Truck System.

* * *

A more fundamental attack on the problem has been made by European machinery manufacturers. G. M. Pfaff of Kaiserlautern, Germany, largest sewing machine company on the Continent, has developed the Varion system, an automatic conveyor providing transportation and automatic dispatching and unloading of work boxes. The Varion equipment, imported to the U. S. by Wilcox & Gibbs Sewing Machine Co., makes it possible to convey work electromechanically from the dispatcher to any desired work station and thence to any other operator or group of operators.

The first of the most advanced Varion systems recently was installed in an Endicott-Johnson plant. Earlier models went into three smaller U. S. factories, including one owned by Carroll Shoe. The latter reports that the system has en-

abled it not only to process a larger number of styles simultaneously, with far fewer complications, but also to reduce sharply its labor costs, through increased output per operator.

Meanwhile, others are at work on the problem. In Boston, a management consulting firm, Bromfield Associates, recently designed a shoe conveyor system, for which it now is seeking patents. Morton Bromfield, the 33-year-old M.I.T. graduate engineer who heads the firm, got into conveyors in a roundabout way. On his first shoe-factory assignment, he found that improved operations depended on a production control system and a quicker turnover of lasts. Mr. Bromfield discovered that lasts constitute an important operating cost for shoe manufacturers. A set of men's lasts may be used for as long as seven years, but women's lasts, because of style changes, must be renewed at least every three years, often annually. A moderate-sized plant may spend \$80,000 a year on lasts, a big one \$500,000.

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Mr. Bromfield also found that these valuable lasts often were tied up for days or weeks while the uppers slowly dried out. He devised a way of extracting the moisture quickly by applying radiant heat. Similarly, he found that it takes two hours, or overnight in some cases, after application to the bottom of the upper for sole cement to reach the desired gumminess for the sole to be laid on and adhere. By preheating the shoe and applying heat to the cement surface, he cut the waiting time to four minutes.

Having got that far, it was necessary to conveyerize to get a uniform amount of heat. His conveyors, incorporating 13 standard machines, not only transport the work in progress but also combine devices for regulation of moisture and heat.

Mr. Bromfield claims that his system cuts the time from the moment the stitched upper enters the lasting room until it has gone through soling from hours or days to 27 minutes. Furthermore, he says the system eliminates two-thirds of the cripples (damaged shoes), and saves from four to six cents a pair on medium- and high-heeled shoes. In an industry where total earnings often run to less than a nickel a pair, such a saving appears enormous. A Bromfield unit, excluding the conventional machines, costs from \$12,000 to \$25,000 and Mr. Bromfield says it will pay out in six months.

He has installed one unit at an A. Sandler Co. plant in Web-

ster, Mass., and one at Parry Footwear, Inc., in Cambridge, Mass., which makes men's shoes for Genesco, Brown and International. The first unit was built in a sheet metal job shop near the Sandler plant; the second, for reasons of secrecy, in a Bromfield family shipyard in East Boston. Right now, Mr. Bromfield is not even considering manufacturing the conveyors himself. He is concentrating on getting his patent applications approved.

In general, though, the technical development of the shoe industry until lately has been remarkably slow. In commenting on this fact, Merrill A. Watson, executive vice-president of the National Shoe Manufacturers Association, observes that "materials have been the governing factor. Leather requires individual treatment in cutting and other operations. If we had had a uniform artificial material to work with, we would have developed more advanced machines." (The materials problem, incidentally, relates chiefly to uppers: already more than 70% of soles are composition, mostly rubber-based.) Moreover, the price of leather until recently has been rising by leaps and bounds.

Hence the great interest in the plastic shoe. DuPont and others now are working to develop a suitable material for this purpose. One of the first to come to market was a vinyl plastic made by Union Carbide's Bakelite division. All-vinyl shoes now are being made by Intercontinental Shoe Co. of Chattanooga, which started producing them early this summer, under license from the developer of the injection molding process, Frank Muller. Intercontinental has the U. S. rights for both children's and misses' shoes.

According to Ben E. Caldwell, executive vice president of Intercontinental, the company originally bought 12 molds for the six sizes of shoes now in production, at a cost of \$8,000 to \$10,000 apiece. It now plans production of half-sizes and has ordered an additional 30 molds. Mr. Caldwell says Intercontinental has sold 100,000 pairs and could have sold three times as many if it had had the necessary molds.

By this process, a shoe can be molded in 40 seconds. It then goes through an additional half-dozen steps, mainly to add style features such as handlacing. The shoes (Orbits and Tempteens) are made in 11 colors, and retail for \$1.99 to \$4.99.

The Utrilon shoe was the first all-plastic one on the market. It is based on a French process, modified by an Australian maker of chemical com-

pounds for the plastics industry, Leonard Rae. He began production in his Australian plastics plant in 1957, and since has opened a die plant in England and other production facilities in France, South Africa, and Puerto Rico.

The *Amigos* are all ventilated models, with open toes and a basket weave. No one claims that they ever will compete with conventional leather footwear for dress or work; they are designed solely for casual wear. Possibly, however, Utrilon's product, or Muller's, will make it possible some day for the world's barefoot peoples to be shod. In any case, plastic footwear may prove to be the first major breakthrough in the U. S. shoe-making business in 30 years.

It remains to be seen, of course, just what inroads the plastic shoe will make into the industry's established markets. Competition from foreign manufacturers of conventional machinery also is on the rise. United, for its part, still faces several damage suits from other U. S. producers. Nonetheless, the business today is on the move as it has not been for years. Diversification and technical advances are reinforcing its strength, as is the jaunty year the shoe manufacturers are enjoying. The opportunities for mechanizing U. S. shoe factories, moreover, only now are beginning to be realized. Business for the shoe machinery makers, in short, should keep moving ahead briskly in the months to come.

November 2, 1959

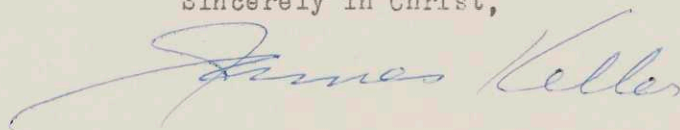
Dear Doctor Wiemer,

The other night at dinner, I sat next to Admiral Luis de Florez at the Navy League Dinner. He told me of some wonderful information that you have put in one of your books regarding the enormous capacity of the human brain.

Would you please send me the name of the book and where I could secure it, as I would like very much to read and study your interesting presentation.

God bless you, Doctor Wiemer!

Sincerely in Christ,



[Ans 11/16/59]

November 2
~~October 30~~, 1959

Mr. Thomas C. Desmond
94 Broadway
Newburgh, New York

Dear Mr. Desmond:

Many thanks for your very complimentary letter of the 21st. I am very much excited to know what you will think of the book after reading it. I know my limitations as an author but I really think I have done a reasonably competent job. As you will notice, I have spoken quite frankly of some of the things that strike me about the invention business but I think and hope that I have also presented the case as it will seem from the point of view of the businessman who finds himself with his unavoidable responsibilities.

Sincerely yours,

Norbert Wiener

NW:smnk

November 2, 1959

Mr. Gil Wilson
245 E. 36th Street
New York 16, New York

Dear Mr. Wilson:

Many thanks for your friendly and appreciative letter concerning my book and for your friendly and appreciative correspondence with Mr. Huston. What comes of this is on the lap of the gods and I am not building too sanguine estimates of the future. However, you have brought up a point which I think needs explaining now whether anything more comes of the matter or not. This is that come what may I do not intend to play the part of Woodbury in any sort of movie, television or dramatic production of my book. I think I owe you an explanation of my reasons. In the first place, I have no skill as an actor even an amateur actor and I have never cultivated such a skill. The quality of sincerity which you attribute to me depends on my doing those things which I feel I can do sincerely and well. I am not of the physical type corresponding to my image of Woodbury nor of the background which would go well with the depiction of that character. I am supposing him to be lean, very deaf, cross-tempered and with the stigmata of poverty. Cross-tempered I may be, but none of the other characteristics belong to me, nor have I the technical skill in simulating them which would go with what I consider to be a good presentation of the part. As to whatever sincerity I may have, it can only appear in doing things that I sincerely believe are within my powers and would disappear immediately if I were to attempt to exploit my personality.

I have a very definite idea of how Woodbury's part should be played and if by any possibility one could obtain Sir Alec Guinness to play the part, it would be ideal. He is small, well experienced in English middle-class and lower middle-class life, and able to assume the physical and mental characteristics which belong to the part. I have some old photographs of Oliver Heaviside in view which convey to me the picture of a part which would be admirably suited to Guinness's physique, ability, and traditions.

If we get a bite as to the possibility of putting the book into the movies, I should be delighted to help in every way in giving my impressions of the characters and of acquainting the actors with the background which I understand to be proper to them. Beyond this, I cannot go.

As to non-professional actors I wish to indicate my entire approval of the acting of Joseph Welch as the judge in the "Anatomy of a Murder", in the first place, however, the judge unlike the scientist is by necessity a public personality. Welch did his part with a complete sincerity and devotion which would have belonged to a first rate judge on the bench. Now I am not a man of the bench, nor even primarily a man of the lecture hall, but a man of the study. What has been appropriate and even admirable in his case would be in

Mr. Gil Wilson
November 2, 1959
Page Two

myself a betrayal of my essential nature.

I shall be ready to see you whenever you wish to make the arrangements. I will be away from Thursday, November 12th until Monday, November 16th but otherwise it would be possible to see you before Thanksgiving.

With all thanks and best wishes for your interest and help, I am,

Sincerely yours,

Norbert Wiener

P.S. I want to emphasize that it is very important that I should not put myself in the false position of being identified with any of the characters of my novel. This could be dangerous from the libel point of view and would give my colleagues an entirely wrong impression of where I think I stand in respect to the work. It just can't be done.

NW:mmk



WGBH

Lowell Institute Cooperative Broadcasting Council
Educational television Channel 2, radio 89.7 mc. and motion pictures
UNiversity 4-6400
84 Massachusetts Avenue, Cambridge 39, Massachusetts

November 3, 1959

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

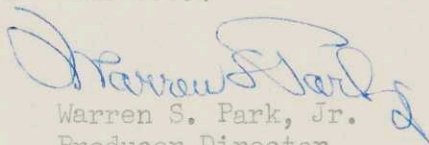
Dear Professor Wiener:

Just a brief note of appreciation for your participation on "I've Been Reading." I hope you enjoyed your visit as much as we enjoyed having you.

In case you are interested, the program will be rebroadcast on WGBH-FM Sunday at 8:00 P.M. and over WCOP Sunday at 10:00 P.M.

Please let me know if we may ever be of service.

Sincerely,



Warren S. Park, Jr.
Producer-Director
"I've Been Reading"



OFFICE OF
THE EDITOR

ENCYCLOPÆDIA BRITANNICA

425 N. MICHIGAN AVENUE • CHICAGO 11, ILLINOIS

November
3
1959

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

Dear Professor Wiener:

I know that we have approached you on a few occasions in recent months with invitations to prepare articles for the Encyclopaedia Britannica. I would not bother you with another such invitation except that this one is of a rather special nature in which, upon completion of your recent novel, I thought you might be interested.

As you might deduce, we are planning quite extensive reorganization and revision within the body of Britannica. One article in which we feel a completely new approach is necessary is ROBOT, which we envision as furnishing the necessary historical background for articles in such other areas as control systems, automation, cybernetics and information theory.

The article presently in the set leaves much to be desired. We hope, in the new article, to present an historical approach to the subject, including accounts of some of the notable automata of past centuries: mechanical orchestras, mechanical chess players and such modern developments as "learning" machines typified by the "tortoise" of W. Grey Walter of Oxford University. The ultimate scope and organization of the article we would naturally prefer to leave to the decision of the author. The same applies to the length of the article: we have tentatively allocated 2,000 words, but we realize that this would have to be adjusted in the light of the author's approach to the subject.

I hope that this proposal may prove of some interest to you. Needless to say, we would be honored to have your assistance in preparing the new article.

Sincerely yours,

Walter Yust
Editor

WY:jm

November 3, 1959

Mr. Charles T. Brown, Director
Center for Communication Research
Western Michigan University
Kalamazoo, Michigan

Dear Mr. Brown:

Many thanks for your interest in me and my work. I have no such material as you speak of and I am too committed by promises of lectures which I have rashly undertaken to be at your disposal this year at any rate. I hope you will understand my position.

Sincerely yours,

Norbert Wiener

NW:mnk

November 3, 1959

Mr. Jason Epstein, Editor
Random House Inc.
457 Madison Avenue
New York 22, New York

Dear Mr. Epstein:

Professor and Mrs. Wiener would appreciate having personal gift copies of The Tempter sent to the following people with a card enclosed with the compliments of the author:

Mrs. Gordon Raisbeck
42 Madisonville Road
Basking Ridge, New Jersey

Miss Peggy Wiener
5201 S. Kimbark Avenue
Chicago, Illinois

Mr. & Mrs. Paul Engemann
13918 Oxnard Street
Van Nuys, California

Mr. & Mrs. Herbert Engemann
11150 Navaho Drive
St. Petersburg, Fla.

Mrs. Aurel Wintner
3750 Tudor Arms Avenue
Baltimore 11, Maryland

The Blakes
59 Fiske Road
Wellesley Hills, Mass.

AIR MAIL

Mr. & Mrs. Ray Morris
University of Hawaii
1028 15th Avenue
Honolulu, Hawaii

Professor & Mrs. Irving Leonard
Department of Spanish Language &
Literature
University of Michigan
Ann Arbor, Michigan

Mrs. Wiener also sends the name and address of Professor Wiener's tailor as follows:

Mr. John A. Flynn
333 Washington Street
Boston, Massachusetts

We will try to locate the two mystery stories "The Brain", and "The Miracle of the Broom Closet" and will send copies when they are located.

Sincerely yours,

Margaret M. Kruger (Mrs.)
Secretary to Professor Wiener

November 3, 1959

Dr. K. P. Mangold
729 Fifth Street
Yazoo City, Miss.

Dear Dr. Mangold:

I am very much interested in your letter of October 2nd and should like very much to hear what you are doing. I will be away from Cambridge from Thursday, November 12th until Monday, November 16th and will also be away during the M.I.T. Christmas vacation which begins December 19th. Please contact my secretary, Mrs. Kruger, for an interview at your convenience.

Sincerely yours,

Norbert Wiener

NW:rank

{ms 11/6/59}

November 3, 1959

Mr. Henry W. Simon
Simon and Schuster, Inc.
630 Fifth Avenue
New York 20, New York

Dear Mr. Simon:

Many thanks for your calendar engagement book and I am proud to have a quotation from me appear in it. I have far from forgotten the many kindnesses you have done me and appreciate to the full your good wishes for the success of my novel.

Sincerely yours,

Norbert Wiener

NW:mnk

HAMBURGER STERNWARTE
DER DIREKTOR

4.11.59

Herrn
Prof. Dr. N. Wiener
Department of Mathematics
Harvard University
Cambridge, Mass.
U.S.A.

Sehr verehrter Herr Kollege:

8911 /
Am 21. September sandte ich Ihnen den in Abschrift
beigefügten Brief. Ich habe bisher von Ihnen keine
Antwort erhalten und bin in Sorge, daß diese viel-
leicht verlorengegangen sein könnte. Während eines
längeren Urlaubs habe ich den Ort mehrfach gewechselt,
und ich habe Grund anzunehmen, daß einige der mir
nachgeschickten Briefe nicht in meine Hand gelangt
sind.

Würden Sie mir freundlichst mitteilen, ob Sie bereits
auf meinen Brief geantwortet haben? Wenn ja, möchte
ich Sie um eine Kopie Ihres Briefes bitten, wenn nein,
wäre ich Ihnen für eine baldige Rückäußerung zu mei-
ner Frage sehr verbunden.

Ich danke Ihnen im Voraus für Ihre Bemühung und bin
mit den besten Empfehlungen

Ihr sehr ergebener

O. Heckmann

(Prof. Dr. O. Heckmann)

2 ans 1/27/59]

November 4, 1959

Mr. Jacques Chambrun
745 Fifth Avenue
New York 22, New York

Dear Mr. Chambrun:

I am very appreciative of your note of October 23rd and consider it a high compliment to be sought for as client by an agent with such an excellent clientele. I am sending my letter to Jason Epstein, my editor, to find out what he thinks best for me to do. I have no immediate plans for further literary work although I have certain ideas which I have communicated to my editor and which seem to meet with his approval.

Will you hold off until I have had a chance to get on my feet again after the extremely exciting experience of publishing a new book. With thanks and best wishes, I am,

Sincerely yours,

Norbert Wiener

NW:mnk

November 4, 1959

Mrs. Janet Persons
Box 1124
Winter Park, Florida

Dear Janet:

We have made the New York Times together! In case you haven't seen our joint reference I am sending you a copy of the picture. Also, I am sending you a copy of the book under separate cover.

Sincerely yours,

Norbert Wiener

NW:mnk
Enclosure



SCHOOL OF INDUSTRIAL MANAGEMENT

EXECUTIVE DEVELOPMENT PROGRAMS

SLOAN FELLOWSHIPS
PROGRAM FOR SENIOR EXECUTIVES

November 5, 1959

50 MEMORIAL DRIVE
CAMBRIDGE 39, MASSACHUSETTS

Professor Norbert Wiener
Room 2-276
M.I.T.

*Mr. Wynne to pick
Prof. Wiener up at 5:15
in his office.*

Dear Professor Wiener:

This will confirm your schedule for meeting with the members of the Program for Senior Executives at Endicott House. The date will be Monday, November 23, and the time, 5:30 to 8:30 p.m. The group typically has cocktails beginning at 5:30 followed by dinner and an informal discussion period. I will leave to you the choice of the subject you want to discuss with this group. I will call Mrs. Kruger on the 23rd to make arrangements to drive you out to Endicott House.

Your particular hosts for the evening will be Dr. David Weisblat and Mr. Richard Osgood.

I am enclosing a booklet describing the Program and the picture list of the current participants.

Thank you very much for your readiness to meet with this group.

Sincerely,

John M. Wynne
John M. Wynne
Director

JMW:js
Enc.

MEMBERS OF THE PROGRAM FOR SENIOR EXECUTIVES, FALL, 1959

SCHOOL OF INDUSTRIAL MANAGEMENT, MASSACHUSETTS INSTITUTE OF TECHNOLOGY



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Assistant to the Comptroller
The Goodyear Tire & Rubber Company
Akron, Ohio



JAY H. LONG
Division Superintendent
Southern Pacific Company
El Paso, Texas



FRANK M. BAKER
Vice President and General Manager
Kentucky Power Company
(American Electric Power Service
Corporation)
Ashland, Kentucky



JAMES W. MILNE
Superintendent of Antibiotic
Manufacturing
Abbott Laboratories
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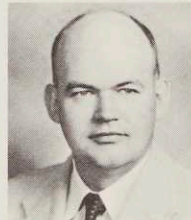
ROBERT P. CROSS
Works Engineer of Manufacture
Western Electric Company, Inc.
Chicago, Illinois



THOMAS F. NEAL
Assistant Regional Manager
Sun Oil Company
Philadelphia, Pennsylvania



OLIVER B. CUNNINGHAM
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Engineering
Radio Corporation of America
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CLIFFORD E. OMAN
General Manager
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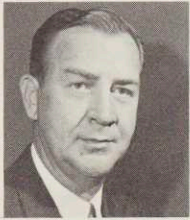
HENRY J. HUGHES
Division Head, Insurance and Social
Security Department
Standard Oil Company (New Jersey)
New York, New York



RICHARD M. OSGOOD
Manager, Waltham Laboratories
Sylvania Electronic Systems
(Division of Sylvania Electric
Products, Inc.)
Waltham, Massachusetts



ROBERT D. SMITH
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Collections
Republic Steel Corporation
Cleveland, Ohio



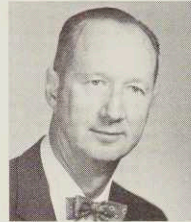
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ROBERT STUART
Assistant to the President
National Can Corporation
Chicago, Illinois



ELLIS J. PREMO
Executive Assistant Chief Engineer
Chevrolet Motor Division
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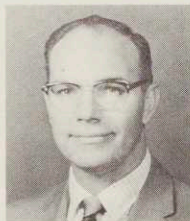
ROBERT R. THOMPSON
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Humble Oil & Refining Company
Houston, Texas



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Division Purchasing Agent
Standard Oil Company (Indiana)
Chicago, Illinois



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Corporation
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Pratt & Whitney Aircraft Division
United Aircraft Corporation
East Hartford, Connecticut



ROBERT C. SIMMERS
Manager - Component Products
Westinghouse Electric Corporation
East Pittsburgh, Pennsylvania



STUART G. YOUNKIN
Director of Agricultural Research
Campbell Soup Company
Camden, New Jersey

November 5, 1959

Ing. Eugenio Mendez
Director General
Instituto Politecnico Nacional
Mexico, D. F., Mexico

Muy estimado senor y conlega:

Estoy de vuelta de mi visita a Mejico. Era para mi esposa y mi una visita de mucho placer y de mucho carino. Quiero expresar a Ud. mi admiracion profunda por el desarrollo cientifico y industrial de su pars, por la limpieza y el progreso social de su magnifica capitol, por la amistad y carino que hemos recibido de terdas amigos, nuevos tambien que viejos. Con una recepcion tan magnifica, no pride hacer menas que empleur todas mis esfuersas para darle mis ideas cientificas y mis refecciones sobre el estada actual de la ciencia de communicationes.

Esperamos en dos anos regresar en Mejico por un pericado de tres o seis meses, a vivir en Coyoacan en una casa con jardin y patio, a travajar (pero no en una manera tan concentrada) en los institutos cientificos de Su undad, y a apartar con nosotros mis dos nietos mayares (que seran en dos anos un muchacho de doce anos y una muchacha de diez anos) para recibir sus primeras impresiones de Mejico y a aprender el castillano.

Le agadesco, y agandesco ignalmente a terdos conlegas y amigos por esta ocasion mercivillora de volver en la vida di un pars en que nos sentimos ningun elemento extranjero.

Prof. Norbert Wiener

NW:mmk

November 5, 1959

Dr. Archie R. Tunturi
University of Oregon Medical School
Portland 1, Oregon

Dear Dr. Tunturi:

The article by Professor Wiener entitled "What is Information Theory" appeared in the IRE Transactions on Information Theory, Vol IT-2, 1956, p. 48. I hope that you will be able to locate the article through this journal.

Sincerely yours,

Margaret M. Kruger (Mrs.)
Secretary to Professor Wiener

Conover-Mast Publications

INCORPORATED



205 EAST 42ND STREET: NEW YORK 17, N. Y.

TEL. MURRAY HILL 9-3250

November 6, 1959

Dr. Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Dr. Wiener:

First of all, I must tell you how very delighted we are that you have consented to write an article for us. ELECTRICAL MANUFACTURING is honored indeed and we are looking forward to the day when we shall be able to count you as "our" author. As a matter of fact, we are so delighted that we find it difficult to refrain from bragging, but prudence dictates that we keep this happy event secret until the date of birth is closer.

Since I spoke with you and Mrs. Kruger I have gone over our plans for the series again, and I find that - for practical reasons - we shall publish an article on the Theory of Logic, which I am writing, to lead off the series in our February 1960 issue. We would have liked to start the series with your article, but understand fully that a December-5th deadline is not feasible for you. (My own feelings are ambivalent - I really can't make up my mind whether having an article preceding yours is better than having it follow yours. Perhaps it is. At least our readers will not have been "spoilt" to the extent of expecting me to live up to your standards.)

We must work pretty closely within our deadlines - and I hope that the February-5th date that is necessary to meet our production standards is satisfactory with you.

I shall be in Boston on February 18th and 19th and shall telephone your office in the hope that you can spare a few minutes for me.

The review of "The Tempter" is featured in our December issue. I wanted to send you a copy in manuscript form, but was unable to get one. However, we shall send you a copy of the December issue, and send tearsheets to your publisher.

Please remember me to Mrs. Kruger.

Sincerely,
ELECTRICAL MANUFACTURING

Alice Mary Hilton

Alice Mary Hilton, Associate Editor

PURDUE UNIVERSITY

SCHOOL OF ELECTRICAL ENGINEERING

LAFAYETTE, INDIANA

November 6, 1959

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

Dear Professor Wiener:

As I believe you know, we have run a symposium on Information and Decision Processes each spring for the past two years. These conferences have been rather unusual in several respects. In the first place, our speakers have been, without exception, outstanding. In the second place, we scheduled only two speakers each morning and only two each afternoon, so that each speaker was allowed as much time as he chose to elaborate on his subject in any way he chose. The attendance was approximately 100, and the conference was held in the magnificent new Memorial Center at Purdue, an establishment which is both conducive to scholarship and unusually comfortable.

Our list of speakers last year was as follows: George W. Brown, Herman Chernoff, J. L. Doob, Wassily Hoeffding, David Rosenblatt, Claude Shannon, Milton Sobel, Patrick Suppes, Lionel Weiss, and Jacob Wolfowitz. The previous years speakers were equally distinguished.

There has been some question as to whether we can maintain this high level, or whether we should perhaps choose some other subject for this year's conference. We have decided that if you would consent to be one of our speakers, then it would be worthwhile to hold another such conference; otherwise not. In view of this fact, I should like to have you consider the matter. We can schedule the conference almost any time that would be convenient for you--preferably during April or the first week in May. We would probably plan a two or three day conference. You would, of course, be most welcome for all of it, or you could come only for the day when you were to speak if you chose.

November 6, 1959

Transportation from Boston to Purdue is now quite easy. There are nonstop jet flights from Boston to Chicago, and we would be pleased to pick you up at the airport in Chicago and drive you to Purdue.

We will, of course, pay all of your expenses and a moderate honorarium. I do not yet know the exact amount of the latter, but it will certainly be not less than \$150.

Because so many of us are worrying about the basic cybernetic questions involved in decision and information processes, and the nature of those two confusing devices called the brain and the automaton, I feel that a conference of this nature would not only be most worthwhile for the advancement of human understanding, but that you might also find it personally rewarding.

I look forward with anticipation to your reply.

Very truly yours,



Robert E. Machol
Associate Professor of
Electrical Engineering

REM:na

JOHN WILEY & SONS, INC.

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PUBLISHERS OF BOOKS

440 FOURTH AVENUE

NEW YORK 16, N. Y.

MURRAY HILL 9-7630

November 6, 1959

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No. Tonawanda, New York

Dear Mr. Packer: We are quite willing to grant you permission to reprint the material listed below, provided:

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2. Suitable acknowledgment to the source be given, preferably in the following form: "Reprinted with permission from (author), (title), (copyright date), John Wiley & Sons, Inc."

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J. A. McNeish

PRODUCTION DIVISION

JAM:gm

Wiener, Norbert - CYBERNETICS - "...the entire field of control and communication theory, whether in the machine or in the animal..."
Cherry, Colin - ON HUMAN COMMUNICATION - Page 56 - "starting with "...it was apparent during the years immediately preceding the Second World War... and ending with ... The referred to this general study as cybernetics..."

THE DOCTORS MANGOLD

729 FIFTH STREET
YAZOO CITY, MISS.

November 6, 1959.

PHONE 1326

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

Dear Professor Wiener,

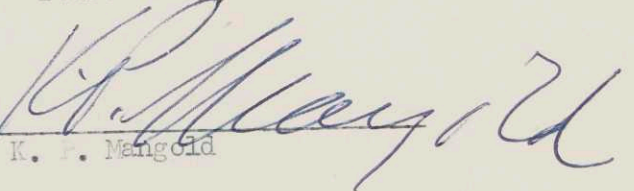
Thank you very much for your letter of November 3d. I think it would be best that we meet after Nov. 16th as you will probably have more free time then.

As you might want to glance at some of my work beforehand, I am sending you, under separate cover, three chapters which contain the fundamental philosophical ideas. As far as I know the idea of two independent truths and the repression of solipsism in deference to objective truth is original, although I may be mistaken in claiming this priority.

As a general practitioner in a small town I have lacked personal contact with specialists in philosophy, psychoanalysis and politics. Before publishing this book I would like to discuss some of my ideas with competent authorities in these fields.

In this age of "team"work the unknown outsider has some difficulty crashing the scientific social barriers. Your recent book "PROMOTERS AND POACHERS" shows that you are not indifferent to this problem. My book contains but a fleeting reference to cybernetics (page 3, ch 12 part 4) and I therefore hesitated about writing you. It was mostly due to an intangible feeling for your personality, since then revealed more clearly in your latest book, that I finally took the liberty to do so. I therefore feel gratified that you are granting me an interview.

Yours truly,


K. P. Mangold

[and 11/23/59]

THE DOCTORS MANGOLD
729 FIFTH STREET
YAZOO CITY, MISS.

PHONE 1326

November 6, 1959.

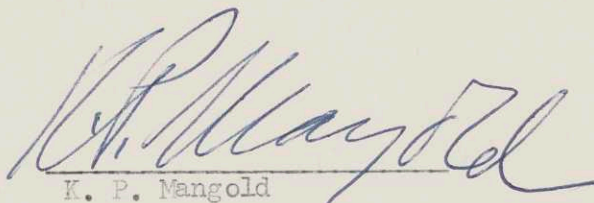
Mrs. M. M. Kruger
Department of Mathematics
Massachusetts Institute of Technology
Cambridge 39, Mass.

Dear Mrs. Kruger,

In his letter of November 3d Professor Wiener suggested that I contact you in order to arrange an interview with him.

Please let me know what day, after November 15th, would be most convenient to him. The earliest day after the 15th would suit me best.

Yours truly,



K. P. Mangold

[ans 11/23/59]

November 6, 1959

Mr. Edmund Dews
Managing Editor
Pergamon Press, Inc.
122 East 55th Street
New York 22, New York

Dear Mr. Dews:

I shall set immediately to work on the Preface for Stanley-Jones' book. I am very grateful to him for having thought of me in this regard.

Sincerely yours,

Norbert Wiener

NW:mmk

11/7/54

Dear Doctor Wiener,

Having just finished the Tempter I can't help thanking you cordially for this book of wisdom, wisdom & challenge. Dr. Weisskopf & I have listened attentively to your all too brief discussion of this work in channel 2. It was a treat to hear & to watch.

You have added a great chapter to the ageless book of morals without moralizing. Sexologists usually don't want to be "mixed-up" with matters of conscience & set themselves too often apart from the stern facts of life. You have, in my humble opinion, dipped deep into the philosophy of the old & ancient masters & resurrected them at a time when their thinking was so dearly begging for the opening of men's minds, hearts & souls in the serious days of the present.

No doubt you'll want to share the powerful benefits

of your experience & of your thinking with the
World Public in additional works that will in
every respect bring home to all concerned the
warning "Caveat Scepter" with a little additional
hint "Caveat Temptor".

Thanks again for your exciting & perceptive
thoughts. None prove to you!

With best wishes,

Sincerely yours,

Frederick
Weisskopf

Box 22
Dickinson College
Carlisle, Penna.



Nov. 9 [1959]

Dear Dr. Wiener,

I have become highly interested in your book, *The Human Use of Human Beings*, but have hit a part of the book which I do not completely understand. Upon asking the various professors in our Social Science Dept. I found there were various interpretations among these men as to what is meant by your theories on the transmission of a living organism such as a human being.

Do you mean that the organism being transmitted will, after being decoded, come out of the receiver in the form of flesh and blood, or do you mean he will be received as just another signal would.

I would appreciate any explanation you could give me, for this work of yours interests me greatly.

Sincerely yours,

Roger Craver

[ms 3/25/60]

THOMAS C. DESMOND
94 BROADWAY
NEWBURGH, NEW YORK

MEMBER OF NEW YORK STATE SENATE
1930-1958

November 9, 1959.

Professor Norbert Wiener,
Massachusetts Institute of Technology,
Cambridge 39,
Massachusetts.

Dear Professor Wiener:

This letter further refers to my letter to you of October 21 and your courteous letter to me of November 2.

Over the last weekend I read "The Tempter" with great interest and appreciation.

But I was also puzzled bearing in mind the statement that the first novel of an author generally includes the author as one of the characters.

Certainly, however, author Norbert Wiener is not character Williams or character James or character Dominguez or even character Woodbury.

Probably it is true that the genius of Norbert Wiener is so versatile that you have the best qualities of all four characters, and understand their weaknesses, and that may be why you portray them all so well.

I hope that all associated with the Massachusetts Institute of Technology will be inspired by the ideals of integrity which are imminent in your thoughtful novel and which you have demonstrated yourself in your noble and useful life. All M.I.T. men and women throughout the world can well have pride in remembering that Norbert Wiener, author of "The Tempter," is an M.I.T. Institute professor.

Sincerely yours,

Thomas C. Desmond

TCD:dr

12, Ballygunge Circular Road,
Calcutta 19, India.

November 9, 1959.

Dear Prof. Wiener,

It is too much to expect that you will remember having met me at lunch with Prof Mahalanobis in Calcutta.

Some years ago, I published a booklet entitled *Light & Matter* giving a new classical theory of light and matter with criticism of the illogicalities of the current theory. I have tried to rouse the scientific conscience of physicists, but with no marked success. Mathematicians are chary of expressing any opinion on physical theories, though they have no fault to find with ~~the~~^{my} reasoning which is entirely deductive from the Maxwell equations and the special relativity theory.

The utmost that I have got from the theoretical physicists is a grudging admission that the current theory is unsatisfactory in some respects. But when I invite their attention to the solution of these difficulties on my theory, they refuse to be drawn into a discussion.

I have taken the liberty of sending you a copy hoping that you would make time to go through it and give me your frank opinion. A distinguished mathematician with diverse interests like yourself ought to have no difficulty in giving an opinion.

My appeal to you is - " Will you allow physicists to get away with the mathematical reasoning which is only a travesty of mathematics ?"

Thanking you in anticipation,

Yours sincerely,

B. M. Sen

(B. M. Sen, M.A. (Catab) M.Sc,
F.N.I.)

To open cut here →

BY AIR MAIL

हवाई पत्र
AEROGRAMME
NO ENCLOSURES
ALLOWED



Prof. N. Wiener
Massachusetts Institute of Technology
Cambridge (Mass)
U. S. A.

CORR - 66

First fold here

Third fold here

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Sender's name and address :-

B. M. Sen
12, Ballygunge
Circutian Road,
Calcutta

Faint, illegible text on the reverse side of the envelope, likely bleed-through from the other side.

November 9, 1959

Mr. Don Lofftus
908 Coronado Drive
Glendale 6, California

Dear Mr. Lofftus:

The word feedback was used in the sense you refer to before any papers of mine. I have treated the notion from the standpoint of communication theory rather than that of energy as you will find in my book, The Human Use of Human Beings. Negative feedback is a situation where any deviation of a system from equilibrium or stability is countered by new input in the opposite direction deriving from the error itself. My definition of feedback is a natural and proper generalization of the first use of the term in electronic engineering.

Sincerely yours,

Norbert Wiener

NW:mkk

November 9, 1959

Mr. Martin Zwick
1114 E. 14th Street
Brooklyn 30, New York

Dear Mr. Zwick:

I think you are on the right track in getting as broad a basis for your interests in cybernetics as you can. I am not in the position of employing young men in the field but if I were, I would set much greater estimation on the generally good mathematical, physical, and possibly physiologically background than on particular courses leading up to a particular subject. Remember that your interests are in a rapidly growing field and that nobody can tell just in which direction it is going to go and what specific knowledge may be most relevant at the time you enter in the field. I like your attitude and I wish to encourage you in going along the path in which you have set yourself.

Sincerely yours,

Norbert Wiener

NW:smmk

10 November 1959

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

Dear Dr. Wiener,

I want to thank you very much for the copy of your new novel which I have just received. It was very kind of you to have sent the volume, and I am reading it with considerable interest.

Again let me thank you for the contributions to our mathematical effort that you made during your recent visit at Rocketdyne. I hope we shall have occasion to discuss some of these problems again in the future.

Sincerely,


J. M. Zimmerman

JMZ:mk

PERGAMON PRESS, INC.

122 East 55th Street

New York 22, N. Y.

Telegraphic Address: PERGAPRESS, NEW YORK

Telephone: PLAZA 3-9651

11 November 1959

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

Dear Professor Wiener,

Kybernetics of Natural Systems

I am delighted to learn from your letter of 6 November 1959 that you have kindly agreed to write the preface to this work by D. & K. Stanley-Jones.

I shall inform them that you are doing so and I know that they will be as pleased as I am.

With best wishes,

Very truly yours,

E. DeW

EDMUND DEWS

[ans 12/21/59]

DR. MORRIS WAX
CHIROPRACTIC THERAPY
1707 CHESTNUT ST., PHILA. 3, PA.
TELEPHONE: RITTENHOUSE 6-5490

BY APPOINTMENT

November 11, 1959

Dr. Norbert Weiner
Massachusetts Institute of Technology
Boston, Mass.

Subject: The Dynamic Spinal Thrust
And/Or Pressure On Gland,
Tissue And Organ As A
PHYSIOLOGICAL NERVE BLOCK
Restoring Circuit Breakdown

Dear Dr. Weiner:

On THE PERSON TO PERSON PROGRAM, Dr. Vannevar Bush indicated to Edward R. Murrow that mankind would soon benefit from a study on the living sciences. From a colleague of mine, a M.I.T. alumnus, Dr. William Harper, I have learned of your book, CYBERNETICS. I have spent some fruitful hours with this volume, despite the severe lack of knowledge of mathematics.

In the introduction to CYBERNETICS, you say in part, referring to a request by your colleagues to devote your energies more in one field of endeavor than another, "I can share neither their feeling that this field has first claim on my attention, nor their hopefulness that sufficient progress can be registered in this direction to have an appreciable therapeutic effect in the present diseases of society."

Only you, of course, can determine where to best use the vast source of knowledge you possess. It is important, however, to note that with the increase in longevity there is a greater increase in the chronic diseases. The healing professions are stressing men's longevity as proof of the effectiveness of their therapy. Alexis Carrel, in MAN THE UNKNOWN, says, "Although modern hygiene has made human existence far safer, longer and more pleasant, diseases have not been mastered, they have simply changed their nature." While in the most recent of BOYD'S PATHOLOGY, there is expressed a fear for mankind, because of the excessive use of chemotherapy.

We believe that the study of the nervous system as it is effected by a dynamic spinal thrust, resulting in a physiological nerve block, which restores circuit breakdown, holds out real hope for solution of the cause of disease of mankind, and restoration to healthful living.

Chiropractic, without benefit of so-called orthodox recognition and despite the severest opposition has had a phenomenal clinical success in the treatment of man's ills. The reason for our success remains a mystery, which may be solved by research into WHAT DOES THE BODY DO WITH THE CHIROPRACTIC DYNAMIC THRUST IT RECEIVES AT A GIVEN SPINAL SEGMENT OR NEUROMERE, CORRESPONDING TO THE TISSUE, GLAND, OR ORGAN IT ENERVATES.

Our premise is that disease, other than congenital or traumatic is caused by irritation of nerves as a result of the defiance of the laws of nutrition, emotion and/or posture, etc., resulting in structural derangement with impaired body function. It goes without saying that nervous irritation is abundant in the congenital and traumatic states, as well. As a secondary effect, the blood, cerebro-spinal and lymphatic circulation is impeded, disturbing the process of metabolism. Nerve irritation from systemic overload causes a breakdown in the reflex arc and incites trigger areas (hypersensitive, cold, or hot spots, etc.). These now bombard the central nervous system with noxious impulses causing not a lessening, but an increase of function. Later, there is fatigue, exhaustion, atrophy from dis-use and finally death.

Crile, in A BIPOLAR THEORY OF LIVING PROCESSES, summing up Sherrington on synaptic relation, says, "The synapse then may be regarded as a highly adapted switch which now closes the circuit, now opens it, now diminishes the current, now accelerates it. An electric current flows from an area of higher to an area of lower potential, hence the electric battery - the nerve cell - would be in constant action, excepting for the intervention of the synoptic switch. If the nerve cell and the end-organ were constantly connected, then the nerve cell would be in the position of the battery of a door bell whose button is pegged. With the living electric circuit closed at the synapse, the nerve cell would work continually and would be exhausted just as certainly as the electric battery in a closed circuit becomes exhausted. And to the same extent the stimulated organ - the gland cell, or the muscle cell - would be worn by continuous stimulation."

Neuro-mechanical examination, more specifically of the spinal segments, is the basis for early simplified detection of circuit breakdown and provides separate measurable reflex reading both manual and/or electrical by (1) palpation and nerve tracing, etc., and (2) by the use of a sensitive galvanometer, cranial para spinal or local.

In Germany, where physical means of healing has always had a prominent place in research, except for the unfortunate period from 1934 to 1945, there was a reawakening of the interest in physical means, other than electrical machines, "the laying on of hands," to the end that investigation of chiropractic was undertaken in medical clinics. And many papers were devoted to A GENERAL EVALUATION OF ORDERING OF THE VARIOUS TYPES OF THERAPY, WHICH SEEK TO ACHIEVE THEIR ENDS BY DIRECTLY INFLUENCING THE NERVOUS SYSTEM.

Albert Cramer, M. D., in his TEXTBOOK OF CHIROPRACTIC OF THE SPINE, Stuttgart, 1955, states; "The great possibilities of chiropractic lie in the exactly purposeful removal of a blocking of the spinal dynamics. The working of the purposeful thrust is aimed at purely mechanical component. IT AMOUNTS TO A REGULATING THRUST INTO THE NERVOUS CONTROL CENTERS.

R. Kendrick Smith, M. D., orthopedic surgeon on the staff of Boston Polyclinic, states: "In the New York Orthopedic Hospital, outpatient clinic, the writer observed that in the many cases examined there was always a relation between the vertebral pathology and the complaint."

K. R. Von Rogues, M. D., on the necessity and manner of incorporating chiropractic into medicine, NEURALMEDIZIN, June, 1954, states: "Here we have to face ourselves; we physicians have now for the first time worked out the theoretical assumptions which enable us to understand the central function of the spine in pathogenesis and therapy. And we must recognize - in so far as we have been concerned therewith - that many ailments or diseases are enormously accelerated in their improvement by spinal therapy; indeed any cure thereby becomes for the first time possible. Whoever HAS ONCE EXPERIENCED THE SMASHING OF POLIOMYELITIS BY A MANUAL THRUST WILL NOT SHY AWAY FROM EXPOSING HIMSELF TO THE ODIUM PREJUDICE."

Judovitch and Bates of the Department of Neurology, University of Pennsylvania Graduate School of Medicine, in their PAIN SYNDROMES, states in part: "Our observations were derived from experience, gained by negative abdominal explorations; by studying patients with organic disease, preceding and following abdominal surgery; by observing reactions following nerve infiltrations and other forms of therapy; by noting the tenderness associated with peripheral nerve lesions; and by follow-up studies or operative procedures in the patients who failed to obtain relief of pain by the method we employed. AS A RESULT OF THESE OBSERVATIONS WE ARE LED TO CONCLUDE THAT SEGMENTAL PAIN AND TENDERNESS IN MOST INSTANCES IS NOT THE RESULT OF PAINFUL VISCERAL STIMULI, BUT DUE TO IRRITATION OF THE NERVE ELEMENTS WHICH CONSTITUTE THE SEGMENTAL DISTRIBUTION OF THE SPINAL NERVE.

From HOW ANCIENT HEALING GOVERNS MODERN THERAPEUTICS, we learn: "Both Hippocrates and Galen, solely by using their dexterous and skillful hands, their effective intuition and also their worthy intelligence, were able to detect and ascertain the slightest vertebral deviations and finer displacements of the spinal segments, which most modern medical men, even yet, cannot recognize and cannot detect in spite of their knowledge of roentgenology and radiography."

Halburton, in his TEXTBOOK OF PHYSIOLOGY, states: "Each gland, organ or tissue, appears to be correlated with a definite patch or band of skin; this may be tender upon pressure (hypersensitive or trigger points). Pain and disturbed sensation may be referred to specific cutaneous areas." McKenzie and Head placed this beyond a doubt by their subsequent work and more recently, Keegan and Garrett demonstrated these truths. Head considered the disappearance of a zone (reflex from spine to tissue) is associated with relief of a diseased organ.


Sir Arthur Keith recalling the work of Duchenne, says: "We shall not stop now to inquire at what point of the reflex arc that breakdown occurs - whether at the end organ in which the sensory nerves of muscles commence or in the spinal centers which control the group; it is enough for our present purpose to show that it was Duchenne who made us look for the cause of flat-foot in a disorder of the neuro-muscular mechanism of the lower extremity, in place of a mere deformation of the bones of the foot." We have seen that what is true of the breakdown of one circuit is true of all.

To the credit of the science of nutrition stands the conquest of pellagra, beriberi, rickets, scruvy, chlorosis and a host of other disorders and perhaps in the future, of polio, arthritis, athero-sclerosis and cancer. It is encouraging, therefore, that the medical trend is to nutrition away from excessive use of chemotherapy.

No one can deny the value of posture, especially foot balance, as it effects the superstructure. Now abundant evidence is available regarding the efficacy of the chiropractic dynamic thrust, etc. It would be shameful if professional jealousy here in the United States, should allow another country to achieve another first, by introducing into medicine spinal diagnosis and therapy (the laying on of hands) specific chiropractic.

On September 1, 1959, the Philadelphia Evening Bulletin carried a story, "Drexel Hospital To Apply Engineering To Medicine." The combined use of the technology of engineering and control and communications in the human should lead to a better understanding of the diseases of mankind. The efforts, however, will fall short, unless physical means, the dynamic spinal thrust and/or pressure on gland, tissue and organ as a physiological nerve block to restore circuit breakdown are also employed.

Sincerely yours,


Morris Wax, D. C.

MW:er

INDIANA UNIVERSITY

BLOOMINGTON, INDIANA

DEPARTMENT OF MATHEMATICS

November 11, 1959

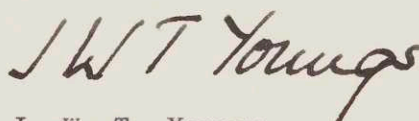
Professor Norbert Wiener
Department of Mathematics
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Professor Wiener:

We are much interested in the possibility of adding Professor Masani to our staff, and he has suggested you as an individual to whom I might write for further information.

Any comments which you could make on your estimate of his mathematical stature and future promise would be much appreciated. In addition, it would be most helpful if you could give us some indication of Masani's characteristics as a lecturer and colleague.

Cordially yours,



J. W. T. Youngs
Chairman

JWTY:cwp



SCULLY SIGNAL COMPANY

174 GREEN STREET • MELROSE 76, MASSACHUSETTS

FLOW CONTROL • ELECTRONICS

November 12, 1959

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

Dear Dr. Wiener:

I certainly appreciate your courtesy in giving us your time on Tuesday when we had the exhibit of the FAYLSAFE Technique.

I am not sure that you have a brochure, so I am enclosing one, together with a copy of an address made by Mr. Deziel of Honeywell before the American Institute of Electrical Engineers. So far, Honeywell have only adapted this technique to one control, but it is my understanding that the customer reception has been very gratifying.

Perhaps you do not know that I am really also a Cantabridgian. I went to Rindge and to M. I. T. and I remember very well when you went to Harvard. I mentioned the fact to Jack Atkinson yesterday that you were with us. Jack happens to be a Director of our company and I believe you have known him for many years.

If you will just call me up and let me know what day will be best for you, we will send a car over, pick you up and bring you out here to our plant and show you some more interesting developments. It seemed to me that you and Bill Rowell talked the same language. Among other things, we would like to show you whether the control or the process has failed, so that if the control has failed, the process can continue and other means of monitoring be instituted, thus eliminating the nuisance shutdown.

You mentioned IBM. Our contacts with IBM have been with Mr. R. L. Palmer, Director of Engineering.

I am also enclosing a copy of a letter from Mr. Segeler of the American Gas Association which is pertinent to our Technique.

I will be looking forward to hearing from you.

Very truly yours,

Frank P. Scully
President

FPS:de

Enclosures (New FAYLSAFE Brochure, cc Deziel Address, cc Letter AGA 11/4/58)

A Speech

by

Mr. F. Deziel

of

Minneapolis-Honeywell Regulator Company, Minneapolis, Minnesota

SYMPOSIUM ON SAFETY BY INTERLOCKING AND BY
INTRINSIC AND INHERENT DESIGN

A. I. E. E.

Hotel Statler Gold Ballroom, February 5, 1959

Subject

SAFETY CIRCUITS INCLUDING SCULLY SIGNAL CIRCUIT

FLAME SAFEGUARDING

Introduction by G. K. Ditlow, Rural Electrification Administration, Chairman of the Symposium.

Mr. Deziel: "Guests of the A.I.E.E. :

It is a real pleasure for me to participate in this program today. My primary interest is in safety controls for combustion burners when safety controls are used on combustion systems to insure safe automatic operation of the burner. If an unsafe condition in the burner should occur, for example, if the flame goes out, the control should automatically close the fuel valve. A safety control for combustion systems is, therefore, an "on-off" control system. If the control fails in the 'on' condition, it is classified as an unsafe failure. If the control fails in the 'off' position, it is classified as a safe failure. The design goal for these controls is, therefore, to eliminate unsafe failures and to minimize safe or nuisance failures. Considerable progress towards this goal has been made in recent years through improvement of interlock circuits that minimize unsafe failures and by the discovery of a new circuit principle that entirely eliminates unsafe failures due to electronic component failures. A simple interlock circuit that has been employed in combustion control systems is shown on the first slide.

"On call for heat, the control relay 1R pulls in and energizes the pilot valve, motor and ignition system. When the pilot flame is detected by the sensor, the amplifier causes the output relay 2R to pull in which, in turn, opens the main fuel valve and de-energizes the ignition system. If an unsafe failure exists in the electronic amplifier before the thermostat calls for heat, the output relay 2R will be continuously energized and on a call for heat by the thermostat, the control relay 1R will be prevented from operating by the inner lock contacts 2R1. The disadvantage of this system is failure of the interlock to provide protection when the line voltage is applied to the system with a simultaneous call for heat by the thermostat. For example, assume that an unsafe failure exists in the

"amplifier and assume that line voltage is applied to this system with the thermostat calling for heat. Considering that the electronic amplifier will require a warm-up period before the output relay 2R will respond to the unsafe failure, it is apparent that interlock contacts 2R1 will be ineffective and the control relay will pull in and then, after the warm-up of the amplifier, the output relay will pull in and open the main fuel valve without the presence of flame.

"To prevent the occurrence of this condition, warning plates were put on these systems to warn the operator that the system must be allowed to warm up before the system could be used for control. This control with its warning tag certainly left much to be desired. This is along the same line which we have just been talking about where you cannot rely on the person to read the instructions, or, if he can read the instructions, he doesn't believe them. A real good example of this--a rather humorous example--may be: some of you are familiar with the person that built the little box that had a short in it when you threw the switch into the 'on' position. You put a tag on it, "Ace Fuse Blower", lay it around on an engineer's desk and he'll look at it and plug it into a socket and throw the switch and blow the fuses out. This wasn't one engineer, it was a lot of them he tried it on. Warning tags just don't work all the time.

"As a result, an automatic interlock circuit was designed and shown on the next slide. Automatic interlock protection is obtained in this system by requiring that the output relay 2R must first pull in and then drop out before the control relay 1R can pull in. The value of this sequence can be seen by again assuming that an unsafe failure exists in the amplifier and line voltage is applied to the system with a simultaneous call for heat by the thermostat. Due to interlock contacts 3R1 and 2R4, no action occurs until the amplifier warms up and energizes the output relay. 2R4 contacts then energize the control transformer and apply bias voltage to the amplifier which, in turn, would normally cause the output relay to drop out. But since an unsafe failure exists, the output relay remains energized and the control relay is never energized due to interlock contacts 2R1. For many applications this system provides a high degree of safety by checking the amplifier for unsafe failures during each call for heat by the thermostat. It has also been general practice, due to lack of safer systems, to use these simple interlock circuits on burners that ran continuously for weeks and even months at a time. Obviously, the degree of safety is greatly reduced in these applications. Considerable design and development effort was expended to find a method of providing greater safety for these long running applications, with negative results until the Scully Signal Company of Boston, Massachusetts, developed an interest in the general problem and their efforts resulted in a simple circuit principle that provides the highest degree of safety ever obtained in a control system.

"The next slide is a block diagram of this system as used in a combustion controller. The operation of the circuit is amazingly simple. When the sensor detects a flame, the amplifier energizes the output relay. When the output relay pulls in, contacts on the relay disconnect the sensor from the amplifier, thus stimulating the absence of a flame. If the amplifier is operating properly, the output relay will respond to this condition and will drop out. When the output relay drops out, the sensor is again connected to the amplifier and if the amplifier is still operating properly, the output relay will pull in again. It is apparent then that if the sensor is sensing a flame and the amplifier is operating properly, the output relay will cycle between an 'in' and 'out' position. To complete the system, contacts from the pulsing relay are used in a capacitor charge and discharge network, as shown. When the pulsing relay is in its 'out' position, voltage source E

"charges up capacitor C1. When the pulsing relay is in its 'in' position, the charge on C1 is transferred to the control relay coil and capacitor C2 is used to maintain the voltage across the control relay coil during the period that C1 is being recharged. One relay blade on the pulsing relay is used to transfer the charge from C1 to the control relay coil. Thus, if any failure occurs in the electronic amplifier to cause a pulsing relay to remain in either its 'in' position or 'out' position, no voltage transfer function occurs in the capacitor network and the control relay will drop out. The merits of this system were so attractive to Honeywell that Honeywell obtained a license from the Scully Signal Company for a substantial sum of money to use this principle in a combustion safeguard system.

"A development project was initiated, aimed at producing a combustion safeguard system for applications that would be continuously operated for long periods of time. Time does not permit a complete discussion of the design considerations that were made in developing a production product. Perhaps the most important single consideration was given to the pulsing relay. Since this pulsing relay operates to transfer a charge from a capacitor, the charge rate has to be sufficiently fast to hold in the output relay 2R and a rapid cycling rate must be provided.

"In any event, the cycling rate must be designed to insure that the maximum time an unsafe condition that can exist on the control system is less than the time necessary to produce a hazardous condition. The product designed finalized with a pulsing relay cycling rate of approximately one cycle per second. Thus, with approximately thirty million seconds per year, it would be necessary to design the pulsing relay with a three hundred million cycle life to obtain a minimum ten year product life. A compromise in the design of the relay was made such that a relay capable of ninety million operations was designed and is being used. The relay has a plug-in octal socket to permit easy replacement in the field when the relay reaches its normal life. In any event, the failure of the relay produces a safe failure in the system.

"Another important consideration in the product design was to insure that no transients or feed-back voltages produced by the pulsing relay would falsely actuate the system. For example, it was found necessary to provide separate voltage supply sources for the amplifier and the capacitor charge and discharge network, due to the regulation characteristics of the transformer. The next slide is a schematic diagram of this system. I will just put it on the board. It does show the two transformers being used--the capacitor charge and discharge network being on a separate transformer and the claim sensor being interrupted by contact 3R.

"It should be pointed out that the sensor used in this system will always fail safe. However, if a sensing element is used which can fail unsafe, then the flame failure simulation must be accomplished by some other means. The chassis of the completed product design is shown on the next slide.

"The pulsing relay is up on the upper right hand corner. It is a plug-in device and then we have a couple of other control relays to give the exact requirement of the system. This device is known as the R40/5A Maximum Safety Relay and is now in production.

"In summary, straightforward design techniques were employed in the development of a product design based on the principles developed by the Scully Signal Company that, we believe, sets a new standard of safety for combustion control systems."

November 12, 1959

Mr. Ronald A. Javitch, President
Math-Physics Society
Sir George Williams College
1435 Drummond Street
Montreal 25, Quebec, Canada

Dear Mr. Javitch:

Please excuse my delay in answering your letter of October 13th. I am enclosing a list of my publications and I should like you to indicate those which would be of interest to you. If I still have them, I shall try to get them to you. The list of publications was in the process of being up-dated when we received your letter.

There is one new publication of mine which might interest you. It is a novel entitled The Tempter. It is published by Random House and I think it can easily have undertones which may be of interest to you as it deals with invention.

As to coming to Montreal, I like trips to Canada and I am sorry that I cannot accept your invitation, but I have extended myself too far this year and have as many talks as I can manage. Will you bring it up again sometime?

Sincerely yours,

Norbert Wiener

NW:mnk
Enclosure

IBM

Research Center
P.O. Box 218, Mohansic Laboratory
Yorktown Heights, New York

International Business Machines Corporation

Telephone: Peekskill 7-6600

November 13, 1959

Prof. Nobert Wiener
Department of Mathematics
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

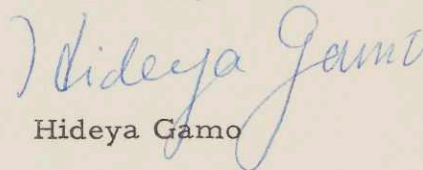
Dear Professor Wiener:

Thanking you for your kind letter dated September 25, 1959, I am writing you to ask whether you could see me November 23 or 25, whichever is convenient for you. Since I have a chance to visit Boston November 24, on this occasion I do very much wish a chance to meet you and to discuss scientific matters.

I am enclosing a copy of a manuscript which has been read at the Ottawa meeting of the American Optical Society, October 9, 1959.

I would greatly appreciate your sending me the information about the time and date available to you. If you would not have enough time to send it so that I may receive it by November 21, will you please leave any message with your secretary whom I will contact by telephone.

Yours very truly,


Hideya Gamo

HG:end

cc: J. W. Gibson



POLAROID CORPORATION

CAMBRIDGE 39, MASSACHUSETTS

RESEARCH DIVISION, 730 MAIN STREET

November 13, 1959

UNIVERSITY 4-6000

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Professor Wiener:

A couple of questions concerning fundamentals of mathematics and physics have been bothering me for a number of years, and I can think of no one who would be more competent to shed light on these questions than you. Here they are.

1. Let us say that a real number has rank one, a complex number rank two, and a quaternion rank four. It is well known that the solutions of algebraic equations with real coefficients are in general complex; that is to say, of rank two. What is the basic significance of this number two, Professor Wiener? Must we take this number two as being a brutal fact that cannot be analyzed further, or is there a more fundamental significance to the number two?
2. Consider the class of all physical quantities that are usually considered to be functions of frequency. It is usually supposed in physics that the functional dependence on the frequency is an analytic function of $p = i\omega$. Why is it permissible to assume this all-pervading analyticity? Can one show an absurdity if any one of these physical quantities is non-analytic over a finite range of frequency? The immediate answer that occurs to me is that we physicists always write the basic differential equations so that only analytic solutions are permissible. Perhaps this is the only answer, but I hope that there is a more fundamental answer.

Any help you can give me on these problems will be much appreciated.

With best wishes,

Dr. R. Clark Jones

RCJ:ecj

[ans 1/25/60]

November 13, 1959

Mr. Jason Epstein, Editor
Random House Inc.
457 Madison Avenue
New York 22, New York

Dear Mr. Epstein:

Professor and Mrs. Wiener would greatly appreciate your arranging to have ten additional copies of The Tempter sent here to the office.

I am enclosing a letter which Professor Wiener received from Jacques Chambrun. We would like to know your comments and would appreciate any advice that you might give. Professor Wiener has written Mr. Chambrun saying that he is asking your advice.

Also enclosed is a revised list of publications. You may note on page 10 that the two mystery stories are listed - The Brain and The Miracle of the Broom Closet.

We would appreciate your returning the letter from Mr. Chambrun whenever it is convenient for you. Thank you very much.

Sincerely yours,

Margaret M. Kruger (Mrs.)
Secretary to Professor Wiener

Enclosures

INSTITUTO POLITECNICO NACIONAL
CORRESPONDENCIA PARTICULAR DEL
DIRECTOR GENERAL

México, D. F. ,
14 de noviembre de 1959.

SR. PROFR. NORBERT WIENER,
Massachusetts Institute of Technology,
Cambridge 39, MASS. U. S. A.

Muy estimado señor Doctor:

Doy respuesta a su carta del 5 del actual, para manifestarle mis agradecimientos por todos los conceptos elogiosos vertidos en favor de mi país y siento verdadero agrado que personas como usted tengan admiración y cariño por mi patria y que procuren que ese cariño se extienda hacia sus descendientes como es el caso de usted con sus nietos.

De acuerdo con lo que usted me indica, quiero agradecerle también su buena disposición para comunicarnos todas sus experiencias y conocimientos sobre la ciencia de comunicaciones.

Aprovecho esta oportunidad para repetirme su afectísimo, atento amigo y seguro servidor,


ING. EUGENIO MENDEZ.

file

EMDgmv

ALFRED D. ROSENBLATT
549 MAIN STREET
LACONIA, NEW HAMPSHIRE

November 16, 1959

Professor Norbert Weiner
c/o M.I.T.
Cambridge, Mass.

Dear Dr. Weiner,

My sincere congratulations on the very fine reviews your book received. It was a pleasure to read how well your first attempt at being a novelist was greeted by the critics.

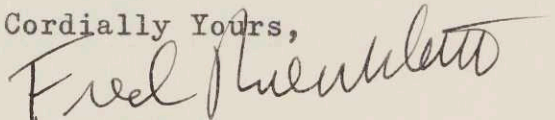
Unfortunately I did not get a chance to review the book myself. Although I wrote to Random House and asked for a review copy, I did not receive a copy until the week after the date of publication which of course made it pointless for me to do.

I have however taken great pleasure in writing about it in my column and I ~~enclose~~ ^{have sent you} a clipping which may give you a smile or two.

My very best wishes for your continued good health and please give your charming wife my fondest regards.

I look forward to seeing you again next summer.

Cordially Yours,



Alfred D. Rosenblatt

ADR/nec

16 Novembre 1959

Dott. Paolo Bonetti
Scientia
4, via Roncaglia
Asso, Como, Italy

Monsieur et Cher Collegue:

Je suis tres conscient de votre lettre de cinq Octobre. Je serai toujours tres heureux a envoyer mes articles a votre periodique aussi important. Quand meme au moment actuel j'accepte la responsabilite d'ecrire autant d'articles pas encore achevees qu'il ne serait juste a mon cote d'accepte des demandes nouveaux. Je suis sur que vous comprendrez ma position.

Va veuillez agreer Monsieur mes sentiments le plus distingues et devoues.

Norbert Wiener

NW:mmk

November 16, 1959

Mr. Bennett Cerf, President
Random House Inc.
457 Madison Avenue
New York 22, New York

Dear Mr. Cerf:

Financially I am much too small potatoes to dare to invest in anything but bank deposits and government bonds. If by any chance my book or future books with Random House should succeed beyond my expectations, I shall be inclined to plow back a part of my returns. However this is a contingency which I am not viewing too sanguinely.

Sincerely yours,

Norbert Wiener

NW:nmk

November 16, 1959

Father James Keller
The Christophers
18 East 48th Street
New York 17, New York

Dear Father Keller:

I think you will find the material you speak of somewhere in my book The Human Use of Human Beings of which a paperback edition appeared with Doubleday and which is probably securable at most bookstores.

I am doing some further work on brainwaves but I scarcely think that that is the field you refer to in your letter. It is always nice to hear from people interested in one's work.

Sincerely yours,

Norbert Wiener

NW:mk

November 16, 1959

Professor L. E. Segal
Eckhart Hall
University of Chicago
Chicago 37, Illinois

Dear Professor Segal:

I enjoyed your visit very much and wish to have a longer time at our disposal to talk over together the scientific matters that interest us both. I shall certainly see that you are on my mailing list for anything that I shall do, particularly in the direction of field theory and statistical mechanics. I am enclosing a list of my publications and would be happy to send you copies of any papers which we still have.

Sincerely yours,

Norbert Wiener

NW:smk
Enclosure

November 16, 1959

Mr. Robert E. Shaw
1037 South 52nd Place
Birmingham 6, Alabama

Dear Mr. Shaw:

In going into a field which is only now opening up, the most important preparation is that of a sound and broad training. In the matter of cybernetics this training should naturally be in mathematics, physics, electrical engineering, and quite possibly physiology. I am a little hesitant to recommend any young man to go into the field until he has a fairly broad and sound background of this sort and until he knows what he really wants and not simply what has glamour in his eyes. When you are ready on the basis of your general training for work in cybernetics and if you still feel inclined for this work, then I may be able to give you more specific advice.

Sincerely yours,

Norbert Wiener

NW:mnk

November 16, 1959

Professor Jerome B. Wiesner
Room 26-231

Dear Professor Wiesner:

I hear that the promotion of Associate Professor Y. W. Lee to a full professorship is being considered. Let me support the case of Dr. Lee as strongly as is possible. He took his Ph.D. with me and afterwards worked with me on the design of predicting and filtering networks in which the final step that made these networks practical was due entirely to him and a very ingenious method of his of reducing and dovetailing the various parts of such a network. Professor Lee has just completed a most important book on filter theory and similar topics which is about to appear this academic year with Wiley. He has shown an enormous ability in picking out and encouraging brilliant young men in electrical engineering as I know well because of his share in making a success of my lecture course, which led to the publication of Nonlinear Problems in Random Theory. Professor Bose, one of our most promising young electrical engineers, was discovered and developed by Professor Lee.

Professor Lee is a man of utter integrity and moral stamina. He is a man of complete modesty and unassumingness who has always contributed to the purposes of scientific work and scientific education rather than to his interests. He is a valued colleague and comrade.

Sincerely yours,

Norbert Wiener

NW:mmk