Next day *by the alps above the Cascade d'Arpénaz and up the Pointe de Colloney by its northern face, descending by the Chalets de Platé to the Plaine de Joux and Servoz.*

Two short days of rough walking most strongly recommended to mountaineers.

Alpine Training Diet: Partly a Retrospect.

By F. C. Grove (President).

(Read before the Alpine Club, December 16, 1884.)

SELF-INDULGENCE is the motto of the mountaineer. This may seem a paradox, but I think that I shall be able to show that it is absolutely true. I do not mean that puerile form of self-indulgence—self-torture it should be called—which gives a day's misery for an hour's enjoyment, and causes Nature to act as a terrible usurer, exacting a long period of reaction and suffering as payment for a brief time of crudely-tasted pleasure. This is the self-indulgence of the greedy child who eats too fast to taste, of the savage who gorges himself, or of the man who cannot resist the temptation to open another bottle, or who drinks ball champagne or some varieties of the fluid known as sparkling Moselle. What I refer to is that enjoyment which comes from a wise, orderly, and persistent cultivation of our faculties by means whereof we are enabled to extract the largest possible amount of pleasure from any given condition of things capable of yielding pleasure, and which is due to a thoughtful and persistent determination to make life—in a legitimate manner and with due regard for the welfare of others—as agreeable for ourselves as we possibly can. To bring about this highly desirable result, it is necessary that a large view should be taken, and that there should be a strenuous effort to extend as much as possible the capacity for enjoying healthy pleasures, intellectual, physical, or partaking of both natures. When this effort is earnestly made, happy consequences are almost sure to follow. It is a most obvious truism to say that the greater the power of enjoyment, the greater enjoyment will be. A beautiful view is a very different thing to a landscape-painter from what it is to me, and perhaps a very different thing to me from what it would be to an omnibus conductor. The privileged and appreciative few who were invited to the table of the late Docteur Véron derived far more pleasure, we may be sure, from the sequences and harmonies of their perfect repasts than could have been

felt by any *mangeur sans intelligence* from barbarous Britain or still more barbarous America.

Now self-indulgence, using the term in the sense which is now, I hope, recognised as the true one, has perhaps been more steadfastly practised by members of the Alpine Club than by any other set of men. The glory of a young man is his strength, and they saw that the persistent exercise of strength in overcoming serious and varied obstacles, such as Nature has benevolently placed on the mountain-side, is one of the greatest physical pleasures of life, and accordingly they made themselves as strong as they could, and used their strength as much as they could. They saw that the Alps told more and more to their worshippers—that is to say, to those who looked at them carefully, especially from 'above the snow-line;' so they observed steadily, and learnt more and more of the marvellous beauty of the world of glacier and crag. In a word, they discovered the immense enjoyment, physical and mental, to be derived from mountain ascents, and worked most zealously in the pursuit which proved such a grateful one, indulging themselves to the top of their bent. Now, strange to say, this noble practice of getting all the pleasure out of life that they could had one indirect but very remarkable result. It caused them all unconsciously to find out and follow the kind of diet most suited to men doing severe physical work at a time when the diet generally advocated, and advocated apparently with scientific sanction, was not only wrong, but exactly the opposite of right. To make matters clear at once, let me say that, speaking be it observed of solids only, the food most suited to a man doing severe physical work is that which he feels most inclined to eat. Now this the members of the Alpine Club have done *ab initio*, true to their noble maxim of self-indulgence, and anticipating in a marvellous way the slow results of science. Men cannot always get what they want to eat in Switzerland, but whenever they could, they invariably did. Bad the best might be, but the best that was to be had they always obtained. Many touching passages in Alpine narrative prove that they have unswervingly followed the rule above just laid down, which, I think it will be agreed, has the merit of simplicity.

Of course it must be understood that this maxim only holds good for healthy men with healthy, natural appetites, who will be content with—will indeed greatly prefer—simple and wholesome food. I am not talking of those who require stimulants to the palate, such as cayenne, hot chutney, West

India pickles, and other like filth, any more than I am talking of men who require whisky and soda before lunch, and gin and Angostura before dinner. Every generalization is subject to certain qualifications, and it would obviously be absurd to say that *pâté de foie gras*, *truffes en serviette*, and caviare (even if it were the brown kind so seldom obtained) would be an advisable supper before a heavy day; but Alpine climbers, whose condition is improving with each march, are as little likely to desire these luxuries as they are to get them. The healthy appetite craves for healthy food, and should be supplied with any variety of healthy food that may be desired and can be procured. With men whose digestions are vigorous, whose blood is rich, whose 'tone'—to use the current expression—is high, Nature is the best guide, and in a very strange fashion has she been shown to be the best guide; for in this case men of science and empirics fell into the same error. The old trainers thought that a man doing hard work ought to eat a great deal of meat, only a small quantity of vegetables, and little or nothing sweet. Into some of their absurd fancies, such as that one meat was better than another for wind, that prize-fighters should drink port and pedestrians sherry, and that ale should be somewhat sharp, otherwise acid, it is not necessary now to enter. These were, of course, ridiculous; but the general system which the old trainers instituted—abominable as it was—can hardly be said to have been ridiculous, as it seemed at one time to have the support of science, though probably its authors and followers were perfectly ignorant of the fact. Let me give a sketch of what the system was some eighteen years ago—that is to say, about the time when the Alpine Club was in the most glorious state of activity. *At Oxford the dietary of one college allowed nothing but beef or mutton, crust of bread or dry toast, jelly, and watercresses. Some other colleges were a little more liberal; one, which was ultra-generous, even allowing potatoes, cabbage (perhaps, by the way, the one vegetable that ought to be excluded), broccoli, spinach, and stewed rhubarb, and sago, tapioca, and jelly; but everywhere the necessity for beef and mutton was strongly insisted on. At Cambridge the dietary was beef and mutton, potatoes and greens, watercresses, lettuce (not very wholesome in its raw state), dry toast and bread, oranges, biscuits, and figs, and, in some colleges, apples, jellies, or rice puddings. The dietary of Westhall, the famous pedestrian, only allowed

* These facts are taken from Maclaren's work on Training.

chops and steaks, stale bread or toast, and mealy potatoes. That of other professional athletes was not quite so severe, but all were absurdly restricted, and in all beef and mutton were the staple. Most preposterous were these systems, the effect of which even now has not altogether disappeared; but, strange to say, the young men who followed them and stuffed themselves with underdone meat till they came to loathe it, could, if they had been sufficiently learned, have quoted the great name of Liebig in support of the precepts they obeyed. Of the mighty German chemist's famous generalization respecting food it is only necessary now to give the briefest account. As need hardly be said, he separated food into the 'tissue-forming' or nitrogenous—represented, broadly speaking, by the lean of meat and by fish—which goes to build up muscle—and the 'heat-giving,' which goes to keeping up that process of combustion which continues in the body until death puts out the flame. This wide generalization cannot now be accepted in the absolute way in which he laid it down, being subject, as later physiology has shown, to considerable qualification; but still, when treating the subject in a popular manner, it may, broadly speaking, be considered as true. In some of the deductions, however, which he drew from his great discovery, Liebig was wrong, and it has now been well established for long that he was notably wrong in thinking that muscular or mechanical effort was exclusively supported by nitrogenous food, and that the heat-giving foods kept the fire burning but did no more. Had Liebig been right, the trainers could have quoted strong justification for urging devotion to beef and mutton and righteous abstinence from the sinful kinds of food which are commonly thought to produce fat; but, unhappily for the reputation of these physiologists, it has been shown that Liebig was entirely wrong, and a system of diet which is in accordance with his views is likely to be an extremely bad one. He was well-nigh as far from the truth as Falstaff was when he held that wine thickened the blood; but it takes long to correct the error of a great man; and perhaps the fallacy which Liebig propagated is, even now, not altogether dead.*

The vestiges of his error should not, however, linger, as it has been shown to demonstration that he was mistaken. Several years ago Hermann said, in his 'Physiologie' (referring to an experiment which will shortly be described),

* The views given in this and the next paragraph are not now advanced for the first time.

that it had been directly ascertained that the albuminous bodies which were consumed in a given time were not by any means capable of accounting for the work done during the same time, adding that it was not possible to point to any act accompanied by the evolution of kinetic energy, for which the consumption of a particular kind of food (nitrogenous food) was absolutely necessary. Later on, Dr. W. B. Carpenter, being surprised to find that Liebig's doctrine 'as to the direct dependence of muscular energy on the expenditure of nitrogenous food' was still put forward as an accepted physiological verity, took some pains to show, in the pages of 'Knowledge,' that it had been entirely exploded. The German chemist's idea was, that the only purpose served by the burning up within the body of the non-nitrogenous components of food in combination with the oxygen of the air was the production of heat, and that it had nothing to do with mechanical force. This, he believed, was 'the product of a transformation of living muscular fibre into dead,' and he thought that he discovered, in increased excretion of urea after severe exertion, a distinct proof of the truth of his hypothesis. Dr. Carpenter showed that this hypothesis had been proved to be altogether wrong. From the first it was seen that some indisputable facts were not reconcilable with it, and in 1845 Mayer, whom Dr. Carpenter quoted, laid down that chemical force in ingested food and inhaled oxygen was the source of the motion and heat which are the two products of animal life, and made a comparison, which has since become famous, of the body to a steam-engine. According to this happy illustration, non-nitrogenous food represents the fuel, and nitrogenous the metal of the boilers and cylinders. When there is a great development of force there will be a large increase in the consumption of the former, but only a slight increase in the consumption of the latter, due to extra wear and tear. It cannot be said, however, that the views which this figure of speech expresses were shown to be true, or that Liebig's doctrine was definitely disproved until long after Mayer wrote. In 1866 Professors Fick and Wislicenus made their memorable ascent of the Faulhorn, dieting themselves with the greatest care, and using the most rigorous methods to ascertain exactly the consumption of muscle-substance; and although the experiment is thoroughly familiar to physiologists, and has been spoken of and commented on again and again, it may be well—since, of course, this humble paper is not intended for medical men, where pardon indeed should be craved for

touching the subject—to quote Dr. Carpenter's precise and luminous description of what these two learned men, given to that self-analysis which is at the root of all true knowledge, found out. He said:—

An experiment which has now become 'classical,' was performed upon themselves by Professors Fick and Wislicenus in 1866—namely, the determination of the respective quantities of urea* eliminated by each of them for twelve hours *before*, for eight hours *during*, and for six hours *after* the ascent of the Faulhorn, whose height is about 6,500 feet. They took no nitrogenous food either for seventeen hours before the ascent, during the eight hours of the ascent, or for six hours after the ascent; but then took a good ordinary meal. The mean of the two determinations (between which there was a very close correspondence) gave for the twelve hours before the ascent 0·62 gramme, being at the rate of 0·052 gramme per hour; for the eight hours of the ascent 0·40 gramme, or at the rate of 0·05 gramme per hour; and the same amount for the six hours following the ascent, being at the rate of 0·066 gramme per hour; while for the twelve hours after the subsequent meal the mean amount was 0·48 gramme, or at the rate of 0·04 gramme per hour. There was thus a positive reduction in the amount of urea eliminated, which was probably attributable to the temporary abstinence from nitrogenous aliment; since the results of subsequent observations carried on for a much longer period upon men going through severe exertion upon an ordinary diet (as those made by Dr. Austen Flint, of New York, upon Weston, the pedestrian, during a five days' walk of 310 miles) show a slight total increase in the elimination, which is fairly attributable to the general 'wear and tear' produced by the excessive strain put upon the machine. There is, then, no foundation whatever for the assumption that every exertion of muscular energy involves the death of an equivalent amount of muscular substance.

Such are the scientific facts. I trust that they have not been over dry, but even if they are dry they are worthy of attention, as the right understanding of them is most gratifying to us. Trainers and athletes went astray for generation after generation. The greatest chemist in Europe, followed by many others, went astray, but the members of the Alpine Club never went astray for a single moment, owing in great part to their wise habit of self-indulgence, but in part also to that power of making a marvellous bound by which intellects of the highest order reach a conclusion that others only attain by a slow process of reasoning and gradual rejection of error; they saw or rather felt, intuitively and perhaps unconsciously, the great truth which was not apparent to the immature intellects of the undergraduate and the biologist. As I have said, it has been from the first, and

* I.e. the ash of the muscle, showing how much has been consumed.

I believe still is, the practice of our members to eat whatever they felt or feel inclined for, subject only to the qualification of being able to get it, and they have never paid the slightest attention to any rules of training diet. In this, as in so many other things, they have acted most wisely, and in fact have done just the same thing as the stoker of an express train does when he throws in shovelful after shovelful of coal in rapid succession—if the parallel may be permitted. During and after prolonged exertion nature cries aloud for heat-giving foods. The heat-giving foods are the starchy, the fatty, and notably the saccharine. These are precisely the foods which can be 'stored' in the body with the greatest ease, and used as a reserve force, and are at the same time most valuable, because indirect sources of muscular energy. Now who has not observed, what innkeeper has not observed with deep inward pain, which, alas, had to be concealed under a smiling mien, the powers of members of the Alpine Club with regard to sweets? How full are the memories which arise of cream and prunes, preserves—whatever time in the feast they came—and above all of that delightful *tartine*, somewhat resembling in appearance a Neapolitan ice and comprised of equal parts of bread, butter, and honey, so often devoured on a mountain; and how gratifying is it to think that in consuming it we were not merely satisfying our appetites, but exemplifying a great scientific truth; and perhaps the reflection may add zest to mountain banquets in the future. Incontestable, however, though the great truth is, scoffers and revilers and believers in old superstitions may try to get rid of this proof of it by two arguments: in the first place it may be said that good meat is not obtainable in the Alps, and that therefore men must eat other things. This is not universally true, and where the meat is good, as at some hotels, members of our Club are not observed even by the most acute eyes, such as those, for instance, of an *oberkellner*, to be a whit less attentive to the other articles of food provided. In the second place it may be said that, under the old system, men grew extremely strong. No doubt they did, but this was because they were, as a rule, young men with magnificent constitutions, who were constantly taking exercise in the open air. As for the diet, they grew strong in spite of it, and not by reason of it; though it must be noted that in some peculiar cases where rapid renewal of the tissues of the body is necessary, a large amount of nitrogenous food is probably desirable; but to carry out this scheme of diet as a system would be an error—a generalization, as it were, from

a special instance. Where the old plan was followed men gained strength, but they lost weight. They became 'fine,' as it was said. As a result they were ever on the brink of breaking down. 'So-and-so broke down because he couldn't stand the training,' used to be a constant remark about amateur and professional athletes; but training should signify nothing but the improvement of health, and the diet, if altered at all in quality, should only be so modified as to suit the digestive idiosyncrasies of the individual. No one should 'break down.' The worst calamity ought to be that he does not improve with proper rapidity in health, in strength, and in nerve. Alpine training, speaking broadly, ought to bring a man down to, or up to, his proper weight, and ought to keep him at such a level. It is well worth observation that, while a break-down in college or ordinary training has never been very uncommon, a break-down in the Alps has been, if not an unknown, certainly a very rare occurrence.

So much for the solids. As for the fluids, there is nothing to be said about them, the rules with regard to them being well understood, and not specially due to our members. To enlarge on the evils of taking much alcohol, when doing hard work, would be about as necessary nowadays as to enlarge on the disadvantages of indulging in opium or bang. The healthier a man gets the less does he desire much alcohol. As to fluids generally, long experience has shown that moderation is desirable, and I believe that many medical men now strongly inculcate moderation in drinking—using the word in its literal sense. I will trouble the Alpine Club no more on this subject, because nothing but truisms can be uttered respecting it. What I have said with regard to food may not be regarded altogether in the light of a truism, but I believe that I have shown that there are substantial reasons for the rule I have ventured to lay down. For those who do not live in an artificial way, Dame Nature is no treacherous guide. With strong men leading perfectly healthy lives, and not desiring elaborate preparations, or those abominations, stimulants to the palate, the one maxim is, 'Eat what you feel inclined to eat, and if you cannot get it, eat what comes nearest to it.' Accept, in this case, at all events, the precept followed by the later Franciscans of the Thames, and 'Fay ce que voudras.'