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GEORGE F. BAKER FOUNDATION

Tel. Univ. 10200

X
ELTON MAYO
Associate Professor, Industrial Research

SOLDIERS FIELD
BOSTON, MASSACHUSETTS

Sept. 7, 1928

9/10
Mr. G. A. Remmick,
Western Electric Co.
Hawthorne Works
Chicago.

Planned and all
followed
for our
own

Dear Mr. Remmick;

I have received and studied your revised report and I find it most interesting; your experiment is by way of becoming something that will be almost classic in the literature of industrial investigation. I had word from Lovell of a brief interview with you before he left for the West.

I have certain comments to make and questions to ask but will reserve them until we meet. I shall be going through Chicago to Colorado about the second week in October. If this is soon enough, I shall arrange to see you then. I shall return by way of Chicago three weeks later, I have been wondering whether it would be a good idea for me to suggest that [REDACTED] might spend the three weeks in your plant - more or less, according as there were, or were not, opportunities of observation. She would not, of course, attempt observations as intensive as those we carried out on our first visit.

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Associate Professor, Industrial Research

SOLDIERS FIELD
BOSTON, MASSACHUSETTS

I was delighted to hear that [redacted] was so greatly improved by the liver extract treatment; I hope her improvement, physical and mental, has continued.

I hope you will arrange to publish your observations in the near future; I am sure that Dr. W. V. Bingham of the Personnel Research Federation, Engineering Societies' Building, New York, would be interested — if you have no other medium of publication in mind.

I gave some time this summer to observation of work being done in England. —

Yours very sincerely,

Elton Mayo.

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GEORGE F. BAKER FOUNDATION

ELTON MAYO
Associate Professor, Industrial Research

SOLDIERS FIELD
BOSTON, MASSACHUSETTS

November 27, 1928.

M.W.
11/30
Mr. G. A. Pennock
Western Electric Company
Hawthorne Works
Hawthorne Station
Chicago, Illinois

Dear Mr. Pennock:

I shall hope to see you when you are in Boston. Please let us know when you are to be here so that we can reserve time for discussion of your interesting experiment.

The last blood pressure readings are interesting as ever. I shall refrain from comment until I can ask you some questions. It is interesting to notice that the index of November 14 is 29.8, which is distinctly higher than those of April. This may not have any special significance, however.

We should like to have the actual figures of blood pressure and the actual production figures (15 minute intervals) for purposes of statistical analysis and comparison with the former figures.

Yours very sincerely,

Elton Mayo.

EM/CB

Elton Mayo

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Elton Mayo
Associate Professor, Industrial Research

file

SOLDIERS FIELD
BOSTON, MASSACHUSETTS

April 1, 1929.

Mr. N. L. Putnam
Chief of Industrial Research
Western Electric Company
Hawthorne Works
Chicago, Illinois

Dear Mr. Putnam:

Many thanks for the photographs of the curves of the operators engaged in mica splitting. I find them quite as thrilling a revelation of the effect of personal situation as I had anticipated.

I have just received your other letter with respect to Dr. Raymond Pearl's article in Science. It is a little difficult to answer your question. I think probably the best thing you can do is to get hold of a copy of Dr. L. J. Henderson's book entitled "Blood". You will find some description of the mathematical methods he uses there. Dr. Henderson himself suggested an article by Pareto on the mathematical sciences in a French encyclopedia. I think we have this in the Widener Library, but I have not yet given time to looking it up. If I find this I will either let you have the reference or else a translation of those sections of the article which throw light upon the Henderson method.

Mr. Pennock's presentation of your joint researches and their result interested everybody at the recent New York meeting. I think it is fair to say that the presentation could not have been better done nor the meeting more successful. Again, I present my congratulations.

Yours very sincerely,

Elton Mayo
Elton Mayo

EM/CB

HARVARD UNIVERSITY

Graduate School of Business Administration

George F. Baker Foundation

Elton Mayo

Associate Professor, Industrial Research

Soldiers Field,
Boston, Massachusetts.

April 29, 1929.

G. A. Pennock, Esq.
Ass't. Works Manager,
Western Electric Company,
Chicago, Ill.

Dear Mr. Pennock:-

It has been very difficult for me to get the leisure necessary to the proper ordering of my reflections on your interesting experiments at the Hawthorne Plant. The situation is not merely that I have been away, it is also that I am shortly going away for an even longer time -- and I have been making desperate efforts to live up to my obligations. Arthur Young tells me that this is the usual condition of everyone who works in the United States -- and I have to extract what comfort I may from his dubious comment.

1. Administration and the Interview:

I am, however, entirely clear as to certain of my reflections. I realize, in the first place, that you at Hawthorne have always given some attention to the training of what Brooks Adams has called the administration mind. And if your "interview" experiment had no further result (which is, of course, impossible) it would at least enable you to develop an entirely superior technique of selecting and training administrators. The importance of this achievement for your company and for society generally can hardly be exaggerated. The following quotation from Adam's book published in 1913 (the translation into modern phrases mine) gives a fairly accurate picture of the industrial and social situations.

"There can be no doubt that the modern environment is changing faster than any environment ever previously changed; therefore, the social centre of gravity constantly tends to shift more rapidly; and therefore, modern civilization has unprecedented need of the administrative or generalizing mind. But, as the mass and momentum of modern society is prodigious, it will require a correspondingly prodigious energy to carry it safely from an unstable to a stable equilibrium.

The essential is to generate the energy which brings success; and the more the mind dwells upon the peculiarities of the modern class of business executives, the more doubts obtrude themselves touching their ability to make the effort, even at present, and still more so to make it in the future as the magnitude of the social organism grows.

"One source of managerial weakness comes from a lack of proper instruments wherewith to work even supposing the intention of management to be good; and this lack of administrative ability is somewhat due to the business attitude toward education. In the United States industry has long owned the leading universities by right of purchase, as it has owned the highways, the currency, and the press, and industry has used the universities, in a general way, to develop industrial ideas. This, however, is of no great moment. What is of moment is that industry has commercialized education. Apparently modern society, if it is to cohere, must have a high order of generalizing mind, - a mind which can, at best, only be produced in small quantity and at high cost. Industry has preferred the specialized mind and that not of the highest quality, since it has found it profitable to set quantity before quality to the limit which the market will endure. Industrialists have never insisted upon raising an educational standard save in science and mechanics, and the relative overstimulation of the scientific mind has now become an actual menace to order because of the inferiority of the administrative intelligence.

"These considerations rather lead me to infer that the extreme complexity of the administrative problems presented by modern industrial civilization is beyond the compass of the business executive. If this be so, American society, as at present organized, with business men for the dominant class, can concentrate no further, and, as nothing in the universe is at rest, if it does not concentrate, it must, probably begin to disintegrate. Indeed, we may perceive incipient signs of disintegration all about us. We see, for example, an universal contempt for law, incarnated in the business class itself, which is responsible for order, and in spite of the awful danger which impends over every rich and physically helpless type should the coercive power collapse. We see it even more distinctly in the chronic war between employers and labor, which government is admittedly unable to control; we see it in the slough of urban politics, inseparable from business methods of maintaining its ascendancy; and, perhaps, most disquieting of all, we see it in the dissolution of the family which has, for untold ages, been the seat of discipline and the foundation of authority. For the dissolution of the family is peculiarly a phenomenon of our industrial age, and it is caused by the demand of industry for the cheap labor of women and children. Napoleon told the lawyers who drafted the Code that he insisted on one thing alone. They must fortify the family, for,

said he, if the family is responsible to the father and the father to me, I can keep order in France. One of the difficulties, therefore, which industry has to meet, by the aid of such administrative ability as it can command, is how to keep order when society no longer rests on the cohesive family, but on highly volatilized individuals as incohesive as grains of sand.

"Meditating upon these matters, it is hard to resist the persuasion that unless industry can, in the immediate future, generate an intellectual energy, beyond the sphere of its specialized calling, very much in excess of any intellectual energy of which it has hitherto given promise, and unless it can besides rise to an appreciation of diverse social condition, as well as to a level of political sagacity, far higher than it has attained within recent years, its relative power in the community must decline. If this be so the symptoms which indicate social disintegration will intensify....."

It has seemed worth while to me to set down this rather long statement of the situation as an able historian saw it some fifteen years ago. The researches of such men as Clifford Shaw and J. S. Plant seem to show that Adams was right in the essentials of his theory, also that little has been done in the universities or in industry since his time to alleviate the drift in the direction of administrative inadequacy. I believe that your interview experiment will result in an immense "lift" in respect of administrative adequacy at Hawthorne. I think it also possible that you will discover, or rather develop, a few administrators of entirely exceptional capacity here and there in the organization. And you will probably need them in the expansions of the next few years.

Passing to more detailed comment on the method of interview you have been using, I think you have been wise, in your first approach to the working line, to disclaim all interest in strictly personal matters. I believe, as you know, that personal situation is so directly relevant to capacity to sustain work (for example, the production efficiency curves of numbers one and five in the mica-splitting group) that one's judgment of workers is doubtful without knowledge of their private situations. But it is easy for an inexperienced interviewer to get the reputation of being over-inquisitive; it is probably better to content oneself with too little information in the first place than to force a confidence and cause a doubt. As the interviewers develop their capacity for "listening" sympathetically, they will get the information they need without asking for it - and the experiment will gain in value without diminishing its reputation.

As a further reflection, it occurs to me that upon the whole, and except in special instances, I am in favor of the Western Electric plan of moving its higher executives from one sphere of operation to another. This serves to keep them intellectually alive, no doubt, but its more important offices seems to me to be that it enables you to select

that "higher order of generalizing mind" (of which Brooks Adams speaks) that can grasp a multitude of complex relations. It implies as a corollary, I think, a policy of discarding (without damage to them) those who do not show a capacity for this type of administrative intelligence. I was re-reading Brooks Adams in the train on my way back from Chicago and I was much struck with the relevance of the passages I have quoted to your experiment and your general policy.

I cannot comment in detail upon the personnel of the interviewing group; I had not time to make their acquaintance with sufficient intimacy. I am, however, accustomed to judging groups by their capacity to fix and sustain their attention to a novel topic presented by a stranger. I thought that in this respect they did very well; in the several discussions, and some of them long, there was no evidence anywhere of a "let down" in their attention or interest. I shall be glad to know of developments as the interviewing of the operating branch proceeds.

II. Biological Measurement:

The more general aspect of the experiment develops in interesting fashion. In answer to Mr. Putnam's question, I think it safe to say that investigation of "the human factor" in industry must take the form of an attempt to measure (or in the first place perhaps merely to observe) the changes that occur in the human organism during the working day. At present our attempt (and I think yours) is to take account of three perhaps measurable changes

- 1) Changes in production
- 2) Bodily changes
- 3) Changes of mental attitude

In proportion as we succeed in gradually developing precise observations of these changes and in relating them together, we shall pass beyond the realm of guesswork with respect to human problems and into the area of scientific control. It is not, of course, possible at present to claim that we can even distantly see any such achievement immediately ahead. But I do think that your observations should encourage you to continue. You have secured evidence that

- a) emotional instability shows itself in low and irregular production.
- b) emotional instability is associated with heavy pre-occupation with personal affairs -- the preoccupation being of an unhappy type.
- c) any improvement in the conditions of work and especially periodic interruption tends to diminish morbid pre-occupation. Interviews which permit an individual to express his fears or worries similarly diminish morbidity or unhappiness in the sufficiently normal person.

d) diminished morbidity (or increased personal content)
is associated with increased efficiency of production -
i. e. the quantity and regularity improve.

I am not altogether content with our method of measuring organic changes. It is too discontinuous, we should probably learn more if we could devise some method of gaining a continuous record of organic changes during a day, week and month on selected workers. I have thought that one might select as index changes in pulse rate. This could be measured by means of a band which passed lightly over the abdominal aorta in the region of the xiphoid angle. I should think that an electrical engineer and a physician working in collaboration could easily devise such an apparatus. The fact that pulse rate is perhaps not quite so adequate an index as pulse-product would, I think, be more than compensated by the fact that you would obtain a continuous record of organic change.

III. Definition of Objectives:

Under this heading, I want merely to make a comment in passing on the interesting questions raised by Mr. Putnam at dinner on the final night of our recent visit. His claim, as I remember it, was that at the moment it is difficult or impossible to re-define the general objective of the experiments. My comment is to the effect that in so far as this is so it is probably a sign of health and value in the experiment. Henri Poincare in "Science and Hypothesis" points out that no science takes facts in general as its topic of study, every science selects certain facts amongst those that offer and neglects others. He further suggests that a science can do this because it takes the form of a question -- and the scientist considers those facts only that are relevant to the question he studies (see also Peirce -- "Chance, Love and Logic"). Now a question that does not change its form and require restatement as a study proceeds is probably a question of little or no value: it is the question of a mere technician rather than a scientist. Nevertheless there are beyond doubt very awkward moments in the development of any scientific study -- moments when questions need restatement and when in consequence, the whole original method of selection amongst the facts that offer is in doubt. But that this should be so is a sign of health and not of failure: one has to welcome such moments, to "hang on" closely to the work and to wait for a new illumination to reveal itself. The questions to which I hold firmly at this stage of the inquiry are those expressed in the former paragraph - those as to the nature and significance of changes in production, in organic balance and in mental attitude. And I have no doubt whatever that if we persist, we shall begin to see more clearly the interdependence between these and their significance for industry.

I should like to thank you and the Company again for your courtesy and hospitality.

Yours very sincerely,

(Signed) ELTON MAYO.

COPY

HARVARD UNIVERSITY
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

GEORGE F. BAKER FOUNDATION

Elton Mayo
Professor of Industrial Research

Soldiers Field
Boston Massachusetts

November 26, 1929.

G. A. PENNOCK, Esq.
Asst. Works Manager
Hawthorne Works,
Western Electric Company
Chicago, Illinois.

Dear Mr. Pennock:

I enclose herewith two copies of the comments I made upon your papers in New York.

I had occasion to see Mr. G. G. Stoll in New York on Friday last with reference to the constitution of a national committee of industrial psychology. Before beginning discussion of the methods to be adopted by the committee of which he is the chairman we talked for a little about the Personnel Research meeting in New York. He seemed immensely pleased with the papers you read and with the response of the meeting to them. He thought with me that it was most unfortunate that two out of the three dinner speakers had not read your papers although they possessed copies and that the third speaker did not seem to see the full significance of your work. He is immensely interested in all that you are doing so we had no difficulty in finding topics of conversation.

I have been thinking of visiting Chicago next on December 12th, 13th or 14th. On this occasion I have thought of bringing anything from six to twelve text books with me in order that Dixon, Wright and perhaps some others should be able to give some time to reading with me. If this date is not suitable will you please let me know.

I am still hearing many echoes of the New York meeting. It seems to have roused a great deal of interest.

Very sincerely yours,

(Signed) ELTON MAYO.

P.S. I am making a list of Europeans to whom I should like to send a copy of your progress report and your two papers. Have you spare copies of your paper and Putnam's or shall I have them copied here?

CHANGES IN INDUSTRY

By PROFESSOR ELTON MAYO

Professor of Industrial Research, Graduate School
of Business Administration, Harvard University

The Broad Significance of the Western Electric Investigations

The two papers to which you have listened today, the description by Mr. G. A. Pennock and Mr. M. L. Putnam of two years' inquiry in the works of the Western Electric Company, have professed to be little more than a matter of fact account of the course run by investigations that begin with one group of questions and continue with another. I think it would be a mistake for us to accept so modest a description of these highly significant events. It seems that in two respects at least these inquiries are symptomatic of the approach of changes, perhaps long overdue, in the relation between industry and the community. It is to these two changes that I wish to call your attention for a few brief moments before the session ends.

The first change is in the implied relation between industrial organization and biological or human inquiry. We have heard much before now of the application of physiology or psychology to industry. It has nevertheless been true, but for the rarest exceptions, that no industry has committed itself to profound meditation upon the significance of biological or social discoveries, or to the basing of its industrial policies upon such knowledge. Industry has tended rather to look to these studies for essentially trivial tricks and shifts--ingenious devices that should bring an immediate recompense. Rags and tatters of physiology and psychology coupled with oddments of technique have been expected to yield increased production or diminished labor turnover or some other rather obvious justification of the so-called experiment. Now although the Western Electric Company, as you know has already secured many such heartening results--and one is glad of it--those results have never been the end or intention of the inquiry; they have been secured by the way. The intention of the inquiry from the beginning has been the advancement of our understanding of human situations, the development of a more precise and biological knowledge of what is happening in industry, and the knowledge of the general conditions that affect human capacity for work. As a result of this wider interest, there has been a singular freedom from the blindness consequent on trivial satisfactions. At a time when several of the older universities are considering the development of collaborate effort in human inquiry, the Western Electric Company has given us a clear lead.

The inquiry begins in the failure of a carefully arranged and carefully controlled experiment. Mr. Pennock and his associates conclude that, although physics and chemistry can proceed to experiment by the selection of two or three variables, human investigations cannot be so conducted, except in matters involving physical or chemical analysis,

without incurring serious danger of distortion or falsification. The apparent implication of the illumination experiment is repudiated not because it is repugnant to common sense but rather because the carefully established control has obviously failed to account for the really significant factors that have determined the result. So when the second series of experiments, those reported here today, is begun, an opposite form of procedure is adopted. A group of workers is segregated for observation of the effect of changed conditions of work, but no attempt is made to "test for the effect of single variables." Where human beings are concerned one cannot change one condition without changing others--so much the illumination experiment has shown. So Mr. Pennock and his associates attempt to observe the unanticipated changes in working conditions as well as those which have been designed; and they attempt also to observe the consequent changes in the workers. In order to do this effectively they devise methods of measuring or, at least, noting carefully--

- (a) organic changes,
- (b) changes in production,
- (c) changes of mental attitude.

The most important of the organic measurements is probably the periodic medical examination, although direct methods of measuring the organic effort required by the job are applied with some success. Changes in production are measured not because they are in themselves important but because they afford direct evidence of the worker's capacity to sustain interest in her work under varying conditions. Changes of mental attitude are observed by the introduction of a new method of supervision--a method which does away with personal criticism and the giving of orders, and substitutes for these a sympathetic and careful technique of "listening."

The results are interesting from the first moment. For example, it speedily becomes evident that the new method of supervision, introduced in order to gain evidence of change, is itself one of the most important changes introduced. You have been told that the interviewing programme grew out of the original test-room experiment; it was actually in the first few weeks of segregation of the group that it thus emerged. Furthermore, the method of observing the changes that occur in workers by the day, week, month and year, and the relation of these changes to other factors in the individual or group situation--this method tends to dispose, and summarily, of the idea of "types" of workers, "good" and "bad" workers and so on. An instance has been quoted to you, out of the many instances that have been found. If the worker known as number five in the mica group had been critically considered as eligible for inclusion early in the experiment, she would have inevitably been discarded as a "bad" worker. Her production is low and irregular. She makes many mistakes. She is, however, continually interviewed after the first few weeks--and welcomes it. She is thus nerved to make decisions with respect to her private situation and to carry them into effect. And her production increases and steadies to such an extent that she bids fair to become the best performer.

In addition to this, the experimenting group soon find that it cannot accept or use the usual industrial conception of fatigue. Industry still tends to think of "fatigue" as essentially the same ill in all instances, and consequently as susceptible to the same type of remedy. A recently published text book in the economics of industry begins its discussion of fatigue thus: "Fatigue is physiological and the result of a toxin in the blood which is produced by continuous physical or mental exertion. Rest and change are imperative in order to permit nature to do the work of recuperation by rebuilding the worn-out cell tissue." It is difficult to know where justification can be found for such a generalization. Our colleagues of the Harvard Fatigue Laboratory have given much time to study of the changes which occur in the blood stream as a consequence of muscular exertion (Studies in Muscular Activity: Journal of Physiology Vol. LXVI No. 2, A. V. Bock, D. B. Dill and others.) They find that the general difference between a Marathon runner and others is that the Marathon runner can achieve a "steady state" while running-- his blood stream shows little or no change in chemical constitution--whereas those others who cannot continue running show an increase of lactic acid, a diminution of alkali reserve and "oxygen debt." More recent studies (Journal of Bio-Chemistry: D. B. Dill, J. H. Talbott, H. T. Edwards) show other changes in the chemistry of the blood during exercise; these other changes, however, do not seem to bear the same general relation to capacity to continue muscular exertion as those specified above. But nowhere is there any evidence that the "work" we have examined in factory situations involves "oxygen debt"; nor is there any evidence that "continuous mental exertion" gives rise to this disability. The hypothesis, or question, that we have taken from the work of Dr. L. J. Henderson and his associates of the Fatigue Laboratory for industrial use may be conveniently expressed in the form of an assertion that an individual cannot continue work, or production, unless he can simultaneously work and maintain himself in a condition of organic equilibrium. Dr. W. B. Cannon's recently published paper (Physiological Reviews, Vol. 9 No. 3) on "homeostasis," the balance between "exterofective" and "interofective" factors, supports this view. Since one finds few instances of actual "oxygen debt" fatigue in factories and since this is no more than a particular instance of unbalance, one must look for other sources of disequilibrium, such as interference of any kind with the individual's capacity to attend to what he is doing. In a recently published paper in the Journal of Psychiatry (Vol. IX, No. 1) two writers report that application of a method elaborated by Professor Knight Dunlap to investigation of psychotic individuals showed such individuals to be deficient in range of attention and power to sustain attention as compared with normal persons. Put in other words, disequilibrium may show itself at any given moment in the form of an incapacity to sustain attention. This symptom seems to be diagnostic, not only for purposes of the comparison made above, but also for industrial situations where the cause of disequilibrium may be in part at least in the external conditions rather than wholly in the individual himself..

Something of this emerged early in the Western Electric experiment. The idea of "fatigue", in its popular sense, disappeared, leaving in its place the realization of a need to be very alert to the presence of "interference," of many types and kinds, in industrial situations. This led directly to the realization that there may be as many varieties of disequilibrium as there are individuals. Health and personal history, the social situation outside the plant and in the working department--these considerations of established relevance all indicated the wisdom of an interviewing plan, if rightly conceived and practiced. It was not thought that the workers themselves would be able to specify rightly the particular interference or disability. But experience had shown that if the individual were encouraged to talk freely, and under the protection of a careful anonymity, the effect was not merely personal and emotional relief, but also, in many instances, the revelation to the critical observer of the locus of "interference."

I have said that the first change resulting from or foreshadowed by the inquiry of the Western Electric Company is of the nature of a new relation between industry and biological and human research. I hope that my comments have sufficed to make clear how closely at least one industry is approximating its point of view and its methods to those of the universities.

The second change to which I wish to call your attention is the changed conception of human control which is not only a logical but also an actual consequence of the inquiry. Mr. Putnam's paper has shown you that the history of this latter development resembles in many particulars the history of the test-room experiment. In this instance also the inquiry begins with one intention and continues with another. The original idea, at least in part, was to learn more of the actual situation in various departments, to discover differences in quality of the supervision. As the plan developed, more interest was taken in the individual himself, his situation and the consequent distortions in his thinking. And the whole conception of what constitutes good supervision has radically changed.

The Western Electric Company plan differs in several respects from any other industrial use of the interview. In the first place, the identity of the person interviewed is known only to the interviewer; and this anonymity is most carefully protected. The protection is not only direct, but also indirect. That is to say, every interview is carefully gone over by members of the department and all clues of a personal order that might lead to identification are suppressed. In certain instances, this may even diminish the value of the interview, but it is nevertheless carried into effect. In addition to this, no interview is "released" for use by the supervisory training department, until a sufficient number of interviews from various quarters have been collected for general release. Partly, but not wholly, because of this, the workers have come to have

great confidence in the plan; they realize that their confidence cannot be abused; and the general quality of the interviews has been high.

Another difference in the Western Electric Company plan is that the interviews are taken from the employees of the Company. They are individuals of sufficiently mature experience, of intelligence, and already "in line" for promotion to supervisory positions. This procedure has many advantages--they do not, for instance, come to the interview as "outsiders," they need no elaborate explanation of Company policies and situations and they can accept and interpret statements without need of laborious explanation. In all these matters they have their own knowledge and experience to guide them. But these things, however important, are yet minor advantages. The really important change is, I believe, that the Company is developing a group of future supervisors who know the technique of interviewing and of human control, who have realized the importance of fact-finding in personal situations, and who are able to extrude emotion of moralistic admonition from their personal contact. The interviewers as a group are eagerly aware of the importance of their new method of fact-finding; but their eagerness is intelligent and their technique of interviewing has in the last year developed amazingly. They have learned to listen rather than to talk, to develop new capacities for active listening. And one has to remember that they are the future supervisors.

It is perhaps to this that the surprisingly unanimous verdict of the workers is due. "This is the best thing the Company has ever done." "The Company ought to have done this long ago"; these seem to be the typical comments. It is interesting that one individual who describes himself as a "suspected Bolshevik" is as enthusiastic as his fellows; the addition he makes is the suggestion that perhaps the plan has been inspired by a "radical" newspaper. It is interesting also that employees report improvement in the supervisors and that almost simultaneously the supervisors report that the employees are "easier to handle."

So much you have already learned from Mr. Putnam's paper and from Mr. Pennock. And now, having used such dangerous words as "eager" and "enthusiastic," I have to ask an entirely sober question as to what is happening. While this question cannot be wholly or even satisfactorily answered, I think that it is nevertheless possible to indicate something of the change that is in progress. Certain future supervisors are being trained to a new method of human understanding; the material they gather is being made available for the training of all supervisors. What is this new method of human understanding.

It is essentially another development of that principle of accurate fact-finding as the basis of thought and action that has been humanity's most reliable guide in recent times. Both the test-room

experiment and the interviews have shown the importance for morale of first line supervision--the supervision nearest to the worker. And it must be confessed that up to the present the quality of first line supervision that civilization has provided for industry has never been very high. The fact that one man has been set in control of others has usually been taken to imply that he is expected to give orders and to have them obeyed. So supervision has frequently come to mean "ordering people about." There is only one objection to this, and the objection is not in any sense political, it is simply that the method is exceedingly stupid. If there is difficulty or delay in obedience, or eccentricity, or eccentricity, or "slackness," the supervisor is expected to yell and bawl and swear or, what is even worse, to indulge in lengthy admonition. So he "talks" and does not "listen"; and he never learns what is really wrong. The workers are often terrified, they harbour no grievance and at last, if they express it, they tend to overstate or to distort. At once the overstatement is seized for attack, and the possibility of understanding is lost.

Perhaps in this, I am myself indulging in overstatement. But at least I can claim that where the good supervisor listens and becomes acquainted with personal eccentricities of attitude--and the causes of such eccentricity--the usual supervisor does not; he prefers to talk and give futile "orders". The interviewers of the Western Electric Company have discovered that it is really true that one can understand personal eccentricities and disabilities by sufficiently careful listening; that one can help the individual to diminish his disability and to develop self-control and understanding. And the Western Electric Company has discovered that it can train good supervisors and need not endure bad ones.

Now if industry, by reason of fact-finidng and intelligent policy, is going to give up ordering humanity about, and to help it to self-control and social understanding, this would seem to be an industrial change of major significance both for industry and for society. This would indeed seem to promise some human complement of the changes which the industrial revolution and political democracy began.

In saying this, there is no doubt that I participate and, perhaps too considerably. But a definition of direction and of possibility will never minimize in any rigorous inuirer his realization of the immense amount of work demanded before such results can be achieved.

November 15, 1929.

EL

HARVARD UNIVERSITY
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
GEORGE F. BAKER FOUNDATION

ELTON MAYO
Associate Professor, Industrial Research

SOLDIERS FIELD
BOSTON, MASSACHUSETTS

*Mr. Pennock
met
file*

December 2, 1929

Mr. M. L. Putnam
Chief of the Division of Industrial Research
Western Electric Company
Hawthorne Works
Hawthorne Station, Chicago, Illinois

Dear Putnam:-

I roused myself sufficiently from my dogmatic slumbers last week to set down on paper certain considerations that should, I think, guide an interviewer in his conduct of the interview. I enclose a copy for the comment of yourself and Mr. Pennock on the one hand and of the interview group led by Wright and Dixon on the other.

I suggested in a recent letter to Mr. Pennock that I should pay my next visit to Hawthorne about the twelfth of this month, December. I propose to bring some text books with me on this occasion.

I am still hearing reverberations of the New York meeting - some interesting, others very stupid -. One University professor asks me to devise a method of eliminating the need for intelligence in business management.

Yours sincerely,

Elton Mayo

EM/rkg
Enc.

HARVARD UNIVERSITY
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
GEORGE F. BAKER FOUNDATION

May 21, 1930.

M. L. Putnam, Esq.
Chief of the Division of
Industrial Research
Western Electric Company
Hawthorne Station
Chicago, Illinois

Dear Putnam:-

Many thanks for your letter containing the report of the meeting in Chicago on March the tenth and Dr. Kornhauser's comments on your experimental work. You say that his comments are interesting. I do not know that one can say so much for him: it may be that there was some suggestion of further experimenting in his mind but the total result of his comment is negative. He says, for example, that the Company has not done well to abandon the method of "controlled" experiment and he implies that the serried ranks of biologists support him in this claim as against us. You are already aware that this is not quite true. The general conception of what "control" means in biological experiment has been poverty stricken and fruitless. So must so that L. J. Henderson in his investigations of the blood stream has, as you know, given a lead in a new direction. This lead is not merely a new method of experiment, it implies an entire change in the conception of the nature of biological experiment. The notion that single variables can be isolated and a one - one relation demonstrated between changes in them has proved almost completely futile in investigations of the organism. Kornhauser still clings rather obstinately to this rather naive conception of inquiry in spite of the fact that it has led him and his colleagues nowhere.

With these qualifications once established I am prepared to admit that something in the nature of "control" is necessary. But we cannot conceive "control" as Kornhauser and Company conceive it. The illumination experiment did demonstrate the futility of an over-simplified "control" in human experiment and, even if we admit that the notion of control must be reestablished, we can still find nothing of value in Kornhauser's reaffirmation of the ideas with which the National Research Council and the Western Electric Company began. It is for us to discover a new conception of "control", that is to say, to discover what we mean by "control", having had to abandon the original simple idea. This is one of the voyages of discovery on which we have embarked; it is very important that we should discover something here as elsewhere, but I cannot see that Kornhauser's comment helps us in the least.

- 2 -

It seems to me rather that he conceived his own work, his own cause, as being in need of defense. This being his attitude he was compelled to criticize, and unpleasantly. It is unfortunate that these people believe us to be attacking them when we are only endeavoring to set the facts down. For so long as they conceive themselves to be in possession of exclusive and proprietary rights which they must defend to the last, it will be difficult for us to establish any relationship of genial collaboration with them.

The time of my departure is near but I shall be writing to you again, and in reply to your letter received a few days ago, before I leave. My best wishes.

Yours very sincerely,

ELTON MAYO

BL

Peabody Museum
of
Archaeology and Ethnology
Harvard University
Cambridge, Massachusetts, U.S.A.

July 3, 1930.

Mr. M. L. Putnam
Western Electric
Hawthorne Plant
Cicero, Illinois

Dear Putnam:

Thanks very much for your recent letter and the enclosures. I think I will be able to use them to considerable advantage on the project which I have in mind. I have been so busy lately preparing for the summer session at Harvard that I have had little opportunity to do any hard thinking on the work which was done while I was in Chicago. However, this condition will be rectified very shortly.

I intend writing Mayo to give him the summary of some of the ideas which I believe will be of value, in order that I may have this approval since I do not want to interfere in any way with his ideas and plans. Since I know Mayo's ideas and mine are quite similar, I anticipate no disagreement with the material I send him. As soon as he O.K.'s it, I shall immediately get in touch with you.

I, also, will discuss the idea of working out a course of instruction for supervisors along the lines which you suggested while I was in Chicago. I think it is a damn good idea and the only possible criticism is that it might be a bit previous, but I am not sure that this objection is valid.

Your idea of my coming out next summer and bringing along some of the young chaps here seems excellent. I believe that in all likelihood I may be able to come out Christmas time since there will be a considerable holiday here at Harvard and I would thus be able to have a long enough period to set at things in a more detailed manner than if I made a flying visit during the regular session. Meanwhile, I shall be working with one of the eastern cities and hope that by next summer it will have yielded sufficient results so that we may be able to apply some of the ideas gained in this work to the Cicero study.

If you can use any of the ideas that I talked bout while you and I were together, in any why whatsoever, you have more than my complete approval. I do not give a hoot whether I get credit or discredit for them. I was highly pleased when your letter informed me that you thought enough of them to think them useful. To put aside all false modesty, I do believe that social anthropology has a lot of offer to the kind of work you are pioneering.

It was fun to have met you, and to have had the several opportunities of conversation and exchange of ideas that were part of our experience while I was in Chicago. I think our Milwaukee jaunt was particularly valuable, if for no other reason than that we slept at the Republican Hotel, that "great historic spot of the great city of Milwaukee".

- 2 -

Give my regards to all the lads that I knew in the plant, particularly Wright and Dickson. Please remember me to Mrs. Putnam.

I am,

Your friend,

W. Lloyd Warner

BL

HARVARD UNIVERSITY

Graduate School Of Business Administration

George F. Baker Foundation

Soldiers Field
Boston, Mass.

September 2, 1930

M. L. Putnam, Esquire
Western Electric Company, Incorporated
Hawthorne Station
Chicago, Illinois

Dear Putnam:

I spent the day after I left you in Albany at 195 Broadway. Here is the program: 9:30 to 11, Hosford; 11 to 1, Stoll; 1 to 2:15, lunch with Hosford and Stevenson; 2:30 to 4:30, Halligan. They were all much interested in my experiences at Hawthorne. Stoll and Halligan were particularly interested in learning the suggested modifications the studies themselves are turning up for you. All three vice presidents were much interested in the comparison of the interview plan with employee representation. I have the impression that Stoll is looking forward to the time when it will be possible to handle employee comments on supervision in an administrative way. He realizes, of course, the delicacy of the situation. The other great topic of conversation was regularity of employment. Hosford told Stevenson to send me a copy of Skinkle's questionnaire on that subject. It looks exhaustive at first glance.

As you may readily guess, I found talking with the vice presidents of the company as interesting but really exhausting as I was finding your work at the end of my visit. I am heading for a short vacation now, but didn't want to step off without dropping you a line to express my deep appreciation of your kindness in making my visit to Hawthorne so interesting and instructive. I am looking forward to your visit here at the School in the fall when we can probably stage quite a party for you, with Mayo in good voice and Warner and I crying, "Bravo"!

Cordially yours,

Richard S. Meriam

RSM:AHK

UNIVERSITY OF WISCONSIN - MILWAUKEE

Sept. 10, 1930.
General Address:
c/o Bram Shipley & Co.
123 Pall Mall
London, S. W. 1

Dear Mr. Pennock:

I send you this note, while on my way back to Dorset, just to say that my presentation of the Western Electric Company researches, today, to a small group representing some leading British firms and the British Association for the Advancement of Science, roused in the audience a great interest in and respect for your work. The attendance was limited to thirty in order to make discussion possible, and the discussion was still going on when I left Bristol to come here.

Major L. Urwick of the International Management Institute of Geneva was present and was obviously much struck by the experiments and their outcome. He proposes to reprint my Economic Association pamphlet (it was all I had with me, except the diagram slides) and to have it translated into three languages. So you may have inquiries, or even visitors, from Germany, France, and Italy. It was interesting to see how quickly the industrialists "took" the various points - and their vote of gratitude to you and the Company was wholehearted and unanimous. I was asked to express their hope that those of you who head the work will find it possible to continue it.

I seem to have been away for a very long time. I begin to fret occasionally because I don't know much of what is happening. However, I saw Lloyd Warner for two days and he gave me a good account of you all. And yesterday I had a very interesting letter from Fritz telling me of his visit. So I try to possess my soul in patience until October or November. I am due in Paris on October 10. I have been there twice already to look over their show.

I have gained some pretty good adherents for your method over here - Remtree, Lord Amulree, the Economic Advisory Committee Secretary - and the industrialists of today's meeting. Also Johnstone of the I. L. O. at Geneva.

But more of this when I see you,

Yours very sincerely,

Elton Mayo.

My best respects to Mr. Stoll and Mr. Rice and my continued good wishes to Putnam and colleagues.

HARVARD UNIVERSITY

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

GEORGE F. BAKER FOUNDATION

SOLDIERS FIELD
BOSTON, MASSACHUSETTS
September 11, 1930

9/15

Mr. H. A. Wright
Western Electric Company
Chicago, Illinois

Dear Wright:

Now that I am away from your busy workshop and back in quiet old New England, I thought I would try to put together some of the impressions I received on my visit with you last August. I shall express these impressions as "the problems of Charlie Western", meaning by that the questions that seemed to be in the minds of some members of your organization. It may be that I am wrong, in which case just dismiss them as my own "projections".

1. Should research have a clearly defined objective?

I doubt very much if an affirmative answer to this question could be critically supported. It would degenerate all research into a "project". By a "project", I mean a specific question or problem which remains the same during the experiment and which can be answered definitely one way or another at the end of the experiment. Such a procedure is only a limited application of the scientific method. One can experiment this way only if the science from which the project emerges has been well founded. For example, once the atomic theory had been elaborated, the determination of the atomic composition of certain compounds becomes merely a project. The quantitative analysis of an ore is a project and not a research. In short, research should have an objective but it need not necessarily have a clearly defined objective. It starts with a vaguely defined question in a vaguely defined area, and as it proceeds it attempts to define more clearly the question as well as the area to which it is to be limited. Your progress from the illumination experiment to the "test room" and then to the interviewing program illustrates what I mean. In each case you stated your problem a bit more precisely, but as yet you have not stated it nor answered it completely to your satisfaction. That is healthy confusion. It is the confusion which follows in the wake of any research where the logic (that is your conceptions and thinking) changes in the course of your research. The "facts" you gain from research can be employed not only to answer the question that you have raised, but also to change the nature

and direction of your question. In the latter case, you have a progressive research and not a fixed project. It may take several years to find out that you are not asking the right question. But one need not grow morbidly pessimistic about that.

2. What should be the status of confusion in the mind of the research worker?

Once you have discovered that all is not simple and clear in research but that things are also apt to be confused and muddled, two contrary attitudes may tend to arise from this newly gained insight. On one hand the individual may feel that "Whirl is king, having driven out Zeus". That is, he may feel that all is flux and confusion. Clarification in the field of human relations is impossible. Or on the other hand, having become exhilarated by their escape from some stale orthodoxy, they may become condescending toward those who seek clarification. In the first case, you have a too deflated attitude; in the second case, a too inflated attitude. I think I detected signs of both among your workers. In both attitudes, I feel that there still lurks an underlying demand for a simplicity and certainty which this universe may not offer.

The research worker is constantly attempting to state his assumptions more clearly and the question which is controlling his research more precisely. There is always a "ragged edge" to his thinking, in which there are a number of questions and problems presented that elude his precise formulation. His thought is always in the process of development to greater adequacy with regard to logic and to fact. He realizes that the universe has always the capacity to disappoint his most cherished theories and beliefs. But instead of deplored this, he rejoices in the discovery of new facts, for by this alone his universe retains a perpetual zest or interest. It can never become monotonous.

3. Is everyone qualified for research?

Having discovered that research need not have a clearly defined objective and that this lack of clarification need not react to make a research worker either more morbidly pessimistic or pretentiously optimistic, the problem arises as to whether or not all of your workers can be educated to this new point of view. I suppose that theoretically it is possible, although practically it may not be expedient. Everyone cannot doubt and question and be critical without arousing preoccupations of uncertainty and pessimism. As I have explained before a certain amount of confusion must accompany the kind of research that you are now undertaking. It would be better not to have this confusion and its accompanying feelings of uncertainty spread all over the department. I think you have sensed this in your plan to separate the two functions of interviewing: (1) as a personnel program, and (2) as a research program.

In the first case you would tend to standardize interviewing as one of your personnel procedures for improving the relationship between employees and management, without being too critical as to just how the results you derive are actually obtained. You are satisfied, let us assume, that this procedure has certain "values" which you want but that as yet these "values" are too intangible to be exactly determined or measured.

This sets the problem for your research group. Just what are these values? Can they be more exactly stated or measured? How can the procedure be improved so as to assure their perpetuation, etc.? The questions are innumerable. Allow this group to be as critical as they wish. Let them destroy in thought or build up in thought anything they please, but on no account let them communicate their ruminations to the straight interviewing staff. Only when they have worked out some definite practical improvement in your present technique which can be passed on and incorporated in your present system, should they be allowed to help in installing and training men for a new procedure or technique.

4. Should the worker feel the need of selling his job and himself to his superior?

By selling one's job, I do not mean the explaining and interpreting of one's work to the management or to those who are not so actively in touch with it. That is essential and necessary. But this function should be relegated to those few who are qualified for this kind of work. It should not be imposed on everyone in the department. The rest of the workers, in my opinion, should be encouraged to do their job, not made to feel that they have to sell it. I think it would be wise to have one member in each working group whose primary function would be to keep things steady so as to allow each individual worker to perform his work with as few qualms and anxieties as possible. This may be one of the functions of a good supervisor who like a good parent keeps the world safe and secure while the child goes out and learns.

I think I have "bawled" myself up in this last paragraph. Still I think that there is something there worth saying which I shall let you ferret out for yourself. These above preoccupations were chiefly aroused when I listened to the questions raised by Dixon's group of interviewers. It seemed to me that they were unduly preoccupied with questions of where the work was leading and what possibilities of advancement it held for them.

5. Should industry be human or efficient?

This seems to be worrying some of you. It is a variant of the question which I heard raised, "Does industry exist for the individual or the individual exist for industry?" In answer to this last question, it can be said that science does not concern itself with existential propositions. You never heard a chemist raise the question of why sulphuric acid exists because it is harmful to the human organism, nor have you heard a chemist try to support the thesis that oxygen had more of a right to exist than hydrogen, but as this answer would probably not be satisfying, I have stated the question as "Should industry be human or efficient", because, in my opinion, it brings out more clearly the underlying false assumption. To be human and to be efficient are not necessarily incompatible propositions. I think that for those who feel that they are incompatible, it might be well for them to state more explicitly their conceptions of humanism and efficiency.

I do not want to enter into this controversy, but I should like to make a parting suggestion. Efficiency even in the mechanical world

Mr. H. A. Wright

- 4 -

is a relation between two terms: output and input; and yet "production" or output seems to be the only term by means of which we express human efficiency.

I hope I have not sounded too critical. After all those were not the only impressions with which I left Chicago. [REDACTED] and I still remember with pleasure the wonderful reception you gave us. We both feel we learned a great deal. Everything looks miniature in comparison with Chicago. Even when I went back to New York, I thought Broadway and 5th Avenue looked measly in comparison with your Michigan Boulevard and Outer Drive. With very best wishes to you and your wife, [REDACTED], [REDACTED], [REDACTED], [REDACTED] and all the others whose names I forget, but who helped to make my stay so pleasant, I remain,

Sincerely yours
F. J. Roethlisberger

F. J. Roethlisberger

FJR/DC

Peabody Museum
of
Archaeology and Ethnology
Harvard University
Cambridge, Massachusetts, U.S.A.

November 26, 1930.

Mr. M. L. Putnam
Western Electric Company
Chicago, Illinois

Dear Putnam:

Thanks awfully for the various data you sent me and your recent note, as well as for the letter of some time back. I shamefacedly admit it, but the whirlpool of work I have been in has made me neglect even my most important correspondence.

I think it is very likely that I shall come out Christmas time for a stay of a few weeks. Thanks awfully for the invitation. I wonder if the Western Electric would be willing to pay my traveling expenses, because the fund that has been laid aside for our research is being eaten up for the work here on the eastern city, and I am afraid I am going to overdraw my allotment. Mayo will be there when this arrives, so I wish you would talk it over with him.

The work here is going in great shape. I have a city of about 17,000 which I finally chose after investigating the possibilities of a number of Massachusetts towns. It is a well integrated, well adjusted community, with the family life in good shape. I have started a number of lines of approach, all of which seem to indicate that, given time and continued effort, we are going to get some very good results, which I feel can be tied up with the work done in Hawthorne. By the time I get out to Chicago Christmas, or before if possible, I shall most certainly have worked out my ideas on the study I did while out with you. I can see now that the relationship of the community to a large industry such as yours is a very different one than that of a smaller industry in a town that has adjusted the industry to its larger social structure.

I am doing the following things this year (I recount them to you to let you see just how God-awful busy I have been):

1. Instructing in anthropology
2. Instructing in sociology
3. Directing research on the Massachusetts town,
as well as doing some of it myself.
4. Finishing the book on Australian civilization.
5. Doing a book on the Life of a Stone Age Man.

Next year I think I can get rid of part of this burden, so that I will be able to devote almost all of my time to modern research, which will please me very much.

- 2 -

I notice that Knute Rockne's football crowd is still taking the teams that it meets, but I rather suspect that Southern California will change the aspects of their winning column. Harvard this year had the lousiest football team I have ever seen. Young men about the college feel that the Yale victory retrieved some of their lost glory, but after sitting through the same I am of the opinion that a third rate prep school could have taken Yale will into camp, and it was not Harvard's special goodness as Yale's particular rottenness that won the day for dear old Harvard.

Give my very best to Dickson and Wright. I am anxious to see you all again.

Sincerely yours,

WARNER

COPY

December 18, 1930.

G. A. PENNOCK, Esq.
Western Electric Company
Hawthorne Station
Chicago, Illinois

Dear Mr. Pennock:

I have not written before because I have been engaged in a rather futile effort to catch up with some of my responsibilities to the University, in areas other than the industrial. I saw Mr. Stoll on my way back and spent an hour with him discussing the work at Hawthorne. He was as keenly interested as ever; he quite approved the suggestion that a "claim" should be made, and as extensive as possible, for presentation to the company's supervisors in general. He saw quite clearly, I think, that except by some such means the attention of the supervisors in general will not be concentrated sufficiently upon whatever of importance the work holds for them. In addition to this I raised the question of publication, and I found that he was entirely prepared to consent to the publication of a monograph on the effect of rest periods or another on hours of work or any other aspect of the work that suggested itself as being sufficiently complete for presentation to industry at large. I found, as ever, much interest in his vigorous discussion.

Dr. Lawrence Henderson will arrive in Chicago on the morning of December 26. I am to meet him at the Palmer House at 9:00 A.M. I should think that at 9:30 he would be ready to visit Hawthorne. I should be glad if it were possible for [redacted] to take us from the hotel to Hawthorne on the occasion of this, the only visit that Henderson will be able to pay to the works for some time. I hope the day and hour are not inconvenient. I had mentioned this, you will perhaps remember, to you and to Putnam when I was in Chicago.

I enclose herewith an account of expenses incurred on my last visit. I have dissected out those expenditures which were obviously chargeable to the University fund but in spite of this the total seems to be more than usual. I do not know whether I stayed in Chicago for a longer time or whether the fact that I drove myself out to Hawthorne for the most part is also partly responsible.

I propose to arrive in Chicago myself perhaps on the 24th, as arranged with Putnam. I cannot be quite sure of this at the moment since I am going by way of New York in order to see Dr. Day of the Foundation and Arthur Young.

My best wishes for Christmas to Mrs. Pennock and yourself. Perhaps I ought to add my wishes to the company for a general improvement in the situation after the new year. Yours sincerely, Elton Mayo

UNIVERSITY OF WISCONSIN - MILWAUKEE

SUPERVISION AND MORALE

By Elton Mayo*

Industrial inquiries that are termed psychological may be undertaken for either of two reasons. A method that has proved to have fertile results in the laboratory may be taken into an industrial plant and used there in order to discover something more as to its relevance and value in human investigation. This type of inquiry is possibly of greater value to the development of psychology itself than the second type. The second type of inquiry develops when, in the process of attempting to find out what happens to workers during the working day, one is forced to take account of mental attitudes and to use whatever clinical or laboratory methods seem likely to serve this purpose. I propose to describe briefly an inquiry of the second type which has been developed during the past three years by the Western Electric Company at its Hawthorne plant in Chicago. The unexpected course of this investigation has roused the interest of everyone concerned in the original and later experiments.

The inquiry was originally designed to discover more definite answers than are now available to certain questions regarding the effect upon employees of the conditions under which they work. It was suggested in the first place by the failure of a carefully arranged and carefully controlled attempt to assess the effect of illumination. The apparent implication of this latter experiment had to be repudiated, not because it was repugnant to common sense, but rather because the carefully established control had obviously failed to take account of the factors that were actually significant in determining the result. Hence, when the second inquiry was begun, a different form of procedure was adopted. A group of employees was segregated and the effect of various changes in the conditions of work were observed. No attempt was made to test for a single effect of single variables, for where human beings are concerned one cannot change one condition without changing others -- so much the experiment in illumination had shown. So Mr. G. A. Pennock and other Western Electric officials in charge of the experiment have attempted to observe the unanticipated changes in working conditions as well as those which were due to definite design.

* - Of the Graduate School of Business Administration, Harvard University.

Published in The Journal of The National Institute of Industrial Psychology - January, 1931. (Great Britain.)

H A R V A R D U N I V E R S I T Y

Soldiers Field
Boston, Massachusetts

February 9, 1931.

G. A. Pennock, Esq.
Western Electric Company
Hawthorne Station
Chicago, Illinois

Dear Mr. Pennock:

I am delighted to have an opportunity of setting down for your consideration some of my reflections upon the experimental work of the past four years at Hawthorne. There are of course limits to what one can say in a single concise statement; the investigations have developed so many possibilities for industry of immediate benefit, and of further inquiry, that one cannot cover the whole field. In selecting certain of the apparently important issues for consideration, I shall, however, try to choose problems that are characteristic of the various major aspects of the research.

I. The Status of the Western Electric Inquiry.

The first question I propose to consider is that as to the comparative standing of the Western Electric experiments. There has been, in recent years and especially since the war, much inquiry into the work situation (including questions of fatigue) throughout the world. How does the Western Electric research compare with other investigations?

The most systematic attempt at research in this field is that presided over by a sub-committee of the General Medical Council in England, known for some years as the Industrial Fatigue Research Board. Inquiries fostered by this group have been continuously in process for more than ten years; the results of the inquiries have been published from time to time in the form of official monographs on this or that aspect of industrial situations. The general character of the work, and much of its unquestioned achievement, is presented in summary fashion in a book entitled "Industrial Fatigue and Efficiency" by H. M. Vernon (E. P. Dutton and Co., 1921). Dr. Vernon was one of the original Fatigue Board investigators; he still carries on such research. He was formerly a Fellow of Magdalen College, Oxford; he holds a degree in Arts and is also a doctor of medicine.

His book is regarded as a standard work on the subject of educational authorities in the United States and in Europe.

On inspection one finds that the book presents a great mass of industrial observation and experimental work. The topics discussed range from fatigue to the effect of "monotony"; "limitation of output", hours of work, wages, "safety" work for the prevention of accidents are also discussed. The experimental work is, for the most part, Vernon's own work; there is difficulty in relating it immediately to American situations since his observations were largely made in munition factories during the war. The difficulty of comparison may be illustrated by reference to a discussion, in the early part of the book, of differences of output and probable fatigue in a week of 74 hours and a week of 55. It is obvious that one might easily find a factor of "fatigue" in a 70 hour week where such complication - for the same job and working conditions - would not be discovered in a week of 48 hours. Another difficulty is that Vernon's work was undertaken in a situation of grave national emergency and desperate need. His inquiries are therefore more urgently practical than scientific. He enters a factory where improvement of working conditions is needed, he experiments with rest periods or length of working hours, taking output as his measurement - also the amount of "spoilt" work, number of accidents and so on. When more satisfactory conditions of work have been obviously established, he is moved on to experiment and re-order industrial methods elsewhere. In sum, therefore, he makes numerous observations of high value, but he does not succeed in establishing a continuous research anywhere. This does not in the least diminish the high value of his observations or his book. But it means that in the end he rather defines the questions industry must face than begin the difficult business of restating and answering such questions.

Since the war a National Institute of Industrial Psychology has been established in London under the leadership of Dr. C. S. Myers. I am a member of the Institute and a personal friend of Dr. Myers. I have the greatest admiration for his accomplishment in a difficult situation, but I feel again that, owing to the general position of affairs in England, Myers and his chief assistant Dr. Miles have not succeeded in establishing anything in the nature of a continuous research at a given point in industry.

The work of the International Institute of Management at Geneva under Major Urwick has not as yet become experimental. Major Urwick is immensely interested in the Western Electric researches, so much so that he has recently published an abstract of the papers by yourself and Mr. Putnam as a special number of the journal of the Institute - in three languages. But his own work for the time being is of necessity mainly propagandist.

Speaking with direct knowledge of these three agencies and of the men working in them, I think I can say that they feel, as I do, that the Western Electric experiment is unique. This for the following reasons:

1. The investigation has been developed by the Company itself, or by certain of its officers, in order to discover something more definite than is known with respect to the effect of modern industrial methods upon workers. It is distinctively an inquiry or research and not a "plan" or system.
2. The experiments have been better planned and controlled than has been possible elsewhere. This is obviously a consequence of the first reason stated above. There has been no "external" irruption into the plant to set up the experiments.
3. The experiments have been more continuous than those undertaken elsewhere. This has meant much more adequate "long time" records of the effects of experimental variations of conditions: it has also meant the development of subsidiary inquiries where such inquiries seemed to be demanded by the original experiment.

Neither of these characters - the continuity or the subsidiary researches - is to be found in other industrial experimentation. There is no criticism of other investigators, in England or elsewhere, implied in this statement.

II. The Experimental "Test-Room".

The test room at Hawthorne really demands description in book form; it represents an entirely new departure in industrial research. It is this which makes it so difficult to present effectively to an ordinary audience. Such an audience inevitably occupies itself with the endeavor to classify the serial experimentation under this or that existent category of so-called research, or they may try to understand it as a "plan". In either event they fail because of the novel character of the procedure - which makes many of them restless and inclined to repudiate the effort of understanding demanded.

For over three years at Hawthorne, the output of the five girl workers in the experimental room rose steadily with only minor variations. This was accompanied by unquestionable improvement in the general health and morale of the workers. Minor changes in the output curve can be related to the itemised experimental changes imposed. Two rest periods, for example, of fifteen and ten minutes respectively

in the mid-morning and mid-afternoon, are much more effective than six five minute rests in the working day. But the major change in output, the increased production which is the most startling feature of the experiment, is quite obviously not accounted for, in any considerable degree, by any itemized change, nor by all of them taken together. During three months when the original conditions of work - no rest periods, refreshments or shorter working hours - were reinstated, the major increment in production ignored the experimental change and rose steadily as before.

The broad significance of this fact, which could not have been discovered, if the experimentation had not been continuous, has, perhaps fortunately, not been generally realized as yet. Nor is the notable increase of output a passing phenomenon of the experiment. At the present moment when workers generally are "anxious", and are certainly indisposed to general increases of output, the five girls are producing in a thirty-seven hour week rather more than they originally produced, as skilled workers, in a forty-eight hour week.

This feature of the experiment was for some time a puzzle to the officers in charge of the inquiry. But the advantage of continuity of research, when intelligently directed, again revealed itself. Three observations gradually emerged from the multiplicity and established their claim to be considered as important. These were:

- a) The freely expressed relief of the workers at their freedom from ordinary supervision.
- b) Observation in several instances of the effect of personal preoccupation or misfortune upon the production curve, and recovery of production when the preoccupation disappeared.
- c) Finally a "case in point" emerged - that of [REDACTED] in the Mica room. This worker's production during forty-six weeks showed just such an improvement, irrespective of experimental conditions, as the general production curve in the original test room.

In the last instance it was possible to trace the effect, in steadier and higher production, of changes in the worker's general, and especially domestic situation. In this instance, as in the others noted (Section b) the difficulty bore no relation to anything in the work situation. Nor could it be related to supervision, for these instances occurred in the test rooms where there were observers but no supervisors.

The Western Electric use of the interview.

It was obviously necessary to broaden the area of inquiry to discover whether any sort of preoccupation, domestic or otherwise, was generally affecting the morale and production of workers. The small number of workers under observation in the experimental rooms made generalization on such a basis impossible - even though the experiments had served to formulate the questions that demanded answer.

At this distance in time, however, from the institution of the interview method it is difficult to say exactly what form the question took in the thinking of the experimenters. We know from the records, of course, what was said and the original form of the questionnaire. But the speed with which this was discarded when the work had once begun shows, I think, that a question and answer type of investigation (of, for example, supervision) was never regarded as relevant or important. The experimental work had shown that misconceptions of an actual situation (supervision or what you will) operated to produce results that should only be expected if the situation were really bad. The misconception often originated in circumstances outside the industrial situation, yet nevertheless came into operation in industry as if industry were responsible. Putting domestic and private preoccupations on one side, the experimenters asked, in effect, whether widespread misconceptions of "work" and "supervision" were affecting adversely the morale and output of the Works personnel. Two leading questions present themselves:

- a) To what extent do misconceptions or falsifications of the work situation give rise to diminished morale and output, or to cheating, deliberate restriction of work and so on?
- b) If this is generally the situation, is it possible for supervision to develop an entirely novel industrial method that will go far towards disposing of such falsification?

At no time, as I see it, did the research imply a direct criticism of existing methods, except perhaps in a few isolated and negligible instances. The interviews increasingly have shown that an attitude of hostility towards a "boss" includes always something of falsification, and has small value as a critique, in the ordinary sense, of supervision. The interview quoted in the report provides an excellent instance. The worker interviewed remarks quite early that she dislikes X, her group chief. She then goes off into a long history of the incredible "meannesses" of her step-father. The story finished,

she remarks casually that X reminds her of her step-father. The story would be amusing if it were not tragic; the unfortunate group chief is caught up into a muddled resentment of a "mean" step-father, of whom he knows nothing. He has to suffer as if he were the other man; no wonder he finds the girl a problem case.

The falsification is not, however, confined to supervision and personal interrelation. Interviewing has discovered that a whole department, from the supervisor down, regards itself as "side-tracked" and neglected. It is "in a backwater"; its morale and performance, under the influence of this misconception, are as poor as if the falsification were the actual truth.

Let me attempt, at this point, to express myself with complete clarity. The test room had shown a remarkable increase in production, easily developed and maintained, and obviously not directly related to the itemized changes imposed. This change was, and is, associated with improved health, there is no symptom of "fatigue"; "absences" have also diminished and the workers have developed what Mr. Putnam calls a "zest for work", a positive preference for the duties and the surroundings of the test room. So much for the first stage of observation. *✓ 64*

The second stage of observation is concerned with mental attitudes and preoccupations; here also there are minor and major changes to be observed:

- a) The minor changes are those mentioned which show a direct relation to obtain between preoccupation with private misfortune and a diminished production for the duration of the preoccupation.
- b) The major change is that to be observed in the girls' change of mental attitude toward the Company officers, the Company itself, supervision generally, and their work. They have lost all shyness and fear; they enjoy their increased earnings without any apprehension of "rate-revision"; they talk freely on any subject to the official observers. It is this major change of mental attitude which is associated with the major improvement in production.

These two changes, the minor and the major, are of a kind. The minor are more readily observable, because the comparative difference (compared with the other workers and with the individual's former achievement) draws attention to itself and to the private situation which is cause. The major change is more important because it implies an

attitude to industry generally, no matter what working conditions are, which makes for poor performance and low morale - and for which industry has developed no corrective device. Indeed, industry, though uneasily conscious of the general is not at all aware of the specific problem.

A Major Industrial Problem.

It has become exceedingly necessary to discover how far the general industrial situation, especially at the Hawthorne plant, is cramped and hindered by prevalent mental attitudes of this type. And it is to this problem that the interview method is essentially addressed. Interviewers from the first have been alert to observe the irrationalities and falsifications that make personal interrelation unsatisfactory and high morale difficult of achievement. These - the minor problems - find illustration in the interview attached to the report which I have already quoted.

But in the last twelve months, the interview method has begun to sketch, in preliminary fashion the major and exceedingly critical problem. Industry hopes, not without justification, that the smaller personal difficulties will come and go; time and the better supervisors aid the process. In this area the research programme has already demonstrated its use and necessity. But the major difficulty (the end result observed by certain economists, notably Professor Leiserson of Antioch) persists and is not yet dealt with by industry - since no one has yet devised a way. The interviews reveal a general situation which may be stated, subject to correction, somewhat as follows. Workers generally (that is, all of them) suffer, perhaps for no good reason, an apprehension of authority, of supervision, of the Company they work for. This is found even in the most reputable plants and in the best working conditions. At worst, it takes form as a tendency to try to "get the best of" the Company; at best, it takes form as a fear of developing that zest in work of which Mr. Putname speaks. The apprehension of preoccupation is sometimes clearly conscious, in which case there is deliberate restriction of output. Elsewhere it is unexpressed except as a production lower than need be - a "defensive" reaction. I think it may be claimed that recently the interviewers have found evidence of the existence of one or other of these situations everywhere - even at Hawthorne where the conditions of work are superior.

Two conclusions would seem to follow. In presenting these, I realize that they are tentative and I would not wish to commit any other person to them. I present them because, even if not wholly true, they at least indicate directions for further inquiry. The conclusions are:

- a) The major improvement in the test room seems to relate itself to the dissipation of these more general and industrial "falsifications" of situation.
- b) Since these preoccupations (and therefore restriction either of the conscious or unconscious type) prevail widely in the Plant, one must tentatively conclude that the accepted production is 30% or 40% below what it would be if means were found to deal effectively with the situation. This is not a condition that can be lightly accepted by industry.

I do not wish to labor the point further. I only wish to point out that

1. No means of dealing effectively with such situations exist elsewhere in industry.
2. The Western Electric inquiry is gradually defining industrial situations with far greater precision than any other investigation. It therefore is to be regarded as the best hope for a future solution of the problem.

I hope I have said enough to show the absurdity of certain accusations against the whole inquiry made in my hearing by men who have never visited Hawthorne. These accusations are that "it is a spy system" or "it is unfair to supervisors". Both these statements seem to be absurd. Another claim is that "the work could be done by the supervisors themselves". Here I must confess that at one time I had a somewhat similar idea. But as the inquiry developed in the directions indicated above, I came to see that this claim cannot, at least at present, be sustained.

I make no comment on the analysis of interviews since I have already been somewhat prolix. It is a necessary part of the interview program and may at any time develop a previously unsuspected importance. This has been the general history of each contributing activity.

Another Major Problem.

I should like, in conclusion, to point out that the Western Electric inquiry is making another important contribution to the economic understanding of our time, and in a direction at present unsuspected. Seventeen years ago Brooks Adams (Theory of Social Revolutions. p. 217) pointed out that under industrialism the development of science and specialist research has been greatly fostered and encouraged, but there has been no parallel or equivalent development of administrative or executive capacity. He concludes that "the relative overstimulation of the scientific mind has now become an actual menace to order because

of the inferiority of the administrative intelligence." In spite of the years that have passed since Adams pointed out this relative and increasing inferiority, little attention has been given by business men or educational authorities to this important problem. And there is small doubt that lack of interest in the broader administrative problems of our time has contributed, perhaps more than any other single factor, to bring out the unnecessarily grave economic depression in the United States. Industry has tended to give all its interest to the problems of production, finance and management; it has paid small heed to the problems of consumption and the ordering of markets. Both business men and economists have implicitly sanctioned the development of economic studies as a group of unrelated specialisms. Theories of finance, of production and of management are commonly elaborated as if it were possible permanently to segregate these problems from each other. There has been a tendency, for example, to attribute the present depression to gold insufficiency or to "overproduction" or to the Stock Exchange collapse of October 1929 or to some other specific cause. In Europe also one notices that "rationalization" is frequently discussed as if improved management would of itself suffice to remedy industrial ills without any attention given to the other problems of finance, production and market organization. This is what Brooks Adams means by the ultimate insufficiency of any merely specialist logic, the relative "inferiority of the administrative intelligence." The four directions of inquiry are abstract; finance, production, management, market organization represent four aspects of a single total fact - partial aspects which an existent situation holds in some sort of equilibrium.

It is clear that in such a balanced system an external stress which affects any factor singly will be resisted by the system as a whole; such a stress will therefore lead to an inner change of equilibrium affecting all factors. Insufficient credit or an oversupply of workers or the loss of a market will effect a change in the general balance. The changes termed "cyclical" are always of this nature - a fact which shows that the concept of "cycles" adds nothing of value to, and indeed actually obscures, our thinking. The situation described as "overproduction" cannot be taken to mean merely too many machines and factories that are too large. Nor is it enough to observe, with Mr. John A. Hobson, that overproduction is due to "under-consumption." What overproduction means, and especially in a developing community, is unbalanced growth. In any such situation it is probable that the need to provide for the ordered development of consumption and of markets has escaped the attention of the specialists. Over-production is unbalanced production and is not merely or mainly the production of too much.

"A problem that has escaped the attention of the specialists" - the phrase should give industry pause. It is as important to ensure that all the necessary problems are being considered as to provide for the development of established specialisms. The fact to which Brooks Adams really calls our attention is that in every effort towards human advancement two types of problem are involved - and if attention is not given equally to the two problems the adequacy of the work will suffer, whether it be work in a university or in industry. The two problems are, first the development of specialized and abstract knowledge, and, second, the adaptation of specialist knowledge of the handling of situations in fact at the experiential level. It is possible for a scientist in his laboratory to concentrate his attention upon a particular group of problems and upon the development of a logic appropriate to such a particular group - chemistry, physiology or what not. The enormous advantages of this selective and specialized method have been demonstrated by a century's achievement in the development of knowledge. But the apparent success of specialized and logical research in the universities has tended to conceal an essential condition of such success which is not included in the mere specialization. Any selection of facts for inquiry - "the scientific method" - tends to result in a logic, an increment of systematic knowledge. But any such logic tends to exhaust itself, to work itself out, unless there is a constant reformulation of the question that is being studied. And the man or men responsible for such reformulation are distinguished by the fact that they are capable of working with their mental vision set equally upon the special logic they develop and upon the original mass of empirical data from which their problem has been selected. There are therefore, and it is important that there should be, two types of scientists; the one is mainly logician, eminently systematic and rational, the other is logician but also scientific adventurer. The scientific adventurer uses every gain in his knowledge to define more clearly the "gaps" in it. That is, he capitalizes his ignorance in such fashion that finally the obvious "gap" in his logic actually shows him the exact point at which to renew his inspection of the empirical field, the point at which a new adventure and experimental departure must begin. This is essentially true of all our leaders from Faraday to Einstein. And if our universities did not include, often by sheer inadvertence, a proportion of such men in their ranks, our alleged scientific progress would speedily peter out and come to an end.

And what holds true of the scientific field holds also of executive administration. It is fair to say that industry has copied the specialized method of scientific inquiry fairly well; but it has failed to notice, and to provide for an attack upon the other type of problem. And in matters of economic administration, such inadvertence is far more disastrous in its consequences than it is in a university. An administrator of human affairs cannot afford to neglect or to forget his original and complex human situation. A specialist he must be,

perhaps originally a contributor to scientific development; but if he is to be an effective administrator, he must work with an ever present sense of the inadequacy of his knowledge and his logics. He must not only study the relation of his special work to the work of his colleagues, he must be alert to symptoms in the situation of the need for new inquiries not yet undertaken. He must indeed endeavor to anticipate the emergence of such symptoms; more than any scientist, he must use everything he knows to define with increasing precision the gaps in his knowledge. He also must capitalize his ignorance.

It seems to me that the Western Electric research program - and especially perhaps in its supervisory conference activities - is admirably adapted to

1. Permanently raise the level of all supervision.
2. Discover and develop men of exceptional (and rare) capacity for executive administration.

This letter, sir, is mere comment. It is remarkable rather for the important things it has failed to say than for what it has said. But one cannot cover even one-half of the interesting questions raised by the admirable report I have read. I have merely selected one or two problems which seem to me to possess considerable importance now - and I fear that even these few have led me to write at unconscionable length.

Yours very sincerely,

ELTON MAYO.

HARVARD UNIVERSITY
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
GEORGE F. BAKER FOUNDATION

Soldiers Field
Boston, Massachusetts

February 20, 1931.

Mr. W. J. Dickson
Western Electric Company
Hawthorne Station
Chicago, Illinois

Dear Dickson:-

The program you outlined in your letter sounds very substantial to me. I would like however, to make certain comments with regard to your second objective, that is, to develop the possibilities of interviewing as a fact finding method.

At first I must confess that after the Wickersham report the phrase 'fact finding' seems to me to be synonymous with going around seriously, earnestly and conscientiously and getting nowhere. As William Allen White said, I don't think we can "wickersham" ourselves out of this situation. It may seem irrelevant to mention again that the word 'facts' is meaningless unless you state definitely the point of view from which they are being selected. It will be with regard to this point of view that most of my subsequent comments will be directed.

I like your idea of relating everything to the work situation. You must have a denotation for your research and certainly that is the point to which your 'facts' should be related. If I were you I should subdivide the work situation into three parts:

- (1) the technical conditions of work,
- (2) the social conditions of work, and
- (3) the personal conditions of work.

Under (1) I should consider such things as light, ventilation, waste motion, postural fatigue and so forth. It is the thing with which probably most of your engineers are well acquainted. It is the factor which modern industry has studied to a considerable degree. As you know more about this than I do, I shall not mention it further.

Under the second heading I should consider the relation of the worker to his co-workers and to his immediate superiors. I should think that you might find an interesting relation between the technical conditions of work and the social conditions. What I mean is, you may find many departments with good technical conditions of work but poor social conditions of work and also vice versa. I think your research in the test rooms has shown that the technical conditions of work are not so important if the social conditions of work are good. It maybe that a law of diminishing returns applies here. That is to say, that under poor social conditions of work increased effort in improving the technical conditions of work may finally reach a point where further improvements no longer bring a proportional increment of working effectivemess.

As I have said, I think, modern industry has taken into account these two considerations. Your engineer has looked at the technical conditions of work, your social service worker has looked at the social conditions of work. Each has fought for the importance of his 'point of view.' Each thought he had the 'facts.' Now I think your interviewing program has revealed a third point of view with a corresponding set of new facts which need to be assessed if we are going to understand more thoroughly what constitutes the work situation. This, for want of a better name, I have called the personal conditions of work. Under this head I would study those things which happen outside of the job and which effect the relation of the worker to the work. In short the personal conditions of work are the attitudes of the worker as conditioned by the social milieu of which he is a member. As you have found, even though the technical and social conditions of work are good this third factor may still diminish the working effectiveness of an individual. I think one of your interviews illustrates this very nicely. I refer to the worker who disliked his supervisor because he resembled his hateful step-father. You could improve the technical and social conditions until you were blue in the face and still this disturbing factor would remain.

Now I think if the interviewing technique has any special claim it is to tap this third kind of material. It is an unusually good instrument for investigating this third type of 'facts.' By this I do not mean to say that they are any more important than the other two types of fact. They are only facts which appear when you study the relation of the worker to his work from a new point of view. With regard to this point of view I think industry is still in its infancy. You are the pioneers in un-

Mr. Dickson

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earthing a new fact which must be related to the facts which the engineer and the social worker bring to the total picture.

Please remember me to Putnam and Wright.

Sincerely yours,

Fritz Roethlisberger

FJR/rkg/SV

PEABODY MUSEUM
OF
ARCHAEOLOGY AND ETHNOLOGY

HARVARD UNIVERSITY
CAMBRIDGE, MASSACHUSETTS, U.S.A.

February 27, 1931

Mr. W. J. Dickson
Western Electric Company
Chicago, Illinois

Dear Dickson:

I am mightily bucked up after reading your recent letter and the memorandum you enclosed. I am quite sure that if you follow the ideas you have outlined in your letter and memorandum to me you will achieve some results that will add to the effectiveness of your research. Now to answer a few of your questions. You say, "In glancing over the memorandum you will readily see that some of your ideas have taken root. The idea you advance, to the effect that in studying a family one studies relationships and not individuals, has a great many possibilities. It looks as though the general principles should apply in studying any group, though in lesser degree, perhaps. Am I right there, or is that stretching the concept too far?" You are completely right. I used the family merely as an example, because the people to whom I spoke at the Western Electric would more readily see that the individual was not the significant factor, but the set of relationships established by that kinship group. The same is true, Dickson, no matter whether you study the Australian totemic clans, the gangs of Chicago, or your departmental groups. Not only will you have relationships between the individuals which it will be necessary for you to study, but you will have further relationships established by one group in relation to other groups. In other words, you will have internal relationships and external relationships. In studying your internal relationships I should advise keeping two ideas in mind which will be helpful in searching out data and later in classifying it. You will have first a set of antagonisms, and also another set of solidarities. These things usually balance each other, and they are always organized. In the type of group which you will study you will have three main types of social cohesion: (1) superordination; (2) coordination; and (3) subordination. For example, in the relationship of the supervisor to the employe you obviously have a condition of subordination of the employe to the supervisor and a possibility of superordination in the relationship. In the relationship established between the employes within the group you will have a condition of coordination or of equality. Now if you look at these three elements from the point of view of the two principles of antagonism and solidarity I think that you will be able to discover a lot that will explain the behavior of the group you have under observation.

By antagonism, please don't think that I mean open conflict or,

necessarily, open display of it. Frequently this antagonism will be a socially organized, unconscious attitude, as in psychoanalysis one finds that a son is in unconscious antagonism to the father. There is no social group in which one does not find antagonism as a definite part of the social cohesion, and it is just as necessary as the elements which make up the positive solidity of the group.

In another paragraph you say "If we are to study relationship, then the question arises, how can we identify and state them?" Your idea of examining the interviews is an excellent one. This should be coordinated with the results you get from straight observation of group behavior. It is most interesting to me to see that you have built up a research mechanism which does for your field work the same thing that my method of research did for my field work, namely, you have first, your interview and second, direct observation. I performed both of these functions as a field man, whereas you have split the two - and I think wisely.

The big thing to look for is the attitudes of the person or group being observed. There attitudes are very frequently unconscious; they are usually what might be called prejudices. Psychologically, they would fall into what the psychoanalysts call latent content, but what the sociologists would describe as social structure if they were found among all, or the greater part, of the people in a group.

LLOYD WARNER.

SV

HARVARD UNIVERSITY
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
GEORGE F. BAKER FOUNDATION

ELTON MAYO
Professor of Industrial Research

SOLDIERS FIELD
BOSTON, MASSACHUSETTS

March 3, 1931

M. L. Putnam, Esq.
The Western Electric Company
Hawthorne Station
Chicago, Illinois

Dear Putnam:-

My talk with Stoll lasted for nearly two hours. He was as keen as ever upon the work you are doing and ^{as} determined to support its development. The criticism he expressed ^{in the report} was pointed almost entirely at the first section which deals with the test room. He had only read the first and second sections and my letter to Mr. Pennock. His criticism can, I think, be summarized in these assertions.

(1) Page 16, pay incentive. Insufficiently specific statement. I think what he wanted here was a more specifically supported claim to the effect that while the improvement of 10 or 15% might be attributed to pay incentive the 40 to 50% increase could not be.

(2) Page 17, "hours of sleep." He would like more detail.

(3) Also page 17, "changing the type of work." He would have liked more detail here too.

(4) Page 19. He found the statement confusing. He also felt the factors named by the ballot perhaps had the defect of a questionnaire method as compared with the method of interviewing.

I think this summarizes rather briefly what he had to say. He did not wish to alter the statement in section 2 with respect to the interview and I think his comment on section 1 really meant that he would have liked a more extended statement and even some of the appropriate diagrams.

Putnam
Mr. Pennock

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In general he was delighted with the statement and believes that with a little alteration and addition it is in form for publication. I supported this since I feel also that the moment has arrived for submitting certain of the outstanding achievements of the work to the appropriate public. I think Dr. Cecil Drinker of the Journal of Industrial Hygiene would be glad to have it. This is an American journal of the highest international standing: there is no better medium of scientific communication.

On the other hand I do not think Mr. Stoil was interested in the Wiggam project. I think he feels that those of you who are doing the work are entirely capable of making any necessary statement.

He made no comment upon my letter except to agree that the material you are collecting possesses the highest possible importance for students of the social sciences. He believes that the appropriate means should be found to communicate to them the results of your work.

My best wishes.

Yours very sincerely,

Elmer Mayo

EM/rkg

P. S. I returned to Mr. Pennock yesterday the amended copy of my letter. It will probably be in your hands by the time you receive this. Such alterations as I made are ^{mainly} merely 'literals' and are not important.

July 8, 1951.

MR. M. L. PUTNAM - 6088:

MR. M. H. HOWARTH - 6088-24

It has occurred to me that the general notion of projection might be a good one to take up with supervisors in your conferences with them. Many of them have stated that good supervision depends on the knowledge a supervisor has of his people. Not one of them has even so much as hinted that correct understanding of others is partially dependent on a correct understanding of himself.

The idea of projection, generalized, means a failure to differentiate yourself from the external world or other selves. In the interviews already taken you have noticed how one unconsciously tends to put himself into the picture. Maybe a supervisor can be taught to keep himself out of the picture, or more strictly speaking, can learn to see himself in the picture which he is painting of others.

To attribute naively to things characteristics which belong to the self or thought is a kind of projection common in children. We project when we endow a certain object with certain characteristics to account for the particular sensations and feelings we experience when observing them. For example, if I endow the fire with malicious design because in the presence of the fire it arouses in me the fear of being burned, I am projecting on the fire a sentiment reciprocal to the one which I experience.

If I am afraid in the presence of a certain foreman merely because he arouses in me the image of my father whom I was still a child, and if in order to rationalize this feeling, I call the foreman "a bully," I am projecting on the foreman a characteristic reciprocal to the feeling I experienced when in his presence.

The elderly foreman with little formal education in the presence of a young man just out of college whose life is all ahead of him probably experiences a mixture of feelings which he does not like to face. In dealing with such a man he is probably projecting into the situation many things which

MR. M. H. HOWARTH,

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July 8, 1931.

do not belong there. Instead of responding to the situation as it is, he is probably responding to a situation which his own unconscious feelings and attitudes have created. This often leads to distortion and misinterpretation. The foreman tries to relieve his own preoccupations of educational inferiority by deflating the young men who, in turn, misinterprets the tactics of the foreman to mean a personal dislike.

Many times we project on others things which we do not like to admit as being part of our own nature. We are often most intolerant of those things which we do not like to confess as our own weaknesses. The reformer is often a man who projects on the world his "evil self" and tries to exterminate outside things which belong within. I sometimes wonder if the supervisor's intolerance of the "chronic-kicker" might not reveal a mechanism of this sort.

Probably the most common kind of projection of which we are all guilty is interpreting other human situations similar to our own. It is for this reason that I am skeptical of the "Golden Rule" so often quoted by supervisors as part of their method of handling people. It means that you tend to interpret other human situations as you would your own. This is projection. The man who is having marital difficulties tends to see too easily marital difficulties in those about him. A paranoid individual is too apt to accuse others of being suspicious.

In writing all this I wonder if sometime we might not work out together some illustrations of projection both among employees and supervisors which might be taken up for discussion in your next conferences.

JJR

F. J. ROETHLISBERGER.

FJR:EL

Copy to:
M. L. Putnam - 6088

July 14, 1931.

MR. M. L. PUTNAM - 6088:

Here are some of my thoughts on "total situation."

1. Total Situation as a "Logic"

To me "total situation" is not the object of a research, but the "logic" by means of which you approach your research. As a concept, it operates in one's thinking very much like the concept of "evolution." It is part of one's methodology. It is the point of view from which your investigation proceeds. It is an instrument for research rather than the object on which the research is being conducted.

2. The Logic of Total Situation

The total situation approach makes the following assumptions:

2.1 It assumes that there is a process of interaction between the organism and the environment, and that out of such interaction the individual is "conditioned" or learns. This is the process of equilibrium effected between the organism and its environment.

2.2 It assumes that the conditioning process includes two factors. The individual is receiving impressions from without as well as adding to these impressions his interpretation. In other words, his reaction to his environment includes both the impressions coming from without as well as the mental schemas by means of which he assimilates them.

2.3 It assumes that the individual carries his life history with him in two ways:

2.31 In terms of a memory of the events which have happened.

2.32 In terms of the meanings which have been assigned by him to these events, i.e., the interpretation.

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The second is the most important because, in a sense, the world holds these meanings for the individual. Meanings are often retained even though memories of the events from which these meanings were derived are lost. In mental therapy it is often necessary to recall to consciousness these early memories from which erroneous meanings were derived in order to make the necessary correction and reinterpretation.

- 2.4 It also assumes that all meanings are not carried by the individual explicitly. Many of these meanings remain implicit. These implicit meanings I have called "schemas of assimilation" to distinguish them from the conscious discriminations which the individual can make or the explicit meanings which the individual can assign.

3. Limitations of the Logic of Total Situation

In the above assumptions we have merely a "logic." This logic can carry you only a short distance. It is merely the logic which gives you the lead for an experimental investigation. It gives you a clue as to what your method might be and things which you might look for, but it can not tell you specifically just how to proceed or what you will find. In other words, it can not tell you just what these "schemas of assimilation" are and how they can be related to other things. This only experiment can decide.

4. Major Hypothesis of a Total Situation Approach

4.1 Meanings as socially conditioned

One of the hypothesis which has grown out of using this approach is that the social environment more than the physical environment affects these "schemas of assimilation." In other words, from the researches thus far conducted one has been led to believe that "meanings" are socially conditioned. It is for this reason that the socio-reality has been studied more and more in relation to these "schemas of assimilation."

The social factor in the conditioning of meaning I have called an hypothesis rather than an assumption in the total situation approach because it is one of

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the general ideas which has emerged from the research rather than a starting point. It is still an hypothesis for conducting further researches. It states more specifically the area in which your investigation might fruitfully begin.

5. Problems on which you can employ a Total Situation Logic

As I have said, the total situation approach gives you your clue as to what you might investigate.

5.1 You look for the implicit meanings by means of which the individual interprets his environment. You try to describe these "schemas" as carefully and minutely as possible.

5.2 You look for the relation between these "schemas" and

5.21 The early life and upbringing of the individual

This is the kind of relation in which the psychopathologist is interested. He attempts to study and describe those schemas which are making it difficult for the individual to adjust himself satisfactorily to his environment, and he looks for their formation in the early life and upbringing of the individual.

5.22 The stage of development of the individual.
(i.e., infancy, adolescence, middle-age, or obsolescence.)

The work of Piaget on children is a study of this sort. It is an endeavor to find the basic mental schemas by means of which children of a particular age and of a particular culture assimilate the world.

5.23 The culture of which he is a member.

This is an anthropological investigation. In this case you study the relation between mental schemas of an individual and the culture of which he is a member. These are the schemas particular to that culture. As, for example, in a primitive

MR. M. L. PUTNAM,

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July 14, 1931.

culture, it is a study of the implicit meanings which the savage assigns to his rites, rituals, ceremonies, customs, etc.

6. Total Situation Applied to Western Electric Research

In the personnel research at the Western Electric, I think you have all three of these problems.

- 6.1 In the first place, you are studying the mental schemas by means of which the operator or supervisor interprets the things which happen about him at the Plant. You wish to know the significance, importance, or meaning he attaches to the activities of his fellow-workers, his subordinates, and his supervisors, his job, policies of management, etc. Your first step is to describe as carefully as possible just what these schemas are.
- 6.2 In the second place, you are interested in relating these schemas to the life history of that individual, to the stage of his development, and to the industrial civilization of which he is a member.

7. Total Situation and Interviewing

Naturally, the kind of facts which you are looking for dictate the method you employ to obtain them. So far it has been found that the method of interviewing is the best way to obtain these "mental schemas." As yet the method is crude and needs to be refined. As I have written on the method of interviewing in another paper, I shall not discuss it any further here.

F. J. R.
F. J. ROETHLISBERGER.

FJR:EL

Memorandum to:

M. L. Putnam - 6088
H. A. Wright - 6088-1
M. H. Howarth - 6088-2

August 7, 1932.

MR. M. L. PUTNAM - 6088:

MR. M. L. PUTNAM - 6088-A

Here are some ideas which, in my opinion, you might try to communicate to the supervisors in your conferences during the coming year:

1. Irrelevant Syntheses

It has been shown that the mind tends to relate things which have no necessary connection. It is from such a mechanism that superstitions, false notions, oversimplified generalizations, fixed ideas, etc. grow. They are things which tend to foster an unhealthy mental atmosphere. Good mental health demands that they be exploited, that is, talked about. A mind cluttered with such irrelevant details is prevented from functioning efficiently. Some oversimplified generalizations, such as the following, might be discussed with the supervisors:

1. If a man is "bumped" he can never come back.
2. Tall men are more successful in this Company than short men.
3. It is not what you know, but whom you know.
4. Education is the big thing in advancement.
5. Personality counts.
6. Long-service employees are difficult to get along with.
7. Women are more difficult to supervise than men.

In taking up these points you might discuss how it follows from the fact that Mr. Rice, who is tall, is Works Manager, that all tall men are successful. You can raise the question of why it is easier for the supervisor to say that women are more difficult to supervise than men, than to say, "I find it difficult to supervise women."

2. False Dichotomies

You want to get across the idea of how the mind tends to split things into two parts which are mutually exclusive: Good and bad; right and wrong; ignorance and knowledge; truth

MR. M. L. PUTNAM,
MR. H. HOWARTH,

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August 7, 1944

and falsehood; honesty and dishonesty; tolerance and intolerance; sanity and insanity. Instead of viewing attributes such as truthfulness, frankness, tolerance, sanity, knowledge, etc. as achievements, one tends to view them as attributes which either adhere or do not adhere to certain individuals. To bring out such points you might ask the supervisors to analyze the following statements:

1. A supervisor, when talking about favoritism, says, "I treat all my people alike." But later, when the topic turns to problem employees, he says, "I treat all my people differently." Just what does he mean?
2. A supervisor who admits he is more favorably impressed by some operators than others and is apt to like some of them better than others and takes this into account when handling them.
3. A supervisor who says he gets along equally well with all people.
4. A supervisor who says that in the presence of certain individuals he is inclined to be antagonistic so he watches himself.
5. A supervisor who puts all the virtues such as being fair, honest, frank, tolerant, etc. within himself and the negatives outside of himself.

3. Interviewing Technique

Probably the interviewing technique as a method of assessing human situations is one of the most important contributions that you can communicate to the supervisor. By discussing the following situations you might be able to develop a better idea of the interviewing technique.

How would you handle:

1. An operator who comes to you after he has been "bawled out" by a supervisor.
2. An operator who thinks he is always getting the worse jobs.
3. An operator whose output has fallen appreciably.

MR. M. L. PUTNAM,
-MR. M. H. HOWARTH,

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August 7, 1951.

4. An operator who thinks he is not being recognized and wants to be transferred, promoted, or raised.
5. A supervisor who has been demoted and transferred to your department.

4. Self Inspection

I think discussion of the following questions might bring out the other side of the picture of supervision which I have previously mentioned, that is, the handling of others depends somewhat on the way you are capable of handling yourself. If the above questions have not already brought forth this point, I should think the following would:

What would you do -

1. If you were "bawled out" by your supervisor?
2. If you thought you had been the victim of an injustice by your supervisor?
3. If you were discontented with your job?
4. If you thought one of your employees did not like you?
5. If you thought one of your superiors did not like you?
6. If you were irritated in the presence of a certain individual?
7. If you thought you should be promoted more rapidly?
8. If you thought you should get a raise?
9. If you thought the Company was unfair in its policies?

5. Total Situation

An idea of what constitutes a "total situation" ought to be gained by discussing the following example:

Example

Supervisor A is in charge of a department. He has had twenty-five years' service with the Company. He speaks with

MR. M. L. PUTNAM,
MR. M. H. HOWARTH,

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August 7, 1931.

pride of the practical experience he has had and seems to be a bit wary about too much theoretical education. He believes in treating his help bluntly and to the point. He despises a "yes" man and yet he likes to deflate any subordinate who "puts on the dog." He believes in treating men as men. He thinks that the operator must be shown that he can't "get away with anything."

Supervisor B, one of the subordinates in this department, says, "A isn't such a bad sort when you get to know him. His bark is worse than his bite. He likes you better if you give him an argument. I don't let him bother me."

Supervisor C, another subordinate in the department, on the other hand, says, "A is a 'bully.' I can't sleep nights worrying about what he says to me. He constantly humiliates me by 'bawling me out' before my operators. He passes me by without saying 'good morning.'"

Supervisor D says, "It takes all kinds of people to make a world. I do what he says; otherwise I don't go near him." However, Supervisor D has a grievance against Supervisor E, his subordinate. About E, he says, "The kid is too fresh and cocky. He wants to change things. Just because he has gone to night school he thinks he knows everything."

Supervisor E is bothered by Supervisor D's complacency. He is very anxious to make good and resents Supervisor D's method of "leaving well enough alone." He sees opportunities for making improvements. He wants to put in application some of the things he learns in the supervisors' conferences, while his supervisor only wants to keep things the way they always were.

What do you think of such a situation? Why do you think A is suspicious of his operators, shuns theory, and exalts practical experience? Why do you think B isn't bothered by A's behavior? Why do you think C interprets A to be a "bully?" Why do you think D resents change in his section? Why do you think E is so anxious to succeed?

Let us assume that you have these further facts about Supervisors A, B, C, D, and E. In what way do they relate, if any, to the above situation?

MR. M. L. PUTNAM,

MR. MC-IVY HOWARTH,

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August 7, 1933.

A is a tall man of Nordic parentage and the youngest child of a family largely composed of girls. As a child, he was sickly. A had a brother whose physical strength and athletic abilities he admired very much. As a child, he was always afraid the other boys would think he was a "sissy."

Very few facts are known about B, except that he was a member of a family in which there were two boys and two girls.

C is a short man whose parents are Southern Europeans. His father died at an early age. As a child he was always sensitive about the difficulty in pronouncing his surname so he changed his name. He married a Swedish girl. Toward his father-in-law, a blue-eyed, blonde-haired, tall Nordic, he has the same feelings of inferiority as he has toward his foreman.

D is proud of the fact that he is an American of three generations. Although he had the opportunity of receiving an education, he went to work immediately after leaving grammar school. Since then, although he has had the opportunity of attending night schools, he has resented the fact that the principal always wanted to put him into more elementary classes than he thought he should be allowed to enter, so he refused to go. He married a girl who worked in the factory and who died shortly after. At one time D had the opportunity of going to Kearny, which he refused. He didn't want to leave his parents with whom he is now living and the community in which he was brought up and in which he is well known.

E is the son of very poor foreign-born parents who have just been able to eke out an existence. He is very eager to lift himself out of the poor surroundings in which he was born and brought up. To him American stands for the land of wealth and opportunity. He is still very young and not disillusioned. He is very proud of the fact that he has recently been promoted to a supervisory capacity. He believes he is on the road to success. Each evening he attends night school. He is studying psychology and hopes to be able to apply some of the knowledge he obtains in his new job as supervisor. He is not married, but has a girl whom he can't afford to entertain, so he spends some of his evenings with her studying.

J.J.R.

F. J. ROEDLICHBERGER.

FJR:EL

Copy to:

M. L. Putnam - 6088

HARVARD UNIVERSITY
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
GEORGE F. BAKER FOUNDATION

ELTON MAYO
Professor of Industrial Research

SOLDIERS FIELD
BOSTON, MASSACHUSETTS

October 20, 1931

M. L. Putnam, Esq.
Hawthorne Works
Western Electric Company
Chicago, Illinois

Dear Putnam:-

The fame of your researches is resounding through the chancelleries of Europe. At the meetings of the British Association we stopped every twenty minutes or so in order to combine in presenting our congratulations to the Western Electric Company for its Hawthorne researches. So the impersonal eye of the European world is regarding you fixedly through a microscope; I hope you enjoy your experiences in the object glass.

I sent you recently a copy of the Week End Review in which Myers, the European leader of industrial investigation, formally presents you with his congratulations and appreciation. It is quite a good article, although from your point of view somewhat out of date. I did not see it until it had been printed, and then only by accident. Myers had not mentioned it to me when I was staying with him.

I have only had a preliminary talk with Fritz and Lovekin but as soon as I have possessed myself of their researches and ideas I shall come out to see you. It will probably take me a week or more to set my affairs in order and to acquire what I can of their observations and ideas. As soon as possible I shall write and ask you to suggest or to approve a date for my visit. In the meantime my congratulations and best wishes.

Yours very sincerely,

Elton Mayo.

P. S. Your election to the presidency of the Hawthorne Club, of which I have just heard, seems to me to be one of the most interesting indications of the attitude of the workers to your work. The record majority of votes which you obtained suggests to me that there is far more understanding than suspicion of what you are doing.

C O P Y

HARVARD UNIVERSITY

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

George F. Baker Foundation

ELTON MAYO
Prof. of Industrial Research

Soldiers Field
Boston, Mass.

October 20, 1931.

G. A. Pennock, Esq.
Western Electric Company
Hawthorne Station
Chicago, Illinois

Dear Mr. Pennock:-

I sent you recently from London two copies of the Week End Review containing an article by C. S. Myers on 'Mind and Machinery.' It is interesting to find that the president of the Psychological Section of the British Association and the director of the National Institute of Industrial Psychology should find your work, rather than the English, the most interesting and the most relevant for quotation and discussion. At the meetings of the Committee on Industrial Co-ordination in London I confess that I was astonished at the number of appreciative and eulogistic references to the work. I was delighted, of course, to know that, whatever America thinks of it, the interest in England, France and Switzerland is unmistakable and profound.

For me, of course, this means no more than that England, France and Switzerland are after all rather intelligent; nevertheless I should like to present my congratulations. I have written to Mr. Stoll at some length calling his attention to this rather interesting development.

I have just returned from the meetings of the British Association and I hope to visit you as soon as I have ordered my affairs here and have discussed sufficiently with Fritz and Lovekin the work that they have been doing at Hawthorne. My respects and best wishes.

Yours very sincerely,

Elton Mayo.

EM:rkg

DON'T DISCLOSE IDENTITIES

From the beginning of this work, the identities of the persons under study have been kept confidential. We look to you to carry on this trust. Please guard the privacy of the persons involved by substituting fictitious names, or code symbols for real names.

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December 7, 1931

G. A. Pennock, Esq.
Assistant Works Manager
Western Electric Company
Hawthorne Station,
Chicago, Illinois

Dear Mr. Pennock:-

An unexpected visit to Washington to take part in one of the discussions of the President's Committee on Housing and the Community has prevented me from writing you as I had intended immediately after my return from Chicago. I have, however, fortunately, a note of several topics that I wished to discuss and can therefore develop each point at leisure now that I have opportunity. Before beginning this I should like to say how sorry I was to have missed you on the last day. In the ordinary course of events I would have asked your secretary to arrange for an interview. My reason for not doing so was that I had to discover Mr. Stoll's attitude with respect to certain of the projects I had mentioned to you before developing these ideas further.

My interview with Mr. Stoll was, I think, satisfactory. You will perhaps remember that I had two questions to present to him, the first important, the second perhaps less so. The first was the question of publication in book form of a matter of fact account of the experimental developments at Hawthorne. You will probably remember that you had suggested I should gain his consent before undertaking the actual work. I put this to him as we were lunching together and explained at some length the kind of presentation which Putnam and his group had entirely approved. The form was to be more or less narrative, an account of the actual happenings rather than a discussion of implications - the total effect being to give some sense of the dramatic element involved in the various changes of procedure, with careful verification and careful avoidance of any falsification, including also, as far as possible, appendices giving the actual data on which experimental decisions were based, at various points in the development. I also urged that the book should carry no names at all but should be published merely by the Western Electric Company, Industrial Research Division. Mr. Stoll approved entirely of the project as described but demurred a little over the non-publication of names. I suggested that any alternative would involve the publication of something resembling a telephone list. At this he laughed and withdrew his objection. He seemed to

Mr. Pennock

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think that perhaps institutions might be mentioned as collaborating, that is to say, the Research Division might acknowledge somewhere possibly the collaboration of Massachusetts Institute of Technology and Harvard. I had no objection to offer here, since this rather neatly avoided the publication of something resembling a telephone directory. As a result of the interview I have assumed Mr. Stoll's entire approval and have undertaken that the manuscript shall be submitted to him for comment at various stages. I have collected together the various records which I have of the Hawthorne work and have sent a list of these to Putnam asking him to check the list with Wright and to tell me whether I have sufficient material to begin work upon. I shall no doubt hear from them in the course of the next few days.

The second and less important question I discussed with Mr. Stoll was that as to the personnel of the department, a question I had talked over at length with Putnam and Wright. It is probably for you an old question, and not in any immediate sense urgent. But I took the opportunity of discovering Mr. Stoll's attitude since we were lunching together. I can best express the question briefly in the following fashion. The men at present working in the Industrial Research Division have been educated for their work by the progressive development of the test room inquiry, interviewing program and the activities subsidiary to these. Sooner or later certain individuals at present in the department may discover that they are not permanently interested and questions of replacing personnel will arise for the surviving experts (Putnam, Wright, Dixon and others). Sooner or later people will be needed who have had some sort of previous education and training, a training that will enable them to take up work at a point where their predecessor has laid it down. In other words, whereas the original personnel has obtained its education on the job, new acquisitions will need to have had some sort of training for the job. I mentioned also an idea which I got from Putnam and Wright, namely, that presently a staff of specialists, perhaps fewer in number than the present personnel, may be able to work with greater effectiveness than the original numerous personnel. Mr. Stoll's attitude here ~~seemed~~ ^{also} to be excellent. He saw the problem clearly, and was prepared to admit that sooner or later a method might have to be devised by which Harvard or some other institution could assist the Company in this matter. I did not, however, take the discussion of this problem very far beyond a mere mention of it as a future eventuality.

In the course of the luncheon I mentioned various other matters, such as my interest in the development by Howarth of a new approach to the supervisory training problem; I mentioned also something of the approach that Whitehead has found to a new study of the experimental data of the test room.

With respect to this last point, and leaving on one side now my discussions with Mr. Stoll, I should like to say that I have practically completed arrangements for the work which Whitehead proposes to do in measurement of the production records. The committee has tentatively approved the purchase of the instruments Whitehead requires and the employment of the appropriate

Mr. Pennock

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technicians. I hope soon to be able to report that this development is actually under way. Whitehead is at present absent and presiding over the adaptation of instruments for the work. I think that very soon after his return he will begin.

After Whitehead and I left Chicago I felt that the Research Division would benefit much by a visit from Fritz. Putnam and Wright were enthusiastically in support of this idea. I have arranged therefore with Fritz that he shall spend some time, I hope two weeks, at Hawthorne soon after Christmas. You will understand that I regard this as part of the research of my department and the fund will provide for the expense involved. I am also trying to arrange that Warner shall visit the plant, perhaps in December since this suggestion was also met with the entire approval of Putnam and his division. It is possible also that I may send out certain other colleagues known to the Research Division if Putnam approves, but of this I cannot as yet be sure. Whitehead will of course pay such visits as are needed from time to time in pursuance of the measurement work that he is doing.

I enclose herewith a statement of my expenses on my last visit. Looking at this and at the arrangements I have made for a sufficiently active collaboration between the Research Division at Hawthorne and my department here, it has occurred to me that perhaps I would be well advised to make my own visits somewhat less frequent this year, particularly because the visits of various specialists ~~would~~ perhaps be sufficiently stimulating and sufficiently directly helpful, and partly also because perhaps the best thing that I can do for the work itself, and for your group at present is to set about the work of preparing a statement for publication with sufficient speed and energy. I should like to know what you think of this suggestion. My reasons are:

1. That my visits at this time represent a considerable additional cost.
2. When I have arranged for successive visits by Frits Roethlisberger, Whitehead, Warner and possibly others, my own visits might occasionally be almost redundant, and
3. Perhaps the most effective help I can give at present is in preparation of a statement of the facts for publication.

I think this should perhaps be presented to Putnam for his consideration also. I shall therefore assume your permission to send him a copy of this letter, but I should like to have a direction from you upon this point.

Mr. Pennock

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At this point I should like to add something I had forgotten. Mr. Stoll at the conclusion of our interview raised the question as to the cost of publishing such a book. He obviously did not wish the cost to be borne by the Company. In answer to him I took full responsibility for making arrangements for publication that should not involve the Company in any such expense.

Finally I want to say that I should like to consult you at some not very distant time with respect to the development of one or two new, but subsidiary, inquiries in Chicago which I have not mentioned in this letter. I may come out to Chicago before long in order to have the advantage of talking over one such project with you on the spot. The suggestion arises out of the development of our work here. I have recently been appointed to a research group in the Medical School which has as the object of its inquiry the investigation of the physical and mental health of a group of criminals confined in a local penitentiary. This brings up certain problems which I should like to have the advantage of talking over with Dr. Smith in the light of his studies at Hawthorne, but before doing this I should like to discuss the matter fully with you. On reconsidering this somewhat lengthy letter I am amused to see that this last seems to contradict flatly a suggestion above that I should not immediately revisit Hawthorne. It is not actually a contradiction. I still wish you to express your approval or qualification of the above paragraph but I have also this special problem which I should like to discuss with you and afterwards with Putnam, before too much time has elapsed. I should like to say once again how sorry I am that I did not see you on my last day at Hawthorne.

Yours very sincerely,

EM/rkg
enc.

The Interview

The interviewer should listen and not talk. He has to get from the person interviewed:

1. What he wants to say.
2. What he does not want to say.
3. What he cannot say without help.

a) The interviewer must be friendly to the person interviewed but his attitude must also be intelligently critical. The assertion that he must listen and not talk means that he must help the person interviewed to make a full and complete statement before making any comment himself.

b) The interviewer must never interrupt. No matter how irrelevant the interview may seem to be, the interviewer must remember that the person interviewed probably cannot easily state what is really important to him.

c) The interviewer must give all his attention to making sure that he understands what is said. Above all he must make certain that the person interviewed is fully convinced that his statement is completely understood.

d) To insure this last the interviewer should, when he arrives at the appropriate point, restate what the person interviewed has said in his own (that is to say, the interviewer's) language. In making this restatement he should, if possible, restate more strongly and succinctly the views expressed. This is the critical point in the interview.

e) 1. Only at this point may the interviewer begin to present his own comment. That is to say, when the re-statement has been accepted by the person interviewed as a complete and sufficient expression of the point of view submitted.

2. In the best interviews the stage last described (that is, a) leads the person interviewed to begin to modify his previous statements. In the great majority of interviews this is the desirable end to attain, namely the modification and restatement of the views he has expressed by the person interviewed without any critical comment by the interviewer. This as an achievement is vital to the success of, for example, the clinical interview.

f) The above considerations will perhaps make clear the meaning of the following claims: First, that the actual truth or falsity of the views expressed by the person interviewed does not matter at all and second that a good interviewer never gives advice, nor does he take action upon anything that has been said in the course of an interview. There may be some types of interview to which these last two statements have no direct application. Even in such instances however it must be remembered that an interview must be conducted as if they still applied.

HARVARD UNIVERSITY
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
GEORGE F. BAKER FOUNDATION

SOLDIERS FIELD
BOSTON, MASSACHUSETTS

February 27, 1934

3/✓
Dear Hal:

May is rapidly approaching, and I understand from Dr. Mayo that the leave extended Dickson by Mr. Stoll last May to work here at Harvard will continue until the book is finished. I am raising this point so that you will let me know in case we are not all in agreement about it.

A few words about the progress of the book, or books I should say. Dickson and I expect to be finished sometime this fall. We are accomplishing this feat by eliminating from our book Part IV (see last outline). All of this material will go in Whitehead's volume. We thought it better to have the complete story of the Relay Assembly Test Room in one volume, instead of partly in our book and partly in Whitehead's. We shall retain in our book only the story of the first 13 periods merely to establish the continuity of all the researches at the Western Electric Company during the five years. We shall also retain the "fatigue story" as an essential element of this continuity. Naturally, in order to accomplish this end Whitehead's book will be radically altered from what you expected it to be last year. It will contain all the data, output, personal and social, collected on these five girls over the five years. It will be organized logically and not chronologically.

The reasons underlying this change are too numerous for me to outline in detail, but were you here and had faced the difficulties Dickson and I were encountering, I am sure you would be all in favor of this new move. I feel certain that the two volumes will fit in better with some of the ideas you expressed last year.

As you know, Dickson is working up the material on the bank wiring test room and I am writing the chapters on the interviewing program. We hope to be finished some time this spring, leaving the summer for concluding chapters. As soon as I have

Mr. H. A. Wright

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finished a few more chapters, I shall send them along to you. Dickson, of course, will do likewise.

Dickson has been working very hard 5 and 1/2 days a week, 8 hours a day. Sometimes he takes his work home over the weekends. I mention this to let you know that we all feel here that he is deserving of a raise, if there is any possibility of obtaining one. I know it is very difficult, and I hope you will not feel I am talking out of turn. He is really doing a splendid job on the Bank Wiring Test Room, one which I think will be a great credit to the book and the company.

Much of the material which now will go into Whitehead's book will have to be written up by Dickson and myself. That includes all the personal and social material. We hope to do this next winter as soon as our book is finished. In other words we shall write something similar to Part IV (see outline) but incorporate it in Whitehead's book. From this you can see that there will be work for Dickson to do here until about May, 1935.

By the way, I hope you understand that, outside of a few changes in Chapter VI, Part I as written still stands.

Because the reasons for the change in the book are so clear to me, I have probably omitted many questions about which you would like to know. If you have any, please let me have them so I can write more to the point.

Both Dickson and I feel that the chapters we are writing now are relevant to some of the problems you are meeting in your employee representation plan. For that reason we are anxious to get this material in your hands as soon as possible.

Sincerely yours,



Mr. H. A. Wright
Western Electric Company
Hawthorne Station
Chicago, Illinois