

## XII

### *Rules of the Workshop*

#### TEMPO OF PERFORMANCE

Select work whose natural tempo of performance suits your own. A job that makes you keep moving faster than is comfortable is fully as bad as a job which slows you down to the point of irritation. Many occupations have been analyzed with respect to the speeds at which workers must proceed. Look up the records before you choose your career. Telegraph operators and typists have to be much nimbler than workers in rolling mills and blast furnaces. Farmers usually must move at a pace so slow that a high-strung city man would go wild imitating him.

Inquire carefully into the facts as presented by reliable vocational psychologists. If you cannot get the information you want regarding tempo, go to somebody working on the job in question and find out directly for yourself.

Do not think that, because you can hit the pace of a job on a short try-out, you can hold it year in and year out. A fairly prolonged test is the only sure one here.

## RULES OF REST

Begin as early in life as possible to form the habit of taking many short rests from your work but no very long rests. In the course of a single day, you may pause for a breathing spell of five or ten minutes at least once every hour or so. In the course of a week, take off two or three periods of four or five hours each for complete relaxation. Now and then, take off a whole day. But beware of long vacations devoted to nothing at all! During such idleness the subtle habits of skill which you have been forming invisibly crumble—perhaps just a little but enough to set you back weeks or even months. All depends, of course, upon the kind of work you do.

In some cases, no doubt, a clean break is necessary. This is especially true of sedentary and closely confined workers engaged in tasks not entirely pleasant and stimulating. If your job is purely a bread-and-butter one; if you dislike it but plug away at it because it is the best you can find, then plainly the general rule laid down above must be precisely reversed. Escape from the kind of work you do on the job as much as possible. The more completely you do this, the better you will be able to handle the hated routine during working hours.

When you stop work for the day, stop all over. Never take your day's duties to bed with you. These make uncomfortable bed-fellows.

There are two ways of dropping work from your mind. One is relaxation, the other is a shift to some totally different activity, either work or play. Choose either method according to your own nature and the particular conditions of time and place. If there is no work nor play you would like to take up after working hours, then relax. If, after trying in vain to relax, find quickly some new form of work or play into which you can throw yourself.

There are many types of people who gain nothing from total rest. In many cases, a profound shift in the direction of energy outlet will accomplish as much as total relaxation, for thus certain systems are rested and others put to work.

If, when young, you are doing pretty heavy work, rest for at least five minutes whenever you begin to sense exhaustion. And if exerting yourself to the utmost, rest more than half an hour between spurts.

If you are between thirty and forty-five, rest from ten to fifteen minutes when weary over fairly hard work; and rest a full hour after each extreme effort.

This rule must be slightly modified according to the weather. If the day is hot, you can shorten the period of rest; and if cold, you must lengthen it somewhat. Muscles recover faster in warm air than in cold.

If you have charge of workers engaged in heavy muscular labor, apply the rule to them;

and you will surely get more done in the course of the day.

Always experiment with yourself to discover the shortest time you require for resting after any hard work, physical or mental. Resting too long is a waste of time.

Find your own best method of resting. It may differ greatly from ways recommended in good books. One man achieves relaxation and rest most deftly by listening to music; another by reading a detective story; a third by taking a long walk; and so on. How find your own best way? Only by trying and testing many ways, of course. Go at this task seriously, unless resting is no problem at all for you.

No matter what your muscular activity, follow two rules. Never exert yourself to the utmost. And never diminish your efforts once you have got going. When you move, you overcome resistance. You may increase this resistance from day to day if you are training yourself for some muscular achievement. But you must never vary the resistance in a single period, for your muscle tensions then vary and are subject to sudden shocks that prohibit their smooth, economical functioning.

Work done under tension is always poor work. Find the source of the tension. It may be a worry. It may be poor posture. It may be a clumsy, ill planned series of movements executed while at work. It may be induced by eye strain or by enforced silence while on the job or by

lack of proper food. Check up on yourself systematically. Don't guess! Having located the trouble, remedy it at once. If you don't, you waste days, weeks, perhaps months. And that is partial suicide.

Worry is the greatest enemy of relaxation.

If you are a chronic worrier, turn most of your folly to good account by always having on hand many jobs requiring physical work. Many women can turn to the wash board, the iron, and the dishpan to escape little worries. If your troubles are serious, do something about them. Any positive action is better than none at all. But stop, look, and listen before you act, except in extreme emergencies.

If you still are victimized by the habit, make a list of everything that disturbs you. Then make a list of every positive act you have made to eliminate each worry. If you have done all you can and still cannot solve sundry problems, forget them by deliberately turning your mind to the demands of the day.

Write poems, epics, sonnets, and psalms about worry. But for heaven's sake, don't make a nuisance of yourself to your family and your friends.

Avoid mental work when thirsty or exhausted. Avoid it, too, when you suffer from prolonged hunger, although moderate hunger due to a self-imposed minimum diet may clarify your mind. Before doing hard mental work, re-

lax completely. And in doing complex mental work at high speed, rest every ten or fifteen minutes.

If your mind is tired, take up some pleasant physical exercise. But if your muscles ache, relax and take up some pleasant mental activity.

If your mind insists upon shifting to some fresh subject, after a spell of boredom or intensive concentration, there is no harm in so doing, provided that you have no eye strain. If your muscles crave to tackle some fresh exercise after they have been fatigued in an earlier line of work, it is not so easy to decide what you should do. All depends on the degree of difference between the former task and the new one. The greater the difference, the less the possible harm of going on to the new task. That is to say, if you have been practising the pole vault for two hours, it would be foolish to tackle the hurdles or the high jump next; but it might be all right to sit down at the piano and play for an hour, even though you use up as much energy over the keys as in jumping. The outlets are totally different; hence the strain of the earlier work is relieved altogether.

Test your own reactions to various kinds of physical effort. Then you will learn how safe it is to start a fresh set of muscles going after one set has become exhausted.

Above all, never attempt to make swift decisions until you have fully recovered from

either physical or mental fatigue. You can trust your judgment in matters requiring prompt conclusion only when your body and mind are fresh and alert.

Study your own symptoms of fatigue, so that you can always stop work in time to avoid overstrain. No two people behave exactly alike when exhausted. So we cannot lay down flat rules here. But there are sundry things to watch. For instance, many people find that, in fatigue, their hands tremble perceptibly when they hold their arms out horizontally for a minute. Try this on yourself. Again, other people flush at the temples. Do you? In extreme weariness the blood often pounds in one's ears. Have you ever noticed this? Certain people detect the approach of exhaustion by a faint nausea. Do you? Many of us can confirm the observation made by Gulick many years ago: "When I am tired," he wrote, "I cannot distinguish between those things which are important enough to keep me at work and those which are not. I only see how many things are undone; and I tend to go on and on." I think this is quite a common reaction, especially among housewives who, without realizing it, walk miles in the course of a day's toil.

Experiment to find out what positions you can hold for several hours at a stretch without fatigue. For example, William Beebe discovered that he could squat on his heels for hours without weariness if his chin rested on his knees, or flat-footed with his armpits on his

knees, or on the balls of the feet with elbows on knees.

#### RULES OF RELAXATION

Learn to relax. This is just as much of an art and technique as learning to play the piano or to master golf. Few have achieved such useful results in the study of relaxation as Edmund S. Jacobson, who practised first on himself and later on many others.\* Jacobson has found that "Whatever the natural propensities of an individual for relaxation, there is always considerably more that he can be taught; just as anyone with a naturally good voice nevertheless improves greatly with proper training."

To relax properly, you must eliminate all tension. This presupposes that you can locate the tension. But most people don't know how to do this. Jacobson believes that when an individual reports muscle tension, he should always be asked, "A tension to do what?" If the subject cannot answer this question, the exact nature of the tension remains obscure. Tensions may occur singly, as in the strain of a single muscle, or in systems, as in extreme anxieties of the neurotic type. Subtle and swiftly changing inner tensions are difficult to analyze through introspection. However, if they persist, they can be studied in terms of their functions. For a tension is always a stress or strain to do something.

\* Edmund Jacobson. "Progressive Relaxation." 1929. By permission of the University of Chicago Press.



Thus the neurotic can always be forced in time to answer the question, "Anxious over what?"

Just as the average worker (and I am tempted to say even the average person) doesn't know when he needs immediate medical attention, likewise the average person doesn't know when he is tense. How, then, can he learn to identify the tension in order to relax it?

Jacobson finds that relaxation is often prevented by too close observation of the muscles, which keeps them tense, setting up at the same time tensions from sheer attention. On the other hand, the tense person must locate the region of the tension. So, says Jacobson, "a happy medium is reached when, with a minimum of attention, the disturbance is located and then relaxed."

The following technique has been used, so far as I know, only with patients under medical supervision. I see no reason why, however, it may not be practised with good results by normal people who are seriously interested in training themselves to relax.

Practise an hour or so every day.

Begin as follows:

Lie on your back, or, if you wish, sit in a chair, with your arms at your sides. Do not cross your legs. The room must be quiet.

Begin making tense the large muscle groups. To bring out the sensation of any one of these clearly, contract the part steadily while someone retards the movement. As far as pos-

sible, keep all other muscles relaxed so that you clearly identify the tension in the muscle you are studying. For example, when the forearm is flexed, the upper arm should rest upon the bed so that shoulder muscles are not in play; the fingers and hand must also be limp. Sometimes it is easier to identify these sensations if you close your eyes.

Practise in this order:

Contract the muscles of the forearm, upper arm, hand flexors, hand extensors of the left arm and hand.

Do the same with the right.

Now contract flexors and extensors of the left foot; then the left leg. Do the same thing with the right foot and leg. Follow the same procedure with the major muscles of the body.

Next contract the muscles that raise the shoulders, then those that bend the head to the right, to the left, forward, and backward. Finally locate the tensions in speech muscles—tongue, lips, jaws, and throat.

At first, you will experience what is called "residual tension." The clinical signs here are the following: reflex swallowing, slightly irregular respiration and pulse, slight activities such as wrinkling the forehead, frowning, moving the eyeballs, winking rapidly, reacting to any sudden noise, and an active mind. The essence of the Jacobson method is to eliminate these. Usually the tension, which may be surprisingly slight, disappears gradually. In many cases, it takes fif-

teen minutes progressively to relax a single part, such as the arm, leg, or foot.

If practice at relaxation makes you nervous, your method is wrong. Probably you are making various efforts instead of really relaxing. *You must never make an effort to relax.*

After you have clearly identified a given tension, practise at inducing it in a weaker form. Weaken it progressively as far as you can.

As your technique improves, you will note the following characteristics:

Your mind is decreasingly active; for thought control really rests on muscle control.

You experience little or no visual imagery. During visual imagination and recollection, delicate electrical methods show the presence of eye-movements or accommodation. Highly trained subjects report that when eye muscles are completely relaxed, they experience neither visual imagination nor recollection. The technique of eye relaxation, however, is too complex to discuss here.

Your emotions die out as relaxation progresses.

Next, practise at relaxation while you are up and at work. This involves selective relaxation. You must learn to do the essentials and omit the non-essentials, make necessary movements and omit all others.

After long experiment, Jacobson is persuaded that "every learning process depends upon the acquisition of certain tensions with

concomitant relaxations." This is evident in most arts. Proper voice placement depends largely on proper relaxation. So do good games of tennis, golf, and the like. So does skill in sculpture. So does dancing, which is ruined by rigid tensions.

Years ago I learned a trick of relaxation which has prevented all strain in public lecturing, talking, and the like. The approximate focus of this is the diaphragm. It extends up into the larynx, and when established, speech is maintained only by very deep breathing. The mouth seems to drop almost entirely out of the picture. It feels lax, while the lips are mere rags flapping in the breeze of my discourse. Listeners say they detect no poor articulation. The feeling of total relaxation often extends up through both cheeks. In this comfortable condition I have frequently spoken for two hours continuously without the slightest fatigue at the end, and have then carried on conversation for two or three hours afterward. At the end of this time, I often have a definite fatigue, which is nearly always broken down by stopping talking and taking a walk.

Learn how to relax on a minute's notice, as most great men of unusual achievement can do. Do not imagine that you accomplish this merely by lying down. Serious tensions persist even then, as you have just seen. Do not expect to master these at the first try. It may take weeks or even months to develop the trick of easing down.

If you drive hard and tend to overwork, using much physical energy throughout the day, try the practice of the busy college president reported by Irving Fisher. He explained his working ability and long life thus: "My secret is that I never ran when I could walk, never walked when I could stand, never stood when I could sit, and never sat when I could lie down."

This does not apply to people whose energy is used chiefly in mental work, and who spend most of the day tied to office desks. In such cases, reverse this rule, especially when you tend toward mental fatigue.

If you must relax quickly, for some special reason, try a tepid bath—that is, one at blood temperature or a trifle below. If this fails to work quickly enough, use—as a last resort only!—some simple drug like beer or bromides. Which drug you use is a matter of personal experiment. Thousands relax best after drinking considerable beer, while others are only upset by it. So too with bromides. Find your own best sedative.

In certain types of occupations, there is no more effective sedative than smoking. For the mild narcosis thus set up leads to the relaxation needed to make delicate adjustments in such work as surgery, dentistry, piano and violin playing. Tobacco is the enemy of energies, but the friend of relaxation.

If you are a pianist, to get complete relaxation of fingers and hands, try Paderewski's

method of soaking the hands in very hot water immediately before playing.

Practise relaxing often. At least five or six times during your working day, either lie down or sit in an easy chair; then relax your feet and hands at first, after which you should relax the limbs. Next relax the throat and eyes. With careful drill you may learn to relax all over in a few minutes. Then you will find that ten minutes in this condition rests you as much as an hour of ordinary sleep.

Experiment with yourself to find the easiest position in relaxing. Nobody can tell you which way is best. Begin the tests when next you go to bed. Watch carefully the relative ease with which you go limp in each of the main resting postures, namely, lying flat on your back, lying on your face, lying on the right side, lying on the left side, and lying curled up on either side.

Experiment with the positions of your arms. Try stretching them out straight beside you, then folding them across your breast, then stretching them up above your head, and finally resting your head on them in cradle fashion.

In connection with each position, make a test with slow, deep breathing. Notice to what extent it speeds up complete limpness in each position. The effect is likely to differ greatly according to position. This may surprise you.

When sitting in a chair, especially while working, see to it that your lower thigh muscles come in contact with the chair bottom through-

out their entire length. Even pressure along them relaxes them best and does not tend to cut off the blood flow.

At the same time, rest your feet on their edges or else on the heels, so as to relax the sole muscles. Some people dislike the tingle that often develops in the soles, but this can usually be overcome simply by attending to one's work. If it cannot, it is possible to adopt another foot position nearly as good. Place one foot over the other so that one ankle rides upon the under one. One foot is thus lifted clean off the floor, while the other one is tilted sidewise and so pretty well relaxed.

Do not misconstrue this rule to mean that you must hold any of these positions fixedly. Shift about somewhat from time to time; but always return to the relaxed position often and remain in it until some slight tension develops.

To relax best of all, you will probably find that it takes less energy to recline at the angle of a steamer chair than to lie flat on your back.

#### THE ART OF SLEEP

How shall you sleep?

Nobody can tell you. You must be your own guide after many experiments. The best we can do is to offer some suggestions successfully practised by many people. Adopt those that fit your case. Only one general, though still

tentative, statement can be made. Sleep probably follows and is induced by *complete* muscular relaxation, either voluntary or involuntary. Your problem is to achieve this. But how?

Here is the first rule. It probably fits 99 out of 100 cases. Never work hard for at least one full hour before going to bed. Thus you avoid establishing tensions and muscle sets that are broken down with difficulty and prevent complete relaxation. And never eat a hearty meal just before bedtime. Light food, especially fruit juice or warm milk, is good for some people, but pure poison to others. Many a man cannot even lie down for one full hour after eating anything whatever.

Once in bed, practise the technique of progressive relaxation just described.

Don't think that you must slavishly follow the social habit of one single stretch of sleep. You may be better off if you sleep during several periods of two to four hours each through the day and night. Many people are handicapped in their energies merely as a result of the astronomical cycles. Man is not built to fit the solar system!

Don't oversleep. Get up fairly soon after waking; a late morning doze may ruin your day. Why, nobody knows. But many a man spends dull, sodden days simply because he indulges in cat-naps after first waking up in the morning.

Sleep in a wide bed. You thereby reduce



muscle tension. Donald Laird suspects that the narrow bed induces a faint fear of falling out of bed which results in an unconscious holding on, and secondly that it is more likely to be cold because the covers loosen easily. I add a third factor: movements of the body in sleep tend to put the hand, foot, and other parts over the edge of the bed, thus setting up equilibrating reflexes and resulting tensions. Laird believes that a thirty-nine inch mattress is the narrowest that should be used. There are, however, thousands of beds only thirty inches wide, while hospital beds are only thirty-six inches. Many people sleep best of all alone in a double bed.

Beds that are springy, shaky, and squeaky are obviously bad. Laird tested three kinds of springs: very soft, medium soft, and a third "so stiff as to be almost as hard as an ironing board." He found that the softest required the most energy to sleep on, the very stiff spring next most, while best of all was the medium spring.

Find your own best position in sleep. Don't sleep rolled up in a ball; this increases muscle tensions. Nor should you stretch out absolutely straight. Your leg muscles then become tense.

If you are considerably over-weight, don't sleep on your back. This causes pressure of the internal organs on the giant blood vessels in front of the backbone, reducing the blood flow and thereby straining the heart.

Make your evenings dull. Stop working at least one hour before you go to bed. If you tend to lie awake wrestling with your problems, try keeping paper and pencil at your bedside and making notes of these as they occur to you. Reduce to a minimum your evening's outside activities, including the movies, if you tend to be wakeful. If you have difficulty getting to sleep, don't worry about it. Try various experiments to conquer your wakefulness. Some people have found that perfumes or a new aromatic in the bedroom encourage deeper, slower breathing, giving a simple focus of attention and hence helping in sleep. In some cases, even moth balls have proved effective.

If you are often awakened presumably by certain noises, study these. Concentrate on them. Attend to nothing else. Study their patterns. Notice their rhythms. Try to get so accustomed to them in all their phases that through the sheer monotony of regular attention to these you learn habitually to adjust.

Are you troubled with wakefulness?

Then never worry over it. If you cannot fall asleep easily or cannot stay asleep, there is little sense in fretting about it. The harder you think about the whole business, the wider awake you become.

People who have been seriously plagued with insomnia often invent ingenious methods of conquering it, or else they learn how to manage pretty well without overcoming it. For

instance, one man always has on hand in his bedroom several interesting tasks; as soon as he finds sleep impossible, he arises, dresses, and takes up his work. He makes no effort to fall asleep. In fact, he finds it best to try to keep awake and busy.

Robert Drake, the biggest bridge builder in America, was for years plagued with asthmatic spasms, and had to get up every night in order to breathe. Standing at his drafting board in order to ease the spasms, he did his best work in designing bridges and planning manufacturing methods. As he grew drowsy, he would prop himself in a chair and doze. Then he would waken, alert, and ready to work again.

Many people lie awake wrestling with the problems of tomorrow. They cannot put these out of mind. This is a stubborn insomnia, yet amenable to ingenious controls. Some men make a rule of keeping pencil and paper at the bedside; whenever an idea about the problems pops up, they switch on the light and jot a memorandum. After an hour or two, they have dropped their tensions to the point of falling asleep.

If wakefulness persists, try drinking a glass of warm milk, eating light fruit, or some other simple food. Or else take a bath in water between  $92^{\circ}$  and  $97^{\circ}$ —about body temperature, but only on an empty stomach.

If nothing else works, try two opposite

techniques; first, that of Coué, and then that of Knight Dunlap. Try saying to yourself as you relax in bed, "I am falling asleep—I am falling asleep—I am falling asleep." Continue this until one of two things happens: either you are asleep, or you are still wider awake. If awake, reverse the engines completely. Get up and dress, no matter what hour it is; start doing whatever most interests you and make a firm resolve that you are going to keep wide awake at it as long as possible.

#### BE AN ARTFUL DODGER

Dodge all the work you can dodge without interfering with your success and happiness. In working toward your goal—whatever it may be—make each act net the greatest possible results. This has been the way of nearly all geniuses (other than the psychopaths), all executives, all generals, all philosophers and all saints (except the silly martyrs, who threw away all of their energies for nothing at all).

When prolonged, heavy, or tedious labor must be done, do as little as possible yourself. But apply the same rule to all others who aid you. Allow them to arrange their subordinate tasks so that each person exerts himself the least without harmfully delaying or spoiling the results. This alone is intelligent.

Never lose your common sense in interpreting this rule. Do not imagine for a

minute that it means that you must loaf while helpers sweat and crack. It simply means that the shrewdest team work always turns out to be that which allots to each member of the team the special task for which he is best fitted, and to no member a task which, by some clever rearranging, might be broken up, spread over several members, and thereby lightened all around.

#### MAKE MATTER WORK FOR YOU

Find your best tools and machines!

To tap your energies best, you must make all things around you serve your purposes. This is the discovery on which Western civilization has been founded. Out of it has grown modern technology. In time it will lead us to a civilization infinitely finer than anything yet realized.

To plant a seed in the ground, that food may grow for your sustenance, you may, of course, scratch up the soil with your fingers, punch a little hole, and drop the seed in it. But what if you can get food enough only by planting 100,000 seeds? To do the whole job with your fingers would soon exhaust their energies. So you scheme a better way of using much less of the power reserves. Out of such scheming there arose first the crude mattock, then the spade and hoe, then the horse-drawn plough of rude design, then the steel plough that turns

deep furrows, and at length such amazing contraptions as the newest soil manipulator which, pulled by a tractor, picks up all the surface earth, throws it against fast spinning steel disks that reduce it to a powder and then spew it forth in a stream singularly like a fire hose.

So in all fields of human desire and effort. The average man sees such mechanisms every day without once thinking that he may, with a little thought, either invent or find ready-made for his own personal uses various devices that lighten his efforts by making each unit of power output accomplish more than it can in and through unaided muscles. I have often referred to the discovery that a difference of seven inches in the height of a drain board on a kitchen sink saves the housewife as much as 10 calories per hour at her dishwashing. In the course of her life she might save as much as 200,000 calories by this trifling adjustment alone! Or quite enough to perform 100 full days of moderate labor!

Be sure to have the necessary tools available and in good order when you need them. Make material things your slaves, not your masters! Teach them to keep their places.

#### AVOID LOST MOTION

Many kinds of lost motion are petty yet cumulative to the point of becoming serious. Fidgeting, drumming the fingers, whistling

absent-mindedly while at work, pulling the ears or nose, jumping from the chair and sitting down again to no special purpose, playing with a pen or pencil, and all similar activities are seldom to be attacked save on the ground that they make a bad impression and sometimes run counter to good breeding. But now and then we find a person who makes so many lost motions of this type that he definitely lowers his working capacities. To such a one we say the obvious and nothing more: start at once to undermine such behavior. Try both the old method and the new; if you cannot break the habit by direct act of will, try to break it by compelling yourself to repeat the act early and often and conspicuously.

Save energy and wasted motion in even such simple acts as rising from a chair. The best method here, as Donald Laird has shown, is to draw in your feet close under your body, bending your trunk slightly forward. You then rise almost automatically.

Must you lift a heavy weight? Then bending your elbow, raise the hand carrying the weight to nearly shoulder level. Thus you can carry more than half again as much as with your arm hanging at the side. If you must lift a heavy object from the floor, make your thighs do part of the work. Place your feet as close as possible to the objects, bend your knees, and stoop or squat to lift it. When carrying a heavy load on your arm for a long time, place it as

near your elbow joint as you can. Thus you fatigue less easily. In lifting weights like shovels or spades, use your knee as a fulcrum.

Are you a housewife? Then when ironing never lift the iron to a high stand. To lift one weighing five pounds on to a six-inch stand once a minute for an hour requires 150 foot-pounds of unnecessary work! Buy an iron that slides smoothly onto a low rack, or one that stands on end.



### *More Power to You!*

Remember that this little handbook is no summer novel. It is a workbook. If faithfully used, it will serve you well as a training school. From now on, make careful observations of your own energies. Experiment with the methods we have described to step up the efficiency of your power plant, your transmission line, and your workshop. Don't expect to remodel these over night. You may work a year before you notice a great change in your fitness. Master the art of using your energies as you would train yourself to become a first-class tennis player or swimmer. Efficiency in the use of energy is just as difficult to attain as superior skill in a sport or in higher mathematics. Keep this in mind, and you will not grow discouraged.

THE END