sign of a serious condition (*vid.* the actual pathological finding in my case.)¹¹

(3) Stasis is not, as a rule, an associate of even the serious stomach conditions as cancer or ulcer; unless the lesion is situated in the region of the pylorus (*vid.* pathological records of no-stasis cases).⁷

To further illustrate the facts and conclusions which have been determined from this investigation, I append a table of the individual records, the research of 25 of the 180 cases included in the investigation.

In each record there are, first, the results obtained by each test or step of the clinical procedure included in the routine method of examination of the contents of the fasting stomach utilized, and in addition a record of the test for free hydrochloric acid in a contents obtained one hour after an Ewald test meal, and some record of the results of the ordinary physical examination as the finding in regard to the existence of dilatation of the stomach or ptosis; second, the statement of the clinical diagnosis in regard to the existence or non-existence of stasis as deduced from these findings; and third, the record of the actual anatomical condition present where, as a result of operation or post-mortem examination, this condition was determined.

INDIVIDUAL FACTORS IN HYGIENE.*

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AND

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IN the prevention and the cure of the vast majority of diseases known to us to-day, our main stay is general hygiene, which may be defined as whatever brings us into the best condition to resist disease.

But what will accomplish this end? What is positively known to-day about personal hygiene? We know a good deal more than we did about public hygiene, about water supplies, food adulteration and the like, but in regard to personal hygiene, diet, exercise, rest, bathing, we are now in one of those periods which occur not infrequently in any growing science, a period when we know considerably less than we used to, or rather, than we used to think we knew. Our venerated hygienic dogmas are being analyzed back into their constituent prejudices and superstitions and no new ones have yet gained currency or confidence.

Is hygiene a set of rules valid for all? A set of averages obtained by the erasure of individual differences? We think it can be shown that the only rules valid for all are so vague as to be almost useless. We can say that a man must eat something and sleep sometimes, but if we try to advance beyond these ludicrously vague generalities we find ourselves at once on very uncertain ground.

If, on the other hand, we try to state the matter in terms of *averages*, we are not likely to get any useful guidance for any particular individual.

* Read in the Department of Health, American Social Science Association, May 12, 1905.

It is like averaging on a map the routes of all the transcontinental roads; the resulting line would run across the country and at about its middle, but would not afford you or me any assistance in finding the best route for our own travels, whatever they may be.

I.

Suppose you went to a general information office, such as Raymond's or Cook's, and asked: "What's the best railroad to travel on?" the clerk would very naturally reply; "That depends on where you want to go." The *individual desire* is the first and decisive factor, and to attempt to ignore it is folly. But the attempt to answer the question, "What railroad should I travel on?" without knowing where the questioner wants to get to is no more absurd than the attempt to tell a man the best rules of hygiene without first knowing what kind of life he wants to lead. "Good morning, Colonel," said a stranger on a visit in the South, "how do you feel this morning?" "How do I feel, sir?" said the Colonel, "I feel like the devil, sir, as every gentleman should, sir, in the morning."

Note the individual factor in the colonel's hygiene, the individual modification imposed on his rules of living by his general ideal of the position of a gentleman. This is the first of the individual factors in hygiene to which we wish to direct attention, the factor introduced by the man's aim in life, the destination at which he wishes to arrive. Knowing that a man wants to go to San Francisco as cheaply as he can, you may be in a position to offer him some advice as to the best means of fulfilling his desire; otherwise it would be absurd to try to advise him. "If you want to get the most work out of yourself and keep yourself always at your best, I should advise you not to drink and smoke." "Oh, but I don't care at all to get the most work I can out of myself," your patient may (and not infrequently does) reply, "I want to have more variety, more fun in my life; I don't want to be a mere working machine."

Hygiene, then, is a branch of ethics and, like ethics, finds the ultimate warrant for its "*Thou shalt*" and "*Thou shalt not*" in the ideals of the individual.

II.

A second set of individual factors becomes obvious as soon as we begin seriously to consider the differences of race, climate, occupation, age and sex. This is more familiar ground. We are pretty well accustomed in our practical dealings with patients to modify or restate the traditional canons of hygiene in accordance with the differences just mentioned. We know in a general way that the hygiene of men differs from that of women, and we have begun to recognize a hygiene for children that takes account of other differences besides those of weight. We recognize (though our school boards do not) that young children ought to be allowed a very large amount of running about, climbing, yelling and other

exercises of large groups of muscles rather than the minutely focussed activities that "wag the tongue and wag the pen," as Stanley Hall says. Yet we recognize that the same amount of violent exercise would probably be bad for an adult and that, at any rate, no adult except a maniac would attempt it.

Further study will, we believe, carry these distinctions much further. We shall grow to be less local, less parochial in our views of hygiene. We shall probably recognize a hygiene for Caucasians, a hygiene for Orientals, a hygiene for brain-workers, a hygiene for adolescence and one for those who have reached Osler's age of chloroform; very possibly, also, one for San Franciscans and one for New Yorkers. All this is more or less a matter of guess work and prophecy, but already our knowledge has gone far enough in this direction to make some of the textbooks of hygiene smack ludicrously of the town that produced them. The German textbooks are unmistakably German in their point of view, and yet undertake to dogmatize for us all; no doubt ours sound as strange to them.

We shall allude but for a moment to the extraordinary disregard of individual differences that is apt to afflict those physicians who are themselves strongly individual in their hygienic habits. The physician who finds that coffee disagrees with him is apt to preach a crusade against all users of coffee and proclaim it rank poison. The doctor who happens to need no exercise is tempted to assume that all exercise is a fad, and so on.

But we pass at once to another class of differences, dependent not like the first type on one conscious ideal of life nor like the second on environment and circumstances, but on certain characteristics which seem to be *inherited*, yet which we are often very backward in discovering. We shall try to exemplify some of these differences in each of the following functions:

(1) Sleep; (2) Waking up; (3) Work; (4) Rest; (5) Exercise; (6) Food; (7) Tests of Health.

(1) *Sleep*. — (a) The average Caucasian has come to take his sleep in one dose and his food in several; but the American Indian often takes his sleep in divided doses and sometimes takes his food in one. Here is an interesting individual difference. How common each of the two methods is seems to us a question on which considerable statistical study might profitably be spent. Some persons habitually wake up in the night, get up, do a bit of work, and then go to bed again. The mid-day siesta, so commonly taken in the tropics, is another example of divided doses of sleep. (b) The total dose of sleep necessary is a matter on which there is, so far as we are aware, very little statistical information. It is a common belief that women need more sleep than men, but it is hard to find a statistical backing for that statement. (c) Preparations are generally necessary for good sleep. Certain persons, if they are to sleep well, must arrange that the vigor of their activities shall taper off and not rise in a crescendo as the evening goes on. Others do not find this

so. There are many other interesting questions about sleep to which we have no time to allude here.

(2) *Waking up*. — One of the most interesting individual differences concerns the simultaneity or lack of simultaneity with which the different organs wake up. In some persons the brain seems to wake before the stomach; in others the stomach gets ahead of the brain, while some persons wake all at once. Some have to wake their systems up by using dumb-bells, some by a cold bath, some by drinking coffee, some by work. Habit, of course, plays a large part. One who is used to breakfast at eight and is forced to breakfast at three or four may find that his stomach is not awake, and being unready for its work does it so badly that indigestion results. It seems likely that the rise of the "no breakfast" idea is due to the fact that some persons' stomachs (or general metabolic processes) cannot be awakened except by work; it is probably a matter of individuality, but we need a great deal more statistical evidence on this point.

People differ much in regard to the time of day at which they become so thoroughly wide awake that they can do their hardest work. Whether a brain-worker should do his hardest in the morning or later in the day is a matter which we hope to investigate statistically and in comparison with tasks of other kinds. It is said that marksmen shoot more accurately after luncheon than before.

(3) *Work*. — We think it is not sufficiently realized that work is a great, if not the greatest, factor, in keeping us well. Physicians sometimes tell a man to give up work without realizing that they are compelling almost as serious a change as if they told him to give up eating. To take away a man's work is almost as serious a thing as to take away his food. We may feed a man by some other channel. So may we send him on a vacation and try in this way to take the place of the nutrition that comes to him by work, but good working of the organism is not always secured in this way. It may be as hard to fit him to loafing (and as unnatural) as to rectal feeding. My convalescent patients sometimes say: "I don't feel fit to work," and the answer is "You will never be fit to work if you wait till you feel like it. The only thing that will make you feel better is the tonic and stimulus of getting to work." This is true not merely in neurasthenic cases. Balfour, the present Premier of England, was miserable physically until he was induced by a wise physician to take up his present strenuous work.

(4) *Rest*. — Of the many problems about rest and recreation we shall cite but one. Persons may be divided into two classes, expressing individual differences, according as they can rest by change of work, going from one work to another, or cannot. We know of nothing more important than for a man to find out early in life to which of these classes he belongs.

(5) *Exercise*. — Almost all doctors prescribe exercise. How many healthy doctors ever take

any? Did it ever occur to you to ask whether there is any word in any language other than English which really corresponds to "*exercise*" in our sense? We can think of none in French, German or Italian, and we are interested to know whether exercise, like athletics, is an Anglo-Saxon peculiarity. Other languages have words that seem to translate it after a fashion, but not very precisely. If this is true it is a very important thing to take account of.

Health and Muscle. — Some of the older men here may remember Bleakie's book, "*How to Get Strong*," a book much in vogue fifteen years ago. It dealt with the question of exercise, and dealt with it on the assumption that to "*get strong*" is the same thing as to develop muscle. In fact the book should have been entitled "*How to develop muscle*." But we know that a man may develop muscle to any extent and yet have no health. We knew a man in college who developed by gymnasium work the most extraordinary set of muscles that we have ever seen, except on Sandow, yet he was never well or healthy and never could put through any piece of prolonged hard work, mental or physical.

Now as soon as we realize that to be strong and healthy is not the same thing as to increase the size of our muscles, the individual element in exercise becomes more and more prominent. If one could prescribe gymnasium exercise to increase muscle and thereby health, the individual element could be largely disregarded, but when you recognize that the muscular individual is not necessarily healthy, the individual element in the choice of exercise comes to the fore. Some persons enjoy pulling chest weights, and are benefited by it, perhaps because they enjoy it, but the vast majority of people would rather be put to penal servitude than pull chest weights, and in such persons it certainly may do harm. We need to take the crude product we call "*exercise*" and analyze out of it what is of value. We believe that the more fully it is analyzed the more the individual factor will be recognized. Is it deep breathing, vigorous heart action, profuse perspiration, that is that invaluable element? Is it relaxation, enjoyment, change of mental attitude? Is it the amount of fresh air breathed in? One thing we do know to be true in most persons, *viz.*, that in valuable exercise there is *no self reference*. Attention is turned away from self. In exercise which you enjoy that is the case. But many exercises (as, for example, the Swedish system or any other system of gymnastics, calisthenics, etc., that is done *for exercise* and not for fun), direct the person's attention to himself, and thus in a very large proportion of cases neutralize any possible good to be accomplished through them.

(6) *Food.* — First, in regard to the amount. The vast majority of us have the idea that when the patient is run down we should feed him up. But the recent investigations of Professor Chittenden should certainly make us more doubtful of the value of feeding persons up. Professor Chittenden has shown that Voit's diet tables can

no longer be regarded as standard for all persons. Some persons on a diet containing a very much smaller amount of proteid and of a lower calory value do not only as well, but apparently much better. We are not arguing that the diet used in Professor Chittenden's experiments is right for all of us, but merely that he has directed attention to individual differences. Apparently, certain persons are better off on what is practically a vegetable diet. Let those who find it to be good for them adopt it, but they need not mount to the house top and proclaim that every one must follow that diet or be damned.

The brilliant work of the Russian physiologist, Pawlow, emphasizes again in another way the same point; he shows that gastric juice will flow freely if the animal likes the food presented to it, and will not flow if it does not like it.

In regard to the use of water, many rules seem to be constructed in the following way: A person comes to us, in ill health; we find that he drinks very little water. We prescribe water; he gets better and we then formulate the rule that the ordinary man should drink more water. But if we investigate not the hygienic failures who come to doctors, but the people who are strongest and healthiest, we should find that many of them drink very little water or liquid of any other kind whatever, very much less than we, as physicians, are in the habit of saying that people must drink to be well. We believe that this is an individual matter, and that no invariable rule can be laid down.

(7) *Tests of Health.* — We are very much in need of tests of the degree of health, tests that will show a "*healthy*" person how far from the danger point he is. In such cases we think that individual differences will be found to count a great deal. Some persons are to be considered well if they eat well and sleep well and feel well. For others these tests are not sufficient. We have noticed in quite a number of persons that information of some value can be obtained by noting the degree of infection of their hangnails. Everybody has some hangnails, but when the individual is below par, they begin to get inflamed. Another possible test is the condition of the reflexes, some of the minor reflexes especially. In the last report of Phipp's Institute for Tuberculosis there is an account of the reflexes of tuberculous patients, especially the hypothernar reflexes. We have watched in ourselves for some time the condition of this reflex as compared with our own general condition, and are beginning to watch it in some other persons too. Perhaps certain individuals can measure their condition by noting the condition of their reflexes. One of us finds that when he loses sleep or is overworked this hypothernar reflex comes out very prominently; scratching the ulnar side of the forearm with a pencil makes the abductor minimi digiti stand out. When he is in first-rate condition the reflex cannot be elicited.

We hope that we have done enough to remind you of a large body of facts which indeed are common knowledge (or common ignorance), but

which are not always in that foreground of our minds whence action issues. These facts exemplify the individual variations dependent on:

- (a) Our chosen plan of life.
- (b) Our environment, age, sex and occupation.
- (c) Our inherited or acquired temperament, taste and bent.
- (d) The selective bent of our individual tissue, which makes the amount and kind of rest, exercise, food, sleep, suit us as they do no one else.

III.

Now are these differences of individuality such as to preclude the possibility of framing any set of requirements for health, such as our hygienic books have usually contained? A "required course" for health, we answer, like required courses in college, will soon become extinct, but a group-elective system will remain. From among a group of possible ways of being well each man will have to choose one by instinct and experiment. For example, you belong either to the group of those who can rest by change of work or to those who cannot; instinct and experiment will enable you to judge. You are either a no-breakfast man, or you are not, and so on.

To work out the actually existing and practicable methods of keeping well, at or near which each man is likely to live, is the job to which we propose to devote a good deal of time and money during the coming years. We propose to collect, if we can, the statistics of the actual habits of 50,000 healthy Americans, the healthiest that we can get in touch with through physicians and other intelligent persons in different parts of this country.

How has hygienic success been actually achieved? What methods of keeping well are the most often successful in this country at the present time?

Imagine, for example, that statistics should show that 80% of healthy Americans eat three meals a day, 5% eat no breakfast, and 4.5% no lunch, while only $\frac{1}{2}$ % skip the evening meal; it would hardly be worth while to experiment much with a no-dinner plan, but one would want to find out by experiment whether one is better without breakfast or without lunch. If it should turn out to be true that one half the healthiest people to be found eat meat but once a day, while a third eat it twice and the balance three times a day, one would wish to try these experiments, but would not consider it worth while to try eating no proteid whatever, nor making one's diet exclusively proteid.

In Colonial days, when our race was more homogeneous and the range of our possible activities more limited than they are now, the variety of hygienically successful methods of living may very well have been fewer. Just as all gentlemen were in Colonial times of one religion and belonged to but two or three professions, so it may very well have seemed as heretical to speculate or experiment in hygiene as in religion. Authority decided such matters.

Now, with the freedom of conscience and the

right of private judgments in politics and religion, are coming, we believe, the right and the duty of the individual layman to prevent disease by working out for himself his own method of keeping well.

Anyone who has watched himself carefully must have noticed how sharp and clean-cut his individual limits are. You can walk easily for miles just inside your individual limit of strength, but if anyone pushes you even a little way beyond it, you are tired in fifteen minutes. Yet it will tire you almost as much to have to hold your pace down to that of a slower walker as it would to hurry after the champion pedestrian. By instinct and experiment you find your proper pace and then it varies little for years. So it is with sleep, food, recreation. You can work for months just within your normal sleep limits, but if you cut down sleep even a half hour a night below your limit it will show at once in the *quality of your work* if not in more obvious forms of ill-health.

The individual's best path of life, then, is sharply marked out and not difficult to determine. *But it may be almost impossible for any outsider to determine it even if the outsider is a physician.* Suppose some one else tried to decide for you how fast you should walk, what the natural swing of your gait should be. He might by very careful and constant observation of your various paces come fairly near the right one, but it would be a great waste of energy for a result only approximately correct.

The individual should be urged to find out for himself how to keep well. We count it a great misfortune or disgrace if an American arrives at manhood without knowing the three R's, but it needs only a little reflection to make us realize that it is a far worse calamity to grow up without knowing what rests you, whether change of work is your best recreation, whether you are better with a low proteid diet, a low or high intake of water and what your *vocation* or hobby is.

Have you not sweated blood in the attempt to discover for a man of forty what his proper *avocation* is, or for a woman of thirty-five what is her proper work? And as you labored has it never aggravated your toil to recognize that this job should have been done by the patient himself years before?

To find out for another man how he ought to live is as awkward as to tie his necktie for him. You *can* do it somehow or other, but he can feel his way and adjust his motions much more accurately himself.

The individual factors in hygiene, then, are so many and so essential, that in the great movements of preventive medicine it is the layman who, with some general guidance, must work out the salvation, that is the best hygiene of the future. We are often told that doctors should prevent disease instead of trying to patch up the poor wrecks who exemplify the hopeless results of long years of hygienic failure. But we cannot believe that the most important work in this line can be done by the doctor; it is a waste of energy for him to attempt it in most

cases. Moreover, the educated layman will more and more resent the attempt. I think it will not be long before it will be held as presumptuous for us to attempt to prescribe by general rules a man's best way of living, as it would be for us to prescribe his wife, his profession, his political or religious opinions. Private judgment and unwillingness to submit to authority will spread to this sphere, nay, have already spread far in that direction.

We will recur for a moment to our own plans. Our belief is (as we have tried to indicate) that the hygiene of the future will be not a series of commands, "Thus do or thou shalt die," but a map showing a number of practicable roads, each preferred and found satisfactory by a group of persons of a certain build, a certain ideal of life, a certain inherited and acquired set of the tissues. "On or near some of these roads," we shall say, "you will probably travel. Look them over as you do in choosing a profession, a house or a town to settle in. Find out which suits you best; then take it."

Now, our ambition is to assist in the construction of this map, to find out by the collection of an enormous body of statistics of healthy people what workable sets of habits now exist in regard to food, water, exercise, sleep, work, recreation and the rest. Such a map of passable roads will not bind the individual to walk on any one of them, but if he wishes to roam in the fields or ditches he will at least be conscious of what he is doing and where the ordinary roads are if he cares to return.

To collect the body of statistics on which such a map could be based will need the coöperation of many intelligent persons all over this country, and later we shall be asking members of the profession to coöperate with us in the task.

THE EFFECTS OF TOBACCO UPON THE THROAT.*

BY S. W. LANGMAID, M.D., BOSTON.

I HAVE been induced to write this short paper because my experience of the evil effects of tobacco on the throat, especially by smoking, has been contrary to what is generally taught in textbooks, and because very little has been written on the subject and no record of clinical observations has come under my notice. The subject has generally been dismissed with an opinion for which no good reasons were offered.

For many years I have been compelled to believe that smoking is responsible for certain forms of throat disease, or is an added factor in the injurious effects of climate.

I must acknowledge that my observations have been made in a cold, moist climate, such as exists in winter all along the seashore of the northern United States, and may not hold good in other, warmer or warm-moist climates. Indeed, I am inclined to believe that such is the case. But should it be urged that climate alone might be considered responsible for the affections of the

throat, I might reply that until tobacco is abandoned there is very little or greatly delayed response to treatment.

The condition of the throat which I have observed is that so exhaustively treated and so truly described by Bosworth in his chapters on acute naso-pharyngitis and naso-pharyngeal catarrh. Bosworth, although admitting that tobacco may be an irritant to the pharyngeal mucous membrane, says that he "has always considered the nicotine absorption to be the vicious factor in its use." He admits that the ammoniacal vapor and possibly the small quantity of pyroligneous acid may act as irritants, and that it is frequently noticed that a patient suffering from naso-pharyngeal catarrh is greatly inconvenienced and his trouble even aggravated by smoking, and that in such cases it is necessary that the habit should be abandoned. But, he says, "the cases are the exception rather than the rule." My belief is that in all cases of acute and chronic naso-pharyngitis smoking must be abandoned or the cure is delayed. Especially is this the case if cough is a prominent and distressing symptom.

Diseases of the nose and throat. — Although I believe that much of the hyperemia of the pharyngeal mucous membrane may be due to irritation of the smoke from the burning tobacco, I am forced to believe also that the poisonous effects upon the nervous system may be to a large extent responsible for the vasomotor disturbances which are plainly visible in the throat of all smokers. I believe that most of us could hardly make the mistake of not recognizing by the appearance of the throat the non-smoking man even if he should not apply to us for treatment of a naso-pharyngitis. It has been my custom to make such a diagnosis greatly to the astonishment of the patient. Furthermore, I think the appearance of the throats of most female patients will be noticed to be unlike that of men even when the pharyngeal mucous membrane is acutely or chronically diseased.

I am inclined to believe that it is largely due to the poisonous action upon the nervous system that tobacco plays such a part, as it seems to me, in producing and perpetuating disease of the throat. The following extracts from recent articles on the action of excessive smoking upon the organs of special sense may seem to you to afford justification for such an assumption.

Possible etiological factor in tobacco. Alcohol amblyopia. — "G. E. de Schweinitz and Edsall¹ attempt to throw some light on what the possible poison may be which produces one or the other of the many changes which have been described by many authors in the optic nerve fibres, or the ganglion cells of the retina, and which manifest themselves by the clinical symptoms."

"Horner, long ago, and de Schweinitz, 1900, suggested that the disease depended on a species of auto-intoxication, and the investigations of Sachs and Casey Wood indicate 'that certain stomach toxins are capable of causing in animals

* Read at a meeting of the American Laryngological Association at Atlantic City, N. J., June 3, 1904.

¹ Trans. Am. Ophth. Soc., 1903.