



HOW TO LIVE LONG

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EARLY in the eighteenth century one of the lights of English literature, even then failing in early middle life from the effects of dissipated habits, called attention, with a mournful particularity of detail that attests his own intense interest in the subject and his desire to warn and encourage others who might be entering upon the path he had been following, to the life and death of one Luigi Cornaro, who, possessing an iron will, being sentenced to death by his doctors before he was forty, changed his manner of living in a twinkling from one of irregular excess and bestial gratification to one of temperate method and almost ascetic restraint, and thereby prolonged his years to one hundred. Doubtless, as he wrote, his pen was lifted more than once in reverie as he meditated upon what he was and what he might have been.

A hundred years of age. Is it desirable or not? Certainly not as a Struldbrug, "opinionative, peevish, covetous, morose, vain, talkative, incapable of friendship, dead to all natural affection," toothless, bald, ghastly, and decrepit. But suppose a hale old age, in the bosom of a family of four generations, with sight, hearing, sufficient muscular power, sound digestion, declining gently toward the end with so gradual a descent as to be almost imperceptible to self, if not to others, and finally

going out like a rushlight in the evening breeze. Is not that worth a little self-denial? And especially if the self-denial itself affords a form and measure of gratification that cannot be obtained in any other way?

There seems to be a consensus among comparative physiologists that the limit of human life should not be less than a hundred years, and some have fixed it at one hundred and twenty. Why, then, do so few reach that limit, which is supposed to be a minimum and not a maximum? Why do we fall so far short of a normal life? Whose fault is it, our own or somebody else's? Does this minimum of a hundred years imply conditions that can never be met? Does it apply merely to a theoretical man, who never existed excepting in the scientific imagination? or does it lie within the compass of every human being who starts right and lives right up to the very end? These be parlous questions, and an attempt to answer them must not be looked upon with too critical an eye. "If thou be a severe, sour-complexioned man, I here disallow thee to be a competent judge."

Men die before their time by violence, by disease, or even by that general failing which goes by the name of old age. Yes; they even die of old age while they ought to be still vigorous and healthy.

Now, what is the cause of old age? Before we try to put it off we should know

how it comes on. Before we try to alter or amend the conditions that bring it about we must ascertain what those conditions are. It may as well be confessed, at the very start, that the subject is more or less wrapped in mystery; that old age and decrepitude seem to be the universal lot of all created things—of animals and plants, even rocks and seas, of planets, stars, systems, of the universe itself; and it is remarkable that while our wise men can explain to our satisfaction why and how the solar system will grow old and die, they cannot fully explain why their next-door neighbor—a mere ephemera—does. Something of this, however, we do know.

To begin with, the majority of men start out in life with a pretty good equipment. The human body is a self-regulating apparatus of extraordinary efficiency. It takes in its own supplies automatically at first and partly so to the end, distributes them where they are most needed, makes its own repairs, gets rid of its own waste, regulates its own temperature, makes provision for accidents, stores up in fat times provision for lean ones, builds its own housing and makes extensions as required, and is altogether a marvel of what might almost be called intelligent automatism. Unfortunately, this wonderful mechanism has a tenant who is constantly interfering with it in the performance of its functions: an ignorant tenant who thinks himself the master when he is really the slave, who insists on subjecting it to his own caprice,—on making it work when it should rest, and rest when it should work, on feeding it when it is groaning with surfeit and starving it when it is ravenous, on oiling it when it needs sand and sanding it when it needs oil,—and who behaves throughout in such a maladroit and bungling manner that this admirable outfit is finally completely wrecked, its last act, at the end of a tedious, unavailing struggle, being the eviction of the unruly tenant and its own collapse. This we call death.

From the moment the infant starts out in life he is surrounded by enemies. The nature of some of these has become known of late years, and methods have been found by which their malignancy can be offset or combated. Such are the various micro-organisms, which live like parasites in the body to which they have gained entrance, flourishing at the expense of their host.

The organism at birth is only partly formed and has yet to go through a long period of growth and development. During this period its energies are largely monopolized in the process of nutritive growth, and there is too little surplus force to insure uniform success in conflicts with external noxious influences. Here art supplements nature, and the community protects the individual until he is able to look out for himself. During all this time the processes of growth, repair, and elimination of waste are very active, but when full maturity is once attained they slacken; henceforth maintenance of an equilibrium is all that is required. No surplus of food or drink is necessary, and, if it be supplied, it cannot be disposed of to advantage, and must be cast aside as waste.

Now the solid waste of the body (the gaseous being eliminated chiefly through the lungs) is got rid of mainly through the skin, the intestinal canal, and the kidneys. The amount of waste material that can be disposed of by these organs is limited. They can look out for a certain amount and no more, and they must have their periods of rest or they will break down. Rest is necessary for recuperation. In work, waste exceeds repair, and intervals of quiet are essential in which repair shall exceed waste in order that the balance of nutrition may be preserved and the organs maintained in good working order. Even that indefatigable worker, the heart, rests about half the time. What, then, becomes of material that is taken into the body when it is not needed and the excretory organs are unable to expel it? Of course it must remain, although not in exactly the form in which it was introduced. The process of digestion is extremely complex. As the food passes from the mouth to the stomach, then to the intestines, to the blood, and then successively through the liver, the heart, the lungs, and the various tissues of the body, it undergoes so vast and complicated a series of changes, decompositions, recompositions, splittings up, and comings together as to be almost the despair of chemists and physiologists.

Now, if there is an over-supply of this material, these various changes are not always completed. They require time, and if the various organs, busily engaged with the conversion of one mass of material, are crowded by the inrush of a new and un-

altered supply, the first lot may be shoved along to undergo the next stage of digestion before it has been sufficiently prepared for the organs that then take it in charge. They may be said to be bewildered at the start by the unusual nature of the duties that are devolved upon them, and those duties, being unfamiliar, are imperfectly performed, their own proper duties being postponed and then hurried, so that the entire organism after a time becomes crowded with matter that has only partly undergone proper physiological preparation for its final disposition. The various tissue changes connected with nutrition and waste are comprehended by physiologists under the single term metabolism. Even normal metabolism results in the formation of products that are not only useless but injurious to the body, and it is the function of the skin, lungs, intestines, and the kidneys to bring about their expulsion. The fact that they are thus rejected is a sufficient demonstration that they are superfluous or worse. Now imperfect metabolism, such as is described above, leads to the retention not only of these normal waste products, but of other matters not wholly transformed, for the proper disposal of which there has been neither time nor capacity; and these products accumulate in the body, an attempt being made to deposit them out of the way, where they will interfere as little as possible with the performance of the necessary functions of the organs which are trying with might and main to catch up with their work.

Such deposits of matters that the over-worked excretory organs have been unable to eliminate are partly fat and partly mineral salts or organic compounds of various nature and composition, and they occur in some situations where they are comparatively harmless, while in others their presence involves decay, mental and physical. This is especially the case when deposits occur in the walls of the blood-vessels. It is the basal fact of animal life that it depends upon the circulation of the blood. The nutritive changes are so rapid and the margin of supply so small that the cutting off of the fresh supplies for the briefest possible time is sufficient to bring on the beginning of disorganization, which is to end in death. The blood alone furnishes these new supplies, which must be constantly kept up. The brain may be injured

to the point of entire unconsciousness, the digestive organs may be paralyzed to the absolute abeyance of their functions, and life still continue for a time; but let the heart stop beating, and the end will come quickly. *Cor ultimum moriens*. A sudden emotional shock, which causes the heart to intermit a beat or two and leaves the brain for perhaps five seconds without its fresh supply of blood, will bring on a fainting-fit, the next thing to death. Anything that interferes with the elasticity of the walls of the blood-vessels and with the normal energy of the heart walls will interfere with the nutrition of every part of the body. The nutritive processes will everywhere be slowed down, all the physical energies will be weakened, the sensitiveness of the brain and the rest of the nervous system will be dulled, the activities of the digestive organs will be lessened; and the body being an automatic organism so far as the processes of nutrition and waste are concerned, all these degenerative conditions will react on one another, until the entire machinery becomes so clogged and hopelessly interlocked that it stops, and an innumerable band of nature's scavengers invades the dismantled organism and speedily breaks it up into its original elements and carries it away.

The gradual failure so imperfectly described may be looked upon as natural death by old age. Exactly what may bring about this clogging of the organism is not known, but that it is hastened by an over-supply of food and drink is certain. In early life the system is vigorous enough to rid itself of this surplus with comparatively little disturbance, but with advancing years there is more and more difficulty in disposing of it. Unfortunately, most persons do not recognize the slow waning of their powers in this respect until it is forced upon their consciousness in such a manner that it cannot possibly be ignored. They go on eating and drinking just as much and of the same articles as they did twenty years before, without regard to consequences. This course of life gradually leads to a general enfeeblement of the body, and at the age of forty-five or thereabout the man begins in various ways to be disagreeably reminded that something is wrong with him. His appetite, as he says, "goes back on him"; he is troubled with constipation; he does not see as well as he did; late

suppers disagree with him, and their effects are considerably prolonged into the next day: so that after a year or two of wondering and grumbling he begins to fear that he is breaking up, that something serious is the matter, and he either consults a physician or betakes himself to tablets, pills, and pick-me-ups, in the hope that his troubles may, after all, be only transitory.

Now a large part of these symptoms are the result of the clogging of the system by a continuance of the same regimen in nearly every respect too late in life. The man has not allowed his system to accommodate itself to the new conditions that have arisen since he reached maturity. Partly through ignorance, partly through habit, and partly through sheer careless neglect, he has gone on living his physical life as if it never required a change and would never end.

A change must be made at this time, or the man will die by what is really a slow suicide. It takes most men four or five years to appreciate the situation and accommodate themselves to the new conditions. This period is one of great misery to them. They often keep it to themselves, but they are constantly haunted by the apprehension that all is nearly over, that their time is short, and they must be ready for the summons. After a time, involuntarily and from sheer necessity, after several sharp reminders, usually in the form of digestive disturbances, they change their mode of life, almost imperceptibly to themselves: begin to diminish their meals, perhaps intermit them occasionally, keep earlier hours, drop things that disagree with them without regard to their palatableness, become more sedate and orderly, control their passions, and, at the end of this first tempestuous period, find, to their astonishment, that, after all, they are not dying men, but that they have marvelously recovered their health, and feel a vigor and freshness to which they have long been strangers. They tell their friends that they feel as they did when they were twenty, and they mean it, too, although it is not true. But it *is* true that under proper self-management they emerge on the shady side of this stormy period in much better condition in many ways than they entered it. Another similar climacteric is likely to occur sometime between sixty and seventy,

and it is during the rebound from this slough of depression that so many old men think of taking young wives. After this second climacteric the inevitable is usually recognized, and the old man is willing to forgo the allurements of sense, and regulate all of his life-habits, eating, drinking, sleeping, exercise, and amusement, so as to insure ease and comfort rather than the mere gratification of appetite.

Such is at least one cause of old age, and a very important one, and one generally recognized by physicians. About a law of development, involving a fatal, unavoidable necessity of gradual decay, we know little. If we have been predestined to old age and death, in spite of all we can do to escape, we shall probably never know anything about it. We simply see this uniformity in the history of living things, and call it a law of growth and decay; but what it may depend upon we do not know, excepting in this respect: we see that the seeds of death exist in our food and drink, and according as we plant them plentifully or sparingly we reap an early and generous harvest or a late and scanty one. We know that many of the disabilities of age can be accounted for in great measure by the accumulation of foreign matter in the tissues; that premature old age is attended by calcification or hardening of the arteries, perceptible to the external touch in a loss of elasticity; and that a green, vigorous, or late old age is marked by a postponement of this process. The man who is old before his time has diseased arteries. In the man who seems young for his years they have retained their elasticity. It is plain, then, without talking in the air, but confining ourselves to what we know, that an excess of food and drink will tend to bring on old age prematurely and so will shorten life. Here, then, is sufficient reason for moderation in the pleasures of the table and for the exercise of some sort of selection in the food and drink we use.

And now these questions suggest themselves: What is a proper diet and what is moderation? How shall one know what he shall eat and how much he shall eat? It is not surprising that in our present highly artificial mode of life these questions should be to most persons very perplexing; and yet the answer lies not far below the surface.

First, then, what is the natural diet of

man? Some will have it that he is naturally a vegetarian, and is better off without animal food; others, still calling themselves vegetarians, would allow milk, cheese, and eggs, rejecting only animal food that requires the sacrifice of life. The nut-and-fruit theory has its advocates, who argue that the human digestive apparatus, from tooth to intestine, is similar to that of the anthropoid apes, our congeners. Some insist upon confining themselves to a diet of vegetables that grow above-ground, holding that roots are too coarse and earthy. Others live upon cereals and fruits, and claim to be maintained in robust health by such a diet. One man, having found that nuts are rather difficult for him to digest, substitutes the proteids of flesh, condemning cereals altogether as containing too large a proportion of mineral matter, and bread as being the "staff of death" and not the "staff of life." And so he lives on fruits and meat. One prophet, a German, lived on brown bread and fruit, and died when he was a little over fifty. The name of the fruit-and-meat man was signed not long ago to a letter of recommendation of some dyspepsia cure which he said had done him a world of good. A new fad, originating in Chicago, advocates raw food, chiefly cereals, some vegetables, nuts, and fruits—nothing cooked, as heat is supposed to destroy the vitality of food and proportionately to detract from its nutritive value. The high priest of this cult says that he has gained thirty pounds in weight and much in vigor since he adopted this mode of life. Very likely he had just arrived at that age when many persons put on flesh—about thirty-five or forty. These theories all assume that the present mode of living is proved to be faulty by the enormous number of dyspeptics and invalids it develops. Every one of these systems has a substratum of truth, and they may be divided broadly into two classes, those based upon the anatomical peculiarities of the digestive organs, and those that start from the apparently undeniable fact that primitive man had no fire and therefore ate his food uncooked. The lives of centenarians teach us little in this regard. Some have been vegetarians, and others have been eaters of meat; some have used liquors and tobacco, and others have left these things alone; some have been fond of cereals and milk, and others of fruit and salads. But we

have in ourselves a pretty certain means of indicating what the original food of the primitive man must have been, and what, therefore, may be called the natural diet of mankind.

It must be borne in mind that amid the artificial environment in which we now pass our lives certain primitive instincts or impulses, animal appetites, are still powerful in their sway over us. They are the ones that have to do with the preservation of the individual and the perpetuation of the race. No matter how much refined sentiment we may try to clothe them with, they are fundamentally the same that they were eons ago. Food to which man had accommodated himself through the countless ages of his gradual development would be likely to remain palatable and gratifying to his appetite during the comparatively short period that has elapsed since he has been able to modify and alter his food by the application of heat and the admixture of other materials. What man liked when he ate his food raw he would be likely to like now, and, conversely, what is at the present day still palatable in its raw state and uncompounded with anything else save water is likely to have been the food of primitive man; and what is now unpalatable when eaten raw and unmixed was probably unpalatable to primitive man before the invention of fire, and therefore cannot be looked upon as the natural diet of the human race. If, as the evolutionists maintain, ontogeny represents phylogeny in epitome, we should expect to find the human being at some period of growth showing a pronounced liking for raw food, and so in truth we do.

The infant starts out in life with raw food. After he ceases to obtain nourishment directly from the mother, he shows so strong a predilection for raw food that no inconsiderable portion of the anxiety of a mother for her child is caused by this very tendency. Children are notoriously fond of raw things—raw grain, the tender joints of grass, leaves, various roots and barks, raw fruit (some fruit, like gooseberries, being almost deadly poison to the small boy when cooked), raw turnips, cabbages, corn, and even, in some cases, raw insects of various kinds. There is only one article of daily use that the boy will not voluntarily eat raw, and that is meat—the flesh of a dead animal. Assuming, then,

that the primitive organic appetites of the human being were permanently fixed during the immensely long eras of his evolution from an inferior type, that during that period he ate his food raw because he had no fire, that the period since the invention of fire has been too short comparatively to produce any essential change in these primitive appetites, we are in a position to form a reasonable conjecture as to the natural diet of man, viz., anything that is now palatable in its uncooked state. A list of such articles would be too long for insertion here, but it may be stated with confidence that it would exclude meat and most of the legumes which, when cooked, are found on almost every table. It would include an immense variety, however: fruits of all kinds, a long list of leaves, stalks, and roots of plants, nuts, many kinds of shell-fish (oysters, clams, etc.), honey, eggs, milk and its products, possibly insects, which most men have given up eating, but which are, nevertheless, said to make very good food. Most vegetables are good raw, and most roots as they are found in the market, excepting potatoes and beets, the former belonging to the poisonous family of the *Solanaceæ*, and the latter being very hard and indigestible, even to the *dura messorum ilia*. Among the legumes, beans, lentils, and ripe peas are decidedly unpalatable raw, but green peas with their pods are often eaten with gusto by children. Raw fish is said to be not unpalatable, and one variety is served as a delicacy on the table of the Japanese gentleman. Raw meat (butcher's meat) seems to be absolutely repugnant to the human palate, unless under pressure of extreme hunger or when smoked, salted, spiced, or otherwise disguised or flavored. Grain of all kinds is agreeable to the taste when uncooked. What it was in its original condition before cultivation had developed it we cannot possibly tell.

So much for the quality of our food; now about the quantity. The tendency of mankind is unmistakably to overeating. The ease with which food can be obtained, and the perfection of the culinary art by which its toothsome-ness can be highly developed, tempt us all to eat much more than we require for the bodily sustenance. Even the arrangement of our meals is so artfully contrived as to encourage over-eating; indeed, it may be said without ex-

aggeration that the greatest skill and cunning of the cook are displayed in efforts to entrap us into gluttony. Not only is the greatest ingenuity put forth to provide a variety of food at each meal, but some of the most indigestible dishes are served near the close, when the normal needs of the body have been provided for by the ingestion of substantial and nourishing food, so that the natural disinclination to eat more may be overcome by delicate flavors and seasonings which titillate the palate and gratify the sense of taste at the expense of the stomach. The palatableness of such food depends not upon hunger, which expresses the desire and need of the body for nutriment, but upon mere relish, the tickling of the nerve of taste, which is no guide at all as to the quantity of food required.

Fortunately, as we have a guide within ourselves as to the quality of our food, so we have also one to indicate the quantity. And this guide is a systemic one, not located, like the sense of taste, in a single organ, but affecting the entire body. When we need more food we feel faint, and the calls for nutriment from all the different tissues and organs of the body gather strength, if unsatisfied, until the corresponding sensation of hunger becomes one of the most powerful impelling motives of action. When food is needed there will be hunger, and when hunger is satisfied all excess is not only waste and refuse, but positively injurious. We all eat too much. This statement has been iterated and reiterated until people have begun to disregard it. But the life-habits of every one will prove it.

It may be asserted with entire confidence that the following description fits almost every person on the face of the globe at some time of life, excepting the very few who have learned how to live. A man is in excellent health, vigorous and energetic. He takes food regularly, his appetite is good, he enjoys life thoroughly. At intervals he feels unusually bright and in high spirits for a day or two, then his appetite falls off slightly; he eats as usual at regular hours, begins to feel a little dull and heavy-headed, drowsy perhaps, languid, complains of broken rest at night, and finally has a "bilious attack," in which his alimentary canal, from end to end, is pretty well cleared out and gets an enforced rest of from half a day to a day or

more during which little or no food is taken. Now it is the universal experience that after an attack of this kind, when the brief illness is over and the normal functions are restored, the person feels much better and stronger than for several days before, and this although he may have eaten nothing for a day or more. In other words, *he feels better fasting than he did when feeding*. Such an illness or indisposition invariably results from overeating—an accumulation of surplus matters in the system which the fool who thinks he is the master has shoved into his body, and which the slave (who is the real master) gets rid of in the most precipitate manner possible.

Physiologically the sequence of events is probably this: normal health, plentiful supply of food, surplus nutriment not assimilated, metabolism imperfect, chemical changes only partly completed, poisonous substances formed that cannot be disposed of rapidly enough, first effects of these substances stimulating, producing feeling of exuberant vitality, further accumulation depressing, giving rise to feeling of oppression and dullness of intellect, obscure abdominal irritation causing insomnia, and final emetic and cathartic action by which the offending matters are violently removed. No slight illness is more common than such a one, and none more easy to avoid. It is the result of overeating; and yet overeating is, as a rule, vehemently denied by the worst sufferers. If such attacks are frequently repeated, the functional derangement results finally in organic changes, which are mostly irreparable, and the beginning of the end has set in.

Even those who are dimly aware of something wrong usually prefer, instead of remodeling their lives on physiological lines, to stuff themselves with proprietary remedies and swell the fortunes of shrewd quacks who understand them better than they understand themselves. In one of Sardou's plays a young man calls upon a doctor for advice, and is told that nothing serious is the matter, but that he must mend his ways if he wishes to rid himself of disquieting symptoms: give up late suppers, rich food, wines, go to bed betimes—in fact, live decently and soberly. Whereat the patient, barely able to control himself until the doctor has finished his sermon, bursts out with: "Oh, I know all that.

You doctors are ever preaching such things. But can't you give me a pill or something to set me right?"

How shall one determine, then, how much food to eat? Too much mystery has been thrown about this subject. Let your sensations decide. It must be kept in mind that the entire function of digestion and assimilation is carried on without conscious supervision or concurrence. It should be entirely unfelt and unknown, excepting by the feeling of *bien-être* which accompanies and follows its normal accomplishment. Satiety is bad. It implies a sensation of fullness in the region of the stomach, and that means that too much food has been taken. The exact correspondence, in a healthy animal, between the appetite and the amount of food required is extraordinary. As a rule, the meal, unless eaten very slowly, should cease before the appetite is entirely satisfied, because a little time is required for the outlying organs and tissues to feel the effects of the food that has been ingested. If too little has been taken, it is easy enough to make it up at the next meal, and the appetite will be only the better and the food more grateful. No one was ever sorry for having voluntarily eaten too little, while millions every day repent having eaten too much. It has been said that the great lesson homeopathy taught the world was this: that whereas physicians had been in the habit of giving the patient the largest dose he could stand, they have been led to see that their purpose was better subserved by giving him the smallest dose that would produce the desired effect. And so it is with food. Instead of eating, as most people unfortunately do, as much as they can, they should eat the smallest amount that will keep them in good health.

And this restriction in the amount of food is not a hardship. It does not involve self-denial when one is used to it. On the contrary, to eat so little at one meal as to be hungry at the next affords the greatest satisfaction. Hunger will ever be the best sauce, and he who can always sit down to a meal with a ravenous appetite and rise from it with his brain so clear and his circulation so free that he can work or play immediately without discomfort, experiences one of the highest joys of life. Cornaro, over and over again, dwells upon the great delight of eating his frugal meals and the feeling of buoyancy and high

spirits which followed them, and is fond of contrasting such feelings with his condition before he changed his manner of life. "When I denied my senses nothing," he says, "I did not taste such refined pleasures as I now enjoy. They were then so troublesome and mixed with pains that even in the height of those enjoyments the bitterness exceeded the sweetness of them. Oh, happy state of life! which, besides other blessings with which thou favorest an old man, dost preserve his stomach in so perfect a tone as to make him relish a piece of dry bread better than the voluptuous do all their dainty morsels and best-seasoned dishes. A sober life is never without such an appetite. So that, by eating a little, my stomach is often craving after the manna, which I sometimes relish with so much pleasure that I should think I trespass upon the duty of temperance did I not know that one must eat it to support life."

In devoting this article almost entirely to the matter of overeating, the example of all other writers on the subject has been followed. It is not pretended that any new or original view has been brought forward. All writers upon hygiene have inculcated temperance, and have especially inveighed against overeating; but the attempt has been made in this article to explain why overeating is so injurious, and especially to show that many persons, possibly most, who consider themselves moderate eaters, really eat too much. Every one believes in temperance as an abstract truth, and every one believes himself to be temperate. The writer has sat at the same table with persons who insisted that they were light eaters, yet proved in his presence to be gormandizers. No man is so absolutely certain that he is in full possession of his faculties as the drunken man or the crazy man, and one purpose of this writing has been to point out the way in which one may judge for himself whether he is a temperate eater or not.

So much time and space have been devoted to this single matter because it has more to do with good health and long life than any other one thing, and because it is the matter in which it is so easy for people to deceive themselves. "Most men dig their graves with their teeth," says one philosopher. "If I were to assign any one thing as especially conducive to long life," says another, "from a study of the habits

of centenarians, it would be semi-starvation." It is notorious that prisoners, who are put upon a restricted diet, as a rule improve in health, and those persons who live to a great age usually belong to the poorer classes who have been compelled all their lives to be satisfied with scanty and frugal fare.

Space remains for only a word or two about the less important factors which conduce to longevity, viz., cleanliness and exercise. Clothing is an unnatural covering and interferes with the physiological functions of the skin. The outer layer of the skin is being constantly renewed from below. The epithelial cells are in constant process of formation, and become thinner, dryer, and flatter as they are being successively pushed out by the growth of new cells beneath them, until they arrive at the surface, where they constitute a hard, horny layer which prevents the absorption of deleterious matters from outside, while allowing the extrusion of noxious material from within. Some of these substances which are excreted through the skin are retained upon the surface by the clothing, when, if the surface were uncovered, they would be removed naturally with the scurf that is being continually shed or pushed off by the growth beneath. These substances are ill-smelling and have to be removed by washing. So do the smouchings of extraneous dirt which occur on the face and hands. And this is all that should be sought for in washing or bathing. The practice of soaking and steaming and coarse rubbing and scrubbing, by which rolls of scurf-skin are removed and pointed to with a sort of exultant pride as loads of dirt, cannot be healthful in the long run. The scurf-skin is needed where it is, and the removal of it or of so much of it as to expose the larger, plumper, still soft cells of the underlying cuticle is injurious. Scrub a kettle until it is clean, but not until it leaks.

The fatuity of most men with regard to exercise is most distressing. They avoid the use of their muscles in every possible way until their health gives way, and then take up the most unnatural and ridiculous methods of restoring the equilibrium. They never walk when it can be helped; they take a car to go four or five blocks, an elevator to go up one story of a building, have valets and waiters to brush their

clothing, to black their boots, to serve their meals, to carry their bundles, and when they feel the lack of physical exercise play golf or bowl, or put up dumb-bells, swing Indian clubs, or pull away at weighted ropes in their bedrooms. In other words, they carefully shun any kind of exercise that subserves a useful end, and devote themselves to that which accomplishes nothing.

The excuse usually given for such vagaries is that the street-car and the elevator save time. To some extent this is true, but it is only half-truth. Any one who takes the trouble to observe what goes on around him will see portly men who ought to walk for their own good stop a street-car to carry them only three or four blocks, and wait patiently for an elevator to come on signal from the basement floor to carry them down one flight of stairs. Now the oddest thing is that if the diet were properly proportioned to the occupation, this lack of exercise would not be felt, and the consequent devotion to monkey gymnastics would not be necessary. Sir Henry Thompson, in his excellent work on "Food and Feeding," has put this aspect of the case as well as it can be put. "Many a man," he writes, "might indeed safely pursue a sedentary career, taking only a small amount of exercise, and yet maintain an excellent standard of health, if only he were careful that the 'intake' in the form of diet corresponded with the expenditure which his occupations, mental and physical, demand. Let him by all means enjoy his annual pastime and profit by it, to rest his mind and augment his natural forces, but not for the mere purpose of neutralizing the evil effects of habitual dietetic wrong-doing."

A proper amount of sleep is of course absolutely essential to continued good health; but if dietetic habits are correct, it

is a matter which will regulate itself. If a rule is needed, one will follow naturally from the fact that almost every one feels languid on waking and is disposed to take another nap, no matter how long he has been sleeping. This is a morbid sensation which it would take too long to explain here. It is enough to say that lack of sleep should be made up, if possible, at the beginning and not at the end. The best general rule is to rise at a given hour every morning, whether tired or not, and go to bed when sleepy.

Thus we have arrived at the conclusion that moderation in diet has more to do with prolonging human life than any other one thing, and we have endeavored to enforce this teaching by showing in the clearest manner of which we are capable the reasons for it. A proper dietetic regimen, once attained, brings all the rest in its train. Sleep, exercise, cleanliness, equanimity of spirit, all hang upon it. Life is not only prolonged, but is constantly enjoyed, most of its minor annoyances vanishing when digestion is perfect. Pay no attention to fads. They give rise to too much introspection, and that is bad for every one. As Hufeland says in "The Art of Prolonging Life": "In general we find that those men who were not too nice or particular in their food, but who lived sparingly, attained to the greatest age." And again: "It is, at any rate, certain that the prolongation of life does not so much depend on the quality as on the quantity of our nourishment, and the instance of Cornaro affords an astonishing proof how far a man of weakly constitution may thereby prolong this existence."

And according to the account of Cornaro's granddaughter, written after he had died, of no perceptible illness, at the age of one hundred years, "during the latter part of his life the yolk of one egg sufficed for a meal and sometimes for two"!



TOPICS OF THE TIME

TOLERANCE IN THE SOUTH

THERE has been much commendation lately of the action of the board of trustees of a Southern college in refusing to accept the resignation of a professor who had been fiercely criticized for the non-official expression of certain opinions concerning the race question. These opinions were not shared by the members of the board of trustees, but, having faith in the professor "both as a man and a teacher," they firmly and courageously refused to let him go. In the stand they took these trustees did good work, not merely for their college and for the South, but for the cause of academic freedom in general, and the still greater cause of the freedom of opinion and of speech everywhere.

The incident referred to is not the only sign of late of growing independence of thought and action in the South, noticeable in connection, as might be expected, with colleges and universities, and emphasized by the conduct of some of the courts of justice in their condemnation of injuries to black men.

One special reason for the difficulty of independent opinion in the South is, of course, the presence of the eternal "race problem." The abolition of slavery greatly relieved the pressure upon opinion and its expression. But the peculiar problem still remains in an acute form, with always a natural, if not always well-advised, resentment at what is looked upon as "outside interference." In the circumstances such an occurrence as the retention of the professor who, in the honesty of his convictions, had offended public sentiment, is all the more creditable.

These incidents recall to mind a remarkable example of Southern tolerance of opinion in the past. James Louis Petigru of South Carolina, at the beginning of the Civil War, was, according to Nicolay and

Hay, "the best lawyer in the South and the strongest man in South Carolina, so far as character, ability, and purity went." They add that this man "never surrendered or disguised his Union convictions." There were Union men in other parts of the South, but it meant more to be a Union man in the very hotbed of secession. In *THE CENTURY* for January, 1888, a picture is given, in connection with the Life of Lincoln, of the bust of Petigru presented to the city of Charleston by its then mayor, Mr. Courtenay. In an editorial mention of the occurrence it was stated that Petigru was not an abolitionist, but that his anti-secession principles were inflexible. In the days of nullification he helped to prevent civil war, though he was unable to stem the tide that rose in '60 and '61. The interesting feature of his opposition to prevailing sentiment was the tolerance, on the part of his fellow-citizens, of his strongly expressed dissident opinion. "Even during the tumult of secession they elected him to their highest salary and most important trust—to codify the State laws. In spite of the satire and ridicule that he hurled at them, they continued to elect him until the work was done. His freedom of speech never destroyed their confidence in him, nor lessened their magnanimity; neither did he restrain it to gain their favor. The case can have few parallels in the history of any country."

A HERO, AND CERTAIN HEROINES

He asked not whence the fountains roll
No traveler's foot has found,
But mapped the desert of the soul
Untouched by sight or sound.

O. W. Holmes.

THREE remarkable books have been published within a year or so which are calculated to add to the unique fame of one of America's noblest heroes. Dr. Samuel Gridley Howe might be called a congenital hero. Courage, altruism, energy,