

ment is extreme, particularly in the cerebrum. The left ventricle is contracted (Wood), and the right chamber dilated. The blood is usually fluid; the lungs are intensely congested. Parenchymatous changes occur in the liver and kidneys.

According to Wood, "heat exhaustion with lowered temperature represents a sudden vaso-motor palsy, i. e., a condition in which the existing effect of the heat paralyzes the centre in the medulla." On the other hand, thermic fever is held to be due to paralysis under the influence of the extreme external heat of the centre in the medulla which regulates the disposition of the bodily heat. Owing to this disturbance, more heat is produced and less given off than normally.

Symptoms.—The patient may be struck down and die within an hour with symptoms of heart failure, dyspnoea, and coma. This form, sometimes known as the asphyxial, occurs chiefly in soldiers and is graphically described by Parkes. Death indeed may be almost instantaneous, the victims falling as if struck upon the head. The usual form in this latitude comes on during exposure, with pain in the head, dizziness, a feeling of oppression, and sometimes nausea and vomiting. Visual disturbances are common, and a patient may have colored vision. Diarrhoea or frequent micturition may supervene. Insensibility follows, which may be transient or which deepens into a profound coma. The patients are usually admitted to hospital in an unconscious state, with the face flushed, the skin pungent, the pulse rapid and full, and the temperature ranging from 107° to 110°, or even higher. F. A. Packard states that of the 31 cases admitted to the Pennsylvania Hospital in the summer of 1887, in a majority of them the temperature was between 110° and 111°. In one case the temperature was 112°. The breathing is labored and deep, sometimes stertorous. Usually there is complete relaxation of the muscles, but twitchings, jactitation, or very rarely convulsions may occur. The pupils may at first be dilated, but by the time the cases are admitted to hospital they are (in a majority) extremely contracted. Petechiae may be present upon the skin. In the fatal cases the coma deepens, the cardiac pulsations become more rapid and feeble, the breathing becomes hurried and shallow and of the Cheyne-Stokes type. The fatal termination may occur within twenty-four or thirty-six hours. Favorable indications are the recovery of consciousness and a fall in the fever. The recovery in these cases may be complete. In other instances there are remarkable after-effects, the most constant of which is a permanent inability to bear high temperatures. Such patients become very uneasy when the thermometer reaches 80° F. in the shade. An extraordinary instance came under my notice in which the patient was subsequently so sensitive to temperatures in the neighborhood of 75° F. that at such times he lived comfortably only in the cellar, and finally sought refuge in Alaska. Loss of the power of mental concentration and failure of memory are more constant and very troublesome sequelæ. Such patients are always worse

in the hot weather. Occasionally convulsions and marked mental disturbance may develop. H. C. Wood states that in a case of this kind chronic meningitis was found.

Guit  ras has called attention to a form of fever occurring in the South, known in Florida as "Florida fever," in the Carolinas as "country fever," and in tropical countries as *fi  vre inflammatoire*. The cases last for a variable time, and are mistaken for malaria or typhoid; but he believes them to be entirely distinct and due to a prolonged action of the high temperatures. He has called the condition a "continued thermic fever."

The diagnosis of heat exhaustion from thermic fever is readily made, as the difference between the two conditions is striking. "In solar exhaustion the skin is moist, pale, and cool; the breathing is easy though hurried; the pulse is small and soft; the vital forces fall into a temporary collapse; the senses remain entire" (Dowler); whereas in sunstroke or heat apoplexy there is usually unconsciousness and pyrexia.

The mode of onset, together with the circumstances under which it occurs and the high temperature, permits thermic fever to be readily differentiated from apoplexy, and coma from other conditions.

Treatment.—In heat exhaustion stimulants should be given freely, and if the temperature is below normal the hot bath should be used. Ammonia may be given if necessary. In thermic fever the indications are to reduce the temperature as rapidly as possible. This may be done by placing the patient in a bath at 70°. Rubbing the body with ice was practised at the New York Hospital by Darrah in 1857, and is an excellent procedure to lower the temperature rapidly. Ice-water enemata may also be employed. At the Pennsylvania Hospital in the summer of 1887 the ice-pack was used with great advantage. Of 31 cases only 12 died, a result probably as satisfactory as can be obtained, considering that many of the patients are almost moribund when brought to hospital. It should be compared with Swift's statistics, in which of 150 cases 78 died. In the cases in which the symptoms are those of intense asphyxia, and in which death may take place in a few minutes, free bleeding should be practised, a procedure which saved Weir Mitchell when a young man. Of other remedies, the antipyretics have been employed, and may be given when there is any special objection to hydrotherapy, for which, however, they cannot be substituted.

VIII. OBESITY.

Corpulence, an excessive development of the bodily fat, is a condition for which the physician is frequently consulted, and for which much may be done by a judicious arrangement of the diet. The tendency to polysarcia or obesity is often hereditary, and is particularly apt to be manifest after the middle period of life. It may, however, be seen early, and in this country it is not very uncommon in young girls and young boys.

A very important factor is overeating, a vice which is more prevalent and only a little behind overdrinking in its disastrous effects. A majority of persons over forty years of age habitually eat too much. In some of the most aggravated cases of obesity, however, this plays no part, and the unfortunate victim may be a notoriously small eater. A second element is lack of proper exercise; a third less important factor is the taking largely of alcoholic beverages, particularly beer.

In obesity it is now generally conceded that the carbohydrates, which were so long blamed, are not at fault, since they are themselves converted into water and carbon dioxide. On account, however, of the facility with which they are utilized for the purposes of oxidation the albuminous elements of the food are less readily oxidized, not so fully decomposed, and the fat is in reality separated from them. So, too, the fats themselves are not so prone to cause obesity as the carbohydrates, being less readily oxidized and interfering less with the complete metabolism of the albuminous elements.

Many plans are now advised for the reduction of fat, the most important of which are those of Banting, Ebstein, and Oertel. In the Banting method the amount of food is reduced, the liquids are restricted, and the fats and carbohydrates excluded.

Ebstein recommends the use of fat and the rapid exclusion of the carbohydrates. The following is an example of his dietary:

Breakfast (6 A. M. in summer, 7.30 A. M. in winter).—White bread, well toasted (rather less than two ounces) and well covered with butter. Tea, without milk or sugar, eight or nine ounces.

Dinner, 2 P. M.—Soup made with beef-marrow. Fat meat, with fat sauce, four to five ounces. A moderate quantity of asparagus, spinach, cabbage, peas, and beans. Two or three glasses of light white wine. After the meal, a large cup of tea without milk or sugar.

Supper, at 7.30 P. M.—An egg, a little roast meat, with fat. About an ounce of bread, well covered with butter. A large cup of tea, without milk or sugar.

Oertel's method has already been considered in connection with the treatment of fatty heart, and is combined with systematic bodily exercise. It is particularly adapted for stout persons with weak heart.

The so-called Schweninger cure is in reality Oertel's, with the sole modification of the forbidding of any fluid at meals. Liquids must be taken more than two hours after the food.

Yeo, after a full consideration of the various methods, gives the following useful summary:

"The albuminates in the form of animal food should be strictly limited. Farinaceous and all starchy foods should be reduced to a minimum. Sugar should be entirely prohibited. A moderate amount of fats, for the reasons given by Ebstein, should be allowed.

"Only a small quantity of fluid should be permitted at meals, but

enough should be allowed to aid in the solution and digestion of the food. Hot water or warm aromatic beverages may be taken freely between meals or at the end of the digestive process, especially in gouty cases, on account of their eliminative action.

"No beer, porter, or sweet wines of any kind to be taken; no spirit, except in very small quantity. It should be generally recognized that the use of alcohol is one of the most common provocatives of obesity. A little Hock, still Moselle, or light claret, with some alkaline table water is all that should be allowed. The beneficial effects of such diet will be aided by abundant exercise on foot and by the free use of saline purgatives, so that we may insure a complete daily unloading of the intestinal canal.

"It is only necessary to mention a few other details. Of animal foods, all kinds of lean meat may be taken, poultry, game, fish (eels, salmon, and mackerel are best avoided), eggs.

"Meat should not be taken more than once a day, and not more than six ounces of cooked meat at a time. Two lightly boiled or poached eggs may be taken at one other meal, or a little grilled fish.

"Bread should be toasted in thin slices and completely, not browned on the surface merely.

"Hard captain's biscuits may also be taken.

"Soups should be avoided, except a few tablespoonfuls of clear soup.

"Milk should be avoided, unless skimmed and taken as the chief article of diet. All milk and farinaceous puddings and pastry of all kinds are forbidden. Fresh vegetables and fruit are permitted.

"It is important to bear in mind that the actual quantity of food permitted must have a due relation to the physical development of the individual, and that what would be adequate in one case might be altogether inadequate in the case of another person of larger physique."*

* A System of Therapeutics, vol. i, edited by H. A. Hare, Philadelphia, 1891.