

toms are serious, he does a tracheotomy. I would like to know whether after the tracheotomy he follows the ideas of one of our British statesmen, does he wait and see? Because I think in many of these cases, if there is no urgency and a tracheotomy is done, we should wait and see. We ought to give Nature a chance, although I do not think that in America Providence has much to do with it, you are generally ahead of Providence; still there is such a thing as self determination even in the human body, and after Dr. Jackson has done his tracheotomy, in order to live up to his ideals, does he wait until the tracheal wound closes before he goes in through the mouth? I did not quite follow him. If he goes in through the mouth with a tracheotomy wound in the neck, it seems to me like a burglar, who, going into your basement and seeing in the cellar some things he wants, goes around to the front door and down to the cellar when he might easily have gone down from the basement. But whatever Dr. Jackson insists is the fact, whether he defends his own position, as no doubt he will do, I still feel that there are many like myself who must agree that a good deal of Dr. Jackson's advice is, as the poet says, "Too wise and good for human nature's daily food."

DR. CHEVALIER JACKSON, Philadelphia: The paper spoke very learnedly about physical signs, but for brevity's sake I omitted the names of the different men who are responsible for those physical signs, as you probably know that I could not tell you on which side a pneumonia was, by my own individual auscultation and percussion. It is only by association with Drs. McCrae, Graham, Boyce, Price and others who have worked with me that I am able to give a résumé of what the physical signs have been in the cases of arachidic bronchitis. Dr. Hubbard's point is worthy of consideration. He spoke of peanuts being of septic character from being chewed in the mouth. That is equally true of fragments of teeth and other dental objects, and especially of bones, which are of all foreign bodies in the bronchi the most putrid, yet they do not produce more than a localized reaction. A patient's temperature will not rise and there will be no particular illness from aspirating a piece of bone if it does not obstruct drainage. Therefore it cannot be true that it is infection carried from the mouth produces the peanut reaction. In regard to there being a multiplicity of fragments, we have reason to doubt that this is the causative factor in the reaction that is produced by the peanut. We have had many cases in the hospital going along day after day with a temperature of 103 or 104 F. While we are deciding whether or not to use the bronchoscope, but finally, introducing the bronchoscope, we have taken out a piece or two of peanut, and immediately the temperature has fallen and the patient promptly recovered. If it were unremovable multiple fragments in minute bronchi instead of one fragment in a larger bronchus, the patient would not have gotten well. Dr. Murphy made a good point in saying that peanut candy is a common cause of this condition. Children without molars are given peanut candy; of course they cannot chew, but they are given the candy and in a great many instances this has been the source of the peanut kernel in the bronchi. His impression as to the small size of the fragments corresponds to my own. I have been impressed in a number of cases with the relatively small size of the peanut kernel; but the subsequent recovery proves that the relatively small piece of kernel was the cause of the illness. Dr. Mosher's remarks are important contributions to the subject. Tracheotomy was mentioned in connection with cases where we had to save the child from asphyxia. It was not for the purpose of inserting the bronchoscope, but to give the child air and to get out thick secretions and tide the child over until he got in condition for a bronchoscopy. The bronchoscopy was always done through the mouth, not for the sake of the technic, but simply that it is easier to work with the bronchoscope through the mouth in the old way than when it is put through the neck with the head in the way. The tracheotomic route has no advantages. If the bronchoscope is inserted, the patient's head being concealed, no observer can tell by looking through the tube whether it went in through the tracheal wound or through the mouth. Tracheotomy for the insertion of a bronchoscopic is a relic

of the developmental stage of bronchoscopy. In regard to using morphin, until I went to Philadelphia I was afraid to use either morphin or cocain in children, and I never used them. But when I arrived in Philadelphia Dr. Graham and Dr. Hare said morphin at least could be given with perfect safety if given with proper precaution. Under their careful guidance I used it in older children with complicated mechanical problems of disentangling foreign bodies and have found it of the utmost value, although I think it must be used with care and discretion in selected cases and in older children only. I am glad of the corroboration in Dr. Turck's remarks, but I must disclaim credit for the hypothesis of the alien protein; that was the suggestion of Dr. Coplin of Jefferson Hospital. Sir St. Clair Thomson is altogether too modest in saying that he understands only English. I heard him give an address at the Congress in London in three different languages successively and heard him translate into three or four different languages the words of different speakers. So I must say he is the master of many languages instead of one, and he is also a master of the bronchoscope.

GANGRENE FOLLOWING CARBON MONOXID POISONING

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REPORT OF CASE

Sunday morning, December 22, the three O'Connell brothers left Warren Bridge in their motor boat, for a fishing trip in Boston Harbor. The day was beautiful and warm. All the brothers went forward. After passing the narrow gage ferry, Cornelius went into the cabin to lie down.

The cabin was 15 by 7 feet. Before starting on the trip, Cornelius had disconnected the exhaust pipe preparatory to installing another muffler. This exhaust was ordinarily carried out along the bottom of the boat, but the pipe was disconnected within 3 feet of the engine, leaving the open exhaust in the cabin.

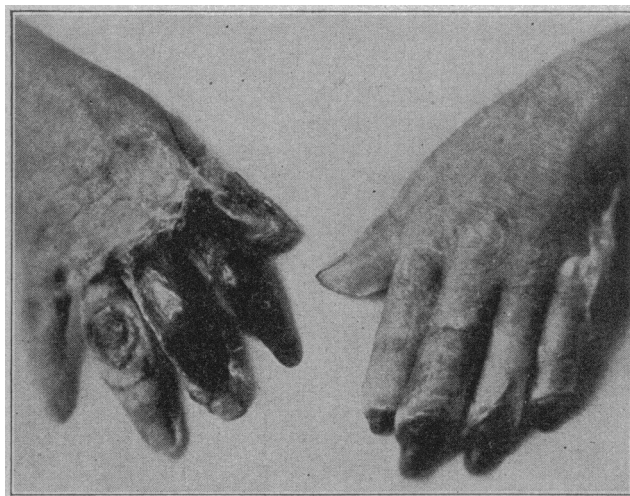


Fig. 1.—Condition of hands before operation.

When they approached Apple Island, Timothy asked John to go into the cabin and arouse Cornelius. After fifteen minutes, John had not returned and Timothy noticed through the open door that he had fallen suddenly forward. Timothy shut off the engine, rushed in and found Cornelius lying on the floor about 8 feet from the engine. John was within 4 feet of the engine and was dead.

Cornelius at this time was still breathing. He was carried out of the cabin and efforts were made to revive him. At first, he talked incoherently. The police boat was signaled and they were towed in. When they arrived at the wharf,

John was pronounced dead and Cornelius was taken to an emergency hospital and the following day was transferred to another hospital, where he remained a week.

He was treated for what appeared to be second degree burns of both hands and feet. His record in that institution states that the backs of both hands and feet were covered with large tense blebs. These were punctured and trimmed off, and boric ointment dressings were applied. After leaving the hospital, he was attended by his physician, who continued

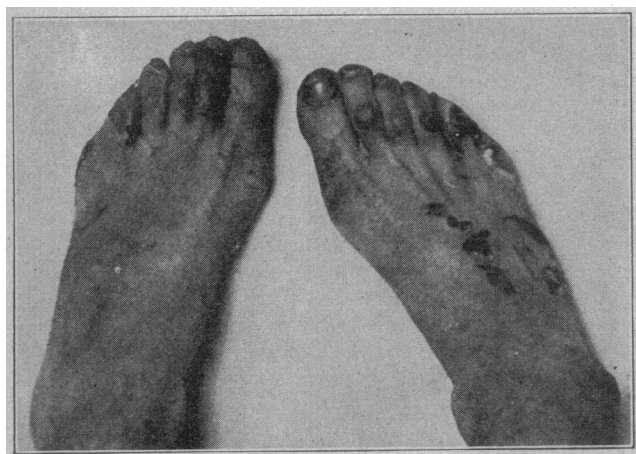


Fig. 2.—Superficial gangrene of feet.

treatment, but soon observed that the affected areas were increasing in size and extensive gangrene was developing.

He was admitted into my clinic, Jan. 24, 1919. On admission, his condition was as follows:

Right hand: Gangrene involved the entire three middle fingers, one half of the inner border of the thumb and an extensive area of the little finger. The left hand showed gangrene of the distal phalanges of the four fingers and flexor surfaces of the thumb. Gangrenous areas were on the outer border of the tibial region, the external malleolus, the outer border of the dorsum of the foot, and small patches on three toes. On the left foot, there were gangrenous areas at distal end of two toes.

It was evident from the location and character of the lesions that they could not have been produced from contact with heat. The type of gangrene differed widely from any previously observed by me. At the time the patient entered our hospital, the blebs which resembled burns had entirely passed away. Situated beneath these areas, a dry gangrene was present. This necrosis attacked the skin, muscle tissue, tendon, periosteum and bone, and entered several joints.

Lines of demarcation were well established. On the left hand, the tips of the fingers were entirely necrotic. On the right hand, the ends of the fore and middle fingers were viable, while extensive gangrenous areas involved the dorsum of both these fingers. It is impossible to conceive of a burn producing areas thus distributed.

Examination of the blood and urine were negative. Absence of sugar, which is frequently present in carbon monoxid poisoning, is accounted for by the long interval which had elapsed since the intoxication.

January 28, thirty-seven days after the accident, amputations were performed as follows: On the right hand, the three middle fingers were disarticulated at the metacarpophalangeal joints. On the left hand, four fingers were amputated midway in the second phalanx. As amputations were made in septic areas and as attempts were made to save all tissue possible, the flaps were only partially drawn together and ample drainage was provided.

As will be seen by referring to Figure 1, an area of necrosis remained on the dorsum of the middle finger and the thumb of the right hand. This destructive process continued, entered the second phalangeal joint, and resulted in deformity and ankylosis. Perhaps amputation of the little finger would have been desirable, but this can be done at a later time.

Figure 2 illustrates a more superficial type of necrosis, from which the patient ultimately recovered without the loss of any toes. The necrotic areas on the dorsum and outer aspect of the right foot, after sloughing deeply, finally healed by granulation.

PREVIOUS CASES

In connection with the foregoing, the two similar cases recorded in the literature may be of interest, and brief abstracts are appended. They are reported, respectively, by Alberti¹ and by MacLean.²

Alberti reports extensive gangrene of the musculature of the throat and paralysis of the left leg in consequence of carbon monoxid intoxication. This patient, W. Kaupe, was overcome with carbon monoxid escaping from a stove. When he awoke, he saw that the woman lying beside him was dead. Her face was congested and swollen and covered with tabloid vesiculations. He had stabbing pains in the head, and on attempting to rise, he fell unconscious. A paralysis of the right foot and painful swelling of the right elbow appeared, with pain in the arm and stiffness in the neck. On the right side of the neck, there was a brownish black mummified area, the size of the palm of the hand, which remained entirely dry and was surrounded by a line of demarcation. It was necessary to incise to the depth of 2 cm. before blood, mixed with dark brown fluid, appeared. The gangrenous area on the neck and right elbow extended, and he died twenty-six days after the intoxication.

The case of MacLean showed carbon monoxid poisoning resulting in gangrene of both legs. The patient was found unconscious in his room with a small gas burner open, in which the flame had been accidentally extinguished. The gas contained 7 per cent. carbon monoxid. A week later, the patient complained of pain in the feet and legs and was readmit-

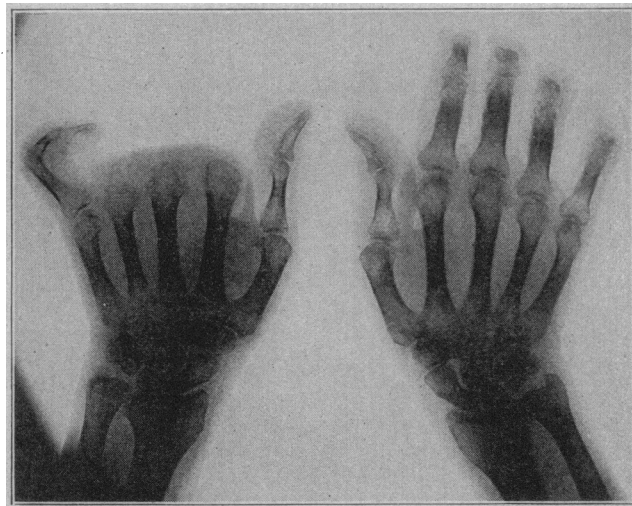


Fig. 3.—Hands after amputation.

ted to the hospital because both feet and legs were swollen and discolored in patches, the discoloration extending below the knees. During the next two weeks, the pain continued, the legs became edematous, and discoloration increased to gangrene. The right leg was amputated, January 9, and the left, January 13. Recovery followed.

1. Alberti: *Deutsch. Ztschr. f. Chir.* 20: 476, 1884.

2. MacLean, Angus: *Carbon Monoxid Poisoning Resulting in Gangrene of Both Legs*, *J. A. M. A.* 56: 1455 (May 20) 1911.