

Hutchinson considered the condition, for the most part, severe concussion in the stage of partial recovery from collapse; but he had one symptom which did not fit with mere concussion, that is, partial paralysis of the left arm and leg. Several of the general symptoms of compression, however, were absent.

The man was not insensible, the pulse not impaired, the pupils not dilated, the breathing not stertorous. Mr. Hutchinson suggested the possibility of contusion of the right middle lobe of the brain in addition to concussion, and advised trephining if the paralysis increased and the patient became insensible. On the following day the hemiplegia had disappeared and consciousness returned. The patient had been restless during the night, and had twice got out of bed, but was unable to stand without assistance. Respiration tranquil, pulse 80. Patient was absolutely deaf, a condition which Mr. Hutchinson explained by some central hemorrhage implicating the auditory ganglia. On the third day erysipelas of the scalp appeared and spread to the face; on the sixth day symptoms of pyemia appeared; and the patient died on the ninth day. The only new symptom pointing to middle meningeal hemorrhage was dilatation and immobility of the right pupil.

The autopsy showed fracture of the base, with two lines passing forwards across the petrous bone and meeting in the top of the sphenoid. On both sides the cavity of the tympanum was full of blood-clots, the membrane being unbroken. This explained the absence of bleeding and the complete deafness. On the right side of the skull a fissure passed forwards through the sphenoid and temporal bone into the parietal. By this fracture the middle meningeal artery had been torn, and a large effusion of blood between the bone and dura mater had followed. The clot was an inch thick, and consisted probably of two or three ounces.

It will be noted that Mr. Hutchinson, in explaining paralysis, made the diagnosis *local contusion*. This term, as well as that of *laceration*, is not infrequently used. Post-mortem examination, however, is strikingly negative as regards laceration, except where the brain had been torn up by actual hemorrhage. In our own case, in which a certain degree of laceration was almost taken for granted, the macroscopical examination failed to show any trace of this lesion, either at the operation or at the autopsy. It seems to us more probable that in such cases, local edema, resulting from contusion, is a not unreasonable diagnosis. Dr. Bullard has already called attention to such edema accompanying hemorrhage, but mere bruising might well suffice for its production.

Suppose we have made a diagnosis of local cerebral edema, ought we to operate? If it be determined that such local edema cannot produce paralysis, a negative answer is in order; and even assuming that edema has produced paralysis, is it worth while to remove the fluid, or ought we not rather to wait patiently for its absorption? In considering this question, it seems to us that if the brain injury is so profound that the circulation is unable to re-establish itself and carry off the fluid, the patient is beyond help from operation or other treatment. Our tendency, therefore, in case we were assured that edema was the only lesion, would be to leave the patient alone.

It may be objected that the mere temporary pres-

ence of edema may prove disastrous; but here again we should say, if the patient is so low that temporary local edema will precipitate a fatal issue, he is too low to react from operation. If operation is decided upon, however, and only edema found, the surgeon should not feel that a mistake has been made, for in any such case he could never have been *sure*, without operation, that no hemorrhage existed. In other words, in a case of local paralysis, it can never be a mistake to operate provided the patient is growing worse or has even ceased to improve. In such a case the point of election might seem to be the anterior branch of the middle meningeal artery. Jacobson has, however, called attention to the advisability, in case trephining at this point proves negative, of making another opening in the region of the posterior branch of the same artery. It seemed to us in our case preferable to select a point between the two branches, from which the bone could be removed in either direction by the Rongeur forceps, particularly as the point we selected brought us in the neighborhood of the facial centre, at a place where hemorrhage from the middle cerebral artery (sub-dural) would be likely to show itself, for the symptoms of hemorrhage from this artery are nearly identical, so far as the paralysis is concerned, with those of the hemorrhage of the middle meningeal.

It is desirable that careful reports of similar cases be collected, in order that general rules may be formulated, to aid in the diagnosis of this important and often puzzling variety of trauma.

#### ARE ESPECIAL HOSPITALS OR HOMES FOR CONSUMPTIVES A SOURCE OF DANGER TO THEIR NEIGHBORHOOD?

BY EDWARD O. OTIS, M.D., BOSTON.

ALL authorities agree that consumption or pulmonary tuberculosis is infectious or communicable only through the dried sputum. When this becomes de-icated the infecting micro-organism, the tubercle bacillus, is set free in the air and enters the respiratory tract through inhalation. The larger the air space and the more frequently and constantly this changes, the less likelihood is there that any given portion of this space will contain the germs although they may be present somewhere in the given area; hence the chance of becoming infected out of doors is exceedingly small in comparison with the danger in a confined space, like a room occupied by a consumptive or any enclosed space where there are likely to be one or more consumptives and where the sputum is not safely disposed of. Further, air and light—the condition out of doors—are inimical to the life of the tubercle bacillus. Ransome and Professor Delépine communicated to the Royal Society of England in May, 1894,<sup>1</sup> the results of their experiments “to determine how short a period of exposure to air and light would suffice to destroy the virulent action of the microbe.” They found that all specimens of dried sputum exposed to both air and light even for two days only, and for one hour of sunshine, had entirely lost their power for evil.

In concluding his remarks on these experiments Dr. Ransome says, “that where tuberculous sputum

<sup>1</sup> Published in Vol. lvi of the Proceedings; quoted in “The Treatment of Phthisis,” by Arthur Ransome, 1896.

can be exposed to sufficient light and air to deprive it of virulence before it can be dried up and powdered into dust, no danger of infection need be dreaded. It is only when there is sufficient organic material in the air, derived from impure ground air, or from the reek of human bodies, that the tubercle bacillus can retain its existence and its virulent power. Long-lived though it may be under these conditions, it is rapidly disinfected by the natural agency of fresh air and sunlight; so rapidly that where these agents are present, even in comparatively moderate degree, the tuberculous material cannot reach its dangerous state of dust before it is deprived of virulence." Dr. Irwin H. Hance in his paper upon the infectiousness of the dust in the Adirondack Cottage Sanitarium,<sup>2</sup> also says, "The most powerful and at the same time freely obtainable agents are the sun's rays and diffused daylight. They can be used by everybody, and have been proved to be the most efficient disinfectants known."

From the above, then, it is a fair inference, that, wherever there is a community of consumptives, either in hospital or at large, in the midst of a town or surrounded by numerous dwellings, if there is an abundance of air, light and sunshine, the danger from infection is exceedingly small, even though no adequate means is employed to destroy or disinfect the sputum. Whereas, I believe there is more or less danger from infection in open resorts—that is, where patients live about in boarding-houses, hotels and the like, not in consumptive hospitals or sanitariums—I believe the danger for the most part arises from the indoor sources of infection, not from sputum scattered out of doors. The inhabitants of these places are brought into intimate contact with the consumptives as servants, attendants, etc., and thus contract the disease from those they serve who are under no such control and supervision as are those in a sanitarium.

On this point, however, others of large experience differ from me, and do not think there is much of any danger, as the following shows: In Colorado Springs, where there is said to be more cases of pulmonary consumption in proportion to its population than any other city or town in the United States and perhaps in the world, Dr. S. E. Solly, a well-known writer and authority on consumption and climatology, says, in a communication to Dr. Clinton Wagner of New York: "The dangers of contagion from a consumptive are so easily controlled that it is by no means necessary to separate consumptives from healthy persons. You ask me concerning my experience here. At least a third of our population are consumptives. The town which contains some 15,000 people, has been established twenty years. An inquiry made by disinterested physicians into the number of cases of consumption that were known to have originated in the town resulted in a report of 20 in all. Although it is probable that our brilliant sunshine and dry air more quickly destroys the vitality of the bacilli than your eastern atmosphere, yet in the poorer lodging-houses of the town there are many ill-ventilated rooms, inside or on the north side of the building, inhabited by consumptives and their families, where recklessness of expectoration and carelessness of ordinary cleanliness are marked features of their domestic *ménage*; yet cases of contagion do not average more than one a year."

<sup>2</sup> Medical Record, New York, December 28, 1895.

Of Davos Platz, in Switzerland, where also large numbers of consumptives congregate, Dr. Clinton Wagner says: "At Davos Platz, in Switzerland, where I spent a winter a few years ago, a very large number of consumptives were staying. The hotels were crowded, and of the 1,500 strangers in the village, above 1,000 were consumptives. At the hotel at which I stayed there were about 120 guests, about 80 of whom were consumptives. At Davos, during the winter, the invalid's day for outing is limited to four and one-half hours, the remainder of the twenty-four hours is spent within doors. No one stood in dread of contracting the disease, and no case occurred in which it was conveyed from person to person. No special precautions were taken by the physicians and local authorities to prevent contagion, other than good ventilation of the living- and bed-rooms. As at Colorado Springs, no cases of the disease originated at Davos."

In health-resorts where the so-called closed treatment of consumptives is carried on in sanitariums, we have evidence that there is no danger of infection to the inhabitants of these resorts; whatever may be the case in the so-called open resorts. At Göbersdorf and Falkenstein, in Germany, are two of the oldest and largest sanitariums. The former has been visited by 25,000 patients during forty years, and the mortality from consumption among the inhabitants has never passed the average, but on the contrary has diminished.<sup>4</sup> During the period of twenty years preceding the establishment of the Falkenstein Sanatorium an average of four per cent. of the inhabitants died annually of consumption, and 18.9 per cent. of the total mortality was attributed to that disease. After the institution was opened, during the period from 1877 to 1894, the average annual mortality from consumption fell to 2.4 per cent., and the proportion of deaths from consumption to those from other causes sank to 11.9 per cent.<sup>5</sup>

Says Dr. V. Y. Bowditch, of Boston, in a paper presented at a meeting of the American Climatological Association, at Lakewood in May, 1896: "I wish to refute the statements that properly regulated consumptives' hospitals are sources of danger to the community, when I believe them to be exactly the opposite as shown by statistics." Says Knopf:<sup>6</sup> "Well-conducted sanatoriums for consumptives are not centres of infection; but, on the contrary, places where the tuberculous patient is the most free from the danger of auto-infection, and where there is the least chance of his communicating his malady to others."

There are already existing in thickly-settled centres many hospitals either exclusively for consumptives or which contain large numbers of them: the great consumptive hospital of Brompton,<sup>7</sup> Victoria Park, Royal Hospital for Diseases of the Lungs, North London Hospital for Consumptives, in London; the Royal National Hospital for Consumptives, in Ventnor, Isle of Wight, a favorite and much frequented seaside resort; the Manchester and Liverpool (Eng-

<sup>3</sup> Medical Record, New York, February 6, 1897.

<sup>4</sup> Rompler: Beiträge zur Lehre von der chronischen Lungenschwindsucht.

<sup>5</sup> Quoted in the New York Medical Journal, February 22, 1896.

<sup>6</sup> Are Sanatoriums for Consumptives a Danger to the Neighborhood? by S. A. Knopf, M.D. (Paris and Bellevue, N. Y.), formerly Assistant to Professor Dettweiler, Falkenstein Sanatorium, Germany.

<sup>7</sup> This hospital is situated in the midst of a dense population in London, where the mortality from phthisis is no greater than anywhere else in the city. Knopf, "Les Sanatoria de Phthisiques, Sont-ils un Danger?" "Revue de Tuberculose," Vol. III, 1895, p. 317.

land) Hospital for Consumptives; St. Joseph's Hospital (300 beds); Dispensary for Consumptives and Others, in New York City; the Rush Hospital for Consumptives and Allied Diseases, in Philadelphia; a small, charitable hospital for consumptives in Baltimore. In Germany a number of special hospitals for consumptives have recently been established or proposed at Bremen, Breslau, Dresden, Hanover, Cologne, Frankfort-on-the-Main, Worms, Stettin, and two in Berlin.

It is fair to presume that if such hospitals were a menace to the neighborhood they would hardly be permitted to be established or remain. How many of the general city hospitals have constantly numbers of consumptives in their wards: at the Carney Hospital, South Boston, for example, there is always a large contingent of them.<sup>8</sup>

As to the danger of infection in consumptive hospitals or homes *themselves* we have abundant evidence. Dr. C. T. Williams, physician of the Brompton Hospital for Consumptives in London (containing 231 beds), says<sup>9</sup> that statistics of forty years of the Brompton Hospital and also those of Victoria Park Hospital (consumptive) directly negatives the idea of infection either to the resident staff or to patients admitted to the wards for other diseases than consumption. "It is obvious therefore," he says, "that phthisis is not contagious in the same sense as scarlatina, small-pox or other acute fevers."

Dr. Irwin H. Hance, assistant to Dr. Trudeau at the Adirondack Cottage Sanitarium, in "A Study of the Infectiousness of the Dust in the Adirondack Cottage Sanitarium,"<sup>10</sup> proved by the inoculation of guinea-pigs (an animal much more susceptible to tuberculosis than man) that 16 out of 17 cottages inhabited by consumptives for so long a period as ten years, were absolutely free from infectious material. In the exceptional cottage (the 17th) the patient had disobeyed instructions and expectorated wherever convenient. Dr. Hance further says that "added clinical proof of the non-infectious character of the dust may be deduced from the fact that not one of the twenty to twenty-five attendants has ever developed tuberculosis; and also that no patient who was admitted suffering from pulmonary disease without the bacilli being present ever subsequently developed them."

Dr. G. A. Heron<sup>11</sup> inoculated 100 guinea-pigs with dust taken from various sources in the City of London Hospital for Diseases of the Chest; 26 died of acute inflammation spreading from the site of inoculation. Of the remaining 74, two pigs died of tuberculosis; the dust in each case came from the tower of the hospital which acts as up-cast shaft, and was damp and unventilated.

In "A Further Study of Tuberculous Infection of Dust" by Dr. Hance,<sup>12</sup> he took dust from various tenement-houses where there were consumptives, two hospitals (Bellevue and Charity), and from several street-cars. In the tenement-houses where the family had paid attention to the instructions and regulations given them by the Board of Health, none of the

guinea-pigs inoculated with the dust were affected with tuberculosis, while in the dirtier tenements, two out of three were found infected. In the cars one out of five was found dangerous. In the two hospitals, no case of tuberculosis developed in the animals from the dust with which they were inoculated. Dr. Hance also took the dust from the waiting-room of the Out-patient Department of Bellevue Hospital, and found it infected with tubercle bacilli. In the "Winyah" Sanatorium for Consumptives at Asheville, experiments with the dust gave likewise negative results.

Cornet, a well-known German investigator, collected dust from rooms occupied by consumptives, and inoculated 311 animals. One-fifth of the whole number were found tuberculous, but in no case was the dust of the walls infectious when sputum cups were used exclusively to receive the expectorated matter.

The above cases, I think, are sufficient to prove conclusively that in a sanitarium or hospital for consumptives where the sputum is properly disposed of there is no danger of infection either to those within or without them, and moreover that it is possible to properly dispose of the sputum.

With regard to the more infectious diseases of diphtheria, scarlet fever and measles, there is probably less danger from them even than the public supposes, as the following statement from Dr. John S. Billings, late Deputy Surgeon-General of the United States Army, and well-known in this country and abroad as an authority upon hygiene, shows: "It is above all things desirable," he says, "to get the public to understand that there is very little danger in a hospital for diphtheria, scarlet fever or measles, separated the width of an ordinary street, even, from the surrounding houses. If there was a hospital of that kind next door to my house, separated by a brick partition wall, I should not have the least fear of anything coming through it or of any contagion coming from it."<sup>13</sup>

## VERATRUM VIRIDE IN PUERPERAL CONVULSIONS.

BY WM. HENRY THAYER, M.D., BERKSHIRE, MASS.

In the treatment of puerperal convulsions—while recognizing uremia as the constant predisposing cause, which may become the exciting cause—we must, of course, consider that the exciting cause may be reflex, requiring evacuation of the uterus, the stomach or the bowels, for their arrest. All practicable measures to that end having been taken, as by active cathartics or emetics, as indicated, we at once address ourselves to the nerve centres, to control nervous excitability until the exciting agent can be eliminated.

For this object, venesection was the reliance until the employment of ether by inhalation largely superseded it. If venesection sometimes failed to relieve, ether never did, while the patient was kept unconscious; and it could safely be continued until delivery or free catharsis occurred, which usually terminated the paroxysms. It has been found, however, that *veratrum viride* in large doses will act as thoroughly as ether; and its effects can be continued, and without producing unconsciousness.

In the condition of the nervous system that exists in puerperal convulsions, there is a peculiar tolerance

<sup>13</sup> Dr. John S. Billings, Chairman Chicago International Congress, p. 183.

<sup>8</sup> I am informed by the sister in charge that there are never less than thirty, and that the few of those who are able to leave the wards enjoy fresh air on the grounds of the hospital and occasionally on the "heights." There has been no complaint from the neighborhood in regard to this class of patients.

<sup>9</sup> Pulmonary Consumption, Williams, 18-7, page 87.

<sup>10</sup> Medical Record, New York, December 28, 1895.

<sup>11</sup> The Relation of Dust in Hospitals to Tuberculous Infection. London Lancet, January 6, 1891.

<sup>12</sup> Medical Record, New York, February 13, 1897.