

of different types of sunstroke coming under the writer's notice in Bellevue Hospital in 1896, there were but eight of this type.

The severest form of insolation is the hyperpyrexial type. In this class are included all patients whose temperature rises to 105° F. and over, with or without loss of consciousness. The prodromal symptoms when present are often more pronounced than in the lighter cases, though many cases of this severe form of sunstroke have no prodromal symptoms at all. Patients whose temperature rises above 108° are less likely to have prodromal symptoms than those in whom the temperature is not so high. The worst attacks of sunstroke, therefore, may apparently occur without warning. The same prodromal symptoms are often present as in the milder forms. Insomnia, however, is marked, and may be present four or five days before the attack culminates. There are often great irritability and restlessness and sometimes decided increase in micturition for several days. A feeling of intense heat throughout the body, with the sensation as if the head were bursting open and the eyes bulging outward, is often noticed just before loss of consciousness. Chromatopsia is not uncommon, external objects taking on different colors, blue being the most common, or the field of vision may be occupied by brilliantly colored flames. In other patients objects suddenly lose color and appear black. Previous to loss of consciousness there are sometimes hallucinations of hearing or sight. Suicidal mania may also develop. Some patients are able to continue work which requires intelligent action and perform complex acts working with machinery, or may leave work and go home, undress, bathe, and go on the street again before falling helplessly inert, and yet after consciousness is regained retain no memory of what they had done for several hours previous to the time when they were seen to fall. When consciousness is retained the patients suffer intensely with burning heat and intense headache, and may become stupid and dazed. Retention of consciousness in these severe forms of sunstroke is the exception. In patients with a temperature above 109° I have never seen consciousness retained. Most patients are comatose. The skin is dry, flushed, and hot; or it is livid, pale, and cyanotic, and covered with cold, clammy perspiration. The glazed, set eyes are suffused and half open, or may be wide open and staring. The pupils are at times normal, or may be dilated or contracted unevenly. They may or may not react to light. Respirations come in short gasps, often irregularly, with a noisy, gasping inspiration and quiet expiration, or with explosive expiration and quiet inspiration, often accompanied with a piteous moan. Some cyanotic patients lie absolutely limp and flaccid, not moving even an eyelid, while in others there may be convulsive twitchings or violent epileptiform convulsions. Other patients with dry, hot skin are wildly delirious and fight and struggle furiously. In the limp patients the pulse is usually soft and frequent or small. In the more sthenic cases it may be full, strong, with throbbing carotids. The worst cases are pulseless. Vomiting and involuntary defecation are very common. The urine is scant, sometimes albuminous, sometimes containing blood. The peculiar petechial rash is often present, being most abundant upon the arms and body.

These sunstroke patients emit a peculiar, characteristic, disagreeable odor, particularly strong in the faeces, though it is distinctly not a faecal odor.

The cyanotic type of sunstroke occurs more often with temperatures above 109° F. than below this figure. The height to which the temperature can go is unknown. The highest reported temperature is 117.8°, in a patient brought to the New York Hospital in 1896. Another patient in the Presbyterian Hospital, New York, had a temperature of 115°. These temperatures were measured with special thermometers. Temperatures of from 112 to 113° are not uncommon, and those of 108–110° are exceedingly common.

There is no exact ratio between the frequency of the pulse and the height of the temperature in these severe

forms of sunstroke. With a temperature of 110° the pulse may vary from 90–150. The same is true when the temperature is 105–106°. The number of respirations per minute may vary from 16 to 50, irrespective of the temperatures.

In the most severe cases death rarely occurs immediately, but is delayed for a few hours. It has been stated that when the temperature is reduced the patient is out of danger, although the elevation of temperature may persist for some days. This is by no means true. While it is true that consciousness returns in about half the cases within an hour after the reduction of the temperature to normal, and when once regained it is retained, others do not regain consciousness until after two or more baths are given to reduce the continually recurrent rise of temperature, and many patients may remain unconscious for twenty-four hours or even as long as ten days and yet recover. In the worst cases, even after the temperature has fallen, the patients do not react but die within twenty-four hours; some, however, will live longer and die without regaining consciousness at the end of a few days. Others, after they have regained consciousness and are apparently doing well, at the expiration of a few hours or one or two days may develop delirium and remain delirious for a few days or a week and recover, or they may die during the second period of delirium.

Patients with a temperature of 105–107° frequently recover without thermic fever or any secondary rise of temperature. This exceptionally occurs when the initial temperature has been 107–110°. With temperatures above 110° there are one or more secondary rises of temperature which usually require active interference, or there is a continued fever for some time.

The secondary rises of temperature are apt to occur from three to six hours after the temperature has been reduced, sometimes not until from twelve to eighteen hours after the first bath. In serious cases the secondary rise may come on within an hour. It is not uncommon to find these secondary rises occurring eight, twenty-four, or thirty-six hours after the first bath. Some patients may have as many as four or five or even more exacerbations of temperature requiring active treatment. It is not uncommon to have thermic fever lasting for several days or one or two weeks, the temperature ranging between 101 and 103° F.

In severe cases after the bath the pulse remains feeble and soft and frequent. In favorable cases it drops more slowly to normal than the temperature. Among markedly alcoholic patients there is an asthenic course of the disease requiring special mention. The initial temperatures in these cases which have come under the writer's notice have varied between 106 and 109°, and the patients were strong, well-nourished individuals. They reacted well after their baths and became conscious within four hours, remaining rational for twenty-four hours; they then became wildly delirious or sank into the low muttering form. Their skin became dry and harsh, there was incontinence of urine and faeces. During the wild delirium their temperatures rose, frequently equalling in height the initial temperature, with a pulse of 120–150. In the low stage of the delirium the temperature did not rise above 102°, with a pulse of 80–100. In some patients just before death there was an ante-mortem rise of temperature to 106–110°. These patients died within from three to eighteen days after the sunstroke.

The convulsions mentioned as occurring in severe cases are not dependent upon the height of the temperature. They occur with temperatures of 105–106°, as well as with those of 108–112°, though they are more frequent with the higher temperatures; and since they seem to depend on the toxic destruction of the central ganglion cells, they are always of serious import though by no means fatal. They may be of a general epileptiform type, or they may be confined to the head, neck, arms, and legs. They may be more severe on one side of the body than on the other and rarely are distinctly unilateral.

While they may occur with the acme of temperature, they may not develop until some hours after the tem-

perature has fallen. When the patient is in convulsion before the first bath the convulsions are apt to continue for some time afterward, though they may cease when the temperature becomes normal. Sometimes a second bath of a few minutes will cause them to cease. After they have disappeared and the patient has been rational for hours, or even one or two days, convulsions may suddenly recur and the patient may die in one. This is not uncommon. Muscular twitchings which do not develop into the convulsions are exceedingly common. An intense rigidity of the muscles similar to tetanic spasms is of quite common occurrence. This usually relaxes as the patient sleeps. These spasms may involve the respiratory muscles, and when they come on suddenly there is great danger of suffocation. The rigidity is often so great that artificial respiration is impossible.

The skin, in these cases of hyperpyrexia, often becomes dry and harsh during the week after the sunstroke, and desquamation may occur, the skin peeling off in large scales or flakes. Ecchymoses which occur in patients from bruising during the delirium are much more extensive than those occurring from ordinary bruises, and hypodermic injections of any substance are not infrequently followed by large ecchymoses which may go on to suppuration.

**Complications.**—Meningitis and encephalitis are not uncommon complications of sunstroke. Delusional insanity, with ideas of persecution and hallucinations of various kinds, are frequently observed. Pneumonia sometimes develops and is usually fatal. Fayer mentions that cerebral hemorrhage may follow sunstroke. Patients with chronic nephritis are very apt to have acute exacerbations of the nephritis and develop acute uræmia.

The sequelæ of sunstroke, even after the mildest forms, are often very pronounced. Not infrequently headache, extreme weakness, malaise, and dizziness are persistent. There may be soreness in the muscles and bones, with numbness and tingling of the hands and feet. This tingling may last for days or weeks, or even months. Anæmia is usually very noticeable. Polyuria, glycosuria, or diabetes mellitus may develop shortly after sunstroke and be permanent. Chronic meningitis with intense headache and stiffening of the cervical muscles or encephalitis with inco-ordination of the extremities, so that the patients may be unable to feed themselves, have all been seen following sunstroke. The nervous and mental conditions may develop into permanent dementia. Various forms of insanity, such as paresis or mania or delusional insanity, are recorded. Multiple neuritis may develop. Sometimes atrophy of a certain group of muscles, as, for instance, the flexor muscles of the forearm, may occur. Patients may develop a change of disposition, and from good-natured change to an ugly irritable disposition. Sensitiveness to heat, dizziness, and headache are probably the most common sequelæ. Chromatopsia on hot days may occur. Epilepsy may arise, and when previously present the fits occur with increasing frequency. Loss of memory and inability to concentrate the mind forces some patients to give up their work.

**DIAGNOSIS.**—Heat exhaustion may be confounded with internal hemorrhage, cardiac failure, and alcoholism. The intense headache of which the patient complains will aid in diagnosing heat prostration. The moderately severe forms of insolation, especially with subnormal temperatures, restless delirium, and collapse, must be differentiated from internal hemorrhage and cardiac failure. The intensity of the delirium and twitching of the muscles will aid in recognizing the condition.

When unconsciousness is present the diagnosis from apoplexy, with its slow, full pulse, stertorous breathing, normal temperature, and local paralysis, can easily be made. In sunstroke we have a soft, frequent pulse, shallow breathing, and rise of temperature, and often hot, dry, flushed skin and absence of local paralysis.

The hyperpyrexial form may be confounded with meningitis, typhoid fever, and abscess of the brain with extremely high temperature. The usual excessive height

of the temperature with the peculiar respirations, convulsive movements or intense convulsions, or the absolute immobility of the patient and the cool, clammy skin and high temperature, with the history of previous environment, should render the diagnosis easy.

**PROGNOSIS.**—The prognosis of heat prostration is universally good. In the moderately severe forms of sunstroke it is also good. The prognosis of the severe forms depends on the previous habits and condition of the patient. In alcoholics and those weakened by disease the prognosis is worse than in those of abstemious habits. The height of the temperature usually serves as a good criterion. When the temperature reaches 111° F. or over, the prognosis is very unfavorable, though by no means hopeless. With a temperature between 110–111°, if proper treatment can be applied quickly, about 50 per cent. recover. If proper treatment is not applied, very few recover with a temperature above 108°. Temperatures between 108 and 110° under good treatment have 75 per cent. of recoveries. With temperatures of 105–108° about 90 per cent. recover. These statistics are based on the death rate in 1896 among 520 hyperpyrexial cases. The death rate in those treated by hydrotherapy in various ways was 25.12 per cent. In 805 cases of all forms the mortality was 16.39 per cent. The mortality is usually given as from 41 to 50 per cent. In 961 cases reported in Aiken's "System of Medicine," the mortality was given as from 56 to 62 per cent.

The mortality in sunstroke depends greatly upon the rapidity with which treatment is instituted and also on the kind of treatment employed.

**TREATMENT.**—In the milder forms of prostration, if the patient is overcome in the sun, he should be immediately taken into the shade and if possible to a cooler place. The clothing should be loosened and the head bathed with cold water. If possible, ice should be applied to the head; this gives great relief to the throbbing headache. Aromatic spirits of ammonia, Hoffman's anodyne, or liquor ammonii acetatis should be given for stimulation. A little alcohol, such as a small dose of whiskey, is sometimes of benefit, though it is by no means as good as the other forms of stimulants mentioned. Iced tea and coffee are also excellent remedies here. Sipping very cold water will also revive a patient overcome with a feeling of faintness. Some of the coal-tar products are also valuable here to relieve the headache, such as phenacetin, in gr. v. doses; antipyrin, gr. x. to xv.; antifebrin, gr. iv.; and ammonol, gr. v. to x. If these can be mixed with a little sodium bicarbonate or caffeine they are excellent. The patient should rest, preferably in bed, for some hours until the feelings of faintness and dizziness have passed; he can then be allowed to go about as usual, being careful not to over-exert himself and taking especial care to eat only easily digestible foods.

In the moderately severe forms, when collapse and subnormal temperature occur, the patient should be covered with blankets and hot-water bottles packed around the outside. The same stimulants may be given, and if the patient is unconscious hypodermic medication is necessary, gr.  $\frac{1}{32}$  to  $\frac{1}{16}$  of strychnine, gr.  $\frac{1}{16}$  of glonoin, gtt. i. to ij. of fluid extract of digitalis, or gr. i. to ij. of a mixture containing ten per cent. camphor and ether can be administered. If the temperature is 103–104° and the patient is unconscious with convulsive twitchings, he should be placed in a cold pack, as a sheet wrung out of cold water, or put in a cold bath and vigorously rubbed for a few minutes, then dried and covered with blankets. If the temperature is not above 107° and is not relieved quickly, sometimes an enema of ice water acts with great benefit. One or two quarts of ice water, in which salt has been dissolved (one teaspoonful to the pint), will often, when used as an enema, bring the temperature down within an hour. But this ice-water enema will not control a rising curve of temperature. Headache in these cases can be controlled by the coal-tar products, which also aid in reducing the temperature, and by the ice cap.

The hyperpyrexial cases demand the most active and immediate treatment. Various forms of cold baths have been used. An ice bath consists of a tub of water in which about half a bushel of cracked ice is floating. Just before the patient is lowered into the bath the ice should be removed, as sometimes the sudden contact with the ice causes intense rigidity of the patient which brings on suffocation. This is rare, but it does occur; therefore the ice should be taken out of the bath before the patient is put in, but if the patient is put in ordinary tap water and rubbed a few moments, the ice can be placed in the bath while the patient is in it. During his stay in the bath the patient should be rubbed vigorously with rough mittens or the bare hand; sponges do not afford sufficient irritation; and as long as the patient is in the bath the rubbing should not cease. His head should be supported and cold water continually poured upon it. A towel folded over the forehead will prevent the water running into his eyes. Such a bath in a few minutes will cause the cyanotic skin of the patient to appear flushed and rosy; an unconscious patient may come to in the bath and the temperature will quickly fall toward normal. A thermometer should be constantly kept in the rectum of the patient in the bath, and the temperature should not be allowed to fall below 103° F. When this is reached the patient should be quickly taken from the water, rubbed dry, and covered up warmly. Hypodermic stimulation will be required in these patients. The ordinary results of this stimulation do not seem to be observed while the temperature remains excessively high. This should be remembered, as overstimulation can easily be brought about, and this will occur when the temperature falls to a point near normal. For cardiac stimulation a dose of morphine, gr.  $\frac{1}{4}$  to  $\frac{1}{2}$ , with gr.  $\frac{1}{100}$  atropine, will be most beneficial. It diminishes the convulsions which are apt to follow and produces a sleep from which the patient wakes refreshed. Strychnine increases the tendency to convulsions, although it does not cause all the convulsions following sunstroke, as has been stated. Convulsions will occur in patients who have never had strychnine, but they do not appear so frequently as when strychnine has been used.

The length of time necessary for the reduction of temperature by these cold baths cannot be stated. It depends upon the amount of heat being produced, and not at all upon the height to which the temperature has gone. It may take twenty minutes to reduce a temperature from 106° to 103°, while a temperature of 110° may drop to 103° in five minutes.

Another method of reducing temperature is to place the patient on a rubber sheet and rub with ice. This takes much longer, and it only allows friction of the upper surface of the body and it does not reduce temperature so quickly or so effectively.

Still another method is to place the patient on a cot on a rubber sheet and throw dipperfuls of cold water over him from a distance of several feet. The impact of the water causes the necessary friction, and it is not an ineffective method. While it takes longer to reduce temperature, the reactions following it are not so marked as in the case of the ice bath, and when ice cannot be obtained it is the quickest substitute. While the water is being dashed over the body of the patient, cold water should be poured upon the middle of his forehead from a pitcher held six or eight feet above his head; this is most beneficial in bringing the patient back to consciousness. A very excellent method, perhaps the best, is to place the patient in a tub or on a cot or simply lay him on the floor and play a hose on him through a fine needle-spray nozzle. Where the head of water is sufficiently strong this is a most excellent method. It causes the physical irritation to the skin which is so essential to overcome the stasis in the capillaries. This stasis, according to Winternitz, prevents ninety-four per cent. of radiation of heat from the skin.

Patients treated in this manner should be allowed to have their temperatures fall to 102° or 101°; then they should be taken up, dried, blanketed, and put to bed.

In severe cases the reaction following this method does not seem to be so intense as with the ice baths, nor so apt to fall below the normal. When the reaction occurs and the temperature goes to 105° the treatment should be repeated; an ordinary tub bath at 65° will sometimes control it. Warm baths have not proved so successful as the cold ones for reducing the temperature.

No treatment seems to prevent the thermic fever. A useful method of controlling this fever is to place small bladders filled with ice in the axillæ and groins; this seems more effective in women than in men.

After the patients are in bed, liquor ammonii acetatis is a most excellent stimulant and produces both diaphoresis and diuresis. Digitalis, ether, and spirits of ammonia are also excellent for rapid stimulation.

Among alcoholics the question arises as to the desirability of giving alcohol. When delirium tremens seems about to develop, as it so often does, a mixture of half an ounce of whiskey with one or two drachms of paraldehyde, repeated in an hour if necessary, will often produce sleep from which the patient will wake much improved.

It is best for twenty-four or forty-eight hours to keep the patient on milk, or at least fluid diet, followed by eggs, cereals, milk, and broth. Where there is severe thirst an abundance of water can be given. The liquor ammonii acetatis is useful in this connection to allay thirst. The sequelæ or complications of sunstroke should be treated as the same diseases under ordinary circumstances. The nervousness, weakness, and loss of appetite can be overcome by a mixture of tincture of nuxvomica and compound tincture of cinchona, five to ten drops each, in compound tincture of gentian as a menstruum. For alcoholics, one or two drops of capsicum and sometimes ginger can be added to this mixture. Meningitis following sunstroke may have to be treated by a merciless use of the actual cautery. Patients suffering from sunstroke in the tropics may have to go to a more temperate climate or they may become helpless invalids. Such patients may develop some form of insanity, and it is well to remember the possibility of suicidal tendencies and never allow them to travel alone. The anæmia and general lack of nerve force following sunstroke can often be treated with cod-liver oil and small doses of tincture of iron. Of the latter, three drops should be put in a tumblerful of water and sipped with meals. This does not derange digestion and is preferable to large doses. Bland pills or any other form of iron may be used.

The numbness and tingling so often complained of can often be benefited by the Charcot douche to the spine.

It is remarkable how long the sequelæ of sunstroke may persist, and they are often discouraging to deal with. It is often years before exposure to heat can be withstood without recurrent headache and prostration.

Alexander Lambert.

**HEAT, THERAPEUTICS OF.**—Although heat has always been recognized as one of the most valuable therapeutic agents, it has never been so widely used as at the present time. It is one of the safest and simplest remedies known. Its good effects are varied and the methods of applying it are numerous. The results of the therapeutic use of heat are dependent upon various conditions, chief among which are the manner of its application and the temperature used. A far higher temperature can be borne when the heat is dry than when it is moist. For example, hot water becomes painful at 115° F. Steam or vapor cannot be borne above 120°, while hot dry air can be used at a temperature of 300° and higher. The vaso-dilator nerves are stimulated by heat, while the vaso-constrictors are inhibited.\* The cutaneous capillaries are

\* This statement demands proper modification to express the facts as they appear. These are given in somewhat detailed manner in Armstrong's article on Baths in Foster's "Practical Therapeutics," and it is from this source that I have derived the information which is furnished in the following explanation:  
In order that heat shall simultaneously cause stimulation of the

dilated by a slow application of heat, but if the application is sudden the primary effect corresponds to that of cold, the skin is blanched and even wrinkled.

When the cutaneous capillaries are dilated the skin becomes reddened, and if the temperature is not higher than 104° F. cutaneous sensibility is increased. When, however, the temperature is increased to between 110° and 120°, sensibility is diminished or even abolished.

The nervous system is soothed by a moderate degree of heat, but untoward effects such as headache and vertigo are caused by a high degree if the air is not dry. The nerves to the sweat glands are excited by the application of heat, consequently the functional activity of these glands is increased and abundant perspiration is the result. The secretion of urine is proportionally decreased. The difference in the effects of dry and moist heat upon the perspiratory function depends upon the following facts. The body absorbs less heat from air than from water, and the skin perspires more freely in air than in water—the evaporation of the perspiration abstracting the heat—so that it is clear why it is possible to bear a higher degree of dry than of moist heat. The number of respirations is decreased by dry heat, but increased by a high degree of moist heat.

Although muscular activity is favored by a moderate degree of heat, a high temperature is depressing, and under its influence the muscular system becomes less able to support fatigue, especially if this is continued. A practical application of this fact is made in the treatment of the various muscular spasms, including chorea.

The effects of a hot climate depend upon the individual concerned and upon the various conditions of his life, such as diet, etc. It has been frequently noticed that debilitated persons are stimulated by a hot climate, becoming stronger and more able to ward off disease. Normal individuals are depressed, the effects being quickly seen in all of the functions of the body. In a temperature higher than that of the human body, body weight is diminished and in proportion to the degree of heat and the length of time of its application. This effect is less in dry heat than in moist heat. Hot applications to the abdomen cause constipation. This may be from two factors: from the decrease in intestinal secretions or from the decrease in peristaltic action of the intestinal musculature. Heat hastens eruptions.

There are many methods of applying heat, some of the appliances being as follows: bricks, water-bags, flat-irons, sand bags, Leiter's coils, and Paquelin's thermo-electric cautery. Moist heat may be applied by means of baths, both water and steam; douches, fomentations, and poultices; besides all of these methods there is the hot-air bath. The use of the hot flat-iron in such troubles as rheumatism gives astonishing results. The effects seem often magical, the relief afforded by this homely household remedy being greater than by many of the methods which are in more general use. The affected part should be protected by several layers of flannel, and in applying the iron it should be held carefully so that the weight is supported by the hand of the operator while the patient obtains the full benefit of the heat. The Paquelin cautery offers one of the best ways of applying counter-irritation. The hot bath produces various effects on the organism: by it the absorption of oxygen as well as the exhalation of carbonic acid is decreased; oxyhæmoglobin is reduced; so are the leucocytes; the excretion of nitrogenous products is increased. By

vaso-dilator nerves and inhibition of the vaso-constrictors the temperature employed must not be above 104° F., for it must be remembered that it is a moderate degree of heat that stimulates the vaso-dilator nerves and inhibits the vaso-constrictors. The cutaneous sensibility is increased and the skin is reddened. When the temperature is increased from 110° to 120° F., sensibility is abolished or decreased. It is from the knowledge of this fact that certain diseases of the nervous system are treated by the application of great heat. The effects also vary according to whether the application is slow or sudden. In the first instance the capillaries are dilated; in the latter the vessels of the skin are contracted and the skin becomes pale as in the application of cold. This fact is taken advantage of in bathing, where very hot water applied for a very short space of time stimulates the cutaneous nerves but does not call for the same vigorous reaction as a cold bath demands.

means of hot baths interstitial combustion is diminished. In Bright's disease hot baths, on account of their weakening effect if often repeated, should not be employed unless dropsy or uræmia is present. When uræmia exists, however, the cerebral symptoms are often entirely relieved by the hot-water or vapor bath, for by this means not only the skin acts freely, but the effect on the whole organism is sedative, pain and irritability being allayed. Especially in childhood, various affections of the respiratory tract, such as bronchial catarrh, are relieved by this treatment. The sedative effect brings sleep and makes breathing less labored. The affected membranes are relieved of the surplus of blood, which is drawn to the periphery. The patient must be carefully watched and not be allowed to become weak from the treatment, as the secondary effects of a too long-continued hot bath are debilitating. However, continuous baths of moderate temperature are used in some affections, such as sloughing wounds and eczema; the patient eats and sleeps in the bath with the greatest comfort. For many years Kaposi, of Vienna, has employed the continuous bath in his wards with great success. Inhalation of warm vapor greatly relieves laryngismus stridulus. Diabetics should bathe in water of only a moderate temperature, and the bath must not be too long continued since this treatment may cause or increase glycosuria. One of the best methods of treating a strained joint, if seen early, is by the hot baths. Burns and phagedæna are much benefited by this method of treatment. Hot baths relieve the various forms of abdominal colic, as renal and hepatic; also inflammation of the urinary apparatus. In dysmenorrhœa, the hot foot bath is valuable. Heat applied to various regions of the spinal cord affects the organs which these nerves supply. This method is often successful in the treatment of metrorrhagia and menorrhagia. The Turkish and Russian baths are well known for their good effects in the treatment of many affections, such as coryza, gout, rheumatism, etc. But recently various new devices have been introduced by means of which the patient may be exposed with comfort to the beneficial effects of an extremely high temperature, for example 350° F., because the air is kept dry. Before apparatus was devised by means of which the air could be kept dry, the evaporated perspiration gradually rendered the surrounding atmosphere moist, and the perspiration on the skin actually scalded it. On this account the Turkish bath cannot practically be higher than about 170° F. The diseases that have of late years been treated with benefit by the new apparatus are the arthritic diseases—rheumatic arthritis, gout, rheumatism, etc.; joint affections, such as sprains; affections of the nerves, as neuralgia, sciatica, etc.; certain skin diseases; chronic ulcers, and flat foot.

There is other apparatus by means of which the body is subjected to the action of radiant heat. The diaphoretic effects of combined heat and light are said to be much greater than the same degree of non-luminous heat. The effect of the electric heat waves is invigorating and tonic. One result of these exposures to extremely high temperatures, one that is contradictory to former physiological teaching, is that the body temperature is raised several degrees. The following suggestion has been made in explanation of cases in which certain parts of the body are exposed to the heat: "It is probably due to imperfectly co-ordinated diaphoresis in parts of the body other than that exposed to the direct heat of the bath—that is to say, the blood as it flows through the heated area is not completely cooled down before it passes on to other areas, where the conditions are different, and where reflex, superficial, vascular dilatation, and consequent diaphoresis, are not correspondingly established." In the application of these new methods just mentioned, the apparatus is so arranged that the head of the patient remains free in the normal room temperature. Besides great local benefit, the general health is improved by these hot baths. In the radiant-heat bath the perspiration, as soon as it appears, is evaporated by the hot dry air. If this heat is applied locally, the circulation of the