

# BUSINESS POWER THROUGH PSYCHOLOGY

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## CHAPTER IX

### THE PSYCHOLOGY OF LEADERSHIP

PROFESSOR JAMES once remarked that society walks on two legs—imitation and invention. He was talking about thinking. Most people are followers. A few—very few—blaze new trails. These are the thinkers—the inventors of ideas. They are leaders.

Men rarely use all their ability. This is seen in their amazing physical strength under stress of great excitement. They then display undreamed-of power. And it is the same with thoughts. A man never knows of what he is capable until demands upon his resources put him to the test. Then he sees that he has been living at a low level of achievement. When Theodore Vail told his engineers that he wanted to talk from Boston to Washington over an underground wire they did not think it possible. But Vail had his talk.

Lord Kitchener, again, during the World War is reported to have ordered an officer to do a difficult task. The officer pointed out that the achievement was impossible. Kitchener listened patiently and then said: "You have given me unanswerable reasons for not doing this thing. Now go and do it."

Human inertia is the cause of underworking our ability. We get accustomed to a certain rate of action, and it is hard to change the gear. St. Elmo Lewis has analyzed, in his *Bulletin*, the mental attitude and methods of the average business man. "The sales and advertising manager as well as all of the executives," he says, "by the very nature of their daily routine and their habits, tend to develop a narrow, but comfortable, view-point toward their work and the future of the business. . . . We realize that our

sales policy needs adjusting to new conditions, but we hesitate. 'What's the use? It's been working pretty well for five years. It's good for another five—or, I'll wait until next year.' ”

The explanation of this comfortable attitude, which Mr. Lewis has so well described, is that human beings tend to follow the line of least resistance. Man does not want to go to unnecessary trouble. So occupation habits get the mastery of him before he knows it. Indeed, he hardly ever discovers that he is a slave to inefficient habits.<sup>1</sup> “The other day,” continues Mr. Lewis, “a manager said to me: ‘I am getting rusty. It would be the best thing in the world for me if I got a red slip from the secretary next month.’ He was candid.”

A significant fact about these occupation habits is their stealth. They creep upon us unawares and before we know of their presence they have overpowered us. Men do not consciously decide to do things in the easiest way. It is just the tendency of living organisms. No one wants to make unnecessary exertion. This is one phase of the law of conservation of energy. Most young men are ambitious. They want to get ahead. The trouble is they do not know how to do it. The way in which things have been done works well up to a certain point; otherwise the business would have gone into bankruptcy. So why make changes? But meanwhile conditions have altered. They change whether the firm's policy alters or not. There never was a time when transitions were so frequent and so rapid. Many a manufacturer has gone into bankruptcy because he did not keep up with the game.

Men, we have said, rarely use all of their ability. A man is never conscious of his power until he throws all of his energy into the scale that is to measure his worth. Then he sees that he has been living at a low level of achieve-

<sup>1</sup> See *Psychology and the Day's Work*, by Edgar James Swift. (Charles Scribner's Sons, New York, chap. I.)

ment. "I did not know that it was in him," sometimes expresses our surprise at the unsuspected ability of a young man suddenly called to a position of great responsibility. He met the emergency because the position was worth his best efforts, and he knew that anything less would mean failure.

Often we need an excitant. Sometimes grave danger does the work. In an emergency we think faster and more accurately than is our wont. Again, the environment may stir our dormant powers. It has been observed that great men appear in stirring epochs. This is not mere chance. Events awaken thought and action. Grant did not show exceptional military ability at West Point, but war revealed his latent power.

A leader also puts us at our best. Many of Napoleon's marshals whose experience and ability won their commander's confidence showed no extraordinary power when absent from his sphere of influence. There is always a tendency to drop to a lower level of efficiency than ability warrants—to move at half steam. In an emergency, power may be applied, but it is shut off when the pressing need has passed. Gradually the will to run at higher speed diminishes and we settle down permanently into a routine mental gait. Occupation habits reduce ability to the lowest degree of efficiency that the work will stand. Change of action requires thought, and thinking demands energy which we are loath to expend. Finally, habits eliminate the need for thought.

Barrett, a psychologist, investigated mental activity when a choice was to be made between two or three kinds of action, and he found that "the natural tendency is toward automatic choosing." Finally, "there was nothing to remark. There were no feelings, hesitations, or motives to describe. The mental act had become direct and simple. . . . The will had gradually ceased to expend useless effort. Volitional force was economized. . . . Automatism

held sway, and there was nothing to record.”<sup>1</sup> This is a pretty good description of mental death. It is the reduction of the mental temperature to the zero point, that is, from the standpoint of accomplishment. From the side of mind it is economy. That is the psychology of it. Economize energy. Expend as little effort as is necessary to meet the situation. This is the physiological law of organisms. And it applies conspicuously to occupation habits.

This explains the statement recently made to the writer by the president and general manager of a large manufacturing company. “I find very few individuals making any effort to think out better ways of doing things. They do not anticipate needs, do not keep themselves fresh at the growing point. If they ever had any imagination they seem to have lost it, and imagination is needed in a growing business, for it is through imagination that one anticipates future changes and so prepares for them before they come. The difficulty with which our factory is always confronted is that the business grows faster than those within it. The men do not keep up with the changes in the industrial and commercial world. We need, at the present time, four or five subordinate chiefs in various parts of the factory, and I can fill none of them satisfactorily from the material in hand.”<sup>2</sup> And in this connection a remark of the sales manager of another large plant is suggestive. “Young men,” he said, “of apparently good ability who wish to become salesmen prove wholly incapable of coping with situations. They seem to lack the energy to apply their intelligence.” This is a strong statement, but, unfortunately, a rather wide inquiry among business houses indicates that it is true.

A man usually grows to the smallest dimensions of his job and then stops growing. He rarely makes a little job into a big one. Only so much effort is put into a piece of

<sup>1</sup> *Motive-Force and Motivation-Tracks*, by E. Boyd Barrett.

<sup>2</sup> See *Learning by Doing*, by Edgar James Swift, p. 213. (Bobbs-Merrill Co.)

work as is required to produce a satisfactory result, and generally there is no standard of achievement. Roosevelt is an illustration of men who set standards.

When he entered upon his duties as a member of the Civil Service Commission everything was satisfactory to the politicians. "The various commissions," J. B. Bishop says in his *Theodore Roosevelt and His Time*, "had been composed of men of quiet disposition and mature years, whose natural inclination was to follow the line of least resistance in all matters of policy." But Roosevelt did not propose to be a nonentity on a useless commission. He knew that the commission was worth while and he determined to show its value. Inquiry into the methods of the Baltimore post-office brought him at once into a bitter controversy with the secretary of the treasury and the post-master-general. And when the commission demanded the removal of the accused officials in Baltimore, the politicians of the Republican party were furious. The excitement was much like that of another day described by Thackeray in his *White Squall*:

"Then all the fleas in Jewry  
Jumped up and bit like fury."

But Roosevelt won, and when he resigned in 1895 "the classified service had been extended to practically all of the executive forces throughout the United States, including approximately 85,000 places. The great value of his six years of service, however, did not lie in the increased number of places within the rules, but in the revolution that he had accomplished in the minds of both the politicians and the people regarding the law and its merits. The old idea that it was a 'fool law,' the outcome of the impracticable dreams of a lot of 'crank reformers' had been dispelled forever."<sup>1</sup> And these changes were brought about by Roose-

<sup>1</sup> *Theodore Roosevelt and His Time*, by J. B. Bishop, p. 53. (Charles Scribner's Sons.)

vult because he was a leader of men. He accepted an unimportant position that was never intended to be a man's job and transformed it into a position for national service.

We have cited this instance in Roosevelt's early career as an illustration of one who did not grow to the smallest dimensions of his job, and then stop growing. He did not put the minimum effort into his work that would enable him to retain his position. He increased enormously the size and importance of the insignificant position that was offered to him as a sinecure.

Lack of versatility is one reason for the scarcity of leaders. But the deadening effect of occupation habits is not limited to employees. An efficiency engineer once told a group of business men the results of his close-range observation of managers and working men. The story is related by E. St. Elmo Lewis in his *Getting the Most Out of Business*. "I have no trouble in getting the factory men to accept efficiency," said the engineer. "It is the managers who make the trouble. The managers want to get better results in their way. They don't want to learn new ways which point to their inefficiency of management or the cause of waste."

Lest, however, the sales managers may think that this opposition to changes is true only of factory managers, the present writer hastens to add his own experience. He has addressed hundreds of salesmen and scores of sales managers. And while he has found the younger salesmen interested in the new ideas of the psychology of salesmanship, he has discovered that the minds of sales managers are frequently closed and locked. They know everything which they think is worth learning. They are unwilling to learn new ways, the suggestion of which indicates inefficiency in their management. "They want to improve," as Lewis says, "but they want to improve in their own way."

The tendency to adopt the easiest method and not take unnecessary trouble is seen in the inclination always to

lower cost of production by cutting wages. Yet N. I. Stone, formerly chief statistician of the Tariff Board, found that "almost invariably the mills paying higher wages per hour showed lower costs than their competitors with lower wages. Thus, in wool scouring, the lowest average wages paid to machine operatives in the thirty mills examined was found to be 12.16 cents an hour and the highest 17.79. Yet the low-wage mill showed a labor cost of twenty cents per hundred pounds of wool, while the higher-wage mill had a cost of only fifteen cents per hundred." Again: "In the carding departments of seventeen worsted mills, the mill paying its machine operatives an average wage of 13.18 cents per hour had a machine labor cost of four cents per hundred pounds, while the mill paying its machine operatives only 11.86 cents per hour had a cost of twenty-five cents per hundred pounds."<sup>1</sup>

"Further," continues Mr. Stone, speaking of the carding departments of twenty-six woollen mills, "the mill with the highest machine output per man per hour, namely 57.7 pounds, had a machine labor cost of twenty-three cents per hundred pounds, while the mill with a machine output of only six pounds per operative hour had a cost of \$1.64 per hundred pounds. Yet this mill, with a cost seventeen times higher than the other, paid its operatives only 9.86 cents per hour, as against 13.09 cents per hour paid by its more successful competitor." Evidently there was no leadership in these cheap-labor mills. The managers could not see beyond the daily wage. Let us turn to another picture.

Henry Ford takes the definite stand that it should be an employer's ambition, as leader, to pay better wages than any of his competitors. "It would be the worst sort of bad business," Mr. Ford says, speaking of his own plants, "to go back to the old market rate of paying. . . . Our

<sup>1</sup> *Century Magazine*, vol. 64, p. 111. These statistics were gathered before the recent rise in wages, but that does not alter their value. The proportional rate of wages is the important fact.



profits," he continues, "after paying good wages and a bonus—the bonus used to run around ten million a year before we changed the system—shows that paying good wages is the most profitable way of doing business."<sup>1</sup>

The writer has quoted Mr. Ford because this manufacturer stands out as one of the conspicuous leaders in the business world to-day, and also because he differs vitally from the prevailing view among business men regarding wages and efficiency. Mr. Ford reduces the price of his product, and "the new price forces the costs down" without reducing wages. "The low price makes everybody dig for profits. We make more discoveries concerning manufacturing and selling under this forced method than by any method of leisurely investigation."<sup>2</sup> The manufacturing methods at Dearborn are worth this reference because they have succeeded from the business man's standpoint. Mr. Ford has made money, which is the business criterion of success. And he has reduced the labor turnover to such an extent as to practically eliminate it as a disturbing problem. He cannot be disposed of on the ground that "he violates the economic law." Leaders are always violating something.

We have been speaking of the human tendency to follow the line of least resistance, to abhor change because of the effort necessary to put the new through, to be satisfied with what is, and to accept the prevailing conventional notion regarding the economics of business. This psychological tendency "to stand pat" is of such transcendent importance as to be worth further discussion and illustration. It has wrecked many a business as well as many a political career.

The history of business, as of other things, shows the violent opposition to innovations which all now accept.

<sup>1</sup> *My Life and Work*, by Henry Ford in collaboration with Samuel Crowther, pp. 116, 130. (Doubleday, Page & Co.)

<sup>2</sup> *Ibid.*, p. 147.

Adding-machines, cost systems, loose-leaf ledgers, card methods of preserving and using data needed for understanding and promoting one's own business were ridiculed. So little are some of these "visionary ideas" appreciated even to-day that it was thought necessary to make the cry, "Dig into your business," the key-note recently at a meeting of a large manufacturers' association. "Make written, accurate records of everything," exclaimed one speaker, "of costs, production capacity, selling expenses, and so forth. Then go to it intelligently."

The Federal Reserve Bank system, as most readers of this book will recall, was vigorously opposed by bankers and business men. The writer has before him more than two score of pamphlets and addresses by bankers, men of big business, and economists, all of which "prove beyond doubt" that the plan will not work. These addresses and pamphlets are marvels of beautiful and convincing arguments. The only objection to them is that when the plan was tried it succeeded beyond the expectations of its most devoted advocates, and to-day the former denouncers of this innovation would, under no conditions, return to the old system.

New methods, changes of any sort, have a hard time getting a hearing. Business men pride themselves on being "hard-headed and practical." And their boast is justified, for new ideas do not easily penetrate their cerebral cortex. The accumulation of conservative débris which has been inherited through tradition, and in which business men are daily immersed, since their associates are men of their own class, obstructs the entrance and reception of new ideas. The old, habitual notions are like the office-boy in the antechamber of the manager or president of a corporation, who guards the sacred person of his employer. These antiquated notions admit only those ideas that are wanted, and the ones which are wanted conform to the old established beliefs and opinions.

Charles W. Hurd, writing about Theodore Vail in *Printers' Ink*, said with a touch of humor that all Mr. Vail did to the Western Union "was to put life and courage into the demoralized force." Yes, that is all he did. He infused life into a corpse. He revitalized an organization which had become inanimate because of conservative, traditional methods. But that is what a leader always does.

Another thing that Vail did was to find good men and use them. He knew a valuable man when he saw him at his work. And this rare ability is one of the characteristics of a leader. The new régime which he instituted broke up the occupation habits of the company's men. They saw a prospect ahead. The trees disappeared in the view of the magnificent forest that lay before them.

And, again, to refer to an event farther back in history, so far, indeed, that the opposition to it has been forgotten, Professor Lovering, of Harvard University, *proved* mathematically the impossibility of telegraphing three thousand miles under the ocean, and Alexander Jones, at that time manager of the Associated Press, maintained, as a practical business man, the impossibility of the Atlantic cable.

The idea, Mr. Jones said in 1852, "of connecting Europe with America, by lines extending directly across the Atlantic, is utterly impracticable and absurd. It is found necessary on land to have relays of batteries and magnets to keep up or to renew the current and its action when sending messages over a circuit of only four or five hundred miles. How is this to be done in the ocean for a distance of three thousand miles?"<sup>1</sup>

We have found that man tends to adapt himself to conditions that exist. Only by conforming does he feel comfortable. He hates changes, and always finds satisfactory arguments against innovations. This tendency is not

<sup>1</sup> *Fifty Years a Journalist*, by Melville E. Stone, p. 208. (Doubleday, Page & Co.)

especially characteristic of any one class. It is a human quality. In business it affects subordinates and managers alike. What, then, is the reason for this lack of energy?

First of all comes racial indolence. No one, we have said, wants to go to unnecessary trouble. It takes effort which one is loath to expend. Men are prone to do things in the easiest way that will bring passable results. Man is primarily an adaptive animal. He adapts himself to things as they are. Change produces friction and that is unpleasant. Consequently, taking the trouble to find the best way of doing things, instead of being satisfied with a way that brings fairly good results, must be made an object. It must be worth while. This is one use of a leader. He arouses energy in those who are under him. He makes them want to go to any amount of trouble to increase their value and efficiency. He does not do it by driving. He knows how to lead. Any one can drive. That requires no ability. But leading—that's a different matter. It calls for genius to stimulate and influence. Sales managers are too commonly drivers. They know only the "hurrah method," and the content of their "hurrah" is usually the superheated air of which we hear in slang.

Then, too, habits play their rôle. Racial indolence—native antipathy to unnecessary exertion—resists adoption of plans or methods because they require exertion, mental and physical, and habit has fixed the old ways of acting in the nervous system. Occupation habits, of which we have spoken, come in here. And the worst of it is that the man who has them does not know it, so subtly do they get their grip and hold the mastery. This is the explanation for much of the labor trouble. The conventional views about labor, trades unions, the wage system, and the entire economic situation, rule the mind because of abhorrence of the new. It is also the reason for the failure of business houses with long-established successful trade. Their managers cannot adapt themselves to the new conditions. They fol-

low the old methods which no longer meet the needs of the times.

Look at the changes of the last few years in the wholesale grocery business, which, to a large extent, is typical of the other lines of business. Formerly the owners knew their customers personally. The country buyer took a week off once or twice a year to come to town and make his purchases. He was given a good time by the owners of his wholesale house. He enjoyed his outing and left a large order. Now the travelling salesman practically owns the trade in his territory. If he leaves his firm he takes his trade with him. The owners know their customers only by name. Again, competition has stripped the wholesale grocer of many of his "best-sellers." He no longer sells tea, coffee, spices, cigars, or tobacco. To meet these and other losses he must find new commodities. So we have the curious anomaly of the wholesale grocer selling dry goods, hardware, sewing-machines, staple drugs, and patent medicines. Indeed, he now sells a greater variety of other goods than of groceries. The rapidity of these changes compels him continually to become familiar with a new line of goods and to find a market for them.

Again, there is the woodenware business which now sells almost everything except articles made from wood. Truly, "eternal vigilance is the price of profits." But it must be an intelligent, offensive vigilance and not merely holding the line against assault. No man who follows antiquated methods need apply for a managership to-day. The work requires a leader.

There is a rather wide-spread view—an opinion as mistaken as it is common—that leadership is an inborn gift, a present from the gods. This is a cheerful belief, since if it be true, the acquisition of the ability to lead requires no work. The power will come of itself if those above us only recognize our worth. This view is usually the excuse of the discontented who are waiting to be appreciated. It is the

expression of satisfied indolence. But a survey of history shows that great leaders have always prepared themselves before emergencies required decisions and action. Read, for example, the qualities which helped to make Dana a leader of journalists as they are described by Chester S. Lord.<sup>1</sup>

“One reason for Charles A. Dana’s success may be found in his fine leadership. He inspired the confidence of his helpers by his surpassing knowledge of the business. He encouraged them by his recognition and appreciation of superior work and his absolute justice toward them.”

Perhaps we can clarify our view of leadership by a glance at leaders in another field than business. Such a survey will give us a clearer perspective.

Lord Fisher, in a survey of great naval leaders, with special reference to Nelson, names self-reliance, fearlessness, initiative, and fertility of resources as essential qualities of leadership. But fertility of resources requires a stock of knowledge from which resources may be drawn, and initiative without knowledge is pure guesswork. Self-reliance and fearlessness, again, have often been conspicuous in men who failed. Our Civil War is replete with names of self-reliant, brave generals who failed. Braddock, also, in the battles of the English with the Indians did not lack these qualities. He was too self-reliant. And he failed because he refused to take the advice of Washington, who did not guess, but based his decisions on knowledge. Napoleon, again, one of the greatest military leaders of the world has emphasized the importance of this factor of knowledge in defeating opponents. “If I always appear ready with decisions,” he said, “it is because I have investigated and meditated.” Evidently Napoleon appreciated the value of information as a basis for reflection. At one time, when his baggage was captured, a complete description of the mental characteristics of all the generals

<sup>1</sup> *The Young Man and Journalism*, pp. 48 f. (The Macmillan Co.)

opposed to him was found. These biographical portraits described in minute detail the way in which the mind of each of these generals worked. Some were daring, others overcautious. So carefully were the descriptions worked out that in an emergency, having identified the opposing commander, Napoleon knew what chances he might safely take. With this great military leader it was intelligence using information which had been patiently and thoughtfully acquired for future use, and that is what intelligence always does.

One of Nelson's orders of the day in the campaign of Trafalgar<sup>1</sup> is worth mentioning, since it shows how fully this great leader had mastered naval history. "Indeed, nothing is so remarkable in this immortal memorandum," says Corbett, "as the way in which it seems to gather up and co-ordinate every tactical principle which had ever proved effectual."

"No day," wrote Nelson in this brief memorandum, "can be long enough to arrange a couple of fleets and fight a decisive battle according to the old [approved] system. . . . I shall form the fleet into three divisions in three lines. One division shall be composed of twelve or fourteen of the fastest two-decked ships, which I shall always keep to windward, or in a situation of advantage. . . . I consider it will always be in my power to throw it into the battle in any part I may choose. . . . With the remaining part of the fleet formed in two lines I shall go at them at once. . . . I think it will surprise and confound the enemy. They won't know what I am about."<sup>2</sup> And they did not.

For more than two hours Nelson's unusual tactics kept the French commanders guessing. They could not understand from his bewildering method what his various divisions were going to do. "But when it was clear that the

<sup>1</sup> See *The Campaign of Trafalgar*, by Julian S. Corbett, pp. 348-349. (Longmans, Green.)

<sup>2</sup> *Ibid.*, pp. 346-347.

strange tactics meant an attack on the centre in a column [the French commander saw], as he says, the possibility of cutting off Nelson's rearmost ships. . . . It was a risk Nelson had calculated and taken with a light heart. 'It must be some time,' he wrote in the memorandum, 'before they can perform a manœuvre to make their force sufficiently compact to attack any part of the British fleet.'"<sup>1</sup> And so it proved.

Stonewall Jackson, again, comes well within the requirements of a leader mentioned by a recent writer in the *Proceedings of the United States Naval Institute*. "A man without dash," says this writer, "is never a hero to his fellow men, and one without imagination cannot hope to rise above mediocrity."<sup>2</sup>

Yet Jackson, though he met this requirement, never dashed without knowledge. "Before he committed himself to movement he deliberated long, and he never broke camp until he had ample information. . . . His power of drawing inferences, often from seemingly unimportant trifles, was akin to that of the hunter in his native backwoods, to whom the rustle of a twig, the note of a bird, a track upon the sand, speak more clearly than written characters. . . . After the bloody repulse at Malvern Hill, when his generals awakened him to report the terrible confusion in the Confederate ranks, he simply stated his opinion that the enemy was retreating, and went to sleep again. A week later he suggested that the whole army should move against Pope, for McClellan, he said, would never dare march on Richmond. . . . At Fredericksburg, after the first day's battle, he believed that the enemy was already defeated, and, anticipating their escape under cover of the darkness, he advised a night attack with the bayonet. His knowledge of his adversary's character, de-

<sup>1</sup> *Ibid.*, pp. 389-390.

<sup>2</sup> Captain R. D. White, *Proceedings of the U. S. Naval Institute*, vol. 47, p. 655.



rived, in great degree, from his close observation of every movement, enabled him to predict with astonishing accuracy how the enemy would act under given circumstances.”<sup>1</sup>

Jackson “appears to have thought out and to have foreseen—and here his imaginative power aided him—every combination that could be made against him, and to have provided for every possible emergency. He was never surprised, never disconcerted, never betrayed into a false manoeuvre. . . . From Hannibal to Moltke [and on to Foch] there has been no great captain who has neglected to study the character of his opponent, and who did not trade on the knowledge thus acquired.”<sup>2</sup>

It will be noticed that the author whom we have just quoted speaks of Jackson’s imagination as an aid in helping him to win victories, and undoubtedly no leader can be great without a fertile, productive imagination. But imagination requires raw material with which it may build. Only after information has been acquired and worked over into related knowledge can the imagination construct a method or plan that will achieve results.

Imagination is admitted to be essential to leadership, but the belief is rather common that it is an easily mastered characteristic of man. The writer has had young business men ask for instruction in imagination. It is thought to be something that one acquires as one learns stenography, in a six months’ course. But constructive imagination, as we have said, is based on knowledge. Memory is the recall of an event or fact, and imagination is the reorganization and reconstruction of the items and details which memory places at our disposal. But facts are a part of our stock of knowledge, and the more facts we have in memory the greater will be the quantity of raw material upon which

<sup>1</sup> *Stonewall Jackson*, by G. F. R. Henderson, vol. II, pp. 12–13. (Longmans, Green.)

<sup>2</sup> *Ibid.*, pp. 594–596.

our imagination can work. Men often fail, however, to make use of the facts at their disposal. They do not see the significance of the information. The old ways of doing things—the familiar, customary lines of action—have too strong a grip. New constructions of the imagination, new methods and plans, to be productive must be carried out, and this involves a serious and painful break in habits of thought and action that run smoothly and comfortably so long as they are not disturbed. Sir Ian Hamilton, in his *Gallipoli Diary*,<sup>1</sup> refers to a tragic case of this mental lethargy during the World War.

“Now that I am getting more precise news about what fighting there was, it seems clear that this great mass of young, inexperienced troops failed simply because their leaders failed to grasp the urgency of the time problem when they got upon the ground, although, as far as orders and pen and ink could go, it had been made perfectly clear. But, in the face of the Turk, things wore another and more formidable shape. Had Lord Bobs been commander of the ninth corps; yes, just think of it! How far my memory carries me back. Every item needed for the rapid advance: water, ammunition, supplies, and mules, closely and personally checked and counterchecked.” Yet the advance was not ordered. The men in command did not see the need of haste. Their imagination could not picture the situation that existed.

The illustration of a manufacturing-plant, as a picture of the manner in which the imagination does its work, is not wholly wrong. The raw material of the factory is made over into something quite unlike the stuff out of which it is manufactured. The finished product in both the factory and the imagination may be machinery or an invention of any sort, or, again, it may be an interpretation of a situation with a formulated plan of action. But it should be repeatedly emphasized that raw material is necessary. The

<sup>1</sup> Vol. II, p. 142. (Arnold, London.)

weather-bureau service, the dissemination of agricultural and financial market reports, the railway postal service, and the Federal Reserve Bank system were all products of the constructive imagination before they appeared at the bar of reason for a critical appraisal of their worth.

An interesting fact was observed during the period of our participation in the World War. Few of the dollar-a-year men were equal to their new jobs in the emergency. The conspicuous failure of some of these "big business" men astonished observers. "The surprising thing," says Franklin K. Lane in one of his letters,<sup>1</sup> "is that these great men . . . do not loom so large when brought to Washington and put to work." It need not have caused surprise since it illustrates just a bit of human nature. But it is a matter of tremendous significance in the psychology of business and of leadership.

The dollar-a-year men were not a promiscuous assortment. They were a selected lot, gathered, as was thought, from the most capable "big business" men of the country. Yet not a few of them were incompetent in the positions to which they were assigned, although the assignments were made with special reference to the work in which each had made a reputation in the business world.

Many reasons doubtless played a part in their inadequacy, but the one in which we are now chiefly interested is lack of imagination caused by want of knowledge. Their imagination had been ranging within too narrow a circle, though within the boundaries of their own fields of business it had loomed large.

The same fact was observed upon the battle-field in the World War. Leaders who had succeeded in the past were not equal to the immensely larger problems of the new kind of warfare. It would be ungracious to mention names, but it is well known that during the early part of the war the

<sup>1</sup> *Letters of Franklin K. Lane*, edited by Anne W. Lane and Louise H. Wall, p. 274. (Houghton Mifflin.)

chief trouble of the Allies was their inability to find competent leaders. After the United States became involved, a member of the War Department was asked why the subordinate commanders of high rank were so seldom mentioned in the public press. "Because it is necessary so often to relieve them of their command," was the reply. These men, like those serving for a dollar a year, could not expand their thoughts to the monstrous size of the new demands. Their imagination, hobbled by earlier experiences less complex, could not wander far afield. Everything was too big to be included in their mental picture.

The use of imagination in making plans by means of the information that has been acquired was shown by Foch at the first battle of the Marne. His view of the situation included the conditions on all of the fronts. He was not unduly impressed, as men of less caliber would have been, with his own troubles when he telephoned to Joffre: "My centre is giving way and my right falling back." He read the signs of the terrific pressure on his front, and remarked to a fellow officer: "If they attack me so hard here, it must be because they are badly off elsewhere." And understanding this, he had added to his earlier report to Joffre the encouragement that "The situation is excellent. I shall attack."

This view of the whole situation was lacking in the officers of the Western Union when they refused the offer of the Bell Telephone Company to sell their patents for \$100,000; it was lacking also in the directors of the Sharpe's Rifle Company during the Civil War when they declined to manufacture metallic cartridges; and in the business men who replied to Howe's request that they try his sewing-machine by saying: "We are doing well enough now. There is no reason why we should bother with it."

We cannot, again, discover either imagination or a grasp of the business situation in the reply of railroad officials to Westinghouse's plea for a trial of his air-brakes, that they

had brakes which worked quite satisfactorily; nor in the refusal of those interested in cotton to accept Whitney's gin; nor, again, in the refusal of steel producers to buy Bessemer's rights; nor, once more, in the appellation, "that old fool," given by the business men of Duluth to Merritt when they refused him permission to make Duluth the terminal of his iron-ore railroad. These replies do not indicate leadership in the business world.

We are prone to underestimate the ability of great leaders. When all the facts are before us and success has been achieved, the right course of action seems so plain that we easily believe the plan must have come spontaneously to the leader's mind. Thus, success is thought to be the result of "will-power," energy, and audacity, rather than of knowledge and of judgment based on knowledge.

"How often," Napier once observed, "have we heard the genius of Napoleon slighted, and his victories talked of as destitute of merit, because at the point of attack he was superior in numbers to his enemies! This very fact, which has been so often converted into reproach, constitutes his greatest and finest praise. He so directed his attack as at once to divide his enemy, and to fall with the mass of his own forces upon a point where their separation—the distribution of their army—left them unable to resist him." This was constructive imagination based on knowledge.

At the opening of his first Italian campaign Napoleon had only twenty-four light mountain guns, a small number of horse, and a ragged, half-starved infantry inferior in number to that of the enemy. Yet, so skilfully did he manœuvre his forces that, in every important engagement, he outnumbered and outfought his adversary. These plans were the product of the imagination working with the raw material of knowledge that Napoleon was always accumulating and using in his decisions. But he gathered his information rapidly because he knew what to look for, and

his decisions and actions followed quickly. He did not adopt the line of least resistance. This was one reason for his success, since his opponents, anticipating the old well-known and long-practised methods of attack, always met the unexpected.

Lord Fisher has emphasized one of the essentials of leadership in the stress which he has put upon audacity. But, in his fondness for exaggeration, he has made this necessary quality of leadership almost synonymous with insubordination. Mere disobedience of orders is not a virtue. Only when violation of instructions is founded on fuller knowledge than the officer in supreme command has, is disobedience justified. And only under these conditions did the great naval commander, of whom Lord Fisher speaks, disregard the orders which he had received.

"Nelson was nothing if not insubordinate," says Fisher in his *Memories*. His "greatest achievements were all due to his disobeying orders." And then he gives a partial inventory of Nelson's insubordinations. He disobeyed Sir John Jervis at the battle of Cape St. Vincent. He disobeyed orders to retire at Copenhagen. He disobeyed the rules of war in beginning the battle of the Nile at night with no charts, and he began the battle of Trafalgar in a formation contrary to all orders at that time.

As a matter of fact, Sir Hyde Parker, who was in command at Copenhagen, was convinced that Nelson was beaten and, consequently, ordered him to retire. But Nelson knew that he was not beaten and so continued to carry on regardless of signals to withdraw. And, again, at the battle of the Nile, Nelson was pacing the deck of his ship when the lookout at the masthead reported ships at anchor in the river. "It's the enemy's fleet," exclaimed Nelson. "Set sail at once."

When Nelson issued his orders the French admiral was also walking the deck of his flagship. "Sails at the mouth of the river," cried the lookout. "It's the English fleet,"

said the French admiral. "But they won't come in to-night. They have no charts." But Nelson did go in. He did not follow the line of least resistance, as the opposing admiral thought he would. He went in without charts and in the darkness, because he understood human nature. He knew that he would not be expected. And so Napoleon wrote: "But for Nelson at the Nile I should have been the conqueror of the world."<sup>1</sup>

Another writer,<sup>2</sup> however, has estimated Nelson more accurately than did Lord Fisher. "Nelson, we are often told, never measured risks," says Corbett, "but nothing was really farther from his character than such folly. . . . He faced risks, measured them with consummate tactical insight, and provided a means of discounting them that was without precedent." At one time, Corbett continues, "his unmatched eye for a battle had seized a weakness in the enemy's position and with perfect mastery he meant to deliver his attack accordingly." So he reverted to a long-discredited formation to meet the exigency of the moment. "Leadership could not well rise higher."<sup>3</sup>

The explanation of Nelson's disobedience of instructions is that he was an immensely bigger man than any of those who gave him orders. Who remembers the names of the commander-in-chief in any of Nelson's battles? In all of these cases only one name stands out—and that is Nelson's. What, then, was it in the case of this great commander that made him so superb a leader? What was the secret of his personality that made his mere presence in command worth many ships and countless sailors?

Lord Fisher has answered these questions by naming self-reliance, fearlessness, initiative, and fertility of resources;

<sup>1</sup> The French admiral blew up his flagship, the *Orient*; and *Casabianca*, the captain, and his son are the theme of "The boy stood on the burning deck."

<sup>2</sup> *The Campaign of Trafalgar*, by Julian S. Corbett, p. 349. (Longmans, Green.)

<sup>3</sup> *Ibid.*

and all of these virtues Nelson surely had. It is, of course, useless to try to catalogue the qualities of genius. There is always an elusive something which cannot be discovered in the analysis. But we may, nevertheless, delve a little deeper into personality than Fisher did. Nelson studied the situation that confronted him. To be sure, he grasped it quickly, but rapid analysis was possible with him because from early manhood he had made it his business to analyze and understand problems of naval strategy and tactics. Consequently, no plan which the enemy could adopt was new to him. He saw its purpose from the beginning.

Then, again, Nelson was one of those rare men who do not follow the line of least resistance. The rule of action in a given emergency, the accepted way of meeting it—in other words, the conventional—is always the line of least resistance, and this is the manœuvre that opponents of moderate ability expect, and which they are prepared to meet. In the battle of the Nile, for instance, the rule was decidedly against entering the river at night without charts. By violating the accepted rule Nelson knew that he would surprise all but the exceptional commander. And his knowledge of the French admiral had doubtless convinced him that this opponent was not that one exception.

But another quality is conspicuous in Nelson. Having analyzed the situation that confronted him, he selected a plan which, by its unexpectedness, would thwart the designs of the enemy. He always kept his adversary guessing. Napoleon followed the same method. Even while yet a young man the commander opposing him never knew what to expect. Napoleon's early campaigns show his appreciation of the factor of uncertainty. But always and everywhere his movements were based upon accurate knowledge, knowledge of the terrain, of the number of opposing troops, and, above all, knowledge of the military



principles and peculiarities of the enemy's commander. But this last factor is only another name for the beliefs and opinions of the man with whom Napoleon was going to transact his business. And this ability to see deeper than current opinions is one of the characteristics of leadership.

Now, as an indication of the diversity in the abilities of great leaders, let us turn to Henderson's estimate of various successful commanders. Speaking first of Grant, he says: "As a strategist he ranks high, but he was no master of stratagem. There was no mystery about his operations. His manœuvres were strong and straightforward, but he had no skill in deceiving his adversary, and his tactics were not always of a high order. It may be questioned whether on the field of battle his ability was equal to that of Sherman, or of Sherman's great antagonist, Johnston. Elsewhere he was their superior. Both Sherman and Johnston were methodical rather than brilliant. But patient, confident, and far-seeing as they were, strictly observant of the established principles of war, they were without a touch of that aggressive genius which characterized Lee, Grant, and Jackson."<sup>1</sup> And this same aggressive nature which grasps in one view the larger, more fundamental aspects of a situation we have found true of leaders in the industrial and commercial world.

When one reads military history another fact of tremendous importance for leadership stands out conspicuously. Every great leader has his crack brigades. "The [men of the ] Thirteenth Division," Sir Ian Hamilton says in his *Gallipoli Diary*, "were not reliable at Helles, whereas now, under Godley at Anzac, they have fought like lions." And our own Washington, on January 9, 1777, wrote to Colonel George Baylor as follows on the choice of officers: "Recollect also that no instance has yet happened of good or bad behavior in corps in our service that has not originated with the officers."

<sup>1</sup> Stonewall Jackson, vol. II, pp. 602-603. (Longmans, Green.)

Fighting Joe Hooker's famous old fighting division is another bit of evidence for the view that a leader produces the morale of the men under him, else they have none. In the battle of the Wilderness "Mott's division behaved badly; it broke and ran. This is a curious instance of a change in morale, since it is Hooker's old fighting division, but it had lately been under two commanders of little merit," so ". . . this once crack division has conducted itself most discreditably."<sup>1</sup> Later this division, irresistible under its former great commander, had to be broken up. "A sad record for Hooker's fighting men!"

Napoleon also led to victory men who had met only defeat under other generals. But, great as was Napoleon in strategy and tactics, it was not alone his skill in manoeuvring forces that won his victories. The men under him—the subordinate officers and common soldiers—fought as they never fought when commanded by other generals. Napoleon remodelled his soldiers, and, having made them over individually, he formed the mass into an irresistible fighting organization.

Hannibal and Cæsar, again, took a rabble of ordinary men and made them into armies that would go wherever they led them. When told that he could not take an army across the Alps, Hannibal exclaimed: "There are no Alps."

A marvelously fascinating scene—this picture of the Carthaginian and Roman—when viewed in retrospect! Each gathered a large body of men who were willing to risk their worthless skins. A lot of peasants without political principles, ready to follow the fortunes of their leader. Such material is certainly not very promising for building a conquering army. Yet that is what Hannibal and Cæsar did. Under their leadership these men endured indescribable hardships because they were following a leader in whom they had supreme confidence!

<sup>1</sup> *Meade's Headquarters, Letters of Colonel Theodore Lyman*, pp. 93, 114. (Atlantic Monthly Press.)

"Cæsar," says Plutarch, "was so much master of the good-will and hearty service of his soldiers that those who in other expeditions were but ordinary men displayed a courage past defeating or withstanding when they went upon any danger where Cæsar's glory was concerned." That was leadership, and yet this confidence was not won by military strategy alone. Cæsar looked after the interests of his men. Like Washington, he was thoughtful of their personal welfare, and the soldiers of each of these generals fought to the limit of their endurance and ability.

After all, leadership is much the same whether it be in the army or business. One fact stands out in the control and direction of men. Certain business organizations, like armies, have their famous "brigades." In business, these brigades are the selling force. Now the belief is rather prevalent that the explanation of the varying successes of these brigades lies in the men. But a glance at the history of military achievement has given convincing evidence that this view is wrong.

When one looks over those who do the world's work a remarkable fact is observed, namely, that there are always intelligent subordinates wherever there is an intelligent leader. A leader generates intelligence in those under him. A manager therefore only accuses himself when he says that his sales force is inefficient. Salesmen adopt habits of ease because of the example that is set them, and they do not apply their intelligence because there is no special incentive from above.

Intelligence is contagious because every man has much more than he ordinarily uses; but it is catching only in an atmosphere of freedom—freedom to think, to suggest, and to act independently. This is the reason why the American soldier accomplished so much on the battle-front in Europe. When the officer in charge was killed, the subordinate next in line assumed command. He was

not an unintelligent part of a machine. Perhaps we may find in this a suggestion toward the definition of a leader. To tap a continuous flow of ideas and thoughts in those with whom one works so as to draw out the best that is in them, to create in the men a feeling that they are being intelligently led, and that the plans of those in control are worth their best efforts, to give subordinates the conviction that intelligence will be appreciated and lead to advancement, to make them see that they are coworkers with those over them in a great organization—this is leadership.

Not long ago the writer heard an enthusiastic teacher describe her pupils to some young men and women who were about to take charge of their first schools. Her children, this teacher said, were so anxious to work that they kept her busy answering questions and directing their study. Matters of discipline never troubled her because the children were always working.

“Oh, I wish that I might get such a school!” exclaimed one of the prospective teachers. But the present writer, who was chairman of the meeting, had to say that such a school does not exist until the teacher has made it. And so it is in business. A sales force is created out of an aggregation of young men, just as Hannibal converted a mob of peasants into an irresistible army.

“My business is different; the plan proposed will not work. My sales force does not have the initiative nor resources to make it a success,” is a remark commonly heard. But this, again, is only another attempt of the manager to excuse his own incompetence. Men have just so much initiative and just such resources as their leader draws out of them. Failure to have an effective organization means inefficient leadership.

The “pep” method of getting results is another way of compensating for weakness in leadership. When a manager does not know what else to say or do he calls a meeting

of his sales force and stages an inspirational performance. Hurrah! is stimulating when men are going to meet a single, isolated emergency. It is effective on the football field if the team is being beaten and is despondent. But it has no lasting qualities. It has the momentary effect of wine which may be given to an athlete to recoup his waning strength for one last tremendous effort. But, like wine, again, it has no staying qualities. In the business world, as elsewhere, those who can, do, while those who can't, talk.

Most men are willing to work when they can see results and when they know that their success will be appreciated. Willingness and capacity to rise to responsibility are human characteristics. Putting responsibility upon men is the most effective way to release productive mental forces. When responsibility is put upon men they sometimes find, to their own amazement, as we have seen, that they are equal to it.

Patrick Henry is a good illustration. He had failed in business, failed in farming, and failed a second time in business. Then, as a last resort, he tried law, and, though neither he nor his friends had any hope of his success, the rest of his life is the story of a marvelous leader.

General Grant also grew with the responsibilities that were put upon him until he was prepared for any military situation. Before the war he had not been a success in anything. He was practically "down and out" when he applied for a position in the army. And military historians do not praise his strategy from the battle of Shiloh to the beginning of 1863. He did not know the geography of the ground over which he was fighting and he ignored climate. During one period half of his soldiers were in the hospital, and the other half on their way there, knee-deep in mud and water. But Grant had one important characteristic of success. He criticised himself so that he did not make the same mistake twice. His errors were a preparation

for the future. He was one of those rare men who learn from experience.

Applied intelligence is a scarce commodity in the market. Business men are always looking for it but rarely find it. A short time ago a salesman told the writer of one way of arousing energy in men and getting them to apply their intelligence. "Our manager," he said, "works with us instead of over us."

Knowledge is too lightly esteemed by business men. The uninformed try to compensate for their inadequacy by a pretentious physical or vocal exterior. They do not do this consciously. Indeed, they do not know that they lack the knowledge needed for fertility of resources. This is an interesting and important fact of human nature. Absence of knowledge does not usually reveal itself to one so afflicted. It is like a hidden disease that causes no pain.

One suffering from such a defect, however, is vaguely aware that he lacks some essential quality of leadership, and he endeavors to hide his deficiency by a smoke screen. So he blusters, or, in moments of defeat, vents upon subordinates the anger caused by his own failures. Yet subordinates, as we have seen, are always what the leader or manager has made them.

In every business, just as in the army, there comes a time when hopes are disappointed. Such a period of stress tests a leader's ability to maintain the morale of the organization. In many respects it is comparable to retreat on the field of battle. And a retreat, Napoleon once said, is more costly "than two battles," because it tends to disrupt morale—to destroy the faith of the soldiers in themselves and in their general. But, though "Jackson's army retreated for seven days before Fremont," Henderson says,<sup>1</sup> "dwindling in numbers at every step, it never fought better than when it turned at bay. From first to last it believed itself superior to its enemies; from first to last it was equal

<sup>1</sup> *Ibid.*, vol. I, p. 509.

to the tasks which its exacting commander imposed upon it, and its spirit was indomitable throughout."

"But it was not only confidence in the skill of their commander that inspired the troops," continues Henderson. "It was impossible not to admire the man who, after a sleepless night, a long march, and hard fighting, would say to his officers, 'we must push on—push on!' as unconcerned as if his muscles were of steel, and hunger an unknown sensation. Such fortitude was contagious. The men caught something of his untiring energy and his unhesitating audacity."

Too many men, young and old, feel that the conditions are not right for what they want to do. But history is filled with lamentations of those who just missed being leaders. McClellan was always training his troops, always calling meetings of his sales force, so to speak, always preparing, always waiting for a more favorable moment to move. And, of course, the favorable opportunity never came. Lee repeatedly took chances which were based on the conviction that McClellan would wait for a more advantageous moment before moving his forces. "Neither Lee, nor those generals about him who knew McClellan," says Henderson, "were in the least apprehensive that their over-cautious adversary would either see or utilize his opportunity." And Joseph E. Johnston's career, to cite another instance, "consists of things he would have done, if circumstances had been different."<sup>1</sup>

The gods are always on the side of the heaviest artillery, Napoleon once remarked, but, in the final analysis, brains and knowledge are behind the guns. During the early part of our Civil War the brains of two great leaders did more for the Confederacy than 200,000 soldiers were able to do for the Union. "Without quitting his desk, and leaving the execution of his plans to Jackson, Lee relieved Rich-

<sup>1</sup> *Confederate Portraits*, by Gamaliel Bradford, p. 6. (Houghton Mifflin.)

mond of the pressure of 70,000 Federals," Henderson says, and "placed the remainder in the position in which he most wished to find them." And it was not until Lee met Meade, who also believed that battles depend more upon brains and knowledge than on sabres and guns, that he went down in defeat. "To take a beaten army from a beaten commander," as Meade did, says Bradford, "and at three days' notice fight a battle against troops like Lee's under a commander like Lee, was as hard a task as was ever imposed on mortal man in this fighting world. Meade accepted it without a murmur and saved a nation."<sup>1</sup>

This was leadership upon which business men may well reflect. Beaten soldiers refusing to accept defeat when an organizer of victory was at their head! It is not the men in the ranks who fail. It is their leader. When factory or sales efficiency crumbles, investigate the "high command."

We have been discussing certain phases of human psychology, and we have found that most men of fair intelligence are ready to move forward if they have a leader in whom they have confidence. But there is always the tendency to adopt fixed habits of thought and action—to become static. It is easier to remain where one is than to go ahead. Repetition is simpler than discovery. Usually a strong stimulus is needed to release one's dormant mental forces. Such a stimulus may be, in exceptional cases, the call of a great cause, but it is more likely to be the stimulation of a splendid leader.

Certain conditions must be met, and man, like the lower animals, meets them with the least possible expenditure of energy. Naturally, actions which do not produce results are eliminated and new plans are adopted until at least the minimum of success is attained. But this does not produce efficient managers. It does not qualify for leadership.

<sup>1</sup> *Ibid.*, pp. 254-255.



When we try to discover the qualities that make up such leaders as Hannibal, Cæsar, Napoleon, Nelson, Jackson or Foch, we can at most isolate only the more conspicuous elements of their power. But, at all events, self-reliance, fearlessness, initiative, and fertility of resources must be based upon something solid. In other words, a leader requires superior knowledge as the foundation upon which to build. Self-reliance and fearlessness may rest upon nothing more substantial than inflated confidence, but fertility of resources needs a well-filled storehouse from which the building material for plans of action may be drawn.

There is no record of a leader who maintained his supremacy for any length of time who did not have the qualities which we have observed in those whom we have mentioned. Men have shot up with the suddenness of a skyrocket and held power for a brief period, without the knowledge needed for intelligent audacity and imagination, but they did not last.

Self-reliance, fearlessness, fertility of resources, and initiative, without knowledge, but with the aid of that protection which the gods are proverbially reported to bestow upon fools, may give the unequipped business manager or military leader a short respite from destruction. But, in the long run, luck and the protection of the gods may be eliminated from the equation of success.

In the same way as we underestimate the preparation of leaders who, with study and thought, have won victories on the battle-field without apparent effort, so also do we pay slight tribute to the explanation of the achievements of those whose knowledge, imagination, and insight have given us the conveniences which to-day contribute to our pleasure, our leisure, and our work. The telephone and telegraph, subways, storage and distribution of water for irrigation, the X-ray, wireless communication, and the radio, seem commonplace, so familiar are they to us. Yet, their conception was the result of imagination and

calculation based upon knowledge accurately acquired through study, reflection, and criticism. But the criticism was always looking forward to new attainments.

Finally, the great leaders to whom we have referred, did not try to excuse their mistakes with words. Their ability made it unnecessary for them to offer verbal compensation for inefficiency. They did not harangue their troops. They did not stage inspirational performances. They got their information, thought it through into clear, accurate knowledge, and then acted.

Pretenders to leadership are like hot steam spurting from a pipe. They make a great noise and stir up a commotion. But when all is over only confusion remains. Real leaders have poise, because they possess knowledge, and know how to use it. Their knowledge gives them an abundance of fertile resources, and puts intelligence into their initiative and self-reliance. They speak with actions rather than with words. And their ability to achieve results inspires those under them with the determination to be worthy of such leadership.

## CHAPTER X

### MENTAL EFFICIENCY

**MEN** at their best are hardly more than sixty per cent efficient, and on the average—well, perhaps we had better not speak of that. It would be too discouraging.

“The hardest thing in a growing business,” said a man who, having begun in a small way, is now president of a corporation that does a business of \$10,000,000 a year, “is to find men who are looking for ideas. It is not difficult to obtain hard workers, but intelligent workers—those who do not think and act in ruts, who can look into the future, and plan the business changes that the altering conditions will demand—that is where the rub comes, and at times I feel completely discouraged.”

As this is being written, the daily press is featuring the laying of the first section of the new type of cable that will connect the United States with Italy. The ordinary cable rate of transmission is 250 letters per minute, and the question which President Carlton had to decide was whether the Western Union should take a chance on an electrical theory which had been proven so far as experimental tests could decide. But experimental tests are over comparatively short distances, and there might be some flaw in the theory for a distance of 2,360 miles to the Azores and 4,704 miles to Rome.

Some of the advisers of the company opposed the risk. It was a dangerous chance, they said, to stake \$4,000,000 on a theory of engineers. As a matter of fact there was no risk. The objections and fears were purely mental. Habits of thought and human inertia were against the change. This is the way the human mind works when it

does not want to accept the new. It conjures up all sorts of absurd and unreal difficulties and objections and then proceeds to get frightened at them. And so it was in this case, since the distance to the Azores and Italy was provided for by the tests of the consulting engineers in the various ways that modern science has found. Perhaps the word "resistances" will convey the method to the reader. Resistances of any desired degree can be introduced into the circuit until they will reveal the distance which a current can travel and still remain sufficiently effective to produce legible signs. But the mental resistances which are as strong in the mind as the resistances to the passage of electric currents in the wire, continued operative. Play safe was the advice, but by playing safe time and money might be lost, because the old type of cable was inadequate for the future. And so President Carlton decided to rely upon the engineers, and he won. The section to the Azores is now completed and, when connected with the new high-speed terminal equipment which engineers also invented, it showed a capacity of 1,700 letters with legible signals per minute against the 250 per minute of the discarded cable.

The greatest obstruction to efficiency, as well as to progress in general, is the mind itself. An American psychologist wrote not long ago, that the human brain and mind are about the most inefficient organs for thinking of which we can conceive. Of course, believing in evolution as all informed men do to-day, the explanation is quite clear. An order was not placed by the builder of the universe for a human brain conforming to certain specifications which the omniscient Architect saw would make a perfect mind. Man has evolved, and in the course of his evolution he has retained certain characteristics of his lowly ancestors which were not so detrimental to survival as to require their elimination.

The physical survivals—rudimentary or vestigial organs

they are called—are the most obvious. The coccyx or remnant in man's skeleton of the tail of the lower animals is an illustration. And another, the appendix, is good for nothing except to be cut out. There are upward of two hundred of these rudimentary organs in man. Some of them in the process of evolution have been turned to other uses, but their old function has been discovered by physiologists. One of the gill arches of fishes, for example, has been converted into the eustachian tube which connects the middle ear with the throat, and equalizes the air pressure on both sides of the ear-drum. Another organ no longer used by man is the conjunctiva—the little white membrane in the inner angle of his eye. In birds this membrane is a third eyelid which serves much the same purpose as the cleaner of an automobile windshield during rainy weather. Some of the readers who lived on the farm as boys may have seen this white eye-cleaner shoot across the eyes of chickens.

If physical organs were the only ones that man inherits from his animal ancestors, it would be unnecessary to refer to them in a chapter on human efficiency; but man also inherits his brain, and with it his mind. When we realize this we understand why men are suspicious of everything that is new and strange, why they carry caution to the point of mental inefficiency. We also see why they do so little thinking—a comparatively new mental activity in the evolutionary process; likewise we learn why men are illogical when they try to think, why they do not get all of the needed information before acting; and, finally, why they are strongly inclined to do what they want to do, to gratify what we call the lower instincts, and to jump at conclusions. But it will be observed that man usually jumps at the conclusions which he wants to believe just as the animal does after a little effort to draw the right conclusion, and play safe.

Not only are human mental processes developed from

those of lower animals but the emotions also have the same origin. Indeed the psychology of man can only be understood by recognizing the source of all of his intellectual and emotional behavior. Only in this way can we see why he makes the same mistake when conditions are superficially the same, why the errors of history are repeated, and why he follows persistently and often disastrously his own earlier experience just as do the lower animals.

Probably the best single statement of intelligence is the ability to adjust oneself quickly and successfully to new and changing conditions. The lower animals adapt themselves to varying conditions unless too great change is demanded. If birds do not find their usual nest-building material they select something else that will answer the purpose. Again, the beavers perform astonishing feats of construction with the material which they use, and their adaptation to changing conditions is so remarkable that it suggests intelligence of a high order.

When we view the reactions and behavior of men, we are often struck with their lack of intelligent adaption under conditions which do not put intelligence to a severe test. We frequently hear a man say, "If I had only thought before I did it"; but that is just like animals; they do not think. The writer, of course, does not claim that animals or primitive man are capable of the thinking of even the average civilized man, though some of the half-developed races have produced individuals whose logical thinking was far superior to that of the average white Occidental. And the psychological tests given to the American army during the World War revealed an amazing variation of ability. Some of the recruits showed an intelligence as low as that of the most backward races.

On the other hand, there have been not a few American Indians who demonstrated that they had intelligence and capacity to think of so high an order as to be comparable with the best of the white Occidentals. And there is

abundant evidence that the men who lived 25,000 years or more ago were not inferior to modern man in the ability to see the meaning of experience and to adjust themselves quickly and successfully to the changes in their environment.

The inventor of the bow and arrow, for example, had quite as keen an intellect as the inventor of the modern rifle. And the discoverer of the use of hook and line for catching fish for food was not inferior to any modern inventor. These men were building their civilization; they were interpreting experience.

We say that the animals use the failure and success method—that they try some way of meeting an emergency; if it is successful they continue to use it, and if it fails they try another way. But this is exactly what the young child does whether in its play constructions or at its studies. If, for instance, one method does not work in a mathematical problem, the child tries another. And this is also the way in which men often work. Indeed, men follow the animal method too commonly and too exclusively. They do not think their problems through; they do not bring an exhaustive fund of knowledge to bear upon the question; they do not estimate experience impersonally; they tend to follow the animal method of trial and error.

Perhaps the first defect in the mental machinery of man to which attention should be called is the tendency to continue in the beliefs and opinions which one already has. These opinions have been acquired in various ways; some have been gained by what we are accustomed to call experience, but in a large majority of cases experience means that one has drifted along through one's professional or business career, meeting emergencies when they have arisen in the simplest and easiest way at the moment. "Men are too lazy to try a new method if it means a little extra trouble," was the severe judgment of an alert business man

in a recent conversation with the writer. "They continue to do things as they have been doing them until they reach a crisis and then they find fault with conditions instead of blaming their own indolence."

Now this tendency to repeat thoughts and actions until they become so firmly established that only a severe mental wrench will change them, is one of the tendencies which we have inherited from our animal ancestors. Animals *must* repeat their actions. Any marked deviation from inherited ways of doing things would be fatal. Each species of animal has its own ways of conducting the affairs of its life, and of meeting the emergencies and dangers that arise. The lower in the scale of evolution an animal is, the more closely must it conform to fixed methods of behavior. Nature has decreed this through its inexorable law of natural selection and the survival of the fittest. Survival demands conformity, and marked deviation from the inherited behavior of the species would mean destruction.

The reason why the lower animals must conform rigidly to the ways of their fellows is that animals cannot think. They have never invented fire, and for that reason they are obliged to protect themselves from the cold of winter by burrowing into the earth, by migrating to a warm climate, or by some other inherited means.

When we observe animals a little below man in the evolutionary scale we notice some rather striking variations from what seem to be inherited actions. Foxes are clever in getting the bait from traps without being caught. Arctic foxes are reported to dig down under the snow and spring the traps from underneath so that they can secure the bait with safety. Though stories of the wonderful feats of animals should be looked upon with suspicion, it is a fact, nevertheless, that the higher animals vary more than those below them in the way in which they meet the troubles that come to them in the transaction of their



business which, as with man, is chiefly concerned with getting a living.

The reader will have noticed that animals high in the evolutionary scale are more efficient than those below them. They can adjust themselves more quickly and more successfully to new and changing conditions. And it will be observed that this increased intelligence accompanies improvement in the nervous system. The more complex the nervous system the greater the ability of the animal to grapple with emergencies.

Though the lower animals never made tools, there is some little evidence that they have at times used stones for pounding, and the *Pithecanthropus erectus*—the oldest ancestor of man whose remains have been found—seems to have made some weapons of flint. He also stood fairly erect<sup>1</sup> though he lived some 500,000 years ago.

We have referred to evolution and to the relation between intelligence and the nervous system, to enable the reader to see that when man first appeared, though he had a better-developed brain than his simian ancestors, he nevertheless retained many of their physical and mental characteristics. On account of his physical heritage man suffers afflictions caused by the strain of the upright position. The visceral organs have not yet become fully adapted to the erect position, and consequently human ills result. And since man's brain and mind are also inherited from his animal ancestors, his thinking may also be said to suffer defects which can be traced to his inherited traits. An illustration will make this clear.

The thinking done by animals is of the associative sort. Associative thinking assumes that because two events occur together they are in some way related to each other. If one event immediately precedes another, the first is assumed to be the cause of the second. The reader is, of course, aware that this tendency in lower animals is

<sup>1</sup> *The Evolution of Man*, by Richard S. Lull and others, p. 14.

utilized in training them, and that in setting traps care must be taken to avoid everything which is usually associated with danger.

Now man has inherited this tendency from his animal ancestors. Whatever immediately precedes an event is likely to be assumed as its cause. Potatoes or wheat advance, for example, because of short crops elsewhere, yet farmers assume that the party in power is the cause of the advance in price. Politicians utilize this human characteristic by ascribing hard times to events which immediately preceded the depression, though these events may have had nothing to do with them.

Associative thinking—the tendency to relate as cause and effect events which occur together or follow one another—is one conspicuous cause of inefficient thinking. Accurate thinking requires that the meaning of occurrences be clearly seen. Real relationship and connections should be discovered. Of course, this demands that situations be analyzed, that the contributing factors be discovered, and that the associated facts which have no necessary connection with the situation be seen to be incidental and unessential.

Interpretation—thinking—involves criticising and estimating the value of facts. Merely living through events, observing and noting them, does not give us valid knowledge. Experience tends to organize itself unless one takes a hand in interpreting and understanding it. The lower animals are incapable of examining and classifying their experiences. They cannot consult books to ascertain whether the particular odor which they now smell comes from food alone or whether it indicates danger from traps or men. Deer know nothing about the open season, but they wander more boldly and recklessly during the closed period than when they are liable to be shot legally. They associate freedom of movement with the closed season, because during those months in past years they have

not been disturbed. Animals, not being able to think, must accept experience at its face value. Their inherited tendencies and acquired habits govern their actions. They "stand pat."

But man can, if he will, examine and criticise his experience. He can ascertain why his business has not prospered as he wishes; why, if a salesman, he did not succeed in selling to a certain prospect. When a fox, on the other hand, fails to win a prospect and loses a meal in consequence, he cannot analyze his method of approach, decide that he erred in certain essential matters, and determine to avoid those mistakes in the future. To catch a fox in a trap, it is only necessary, if prospects are abundant, to give the trap the appearance of a good bargain. But this likewise is all that is necessary to catch a man, as is shown by the continued success of long-practised swindles.

Every one knows how easy it is to catch even intelligent men with tricks that are nicely camouflaged. Perpetual-motion machines are an illustration. Thirty years ago a man by the name of Keely obtained millions of dollars from hard-headed business men for the purpose of perfecting his perpetual-motion machine, and at his death the walls and floors of his "laboratory" were found interlaced with electric wires by which the "perpetual motion" of his machine was made possible. Scientific facts and principles counted for nothing with those who wanted to believe. Experts who told these investors that perpetual motion was an absurdity were regarded as impractical theorists; yet subsequent events proved that these practical business men were as uncritical of the situation as foxes are when tempted by a trap. They did not use available knowledge in their judgment of the case. They accepted appearances at their full value. But this ready acceptance of superficial evidence ignores the mental processes which have evolved in the course of man's

development. Analysis and criticism are thrown aside with facile acquiescence in external objective appearances. It is a return to the animal method.

In 1920, to give another illustration, the following prospectus of the so-called California Ranching Company was posted as a joke in the windows of an Eastern bank:

**EXTRAORDINARY OPPORTUNITY**

“We are starting a cat ranch in California with 100,000 cats. Each cat will average twelve kittens each year. The cat skins will sell at thirty cents each. One hundred men can skin five thousand cats a day. We figure on a net profit of ten thousand dollars a day.

“To feed the cats, we shall start a rat ranch next door with 1,000,000 rats. The rats will breed twelve times as fast as the cats. So we will have four rats to feed each day to each cat, and we will feed the rats the carcasses of the cats after they have been skinned. The skins of the cats will cost us nothing.

“Shares in this epochal enterprise are now selling at five cents each, but the price will soon go up. Invest now while the opportunity knocks at your door.”

(Signed) CALIFORNIA RANCHING COMPANY.

This prospectus, published as a joke, was taken so seriously by men with money to invest that it was removed. Sixty men in good business standing applied for stock during the first day. Evidently tricks will catch men about as easily as they will deceive foxes or monkeys. Little or no thinking is done. A wildcat investment programme, a Blonger whose confidence-gang took \$420,000 out of Denver in 1921, and a Ponzi who showed how easily Boston investors take the bait when the trap is skilfully arranged, seem to justify the statement of the District Attorney of Denver “that the birth-rate of suckers is considerably better than one a minute. Almost any of the spectators at the trial,”

continued the prosecutor, "would have fallen just as hard as did the victims they heard testify."

"It is so easy to fool the hard-headed business men that you would hardly believe it," remarked a reformed member of the "con" fraternity when his attention was called to the cases mentioned above. Perhaps this readiness to be victimized would be of little importance if it did not reveal something deeper in man than willingness to take a chance when large returns are offered. But, unfortunately, it is only an illustration in one line of the human tendency to accept appearances without investigation—to estimate situations by their most conspicuous aspects: and the result is failure to understand the cause of the red ink on the balance-sheet, or the reason for the dissatisfaction of employees in the plant.

Man has no inborn faculty that drives him to investigate. Curiosity, of course, he has, but so have the fox and the monkey. Curiosity may end with its superficial gratification. "What makes the watch go?" asks the young child, and the answer, "The wheels and mainspring," usually satisfies. And so are men prone to be content with obvious, shallow explanations.

Something was added to curiosity when prehistoric man began to experiment with the bow and arrow and to make tools; and that something was a desire to contrive and fashion for a purpose so definite that reasons for failure had to be considered. When weapons of stone did not hold their point or edge, there was a reason for it, and something harder had to be found.

Investigation of causes is difficult work, and a compelling motive is needed to induce one to exchange the comfort of the office chair for the rigorous demands which any investigation requires. It is much easier to accept vague phrases as explanations, and this has been one of the chief obstacles to accurate thinking ever since man began some hundred thousand years ago to learn to use

the mind which his animal ancestors had bequeathed to him with all of its inherited imperfections.

Radicalism is one of the vague phrases in common use to-day, and it covers many sins of loose thinkers. It is the satisfying explanation for trouble in the factory, and, under various aliases, it has even been thought to have stealthily entered the office to the serious disturbance of the work. But that is what the thinkers of the past were called—the men who signed the Declaration of Independence, and those who made the scientific discoveries from which we profit.

The radical view of to-day is the accepted opinion to-morrow; and the following day it is so universally admitted that it is a truism which no one ever questions. The old is thought "safe" because we do not know the meaning and possibilities of the new.

To be convinced by conventional words and phrases, to hear them as words of wisdom, is a mental characteristic inherited from ancestors who accepted mystical obscurity as a sufficient explanation of all the perplexing difficulties in the daily life of primitive man. Progressives—doubters—were not tolerated in earlier days. Established tribal belief and nature were the censors of men's actions, and they were exacting judges. In primitive times men were not sentenced to thirty days in jail for contempt of court. Contemptuous scorn was the penalty for violating tribal custom, and for denying nature's authority it was death. The laws of conformity and of the survival of the fittest were inexorable.

Conformity is therefore in the human blood. Variation is dangerous, or at least it is so thought to be. Our legal procedure is decades behind the times, and business men follow the safe and sane methods of the founders of their business because of the ingrained fear of adopting a new policy. When the need of justifying their "stand-pat" policy arises, these men conjure up terrifying phantoms of the

disastrous effect of change and then proceed to rationalize with vague phrases that deceive no one except themselves. "Whenever a new plan or policy is proposed, business men get frightened," remarked the president of a large corporation to the writer. But this is not efficiency.

Adaptation to conditions which one must meet, as we have said, is the practical test of intelligence, but in human life this adjustment should be versatile—adaptive to new and changing circumstances. Human beings, like the lower animals, struggle to adapt themselves, and in both cases the tendency is to make the adjustment to a static set of conditions. This was necessary in the early history of man when variation involved the risk of life, and it was permissible forty years ago when conditions were less changeable. But to-day changes are so frequent and sudden that one who consistently adapts himself to static conditions is courting failure. Professional and business men must keep up with the game.

But keeping up with the game involves more than merely the desire to do so. Man not only tends to adjust himself to the conditions which confront him but he also continues this form of adaptation. This, we have said, is a part of his animal inheritance, and consequently a mental defect for which man is not responsible, but against which he must incessantly be on guard if he is to be efficient. Indeed, to be on guard is hardly sufficient, because the conservatives in business as well as in other affairs of life are constantly on the offensive. "Frills," "visionary," and "impractical," as we have said, are common words in the business world to-day. A prominent psychologist asked a public-service corporation to finance tests of ability of applicants for their work. But the company's employment department replied that their experience had not convinced them of the need of any such tests. In other words, the officials do not care to try to improve their method of selecting employees, though,

aside from the expense of hiring and firing, this public-service company may suffer heavy loss from lawsuits caused by the mistakes of men unfitted for the work. Let things go as they are until they break down because of inadaptability to new conditions, is the business policy. "Beware of visionary, impractical ideas." Yet theorists have given industry its inventions, and they have given commerce the ideas which brought to it a world market. The market was there, but it needed theorists to prepare the way with inventions.

"Without Newton's discovery of the law of calculus," said President Fields in a recent address before the Royal Canadian Institute, "we should not have the electric light, the power-house, the telephone or the telegraph. Navigation, aviation, the X-ray, even the adjustment of our clocks and watches, depend upon the use of the formulas of calculus. And calculus goes back to the invention by Descartes of analytical geometry. In the epic of human progress, the recurring note is the successive dependence of one man's work upon another's," and upon the discoveries made by "visionary theorists."

One reason for failure to adapt ourselves to the new conditions which arise as we push on into the future, is that there is no standard of success. There was no accepted measure of intelligence before Binet invented one, and the results of the tests that followed showed an amazingly wide variation in the intelligence of youths. Informed business men now know that those who seek employment vary in ability from morons to potential geniuses, and consequently alert employers test the general intelligence of applicants before giving them employment. Yet so slowly are ideas accepted that the great majority of business men continue to follow the trial and error—success and failure—method which man has inherited from his animal ancestors. Intelligence-tests are still thought by many to be fads and frills. But this attitude does not indicate



efficiency. It is only a form of the opposition to innovations which we have found characteristic of men in bygone days.

When we turn to business itself we find, again, no standard of success. In a given office the younger men adopt the methods and quality of work of associates or superiors, the grade of efficiency set for novitiates depending upon the prevailing standards, which may be high or low. Imitation rules, but this imitation is to a large extent unconscious.

Since the unconscious adoption of one's method and quality of work is a tremendously important fact for those who wish to become efficient, it should receive more than passing attention. Men who have already established their ways of working will probably not be influenced, because fixed habits are not easily changed, and rationalization always responds to the appeal for justification of inefficiency. A large number, however, of those in business are alive to the necessity of improving their habits of work. They realize that they have fallen into ruts, and deep ruts are hard to get out of whether one is in an office or an automobile.

The first thing to be remembered is that daily routine work organizes itself unless one takes a firm grip on the steering-wheel. If one is a manager, certain things must be done each day, but who shall do them? Naturally, the manager feels responsible, and the quickest way of getting things done is to do them himself. Consequently managers fall into the habit of doing many things which might be accomplished quite as well by a subordinate. "To fall into a habit," like many other colloquialisms, expresses a psychological fact. We rarely select our habits; they lie in our way and we fall into them. Methods of work are adopted unconsciously.

A manager who has not thoughtfully planned his work will find, by reviewing the day's activities, that much of

his time has been wasted. This does not mean that he has been idle, but it indicates that many of the things which he has done did not require his expert knowledge. In every large business, again, there is an inexcusable overlapping of duties and responsibilities. The head of a large factory spent several days trying to locate the responsibility for failure to meet the specifications of an important order. No department accepted the blame; each accused another; and in the end the general manager could not decide who was responsible. The explanation, as given by one of the departmental managers, was that the business had grown rapidly and that the various departments had encroached upon the authority of each other until no one knew where to place responsibility.

We said a moment ago that work, when not consciously planned, organizes itself. This was observed by thoughtful men during the World War, when men were scarce and those who stayed with the business had to multiply their efficiency several times. The head of a large New York house, for example, said that all of his men in responsible positions had to do two or three times their usual amount of work and make decisions much more rapidly; yet, so far as the president of this house could determine, the decisions were quite as satisfactory as when they were given much more time.

A still more striking case was related to the writer by the manager of a factory in which he supervised nine plants. When the United States entered the war he was made a captain in the quartermaster's department with supervision of one hundred and fifty plants. This manager thought that he was working to his limit when he managed the nine plants of his factory. "I never could quite catch up with my work," he said in telling of his subsequent achievement. "But during the war, with one hundred and fifty plants under my direction, I worked just as easily as when I was supervising less than one-sixteenth of

that number. In other words, I worked sixteen times as efficiently, but I did it by organizing my work instead of letting it mechanize me."

Evidently men in administrative and executive positions waste an immense amount of time. Two facts of supreme importance for efficiency should be noted in this connection.

First, men rarely use more than a fraction of the energy at their disposal. One reason for this is their bad physical habits which deplete their energy. A business man accounted for his lack of energy to his physician by saying that he was overworking, and the doctor replied: "From your story I can assure you that I am working several hours each day more than you, and my work is more wearing, yet I keep my health. The cause of your loss of health is not overwork; it is unhygienic habits. When you give the care to your health that I give to mine, you will be able to do twice as much without breaking down."

Another reason for failure to use one's available energy, reaches far down into the psychology of the race. From the time when man emerged, he has alternated between periods of great activity and of indolence. Early man rested and enjoyed life so long as he had an abundance of food and was not called to battle. Modern man cannot divide his time into periods of activity and loafing. Consequently, he satisfies the racial craving for indolence by working at low pressure until some emergency arises, when he puts forth all of his energy.

We see this illustrated by the physical strength shown when a house is burning and a frail girl carries her bedridden father down the stairs, though under ordinary conditions she could not even lift him. Men, again, who take little or no exercise through the greater part of the year, when away on a vacation exude energy from all their pores. They often climb mountains to the point of exhaustion, or they tramp through underbrush to fish and hunt until they are ready to drop. But the next day they are ready

for another outburst of energy. And then when the vacation is ended, they return to their physical indolence.

On the mental side, the parsimonious expenditure of energy is quite as noticeable as on the physical. Precedents are exertion-savers, and no one wishes to expend more energy than a situation requires. Consequently, all questions, difficulties, and complaints are settled by precedent, though every thoughtful man knows that no two cases or problems are alike. Most businesses are run by precedents. They are precedent-ridden, because it is easier and simpler to follow a rule than to treat each question that arises on its merits, mindful of all the peculiarities of the varying situations. But precedent is only another word for habits of thought and action established by fathers or grandfathers, and transmitted to their children's children.

Precedents are obstructions in the way of progress. When the United States Steel Company was told that a twelve-hour day and a seven-day week was a blot on civilization, the company replied, "An eight-hour day is impracticable for us." But why was it impracticable? Because the precedent was against an eight-hour day. The company had never done business on that basis, and a change would disturb the peaceful lethargy of the management. But the fact that the company has finally yielded to the insistent public demand, proves that the impracticability was mental rather than physical.

The second of the two significant facts referred to above in connection with efficiency is that man tends to make his adaptations unconsciously. He always does this unless he is conscious of the danger and continually guards against it. We have already spoken of this in connection with the organization of the day's work, but it has a much wider application. Man adapts himself to existing conditions, and these conditions then seem so natural that the need of change is incomprehensible.

The lower animals, we have said, must meet situations which are put upon them. They have no choice. They cannot change their environment. They are unable to look ahead and plan for the future. If the food of a given species disappears, these animals die. We frequently see illustrations of this among domesticated animals during a drought. They are prevented from wandering far afield, and consequently must feed within a limited area or perish. Nature also has at times deprived undomesticated animals of the food which they require, and consequently whole species have passed away leaving only fossilized specimens. The animals on oceanic islands are another illustration. These islands were once part of the mainland but have become separated by geological changes. Animal life on these oceanic islands is altogether different from that found in any other part of the world, but it most closely resembles that on the nearest mainland of which the island originally was a part. The explanation is that when, by submergence of the connecting land, the peninsula became an island, the animals thus caught had to adapt themselves to the new conditions. Some succeeded for one reason or another and lived to perpetuate their offspring, which was better adapted to the new style of life than their parents had been. The reader will notice that the conditions to which animals must adapt themselves are static. So far as the animals are concerned they are unchangeable. If the animals can adapt themselves they live, and if they cannot they die.

Man, on the other hand, can change his environment. He found the horse too slow and invented the railroad and automobile. Again, when letters caused delay, the telephone, telegraph, and radio were discovered. We have accepted these innovations so readily that people are prone to assume that man looks forward to changes and accepts them gladly. But, unfortunately, this is not the case. Even physical inventions—the most readily accepted innovations—have, as we have seen, often met determined opposition.

Conservatism—unwillingness to discard the old and adopt the new—was shown when steam was first proposed as a substitute for sails. “The parting with sails as the motive reliance of a ship of war,” says Mahan in *From Sail to Steam*, “was characterized by an extreme conservatism. Steam was accepted first as an auxiliary for towing, etc. A man of unusual intelligence maintained that steam would never maintain over sail; the steamer broke down, and owing to the fuel question could never be as self-contained as a sailing-ship.”

When it was proposed to introduce steam-power into the British navy, Sir Charles Napier, one of England’s famous military commanders, said in a speech: “When we enter Her Majesty’s service we go prepared to be riddled by bullets or to be blown to pieces by shot and shell; but, Mr. Speaker, we do not go prepared to be boiled alive.”

Rear-Admiral Sir William Symonds wrote to a friend: “I consider steamers of every description in the greatest peril when it is necessary to use broadside guns in close action; not alone from their liability to be disabled from shots striking their steam-chests, steam-pipes, and machinery, but from the great probability of explosions caused by sparks from the funnel.”

When Congress, in the fifties, ordered six steam-frigates the steam-power was ridiculously small. It was intended to serve merely as an auxiliary to the sails. The “elder statesmen” could not bring themselves to accept the new idea.

The same prejudice and violent opposition worked against the adoption of iron for the defense of war vessels. Armored ships were said by one admiral to show lack of foresight. Even Farragut raised his powerful voice against protective armor when he said: “The best protection against the enemy’s fire is a well-directed fire from our own guns.”

The controversy between breech-loading and muzzle-loading guns is so recent as to fall within the memory of

men now living. The advocates of the old notions obscured the issue by emphasizing the mechanical difficulties of perfecting the breech-loaders. This is an illustration of rationalization—the attempt to justify one's conservatism by evading the fundamental question and stressing the difficulties of the change.

The adoption of shells in place of solid shot met the same mental resistance that had to be overcome by the advocates of steam, and metal protection for our ships of war. All sorts of curious objections were raised by the conservatives of those days: solid shot was said to be more accurate, and to have a greater range and penetrating power. Yet now we know that these were merely excuses of those who did not want to think.

Even after railroads had overcome the first resistance, and many had proved their value, those connecting the Atlantic with the Pacific were vigorously opposed by business men. Nearly every one thought the scheme visionary and hopeless. It was predicted that the Union Pacific would be a commercial failure. Money needed to finance it was obtained with the greatest difficulty. At one period the stock was quoted as low as nine dollars, and about that time this railroad was described as a "right of way and a streak of rust." Goldwin Smith long maintained that the great lines of communication on the American continent should run from north to south; and on this ground he predicted that the Canadian Pacific Railway would never pay for its axle-grease.

The difficulty of gaining a hearing for new ideas to-day—even for inventions vital to industrial progress—has been forcefully stated by Fessenden.<sup>1</sup> He declares that no organization engaged in any specific field of work ever invents anything of importance, or adopts a significant invention in that field until forced to do so by outside competition.

<sup>1</sup> *Radio News*, vol. VI, p. 1140.

A formidable array of evidence is offered by Fessenden in support of this statement. The telegraph companies, he reminds us, invented neither the cable nor telephone, and when the telephone was offered to the Western Union for \$100,000 the company declined it; none of the companies directly interested invented the wireless telegraph, and they refused an offer to purchase it; the companies immediately concerned did not invent the wireless telephone, and they declined to buy the patents for \$250,000; neither the steam-turbine nor the internal-combustion engine was invented by steam-engine companies; none of the companies interested invented the Diesel engine, the turbo-electric or Diesel-electric drive, and the engineer of a large electric company insisted that electricity could never be more than an auxiliary for ships; the high-frequency alternator was not invented by electric companies, and they did not appreciate its value when given an opportunity to test it; and finally, the gyroscope compass, the inductor compass, and the wireless compass were outside inventions. And Fessenden indicates that this list contains only a few samples of the evidence at his disposal. Could a more severe indictment of business efficiency be prepared than this arraignment?

The facts which we have mentioned, showing the desire of those high in authority to maintain the *status quo* and not to permit new ideas to gain a hearing, are matters of history. We look back over the past and smile in our conceit at the progress of to-day. Those old fellows, we say, did not know what progress was, but to-day we are different. "Changes are going on all the time and we are eager for them." Unhappily, however, our longing for progress is only a myth concocted as a mental soothing syrup by men who want to justify their determination to adhere to what in their ignorance and mental petrification they call "safe and sane."

Only a few years ago, reports were made to the Navy



Department by officers at the China station regarding an improvement in sighting and firing. Though the evidence that our navy was inefficient was conclusive, the reports were "filed," and finally destroyed, as only another attempt of "radicals" to impugn the wisdom of the "High Command."

Finally, Admiral Sims went over the heads of the safe and sane men in the Navy Department and appealed directly to President Roosevelt, who issued peremptory orders that the improved sights and method of training should be tried, though nearly all of the senior officers opposed the new ideas; and it was not long before the rapid improvement in the marksmanship of the navy justified Admiral Sims's emergency treatment of the threatening cerebral ossification in the naval department.

The increased accuracy of heavy turret-guns that followed the introduction of improved sights and method of training, soon created further trouble for the elderly seers of the navy. The diagnosis indicated dreadnoughts, but the wiseacres again opposed such a radical innovation, until President Roosevelt once more forced the issue and insisted upon the adoption of this modern ship of war.

Acceptance of a new idea always creates additional troubles by discrediting related notions, and thus it was in the present instance. The caliber of guns as related to accuracy of gun-fire now required decision, and during this discussion the tendency of the backward to use fog words was again evident.

"Many of you may remember," said Admiral Sims in his address to the graduates of the Naval War College in 1921, "that this opposition was based upon the Department's official opinion that the greater the caliber of the gun the less its ability to hit; also upon the singular opinion implied by the phrase 'the smothering effect of the fire of the small secondary-battery guns'—a phrase without meaning when applied to the fire of such small guns against

battleship-armor, but, nevertheless, tenaciously believed in for many years by some of our leading authorities—a striking example of the peculiar power of a picturesque phrase when substituted for the careful reasoning that is of such vital importance in military matters.”

Careful reasoning is quite as important in business as in military matters, and the use of “picturesque phrases,” to which Admiral Sims refers, is always the method of those who strive to maintain their previously expressed opinions rather than to think the question out on the basis of objective facts. This is the way in which the defense mechanism works: it seeks justification—justification for opinions which have been expressed so many times that a change of front would imply error of judgment. No one wishes to admit that he has made a mistake on an important question. A strongly advocated opinion must be maintained against young upstarts who think that they can advise their elders. To yield to them would be humiliating, and so the men who were wise in their generation but who have not kept up with the progress of events, put on their armor of defense against facts, because nothing hurts one’s self-esteem so much as incontrovertible evidence.

The writer does not mean that men consciously decide to obscure and pervert the truth. No naval officer wishes to preserve an obsolete type of ship or gun-sight; and no business man, again, wants to maintain a policy that gives his more alert competitors an advantage in the commercial game which both are playing. Any man would indignantly deny that his mind is closed to new ideas, that he is not liberal toward suggestions of improvement, that he is opposed to progress. But before we are aware of it our opinions become all but irrevocably fixed, and then, after we have expressed our views among associates, we are loath to change lest our wisdom be doubted.

Our opinions are a very intimate part of our personality,

especially after we have taken a definite position and asserted our opinions positively. Their denial contradicts our good sense. Consequently, the impulse is to rush immediately into the lists in their defense when they seem endangered. Facts do not count at such a time. Indeed, we are blind to such insignificant details when once we have taken sides and championed a cause

Sometimes this defense of a challenged opinion takes a ludicrous form of argument, as when a former secretary of the navy expressed his willingness to stand on the bridge of the *Ostfriesland* while bombs were dropped upon it from aeroplanes. Probably he was glad that the bombers refused to be so discourteous as to blow him up. The experimental tests showed that without a miraculous intervention it would have been necessary to find a new chief for the navy, had this reckless offer been accepted. But the stock of naval secretaries was considerably below par at that time and probably the government would have placed an order before the risk was taken. The secretary had given a positive opinion against the value of bombing-planes, and the only convincing argument which he could discover was to offer his valuable body as a target.

A naval captain who had also disparaged bombing-planes, though thinking the risk too great to offer his life as collateral, maintained that bombers could not hit a moving vessel, that in any case bombs do not do much damage, that a bomb with less than 3,000 pounds of T. N. T. would not penetrate the deck, and, finally, that if the bombers could hit a moving vessel and do serious damage, a battleship would quickly shoot down the planes. This delightful bit of sophistry is rendered the more charming when one realizes that the question at issue was an experimental and not a logical problem. When the tests were made the opponents of bombing-planes were silenced for a moment, and the life of our picturesque secretary of the navy was spared.

Illustrations of unalterably fixed opinions, however, influence but slightly the mental attitude of those who learn of them. When questions have been settled and the opponents of progress in business, politics, or other lines, have become only a memory, man usually takes a complacent attitude of self-righteousness. Who, for example, would not have known, as Lincoln said, that the question whether the heavy armor of the *Monitor* would sink the vessel was a matter of simple mathematics? Yet Fox, assistant secretary of the navy, and the naval board, boldly asserted that the *Monitor* would not float. Their opinions were organized, filed away, and locked so that they could not be changed.

We readily see the faults of others, but ignore our own. Acquaintances, and even friends, have fixed ideas—opinions so firmly established that they cannot be altered—but “we are liberal and open-minded.” “We look for facts and when we get them we gladly change our views.” Indeed, one might think that nothing is so delectable as a change of opinion when the evidence is sufficient. Unfortunately, however, this is one of the pleasant delusions to which man is heir. It is one of the myths that man invented to persuade himself that he is open-minded and progressive. Few could respect themselves were they convinced that their minds are closed to ideas as tightly as the shell of a clam in the presence of an enemy. Consequently, when the protective mechanism comes to their aid, men say: “I am a thinking individual, and I will change my opinion if you will give me facts that warrant a change of belief.” But facts are never convincing when they are in opposition to beliefs and opinions amid which one has grown up and which have taken on a halo of sanctity.

The conviction is rather common also that liberalism in one line spreads through all of the affairs of life. Open-mindedness, in other words, when it exists at all, is thought

to include all questions of policy. Yet observation shows that a man may be progressive in politics and excessively conservative in business; or one may be liberal in religion and jog along with the rear-camp followers in politics and in business.

As a bit of evidence for the difficulty of being open-minded even in matters in which one is an outstanding progressive, a quotation from an address of Admiral Sims before the Naval War College is suggestive. The admiral, musing upon the mental obstructions in the way of new ideas, said: "Doubtless many of us have suffered from the pain of a new idea, and some have recorded their suffering in writing. I remember ridiculing many years ago an imaginary article describing a naval battle of the future, because the author had ships destroying one another at 12,000 yards; and I am consoled only by the fact that many of my seniors inveighed at the time against the absurd idea that 'naval actions could ever be fought at the enormous range of 7,000 yards.'" This confession of faith in liberalism and in its difficulties is the more impressive because Admiral Sims is regarded as a radical on naval questions.

What, then, is the meaning of these facts for business? The answer is that they are just as important for business men as for those in the professions or in the navy. Commerce and industry do not exempt those who engage in them from the frailties of the human mind. Business men think in obscure word-formulas as much and as often as those in other pursuits. When men say that Henry Ford "defies economic laws" they are using a formula, because Mr. Ford has met the business standard of success. He has done what was impossible according to "the economic law" and its devotees. In a time of high prices he cut the cost of his machines without lowering wages; finding steel too high because of "the economic law" he manufactured his own at a lower cost, again without reducing

wages; he found a market where his competitors had vainly searched with a microscope; and when the New York bankers thought that they had him in their grasp, he slipped through their fingers, once more defying "the economic law."

We have already spoken of the ease with which business men fall victims to pretentious "psychologists" who roam through the country luxuriating on the fat fees paid by worshippers of large-sounding phrases, the obscurity of which makes them sound like wisdom. Were this tendency to accept vague words limited to occult matters, it would have little significance for business men, since an evening's debauchery in moonshine language might afford recreation. But the substitution of meaningless phrases for facts with intelligible content is a symptom of a racial malady which permeates and undermines the foundation of all thinking.

Primitive man lived on myths and occult explanations. His efforts were directed toward adaptation to static conditions. Change had no meaning for him because he did not expect it. If an emergency arose, such as the adoption of a superior weapon by neighboring enemies or the introduction of an unknown contagious disease, the tribe paid the penalty by innumerable deaths or, perhaps, extinction. Competition was usually within known and customary limits so that the static mentality of these men and the meaningless explanations of "hard times" which they attributed to vicious spirits, did not seriously interfere with the transaction of their business. But to-day, in the midst of almost inconceivably sudden changes from inventions and other revolutionary ideas, alertness of mind and ability to discriminate fact from fiction are absolutely necessary for business success.

Efficiency is largely a psychological matter. The best machines may be used; improved devices may be installed; the management may buy at the lowest price and sell

at a handsome profit over the cost of the raw material plus the estimated expense of manufacturing it; but the firm may still lose money because of its neglect of the human factors.

We have spoken elsewhere of that phase of the psychology of employees which falls under personnel management, and at present we are concerned chiefly with the efficiency of the individual, whether he be manager or subordinate. We have found that man tends to think in vague terms, that he uses phrases which, intelligible perhaps in themselves, are meaningless when applied to the problem before him, that he readily falls into conventional language which obscures the questions which require knowledge, and that he accepts ready-made solutions which do not take into account the changed conditions.

Clearly, then, a man who would be efficient should not make hideous scarecrows and then proceed to get frightened at the monsters which he has created. He should not be afraid of ideas merely because he has not heard of them or because they are called visionary and radical; and he should remember that one is always timid in the presence of the unusual. A man afflicted with the phrase-disease does not investigate.

We have been speaking of seeing problems, of finding those which others have missed, and of discovering meaning in questions that to the casual observer look insignificant. This is what Joseph Choate did. His eloquence was not the bombast of empty words harmoniously arranged to please the uncritical ear. It was the clear and forceful presentation of facts which had escaped the notice of the opposing advocate. He found problems which others had not discovered. This eminent lawyer "did not argue many great questions," one writer has said, "but he made little ones great."

The first step in thinking is to get the facts that bear upon the question at issue, and when one has done this one

has gone a long way toward understanding the problem, even though the solution may still be uncertain. Facts have a strange way of guiding a searcher toward his goal. They did this with Darwin, who collected data and organized his observations for many years before he found the explanation of his difficulties. Darwin, however, followed his facts and therein lay his success. But the rather common trouble with thinking is that the self-styled thinker does not want to go where the facts lead.

Man usually forms his opinions first and then if he takes the trouble to collect facts—a thing which he rarely does—he selects those which fortify his views and discards the others as irrelevant or false. This defect in thinking—getting opinions and then trying to justify them—ranks with the use of vague word-formulas in smothering thought. It is usually caused by the fixed systems of thoughts that possess the man.

Since we have spoken in an earlier chapter about organized systems of thought and the effect of substituting word-formulas for thinking, it will be unnecessary to say more at present than to indicate their disastrous influence upon mental efficiency. Study of oneself to learn one's various prejudices is, of course, essential. The difficulty, however, is that no one likes to admit his prejudices. The word has an unpleasant implication which men are more ready to impute to acquaintances than to themselves. Mental complexes—settled systems of thought—are more euphonious words for fixed ideas that prevent clear, straight thinking.

Such a complex was observed by the writer in a business man a few days ago. "I believe that the best method of creating an incentive in subordinates is to appeal to selfish individual motives," was the way in which this man betrayed his fixed thoughts on this subject. If he was right, co-operation is impossible, because co-operation means working for a common good in which each indi-



vidual profits from the advantage of all. Selfishness sees only the benefit that to-morrow will bring, while co-operation takes a larger view that extends into the distant future, and assumes that one profits most when the others with whom one is associated are also benefited. Aside from argument, however, experimental handling of men has shown that narrow selfishness is neither the only nor the most effective impulse to which appeal can be made.

It would be well at times, as we have found, to act the lawyer with oneself—to place before the jury the facts about the opinions that one holds. Unfortunately, however, in such a court we ourselves are prosecuting attorney, lawyer for the defense, and the jury which must decide the case. Further, as we have seen, in such a trial the prosecuting attorney is deceptively keen to protect the defendant; and the jury is not unprejudiced. Still, such a self-examination will not be without value if the defendant is frank in his answers to the questions he puts to himself in his capacity of prosecuting attorney. He is likely to find that he has no very satisfactory reasons for his views beyond the fact that he has always heard them. The advantage of trying oneself before the bar of reason is that it aids in discovering defects not easily discernible. But one must be square with oneself, and this is difficult in matters of self-criticism. Carlyle, for example, failed in honesty with himself when his fixed opposition to evolution led him to say of Darwin: "A good sort of man this Darwin is, and well-meaning, but with very little intellect."

The arguments for novel ideas must be viewed objectively if they are to be understood. They should be kept free from all emotional entanglements, and from confusing alliances with self-interests and desires. If a mere fraction of the predicted disasters from innovations had occurred, the earth would be peopled only with raving maniacs. Happily, however, the outcome of new ideas is never as serious as the anticipation. Usually, indeed, these inno-

ventions turn out quite successfully, and those who live to enjoy their beneficial effects wonder why they ever expected such terrible results. The imagination is a serious menace to thinking when it gets its inspiration from a fixed mental complex.

Fixed systems of thoughts are habits of thinking, and consequently those who would be efficient must become acquainted with the disadvantages as well as the advantages of habit. This information will enable them to make an offensive and defensive alliance with their habits so as to use them to advantage. But to do this one should know why habits when once formed are so irresistible.

Habits are primarily the result of changes in the nervous system. They are physical phenomena and not mental. This explains why bad habits are so difficult to overcome. If they were merely mental, we could decide to change them and perhaps do it without much trouble, but physical habits are like the habits of shoes which have become fitted to our feet, or the habit of a book to open at a certain page.

To be sure, we are not accustomed to speak of the habits of shoes and books, but that is merely because we have reserved the word for the acquired behavior of animals and man. The reason for the fixed responses of such non-living things as shoes, and clothes and books, however, is the same as for the habits of man. In both cases, behavior is caused by a change in the substance that underlies action, and in man this substance is the muscles and nervous system.

We know that by exercise we can develop strength in the muscles of our arms or legs, and the explanation is that activity breaks down tissues which are restored during rest. But this restoration includes an adaptive process which tends to meet the new demands upon the muscles. In other words, the muscles change to meet the requirement of stress and strain when this requirement

is persistent. They adapt themselves to the use to which they are put.

But muscles and nerves not only adapt themselves to stress and strain; they also fit into the peculiarities or methods of work that one adopts, and when they have done this it is as hard to change our method as it would be to wear shoes which have become fitted to the feet of another man. The explanation of this is that one of the evolutionary purposes of habit is to "fix" actions so that we can repeat them exactly without fatigue.

Many acts must, of course, be repeated, and it is important that the repetition be essentially exact and without fatigue. If it were necessary to learn how to button a collar or to put a pin into our clothing whenever there is need, there would be little time left for other things. Observation of a little child trying to do either of these things will convince one of the length of time each takes, and these acts are only samples of almost innumerable things that we must do each day. But habits do not end with muscular acts of skill. Mental habits are quite as real as are the physical.

Cashiers and accountants work with a rapidity which would exhaust those unaccustomed to the strain, and newspaper reporters soon adapt themselves to the rapidity with which they must prepare their copy. The nervous system evidently adapts itself to its demands as do the muscles. But, as we have said, this adaptation results in a repetition of the same methods. This is the advantage of habit. Things which should always be done in the same way are quickly learned and then we do them automatically without error or fatigue. But one reason why we are unfatigued is that we do not need to give thought to acts of habit, and this reveals their danger for efficiency.

Since habit eliminates attention to the work, it is clear that one who would be efficient must consciously and thoughtfully decide which acts shall be relegated to habit

and which shall be left free for intelligent direction. But the difficulty in following this principle lies in man's tendency to drop into a routine because it is the easiest way of doing the day's work.

Habits are trouble-savers. They also relieve one of the effort that thinking requires. This is one of their evolutionary purposes. The lower animals cannot think, and some way had to be found to save them in spite of their low intelligence. Consequently, a given species repeated the same acts; its members went to the same feeding-ground at the same time of the year; birds migrated every fall to the same warm climate; and beavers learned to make their marvelous dams and houses. Those animals that adopted the same beneficial habits survived, and those that did not perished. In this way the instincts of the species were established.

Man is only an incident in the evolutionary process, and nature quite properly took no account of the moderate improvement of his brain over that of the lower animals. She seems to have assumed that he would need all of the protection that she gave his less-endowed ancestors and so she made him quite as much a creature of habit. As a result, man tends to repeat what he has done and to do it quite as unconsciously as do the lower animals. But to make the matter still worse, man has allowed habit to rule his intelligence—the intelligence that was bequeathed to him as a bonus by some freak of nature. He does not distinguish between the acts which efficiency requires should be made habitual and those that should be reserved for thoughtful direction and control. For this reason, man becomes a slave to his habits instead of making them his allies in furthering achievements.

Habits continue without alteration when no compelling motive forces a change; and, as a consequence, if they were acquired without intelligent selection, they remain inefficient. Executives usually get their habits by a

drifting process. Many things must be done and the executive follows the method that produces the quickest results, quite unconscious that he is cementing his method of daily work for the future. Inability to delegate authority, for example, is quite as much a habit as is the stereotyped form of letter which is characteristic of business men.

With the subordinate, the determining force that fixes habits is the spirit of the factory, office or sales force. Men want to succeed, but, as we have said, there is no established standard of success, and man is imitative. He therefore takes his cue from what he sees about him. That is his only visible standard of success, and consequently he adapts himself to it. But this adjustment is in large measure unconscious and therefore unintelligent. The spirit of the organization, of which we have already spoken, thus plays an important rôle in determining the habits which subordinates shall adopt.

But habit, as we know, extends into the realm of thought. Inclination to look into the future—to see the inevitable and to prepare for it—is as much a matter of habit as is the hour of arising in the morning. The tendency to resist the new, of which we have spoken many times, is especially disastrous in business because the onrush of the unavoidable finds it wholly unprepared. The habit of looking ahead, of seeing changes in the making, is a tremendously valuable mental asset.

Business men are often determined that the inevitable shall not be realized. The time which should be given to preparation for adjustment is spent in a vain struggle to oppose the approach of the irresistible. The path of industry is cluttered with business wrecks left by men who tried to resist the onward march of progress. We call the collection of débris from these wrecks reorganization.

Men are frightened at the immensity of the obstructions in their way. But this is because they are so close. Near objects always loom large, especially when seen through the

mist of ignorance of the facts. Wage-earners were terrified at the spectre of machinery, stage-coach owners at the competition of railroads, butchers at the advent of packing-houses, and the manufacturers of genuine articles at the invention of synthetic imitations. Things are never as dangerous as they look when seen near by.

Mental efficiency, to summarize briefly, requires a free mind, a mind unfettered by beliefs and opinions that have been absorbed as a sponge draws water into itself. New ideas should be judged frankly and generously instead of by the effects that we imagine they will have; and that the test may be fair, these new notions should be given opportunity to justify themselves. Ideas are not improved by antiquity. Those that proved themselves in the past did so because they suited earlier times, but as conditions change the ideas of an efficient man will alter to conform to the new circumstances.

Vague word-formulas have no mystic influence over the man who thinks. If he is told that the Constitution must be preserved, he will reply that several important amendments have already changed the original draft and that further progress may require other alterations. To such a man obscurity will not look like wisdom.

Further, an efficient man will subject himself at times to a searching examination to ascertain the source of his beliefs and opinions. Men have found that the bodily organs require a periodic examination that incipient diseases may be discovered before they become incurable; and, with the same purpose also, it would be well to search the mind. To be sure, defects of thinking do not result in death; they only make a man thus afflicted an antiquated specimen living in modern times.

An efficient man selects his habits, reserving for reflective consideration the acts and decisions which thoughtful attention may improve. He knows that adaptation to conditions is a subtle influence which is always busy,

and will make his mind as inelastic as the arteries when once the hardening process has them in its grip.

Finally, one who wishes to be efficient will look the inevitable boldly in the face and plan to readjust oneself before it is too late. He will view unfalteringly approaching changes. He will study causes. He will know that their explanation is to be found in man's nature, and in its relations to conditions. The world has never halted in its course, and the efficient man will not rashly try to hold it back. He will endeavor to understand the thoughts and emotions which are the driving force of the changes that come and in turn give way to others; and, in his study of these motives, the efficient man will try to be impersonal, and unbiased by the conventional business code—a code written for an earlier day and denying the right of alteration, though time moves on.