CHAPTER IX

APPLICATION OF THE THIRD LAW OF EFFORT

Sub-principles 1, 2, 3, and 4

1. Good physical conditions and environment must be maintained.
2. The vocation, task or duty should be analyzed to determine the special human faculty concerned.
3. Tests should be applied to ascertain in what degree candidates possess special faculty.
4. Habit should be formed on standardized bases, old or new.

So far we have been dealing with persons in their aspect as officials fulfilling special duties. We have in fact treated the human factor in production merely as an abstraction—a passionless, perfect, malleable, plastic article to be labelled "Designer", "Operative", "Storekeeper", "Clerk", as might be found necessary for the immediate purpose in view. In other words we have not been considering men at all but only the possible actions of Man at large. In the present chapter we shall get away from this bloodless and abstract view, and shall consider the human factors of production in the
light of the third law of Effort, viz.,—that
"Personal Effectiveness must be Promoted."

Every properly constituted young man be-
lieves that supreme attainment in almost any
line of human endeavor is within his grasp.
His remaining years are spent, too often, in
discovering his limitations, and in undergo-
ing the painful process of disillusionment.
While ambition is the most powerful lever of
success, disappointed ambition, on the other
hand, is frequently a deadly blight on the en-
ergies. As industry develops, particular
types of mind, habit and character find cer-
tain directions closed to them, and certain
other directions more open to them than to
others. A man is not just a man, he is a
particular and specialized combination of
powers, faculties and weaknesses, and as
civilization becomes more complex, the im-
portance of recognizing this becomes more
important both to the individual and to so-
ciety at large.

The idea is expressed popularly by the
saying that "a square peg must not be placed
in a round hole". But in modern industry,
we find an infinite series of sizes, both of
pegs and of holes. The field of inquiry thus
opened up is as yet hardly cultivated to
any noteworthy extent, but the problem has at least been recognized and stated, and given the title of "Industrial Psychology". The pioneer worker in this new field is Professor Hugo Muensterberg of Harvard, whose work "Psychology and Industrial Efficiency" should be in the hands of every progressive student of the science of manufacturing management.

In exhibiting the scope of the third law of Effort, we cannot go very deeply into these matters, or do more than indicate briefly what class of problems comes under the law. The whole subject is so new that only its main outlines can be indicated.

Methods of Promoting Personal Effectiveness

If we regard the strictly practical task of getting the best value for a given pay roll, it becomes evident that a study of human beings, as such, will be remunerative. If we have bad conditions and surroundings, there will surely be a money loss on that account, since a man, no less than a cabbage, requires favorable conditions for thriving. If we are expending money for mental or physical services, it will hardly be a paying proposi-
tion to impair the possible maximum of such services, either as regards quantity or quality, by neglecting to maintain the most suitable conditions within our power. The first sub-principle of the third law of Effort may therefore be stated as follows:—

(i) Good physical conditions and environment must be maintained

Though a good deal more attention is paid to this sub-principle than was the case twenty or thirty years ago, it is probable that the subject is only half explored at the present time. We have passed beyond the idea that a workshop is necessarily a dark, dirty, untidy and unwholesome place, encumbered with the accumulated dust, débris and waste of years. We have come to realize that it is not really good business to have death-traps conveniently scattered about in the shape of unguarded machinery and belts. We begin to understand that a close and fetid atmosphere is not a necessary concomitant of either office or shop. We have even begun to appreciate that noise and confusion are really inimical to the proper functioning of the human mind at its best. But we have not learned the lesson very thoroughly, or
carried its teachings into any great degree of refinement, save in a few instances. We have hardly begun to do as much for systematically promoting favorable conditions for the human factor in industry as a scientific grower of crops under glass does for his grapes, tomatoes, or melons.

Why is this? The answer must be that the human organism has a hardier vitality than a vegetable, that it can exist and even work in a fashion under conditions far removed from the best. Where the growing plant would perish and become a total financial loss, the human being remains in evidence, still breathing and moving, still working, still earning wages. And the short-sighted employer of the past, observing all this, never thought of asking whether, in point of fact, the wages earned under conditions of discomfort were producing as much as they would if the worker were made comfortable. He could always see the cost of providing good conditions — what he failed to see was the net result, or efficiency.

In adjusting physical conditions and surroundings to promote the best working environment, the need of a sense of proportion is obvious. In the reaction from the old-
time conditions, a tendency to overdo, with the accompaniment of paternalism and fussiness, will sometimes be manifest. To provide baths, it is not necessary to construct them of marble; to enliven the atmosphere of the workshop we do not need stained-glass windows of costly design; to provide dining facilities we hardly require to imitate the tone of a Fifth Avenue restaurant. On the contrary, the prime and fundamental conditions which are favorable to the free working of the human organism are simple and not costly. Simplicity is not only less expensive but actually more efficient than over-refinement. What we should strive for is the removal of bad conditions that are obviously destructive of efficiency, not the elaboration of what we may consider are specially favorable conditions, because the result of such elaboration, in the present state of knowledge, is always uncertain.

Our aim should be to provide a generous minimum, rather than to undertake the task of endeavoring to raise the standards of the persons concerned beyond the level at which they may happen to be. Though this may be undertaken, in some instances, as a hobby or from some sense of duty, it cannot be re-
garded as strictly part of the science of industrial management. Much of what is known as "welfare" work, is therefore outside the limits of the third law of Effort, though at some future day it may be so well explored, and its utility so firmly established, as to become a recognized sub-principle of that law. At present it must be regarded either as philanthropy, or at best as an experimental attempt to extend the limit of application of the law. In very large factories, forming, as they sometimes do, quite considerable communities, perhaps isolated and self-contained, the administration may project its energies into the area of social life, at least to the extent of leading and guiding it. But such activity can hardly be said, at the present day, to form an inalienable part of the management of industries, if only because it is, for the most part, an entirely optional responsibility, and opinions are divided as to whether it ought to be assumed, or even whether it can be assumed with ultimate benefit to all parties concerned.

Our line of inquiry must therefore be towards establishing certain well-recognized minima of hindrances to the free working of the human organism. We must endeavor to
find out what are the normal conditions under which the ordinary man finds himself at his best, and then take precautions to maintain his surroundings at this minimum level. Naturally, for different kinds of occupation, quite different standards of minimum conditions will be required. The weigher at the cupola will not require such a perfect equilibrium of conditions as the president in his office, or as the designer working on a new scheme. But neither the weigher nor the president can work in the dark; neither can work efficiently at zero temperature; neither can work twenty-four hours a day; neither can do his work properly if subject to constant interruption that distracts his attention. For each, in his respective degree, therefore, there will be a minimum of conditions below which his efficiency will suffer, and the object of the first sub-principle of the third law of Effort is to observe what these minimum conditions are, and to maintain them.

Most persons work at their best when they are unaware of their surroundings. They work less efficiently as their attention is diverted from the work in hand by unpleasant sensations. And this holds true, even though
the marvelous faculty of "inhibiting" attention makes it possible to work under very bad conditions where these are habitual and customary. For recent scientific opinion tends to the belief that even though we succeed in inhibiting attention to a regular noise, for example, and do not in fact notice it, it has a disturbing effect on the organism all the same. Besides, the power of inhibition varies in different individuals, and it also varies according to the amount of concentration necessary for the work in hand. A mathematician, once immersed in his problem, is proverbially proof against earthquakes; a poet in the throes of composition has his nerves set on edge by the crinkling of a sheet of paper. These are, of course, extreme cases, but all intermediate stages may be found.

If, therefore, persons can accustom themselves to work under the most unfavorable conditions, it does not follow that it is good for them or their work. It may be taken as a thoroughly-proven principle that the better the conditions the better the work. This is particularly the case when bad conditions are intermittent. Starting to work, for example, in a cold shop at a temperature around freez-
ing point is an example of conditions that make for much more inefficiency than is commonly believed. Working in failing daylight is another such condition, as anyone can try for himself, and experience the relief felt when a powerful light is turned on. Yet frequently absorption in work inhibits attention to the insufficiency of light, though the strain on the faculties has been gradually augmenting all the time. It is only when this strain, and the feeling of discomfort to which it gives rise, overpowers the inhibition and calls our attention to the cause, that we perceive how far we have been incomed by the bad conditions that have stolen upon us.

The whole subject of industrial psychology is fascinating, but it is also, at present, rather nebulous and vague. To keep our inquiry within practical limits, it will be well to confine our attention to the common experiences of factory life. Even when we do this the subject is full of dangers, because of the tendency to replace what should be fluid human relations by clumsily ascertained standards. The moment we fix certain standards of conduct, attainment or merit, we set in motion a whole chain of dis-
simulations. Men give their attention, not alone to doing well, but to the appearance of doing well according to the arbitrary standards they find set up against them, and they are apt to develop a great deal of ingenuity in doing this. Elemental simplicity in making arrangements to guide human nature is therefore essential to success.

We may begin by a study of physical necessities. Fresh air, warmth, good light, quiet, movement free from danger are conditions desirable for any kind of work. But merely stating this is not enough. All these factors require stating in more precise terms for different purposes. Fresh air should not imply drafts. Warmth should mean definite limits of the thermometer. Light should be considered not only with regard to quantity, but with regard to the angle at which it strikes the work, to the shadows it produces, and the presence or absence of glare. Quiet is a relative term; very different degrees of quiet are essential for a molding floor and an accountant's office. Freedom of movement is also relative; movement is safer in the offices than in the shops, from the nature of things. But no obvious danger should be permitted to exist that can be guarded against. Men
will move more quickly where they can move safely, even though familiarity with danger produces callousness.

These more obvious physical conditions being attended to, we come next to indirect conditions. It is becoming appreciated that sanitary, clean, and bright surroundings have an influence on the spirits. Shops that are clean, bright and orderly will not only attract a better type of man, but will also exert an unconscious influence on everyone. Human nature is so sensitive and ready to adapt itself to its environment that a careful man working in a dirty and disorderly shop will lose some of his best qualities. Similarly, an untidy go-as-you-please kind of man coming into a shop which is scrupulously clean and bright, and where nothing is out of its place, will unconsciously feel the influence that such orderliness exerts, and will begin to improve.

The primitive wants of men should be carefully provided for. Sanitary appliances, latrines, washing facilities, clothes lockers, should not only be provided but maintained in an orderly condition. They should not be placed in any odd corner, but so distributed as to avoid congestion and crowding. Fur-
ther, the supply of drinking water should be carefully attended to. No one should have to go far for a drink, and the accommodation provided should be such as a self-respecting man cares to use. In many cases this important matter is neglected. It is one of those small points that silently make for efficiency.

Next we come to what may be termed the "protective" services. Foremost amongst these is the fire service. Every factory of more than one story, and all buildings of one story in which there is anything to burn, should be provided with a sprinkler system. In addition to this, fire drill should be rigorously insisted on. Fire wardens should be appointed and held responsible for seeing that emergency doors, stairways and gangways are never encumbered, that doors are always unlocked during working hours, and that alarm apparatus is tested at frequent, regular intervals. The most elaborate precautions sometimes fail, with terrible results, for want of efficient inspection.

The fencing of all dangerous machinery, and of elevator shafts and similar openings in floors is not merely dictated by common humanity, but is actually the cheapest kind of investment. Movement surrounded by
dangers will always be slow and cautious movement, even though it becomes an unconscious habit after a while. Unfenced dangers are a handicap which it is very easy, and not at all costly, to remove, and in many States, as in most foreign countries, the Law has stepped in to force these obvious precautions on careless employers. It is certainly a case where force is applied for the employer's own good, however blind he may be to the fact.

In all factories not situated in the midst of towns, the organization of first-aid to the injured should be one of the protective services to be provided. In larger plants, this may usefully be developed into a regular medical service, with or without hospital accommodation for emergency cases. The question of sick and benefit funds, and of workmen's compensation for accident is also an important one in large plants, but in the United States as in most industrial countries in Europe, it is passing out of the control of the private employer into the larger, if not more capable, hands of the State. It would seem to be only a matter of time before insurance of every kind will be as compulsory on every citizen as is the payment of
taxes. Already in some European countries industrial insurance against sickness, accident and even unemployment is compulsory, and the community undertakes to look after the declining years of its poorer citizens by means of old-age pensions. It does not come within our province to offer any comments on this tendency, since universal application by law removes such questions from the domain of the science of management, which has then no field for discussion nor any option but to apply them.

Under the head of accessory conveniences we may enumerate the provision of meal rooms, with or without kitchens attached; bath facilities where the nature of the work seems to call for them; rest rooms, and so forth. Of these the meal room is perhaps the most important feature where employees come long distances to work. They cost little unless space is at a premium, and especially if provided with some simple conveniences for heating food brought ready prepared by the men, make a distinct place for themselves as promoting effectiveness of the employee.

A matter to be wisely guarded against is the introduction of fussy rules as to smok-
ing and minor personal habits. Such rules are well meant, but are apt to be regarded as unwarrantable interference with personal liberty, as it must be confessed they are. Grown men should be treated as such, not as creatures of undeveloped intelligence. Outside the shops men should be left to themselves as far as is consistent with the maintenance of elementary order and decency of conduct.

We have now enumerated some of the more important points to be considered in regard to the physical welfare of the human factor in production. To elaborate them in detail would require a volume devoted to the subject. Some of the points mentioned are more neglected than many owners of factories are themselves aware, because they are precisely the kind of arrangements whose efficiency is taken for granted on the one hand, and apt to be undervalued on the other. But the importance to old-established concerns lies in the fact that modern plants are giving attention to just these very matters, and where old and new are in competition they may have considerable influence on the obtaining and keeping of the best class of help.
Vocational Fitness.

The next division of the third law of Effort to claim our attention is of a totally different and much more difficult and debatable character. It is also by far the youngest and least developed branch of the subject, having only begun to assume importance within the last few years. It is the special field of the new science of "Industrial Psychology" already mentioned. It may be briefly described as the study of "Vocational Fitness"—"the selection of those personalities which by their mental qualities are especially fit for a particular kind of economic work."

Actually the study of vocational fitness gives rise to two sub-principles of the third law of Effort, which, for convenience, and in consideration of the novelty of the subject, will be treated together. These two sub-principles are:—

(2) Every vocation (occupation, task or duty) calls for special and definite human faculties.

(3) Every human being has certain faculties more developed and developable than other faculties.

As they stand here these two sentences are merely statements of fact. We can now
translate them into the mandatory form in which most of our principles have found expression, as follows:—

(2) The vocation, task or duty should be analyzed to determine the special human faculty concerned.

(3) Tests should be applied to ascertain in what degree candidates possess special faculty.

It must be insisted at the outset that this new branch of the science of Management is as yet almost unbroken ground. The necessity for caution in the matter has been emphasized by Professor Muensterberg himself:—

A word of warning may be given beforehand so as to avoid misunderstandings. These examples do not stand here as reports of completed investigations, the results of which ought to be accepted as conclusive parts of the new psychotechnical science; they are not presented as if the results were to be recommended like a well-tested machine for practical purposes. Such really completed investigations do not as yet exist in this field. All that can be offered is modest pioneer work.*

This warning is needful especially if, as seems likely, we are to be over-run with a new swarm of "experts", professing to de-

*"Psychology and Industrial Efficiency," page 61.
termine vocational fitness for employers at short notice, because it may fairly be assumed that there is but little justification for such claims at the present time.

MOTION STUDY NOT A PSYCHOLOGICAL ANALYSIS.

The difference between this psychological analysis and that performed by time or motion study should be clearly understood. The sphere of motion study is to determine the path and sequence of physical movements, and the normal time that should be occupied in the performance of each such movement. It is therefore an investigation into method, not an investigation into faculty. Motion study, by reducing operations to their prime and necessary elements, is enabled to combine these elements in the shortest way, with the least expenditure of effort, and therefore in the shortest time. But it does not measure the fitness of this or that man for the particular combination of motions that it has found to be the best. Its only relation to the study of vocational fitness is by way of observing that some men take longer than others to go through the same series of motions. But it does not attempt to throw light on the very important question WHY
some men are more adapted to the particular work than others.

It is precisely at this point that the new science of industrial psychology, or psychotechnics, enters the field. It may be well to approach the subject from the most elementary point of view. We may take the simple and well-known cases of railroad engineers or ships' officers, with whom a prime necessity of their calling is that they should be able to distinguish between red lights and green lights. However fit in other respects a man may be for either of these vocations, unless he possesses a normal sense of color he is barred from them. The important point is, of course, that such a man is usually quite unaware that other people see green and red light differently from himself. Until a correct test is formulated and applied, such men would readily undertake either of these vocations in all innocence of their entire unsuitability for them.

The case of color blindness is a very simple and elementary one, first because the faculty in question (that of seeing green and red as normal people do) is clearly defined and marked off, and secondly because the test to be applied is easily formulated. But as
we shall see later, the difficulty begins when we have not only to formulate tests, but first to discover and delimit what faculty it is that we are to isolate and give preference to.

The selection of the instance of color blindness must not be taken to suggest that the sphere of industrial psychology is wholly one of elimination of the unfit. In this particular instance it is so, because it happens that color-blind persons are only a small percentage of the total population. On the contrary the real objective of the new science is selection rather than elimination. Its purpose is not to throw the square pegs out of the round holes, but to gently shepherd the round pegs towards the round holes, and the square pegs towards the square holes. In the beginning of its application, however, it will be largely eliminative because its opportunities are confined at present to studying particular vocations, and eliminating those unfit for them. Later it will probably find an opening in the study of the individual and will point out to him which of a wide range of vocations he is likely to succeed in. This, however, obviously cannot come to pass until a large number of vocations have been studied by competent psychologists.
Professor Muensterberg's investigation into the causes of street car collisions is an interesting example of the method. The problem was (1) what particular kind of faculty is concerned in mentally seizing on and responding to movements in traffic crossing the tracks in time to prevent collision, and (2) how could the presence or absence of this faculty be detected in candidates. Professor Muensterberg says:—

I found this to be a particularly complicated act of attention by which the manifoldness of objects,—the pedestrians, carriages, and automobiles,—are continuously observed with reference to their rapidity and direction in the quickly changing panorama of the street. . . . In the face of such manifoldness there are men whose impulses are almost inhibited and who instinctively desire to wait for the movement of the nearest objects; they would evidently be unfit for the service as they would drive the electric car far too slowly. Then there are others who, even with the car at high speed, can adjust themselves for a time to the complex moving situation, but whose attention soon lapses, and while they are fixating a rather distant carriage, may overlook a pedestrian who carelessly crosses the track immediately in front of their car. . . . My effort was to transplant this activity of the motormen into laboratory processes.*

* Psychology and Industrial Efficiency, Chapter VIII.
To accomplish this the task was not to reproduce "external similarity of the apparatus, but inner similarity of the mental attitude". After some experimenting, the device of a window moving over a card marked with heavy double lines representing a track, and movable at any desired speed by the candidate, was adopted. On the card were figures in red and black, representing items of traffic moving at different speeds, both parallel and across tracks, and the test was for the candidate to move the window as rapidly as his mental grasp permitted and call out the distances at which the different items of traffic would reach the track.

Before attempting to apply this test to actual candidates, two demands had to be satisfied, and these could only be ascertained experimentally. First, it was necessary to find whether the method of testing did actually show good results with motormen of known reliability and bad results with inefficient motormen; and secondly whether it aroused vividly in all the motormen the feeling that the mental exercise they were going through was similar to their experience on the platform of a car. Not until these two proofs were forthcoming, and the genuine character
of the test thus proven, was it applied in practice.

Professor Muensterberg’s inquiry into the mental qualifications necessary for telephone girls have been so widely described that it is not necessary to include them here, further than to recall that in addition to special factors, a “general intelligence factor” was tested for and made a part of the examination. This is worthy of notice, not only because some psychologists deny the existence of such a factor, but as showing the exceedingly subtle and difficult nature of any inquiry into human faculty. The allotment of “points” or “marks” for success in each of a series of tests must always be of an arbitrary character, though conceivably it may be practically valuable. The human being, moreover, is not the same at one time as at another. At one time a person is “full of life” and at another time is sluggish and slow. At one moment the attention wanders, and at others it is easily concentrated. It is inconceivable that the same series of tests applied under these circumstances at different times to the same individual would not have different results, and result in a different grading.
Industrial psychology is therefore no field for the amateur to dabble in, especially in view of the grave injustice that may be done to employees or prospective employees by crude and faulty application of such methods. Nevertheless, it does not seem impossible that some simple and broad groupings of faculties can be made and tests devised for them, so that obviously unsuitable persons shall be excluded from positions they would be unable to fill, and on the other hand that certain faculties shall be recognized as present to a considerable degree in certain men, with a view to making use of such faculties when the question of promotion is up.

The higher the post the more difficult it will be to dogmatize as to what a given person will or will not do, if he is permitted to fill the post. There is even great danger in endeavoring to stereotype the qualifications demanded for the higher posts. The danger is, of course, that a new departure in the direction of progress may result from the incursion of a new type of mentality into a given field of action. Every individual’s success is a net balance between his qualities that do make for success and those which do not make for success. No one is all good
qualities, or all bad ones. It is only the preponderance which counts. And the higher the type of activity the more impossible does it become to say, or even guess, at, what the net result might turn out to be.

In lower posts, certain simple psychological tests might be possible. Some posts require a good memory, others quick decision, or selection of alternatives, others again demand a sturdy independence of character which will not yield to cajolery or descend to petty "graft". Some positions demand suavity, others inflexibility as their predominant feature. Of course all this is nothing new. Men have always been selected with an eye on their outstanding qualities as far as these could be seen. The new departure is the proposal to assist the judgment—that is the instinctive judgment of the ordinary man—by some more definite instrument of analysis, some quantitative instrument of analysis, so that more definite judgments are possible.

The whole subject, however, is so new and undeveloped that employers need rather to be warned against possible extravagances than encouraged to rush into the field. At the same time there is certainly the germ
of great future development in the idea, and therefore it must take its place as one of the sub-principles relating to the promotion of personal effectiveness.

Habit

We enter a much less debatable field when we consider the influence of correctly acquired habit on the various officials and workers in an industrial plant. Nevertheless, under the influence of the new methods of analysis, particularly time study and motion study, that have been so largely employed and talked about of late years, the enormous value of habit as an element of industrial stability has been lost sight of to some extent. When industrial habits and customs are all under scrutiny and criticism, and many of them found to be unwarrantable, it is natural that the real place and significance of habit should be somewhat forgotten.

In speaking of habit it must be remembered here that we are not concerned with ethics, but with administration. We have nothing to do with the personal habits of men, whether they drink or smoke, whether they play cards or billiards, whether they are meat eaters or vegetarians.Still less
have we to concern ourselves with their mental habits outside of industry. We must not inquire their attitude towards woman suffrage, or anti-vivisection, or whether they are church members, or whether they are spendthrifts or savers. Those are the private habits for which each citizen is responsible only to his own conscience, and it is invading his rights as a citizen to pretend to control them or even to inquire into them. Even if we persuade ourselves that such and such habits in private life tend to make a man a more satisfactory member of an industrial organization, we must be content to abide by the actual record of the man in his industrial capacity, and not carry our zeal so far as to invade his private life. Nothing is more fraught with danger to industrial peace than a spirit of meddlesomeness with matters that are no real concern of the employer. He is not his employees’ keeper—indeed he has a sufficiently large task if he confines his horizon to the actions of the employee in his industrial capacity.

With this important reservation as to the meaning of the word habit we may define the fourth sub-principle of the third Law of Effort as follows:
(4) Habit should be formed on standardized bases, old or new
and as habit has not one but many aspects, it may be as well to consider these in some detail.

It has been almost entirely overlooked that the importance of the revelations made by time study and motion study into operative methods, and the discovery of great inefficiencies in the application of labor to work, is mainly in the substitution of better habit for that which has been declared faulty. Firm progress can only be assured by taking the new revelations and transforming them into new habit. Some authorities seem to imagine, for instance, that there is a positive virtue, in "written instructions" which the worker is expected to consult every time he performs the work. The obvious truth is, of course, just the opposite of this. Written instructions are simply an unavoidable nuisance in those industries which, having just been exposed to the critical artillery of motion study, have been found to be all wrong in their operative habit. They are unavoidable because, until new habit has been acquired, it is necessary to have at hand an authoritative statement of what is consid-
ered proper habit, but to regard them as an end in themselves, as many persons appear to do, is mere fetish-worship. The more often a given task is repeated the less necessity for "written instructions", until a time comes when to maintain them would be simple foolishness. In the complex operations of the machine shop, where the instructions of design are not really complete until they have specified not only the work itself but the accessory tools, jigs, fixtures and attachments with which it is to be done, written instructions are, of course, inseparable from the piece—as inseparable as the drawing itself, but in few other industries is there much excuse for attempting to train men in that way.

The valuable idea underlying "written instructions" is of course the standardization of methods. But this again is nothing but a long word for "proper habit". Now Mr. H. L. Gantt, who has been very successful in increasing the efficiency of textile workers, so far from being able to make use of "written instructions" in forming new and better habit in them, has achieved some of his greatest successes among men and women who were not only unable to follow written in-
structions, but were not even able to speak English. They learnt to follow motions and not words.

The first line of approach to the formation of a correct industrial habit is, then, correct operative habit, and this applies not only to the men in the shops, but equally to the members of all the other organic functions. Though less studied as yet, it will be obvious that all clerical workers should be encouraged to form good habit in carrying out the steps of their work. "A place for everything and everything in its place" is, for example, one of those homely adages that have a practical bearing on clerical as on all other work. The order in which the daily routine is carried out has often a considerable influence on success. In other words a certain amount of time and motion study, even though of an elementary character will be found useful in establishing good habit among the rank and file of employees outside of the operative function.

Industrial value is, however, not confined to the ability to go through a series of motions in a given time, however good a productive habit is created thereby. Skill and ability are no doubt prime factors, but steadfast
iness, punctuality and long service are also factors that should have weight in determining a man's value to the organization. It is to be feared that in the zealous application of the new methods of analysis to plants, too much attention has been concentrated on the pure skill factor and not enough on these other factors, by which means valuable organizations have been more or less disrupted, and the gain made in one direction lost in another.

Some of the most pointed observations yet made on this subject will be found in Mr. James Hartness' little book already referred to;* and his remarks on the necessity for controlling "progressive energy", and his insistence on moving the worker along "habit lines" should be read by everyone interested in practical management. As Mr. Hartness truly says there is an "Inertia of Habit" which is as much a law of human nature as it is of engineering. This being the case it is evident that whatever habit exists throughout an organization can only slowly be changed for the better. Similarly, if through a long term of years an organization has been built up, resulting in a steady, 

*"'Human Factor in Works Management,'" Chapter II.
more or less contented, and faithful body of employees, the industrial habit therein contained has a very large economic value. To rush in and change all these relations and disturb all this habit in the name of Progress or of Efficiency is to do a very bad service to the organization. Even though analysis should reveal that everything that can be done badly is being done badly, there is still the asset of organic solidarity that remains, and this should be preserved at all hazards. "Festina Lente", "Hasten Slowly", should be the motto of every one who undertakes to introduce "betterment" into an established plant.

The relation between this aspect of habit and "standardized methods" may not be very clear to those that connect the latter phrase with something new and perhaps revolutionary. Standardized methods are not necessarily new methods. Of course a standardized method is any method that is recognized as too good to be altered, or as the best that can be attained or expected. Among these the habit of punctuality is certainly a standardized method—a regular compliance with the standard of attendance set up by the firm. Steadiness and reliability are also
compliances with standards, even though unwritten standards. Long service may or may not be, just as the firm consider it a merit or not. But it certainly should be so regarded, and we may regard life-long service as the standard to which every employe is getting nearer as the years pass.

Thus we are able to observe the desirability of fostering good habit in all these directions, remembering always that habit has, as Mr. Hartness says, inertia, and can therefore be changed only slowly. The subject is capable of much greater development than has been made here, but its most important features have been mentioned.
CHAPTER X

PRACTICAL APPLICATION OF THE THIRD LAW OF EFFORT (Continued)

ESPRIT DE CORPS

THOUGH the phrase esprit de corps is sometimes translated by “teamwork,” this is not an exact equivalent, yet perhaps the nearest approach that the English language allows. It omits, however, a very important shade of meaning, namely the feeling of pride in the group—originally in the corps or regiment—of which the members form part. The Cornishman’s motto “Each for all and all for each” has also something of this spirit, though on a lower plane of thought. Generally speaking it may be said to include the American conception of team work plus pride of organization, implying though not expressing a superiority to the outside mortals not fortunate enough to belong to it.

In some industrial concerns esprit de corps is strongly developed. The “Company” is
personified and made an object of regard and even of reverence. Where this feeling exists it has very great economic value. It is usually evidence of the passage or the presence of some strong and kindly personality whose influence has permeated the organization, and tinged it, so to speak, with a robust form of sentiment. But in other cases this desirable spirit is wholly absent.

The value of *esprit de corps* is so great (though in a world of change it is apt to be undervalued if not overlooked) that it must be regarded as one of the main engines for the promotion of personal effectiveness. For this reason we may include it under the Third Law of Effort, as forming the fifth sub-principle of that law:—

5. *Esprit de corps* must be fostered.

It may be confessed, however, that it is far more easy to lay down this principle, however obviously true it may be, than to state how the thing is to be done. For *esprit de corps* is so much the outcome of personality—the personality of the man or men at the head, that it is too elusive to be reduced to words, or rules. Nevertheless, we may turn over the subject so as to see what it is
that should be aimed at. The possibility of developing it is based on a peculiarity of human nature. Humanity being gregarious—that is, having an instinct to associate in groups—it follows naturally that each of us has a tendency to declare and even to believe that our own group is a mighty superior kind of group. The accident of our being born in an Anglo-Saxon country gives many a kind of pity for the benighted peoples not so born. The Christian is sorry for the Brahmin and the Brahmin looks down on the Mahommedan. The inhabitant of a metropolis always has a kind of condescension for the provincial; the men of certain regiments in most countries believe that their regiment alone is the true fighting force of the State; to belong to certain clubs is considered as an immensely more valuable privilege than to belong to certain other clubs; in short, the whole world is divided into groups, each of which looks upon other similar groups with a calm superiority, that in four cases out of five has very little foundation in reason.

But though under the cold light of reason this group-pride has frequently little foundation in fact, it has nevertheless great moral
force. It generates energy, both aggressive and resistive. The man who believes in his group will make sacrifices for its welfare. He will be ready to maintain its superiority against all comers. And he will be ready and anxious to identify himself with its inner life and amalgamate himself as thoroughly as possible with its traditions and customs. In Chapter VI of his book, Mr. Hartness speaks of "Confidence . . . born of a knowledge of the superiority of existing things—things that may not be perfect but are nevertheless best". This is in fact a fairly good definition of the condition of mind produced by a lively sense of esprit de corps.

Can we picture to ourselves any of the conditions that give rise to this state of mind? To a limited extent we can. A man finding himself in the position of a unit in a large group, such as a manufacturing plant, will tend to form esprit de corps if he finds around him an atmosphere of justice and fair-play, of leadership in which he can confide, of recognition of his efforts (not necessarily or always monetary recognition), of decent conditions under which he can retain and augment his self-respect. All these personal influences are necessary, without
doubt, yet there must be something more than this.

An essential feature is belief in the purpose for which the group exists. In industry this means belief in the product itself and in the public recognition of its value. If a man works in the dark, without perceiving the end and aim of his labors, he is not likely to develop a lively sense of esprit de corps. But open up to him some of the excitement of propaganda, let him share in imagination in the work of the organization as a whole, and his interest is sure to be both widened and intensified. Let him feel that he is one of the players in the great game, and he will be much more inclined to do all he can to help the game forward, even though his personal share in it is a small and unimportant one. To him it will soon seem neither small nor unimportant, because it is a principle of human nature to magnify one’s own place in the world and to believe that our position, our work, are pivotal matters, round which the universe revolves. To neglect the fostering of this excellent and happy frame of mind is to throw away great assets.

Just how, in practical affairs, this is to be effected, is, of course, a somewhat difficult
problem, needing careful consideration in each case. But the broad outlines are clear enough. Every industrial group is in effect an army marching to the conquest of the world. Its battlefields are the offices of its customers. It has its territory already occupied in force, its territories in which the flag is only shown, its territories undergoing survey, its territories as yet wholly beyond its sphere of operations. It has its days of triumph, when large and satisfactory orders are secured. It has also periods of struggle and difficulties, when the army must march in close order with carefully guarded flanks—the days of industrial depression, when the question is not so much to make fresh conquests, but to keep what one has.

Some few firms have begun to use this array of stimulating facts to promote esprit de corps, at least among their sales force, but where it is really wanted is among the whole body of employees. In a large plant a new kind of publicity service seems needed, not to impress the imaginations of the world outside, but to develop the interest of the world inside the factory gates.

Suppose for instance some machinery has been shipped to a mine in South America,
and that photographs have been secured of its passage on mule-back across some Andean pass, or across some turbulent river, and its arrival at its destination in some wild end of the world. Would not the exhibition of these pictures profoundly interest the men who had made that machinery, who had watched it being made—who had written the orders for its making, who had handed out the materials for its making? Nothing more so, yet how often is it done?

Or suppose a product that is fighting its way, from city to city, from county to county, from State to State, from the home to the foreign markets. Is it possible that a great map, on which the successive stages of this progress were shown graphically, would have no interest to the men who were devoting their lives to making that product? The passengers on an ocean liner find interest in the day’s run of the ship, though they have no share in bringing about the result. Is it not likely that men would follow with still keener interest the fortunes of a product that they themselves help to make, and on which all their prosperity is dependent?

Synthesis, as was pointed out in a preceding chapter, is the great instrument by the
skilful use of which the management will ultimately have to stand or fall. Now esprit de corps is the perfect synthesis of the goodwill of individuals. It is the most important thing of all to secure and the most difficult thing of all to secure. It is a strong moral force, tending to polarize the wills of men in one direction, namely that of furthering the efforts of the group. But because it is a moral force, it cannot be brought about by mechanism alone. It is an outcome of personality in essence, and no system of management, no rules, no cut and dried principles, can supply the place of a fine personality at the head of affairs. And this brings us to another important matter—the difference between esprit de corps and enthusiasm.

When many people speak of enthusiasm as a fine force in business, they are really meaning esprit de corps. Enthusiasm is not a workable proposition, because it is not a steady enduring force. It is up and down, a kind of mental revivalism that is evanescent. Enthusiasm is an excellent thing in a crisis, but if we rely on it as a working force, we shall have confusion before long, because it is a conscious exercise of the imagination and the will, and cannot be kept up. The
man who is naturally enthusiastic is nearly always unstable and unreliable. His mind is apt to run up side roads, to be diverted hither and thither. Much of the scrappiness of modern life is due to the fact that things are done under waves of enthusiasm—that is, of necessity badly, because hastily. 

*Esprit de corps* should generate enthusiasm when the need exists for it. Soldiers cheer when making a charge, but they do not spend their lives in cheering. The salesman should feel enthusiasm when face-to-face with his competitors, or with some intractable purchaser, but calm consciousness of "the superiority of existing things" should be his normal state of mind. Similarly, when we speak of the essence of *esprit de corps* being personality, we do not mean that the man at the head of affairs should be, in the language of the Salvation Army "always on the mountains", that is, always under the stress of enthusiasm. On the contrary, the less of that quality he has in his make-up the more his chances for success. What he wants is calm but intense belief in himself, in his mission, in his men, in the power, strength of purpose, and justification of aim of his organization.
Within the plant itself there is also the opportunity for developing local *esprit de corps*. Each of the organic functions forms a group sufficiently distinct from the other groups to feel a common consciousness. The Designing group, the Equipment group, have for example a wholly different outlook, and indeed a different mentality, from the Operating group or the Comparison group. How can this essential difference of mental outlook be used to develop *esprit de corps* within the function? Of course, when any of these functions is only slightly developed in a plant, such as the designing function in a chemical industry, nothing in that way can be done. But where the functions are developed so that many men are employed in each, then something may be attempted.

The idea to be kept in mind is that of generating interest in the common daily happenings of the plant, and particularly of the function itself. There is nothing more high-flown than this required. In a sense it is what may be termed the scientific use of gossip, or rather of the ineradicable tendency of mankind to gossip. Where everything in a plant is held down under a heavy weight of strenuousness, very little is accom-
plished. "Stone walls do not a prison make, nor iron bars a cage," is as adapted to an industrial organization as to a jail. We can control the body to some extent, but we cannot coerce the mind. If our work is uninteresting, the mind will wander away in spite of us to tomorrow's or last week's ball game, to the book we are reading at home, to a dozen other things not very pertinent to the work in hand. It will not wander the less if we are but a small wheel in a big machine, with no very clear or lucid idea of the exact utility of the work we are doing to earn our living.

The problem of local esprit de corps is therefore to give current daily interest to each man's work, to provide food for his errant thoughts, for his imagination, so that he will not look on his life within the office or shop as drudgery to which his noble spirit stoops, indeed, but unwillingly. Make him a world to live in within the organization, and his thoughts will not so readily fly to the greater world without. Local esprit de corps, that is, within each function, is so narrow a field, even in a large plant, that most of the influences that can be brought to bear must be considered presently under the head of Incentive. But the point here is that each
function is a little world of itself, with common interests and needs, and that something can perhaps be done to make these interests appreciated by everyone, and make everyone anxious to promote them, not for personal ends but for the sake of _esprit de corps_.

A concrete example may be taken in the case of the power service. The efficiency of the power service depends on many factors and the co-operation of many individuals. There are standards to be maintained, and definite results to be gotten. In other words we have here an example of a local group in which the fostering of _esprit de corps_ may be assisted by suitable arrangements. It will be remembered that we have defined one of the necessities of the situation as belief in the purpose for which the group exists. This being established we must connect the work of the individual with the realization of the purpose, and assist him to see the importance of his own share in the result.

Now the purpose or purposes for which the group exists is clearly definable in this case. It is to generate power and attain a certain efficiency in doing so. It may be also to keep up pressures or temperatures, to maintain vacua, and so forth. All these things are
the subject of Record and Comparison, and what is easier than to make the results public property as far as the group concerned in establishing them is concerned? One day the fuel consumption will be high and another low; one day the pressure will fall off through someone’s fault, or by some accidental cause; perhaps another day some heavy demand will be experienced and successfully met—a matter of pride to those responsible.

These seem trifling matters compared with the total life of the whole plant, but if judiciously made public, they would afford subjects of comment, of discussion, of gossip if you will, to the power-plant group, and tend to make each one realize that he was engaged in an interesting occupation, on which a great deal depended.

Similarly, with regard to that part of the Equipment group concerned with maintenance and repair. Here a clean slate would be the thing to aim at, but it would perhaps rarely be realized. The prevention of accidents, of breakdowns and delays, would certainly be assisted, if each event was published, with judicious comments on its results, and on what might have been done to
prevent it. Again, a repair staff has frequently to work hard and long on some urgent repair. What more likely to give encouragement than some means of public recognition of such work, some bulletin notice giving credit where it was due?

In the above suggestions we have underlined the word "judicious", for that is the kernel of the problem. It has already been remarked that the fostering of esprit de corps is in the end a matter of personality. The mechanism just described is only mechanism—whether it be successful or not will depend on the personality of the higher official who is entrusted with apportioning praise and blame. A very judicial as well as judicious man is necessary. The object is not to establish a mutual-admiration society, neither is it to set up an engine of scolding and worrying. Either of these tendencies will defeat the object in view. Even-tempered justice is the first requisite for any measure of the sort. Men will always respect justice in the long run even if sometimes it falls on themselves.

Team work and co-operation are not the same thing as esprit de corps, though they are an essential element of it. Neither of
them, however, is usually more than the response to some unusual stimulus or incentive, unless they are actually the outcome of an existing esprit de corps. Therefore they are rather a result of esprit de corps, generated by it in the natural course of events. They cannot be permanently established without it. To speak therefore of a spirit of co-operation is rather a misnomer. Co-operation is not an end in itself; it is a result of something. Men will not co-operate for the sake of co-operating, but they will co-operate to gain some definite end. This end may be a tangible one, like some special bonus, or an intangible one like upholding the honor of the flag, or the credit of the plant. It is hardly necessary to state that the latter class of co-operation is the most valuable, because it alone is due to esprit de corps, that is to a larger issue that controls the will of each unconsciously.

While good physical conditions, as indicated by the first sub-principle of the Third Law of Effort, do not give rise to esprit de corps they are a valuable influence in its favor. But the moral atmosphere is still more important—that is, whether or not the worker feels that he has fair play, that his
efforts are appreciated, that he is treated as a man and not as a child or a piece of mechanism, and that he is a working and indispensable unit in a large whole, of which he can, to some extent at least, perceive the objective and the drift.

Since the above was written a recent contributor to a technical paper has given what purports to be the gist of a shop conversation over the after-dinner pipe, on the subject of "What makes a shop pleasant to men". From this is extracted the following word picture of the men's idea of a good shop:

The talk became general, and several things came out very plainly. The shops that offered steady work at the highest prices seemed to have the most friends, but it took quite a difference in wages to offset some other things. The highest praise for a shop was not beautiful buildings, or welfare work, but was told in an expression that every man who had been around much seemed to fully understand, and it was: "and they treat you right."

While these men all seemed to comprehend the meaning and high praise of the expression, it is one that is not easy to interpret to the man who is not a shop man from the bottom up, but in general terms it meant a shop with a sufficient mixture of the following good points.

- The men in authority understood the work and judged fairly of a man's accomplishments. Needed
assistance was easy to get when needed; accidents and bad work were investigated before judgment was pronounced; work was so provided that a man did not need to worry about a supply of it; a sufficient quantity of accessories was readily available; troubles and dissatisfaction could be told to someone with power to act; enough attention was paid to individuals to tell a good man from a poor one. The system used, as it touched the men, seemed reasonable and necessary; the ones in authority acted as though they recognized that shop men were also intelligent human beings with some brains; a moral atmosphere that seemed to assume that the men were willing and trying to do right by the shop.

This last point may not appeal to some as belonging to a machine shop, but it is a very real one for all of that. In some shops the system, or the way it is applied, seems to say: "You are naturally a stinker, but we are on to you and it won't go here. We can and will keep track of you from the minute you come in in the morning until you get out of the door at night, so get right in line and stay there, or out you go."

In other shops the system, or the way it is applied, seems to assume that the men are reasonably honest and willing, and only need directing instead of watching. Applied long enough and rigidly enough each shop will be found to tend toward being filled with such men as the system fits, and it is because of the management, and should not be blamed on the men.

Among the things that were most often complained of about unpopular shops were unjust treatment by foremen; supercilious treatment by some cheap clerk, whose position made him an errand boy between the shop and the office, but who acted,
and was allowed to act, as though he was owner, or more, for a man with brains enough to be owner seldom acts in that way; an insufficient supply of such things as bolts, clamps, dogs, chisels, files, and so forth. It is surprising to know that this is a complaint that is made against some shops that are called up-to-date. Shops in which the tools and the shops are modern, but where the work is held back because of the little things, and the ceremony and trouble which attend getting a needed quantity of them. —W. Osborn, in American Machinist, Mar. 12, 1914.