and adaptability. These frames, as they are called in England, are made of common band iron covered with leather or cloth and applied to the patient with adhesive plaster or swathe bandage. They are so simple in construction that with a few necessary rules to follow, the physician can easily instruct a blacksmith to make them. Their cheapness is of great advantage to patients when expense is to be considered, and in large clinics stock patterns of various sizes may be kept on hand for immediate use. (See Figs. II and III.)

FIG. 2. Foot splint, after Jones, for varus or valgus. To be padded and held in place by bandage.

C. Calf piece of thin untempered sheet iron.
A. Foot piece of same material, with flange at F.
I. Malleable iron connecting bar, which may be bent to obtain more or less dorsal flexion and twisted to obtain more or less varus or valgus.

Like England and Germany, France, too, has types of her own, which rather resemble ours in principle of construction. In Paris little work is done under hospital supervision, it being left almost entirely in the hands of private concerns and, owing to the exclusiveness of these shops, it was not the privilege of the writer to observe the actual making of apparatus. The appliances are strikingly beautiful in appearance and workmanship, a consideration regarded as important as their efficiency and due probably to the keen competition among shops in Paris. It seems to us possible that at times mechanical efficiency may be sacrificed to this very beauty of workmanship.

While it is not in the province of the writer to express any opinion as to the success of the various appliances in accomplishing cures, and while he realizes that the indication for any type of apparatus depends solely upon the opinion of the physician, he wishes to offer for your consideration certain suggestions which he believes would be of advantage to the patient and physician if they could be adopted:

1. The standardization of certain common types. It is of course true that improvements in existing types are to be looked for and welcomed. It is also true that each case is a separate problem, else we should have efficient ready-made apparatus. We believe, however, that there must be something approaching a consensus of opinion

in regard to the efficiency of the common forms of apparatus and that special needs can be met by comparatively minor adaptations of certain standard types.

2. We believe that the efficiency of any apparatus, providing, of course, that its mechanical principle is correct, depends largely upon the accuracy of its fit. We would urge, therefore, that, whenever it is practical, at least in the more complicated forms, the instrument maker be consulted in the presence of the patient and be allowed to take any measurements he desires. It is recognized that an ill-fitting apparatus may do harm, and rarely serves its purpose as a support. The brace should be so carefully worked out in detail that it may, as far as possible, adapt itself to give adequate support in whatever position or under what anatomical peculiarities it is called upon to serve. To attain this nicety of fit it is very important that the maker of the instrument should be allowed to take his own measurements of the patient. However, this should never be left entirely to the mechanic. There is at present no uniformity of type or style so that a hip brace, for example, can be fitted as the tailor fits an overcoat. The measuring, the fitting and the working of the brace should all be carefully followed and observed by the physician in charge, who alone can fully appreciate the requirements. But it is equally true (especially in the more complicated appliances) that the physician cannot expect a good result if he simply orders a brace from certain measurements without allowing the maker to note

FIG. 3. Thomas hip splint.

A. Thoracic band.
B. Pelvic band.
C. Thigh band.
D. Ankle band.

Notice the important and simple curves between B and C for the buttock, and the absence of other curves.

for himself the peculiarities of the case and to fully comprehend the principles that he is to carry out. The highest grade of efficiency in orthopedic apparatus can only be obtained by this intelligent co-operation of physician and mechanic.

Clinical Department.

SARCOMA OF THE TONSIL.*

BY GORDON BERRY, M.D., WORCESTER, MASS.

THE case of sarcoma of the tonsil to which I would first call your attention is of particular interest on account of the advanced age of the patient: eighty-five years eleven months. She gave a negative history

* Read at a meeting of the New England Otological and Laryngological Society, Nov. 14, 1911.

up to three or four months previous, when she first noticed the beginning of the growth of a mass in her throat. This had caused her no serious inconvenience, though talking and swallowing were becoming difficult. There had been no pain and no wasting away. Excepting a marked arteriosclerosis, her general condition was very good. A local examination revealed a large tumor mass involving the right tonsil, round, hard and isolated from the surrounding tissues excepting below, where a roughened area extended down a little way on the lateral wall of the pharynx. Its exposed surface was ulcerative and necrotic. Externally was another nodular mass, the size of a walnut, beneath the sternocleidomastoid muscle, in close proximity to but distinct from the tonsil tumor. A specimen taken from the tonsil-tumor was examined by Dr. F. H. Baker and pronounced "lymphosarcoma."

An operation was decided upon and performed on Sept. 5, 1911. Under ether anesthesia, the neck tumor was dissected away and the external carotid ligated. Then the tonsil tumor was removed through the mouth by use of sharp dissection well outside of the involved tissue, and by the cold-wire snare. There was but little hemorrhage. The active anesthesia lasted about forty-five minutes and was well borne. A pathological section from the removed tumor confirmed the diagnosis of lymphosarcoma. Recovery was rapid and uneventful; but the patient complained of dreaming the first few nights, and the right side of the face remained colder than the left for a week. There has been no recurrence in the throat two months after the operation. Articulate speech and deglutition are normal. The patient is up and about the house, and feels much better except that she tires easily. On the other hand, the neck began to have a diffuse brawny feel after three weeks, and this has continued to grow since. Reliance must now be placed upon Coley's serum.

It is not within the scope of this paper to enter the interesting field of serum therapy, but that we may have before us a broader view of the surgical aspect, I have reviewed the periodical literature of the past year and a half and find a surprisingly small number of cases reported. More is told of "cancer" of these regions, possibly because the term "cancer" is frequently used to represent all malignant neoplasms. Of those reporting "sarcomata" of the tonsil, six write in English and six in other languages. The former report nine cases with an average age of thirty-eight and one-half years, the youngest being five and the oldest sixty-five. Of these nine cases, five died, three were cured and one was helped, though having a recurrence. These authors find that small-celled sarcomata show a tendency to early spread almost equal to that of carcinomata in this region, while other forms of sarcomata do not spread so early. If, however, we investigate the literature on "cancer" of the mouth and neck, we find Butlin giving about the same percentage of recoveries. He reports 54 cases, 14 of which died, 20 had recurrences, 3 died of cancer in other regions, and 17 were cured, of which 9 had been operated on at least three years previously. This gives a percentage of 31.5% cured.

In our textbooks on diseases of the nose and throat we find, in the main, the more recent writers offering a more radical treatment and a better prognosis. For instance: In 1892

Ingals advised the removal of the tonsil if the cancer be early recognized. In 1898, Bishop recommended the injection of 30 to 50% alcohol in 6 to 30 minim doses, as borne. The following year, D. Braden Kyle said: To excise if possible, though the tumor was sure to recur. In 1901, Coakley advised the removal of a sarcoma of the tonsil together with an excision of any glands that might have appeared in the neck. In case of a recurrence, which generally came, he advised the electrocautery to keep the growth from obstructing the pharynx. Two years ago, Miles F. Porter, of Fort Wayne, Ind., reported the cure of one case by the local injection of toxins and boiling water. Ballinger recommends the radical removal where possible. These citations taken somewhat at random will serve to show the hesitation with which the matter was approached until but recently.

To take up somewhat in detail three of the more recent writers: In 1909, John E. Summers, of Omaha, reported a well-advanced case of sarcoma of the tonsil, aged forty-eight years, cured by the so-called Crile block operation. He draws attention to two characteristics of sarcomata of this region: (1) Though sarcoma cells usually spread by the blood channels, here, on account of the fact that we are dealing with a lymph organ, the metastasis extends down the large lymph passage direct to the superior deep lymph nodes of the neck. The glands are consequently early involved. (2) If there is a recurrence, it is early, generally in one or two years; though in one case reported, recurrence came after nine years. Carcinomata may recur later, though if they do not come within three years, the case is considered cured.

In 1908, Dr. J. Collins Warren read a comprehensive and very instructive paper on "Cancer of the Mouth and Tongue" before the International Society of Surgery at Brussels. He draws his data from 172 consecutive cases occurring at the Massachusetts General Hospital from 1890 to 1904 inclusive. His description of the anatomy of the lymph circulation of this region is of particular value. He then goes into the etiology and pathology, and under diagnosis he remarks that "the indiscriminate use of specific treatment as a means of diagnosis should be thoroughly discouraged." He is opposed to the taking of a specimen from the tumor as being both unsatisfactory to the pathologist and as spreading the cancer cells out over fresh tissue; and advises an exploratory operation in which "the whole of the primary growth is excised." He then describes in detail the different operative methods used and the results obtained. Among other conclusions he notes that: (1) The ideal operation of the future should contemplate a free exposure of the mouth and anterior cervical triangles as one continuous area, with a block dissection of its diseased content. (2) In this series of 112 operations upon cancer of the tongue and mouth, 16 were free from recurrence over three years after operation (or 14.2%). (3) Local recurrence of the disease occurred more frequently than recur-

rence in the lymph glands alone. In only one case did recurrence make its appearance at a period of more than three years after the operation."

George W. Crile, writing in 1905, 1906 and 1907 in different periodicals, advocates what he calls the "block" operation for cancer of the mouth and neck. There is time for but a brief reference to this classic work which was destined to revolutionize neck surgery. The author boldly takes the ground that all the lymphatic and other tissues containing possible cancer cells should be removed, and points out the parallelism in cancer of the breast where success first attended operative interference when the radical Halstead operation was introduced. In reviewing the literature, Crile found that in 4,000 cases, but 38, or less than 1%, had distant metastases, showing that cancer cells rarely get below what he calls the "collar" which the lymph nodes form about the neck. Taking advantage of this fact and that the structures of the neck though complicated are so easily accessible, he considers that the field is one particularly favorable to a total extirpation of the disease. His operative results justify this contention. He began the radical method in 1900. Since then he had operated on 122 cases, with a mortality of only 8%. Of these, the cases in which the radical operation was done show a mortality only one quarter of that where the old method was deemed sufficient. With perfection in technic the death-rate lessened, for he had had no deaths in the last twenty cases. He finds that the nature of the operation must be largely determined by experience, and that each case must be considered individually. His own researches, and those of Porier, Kuttner and others, have thrown new light on the lymphatics of this region. If the disease is on one side, it almost invariably stays on that side, and goes to given and definite lymph nodes. If the tumor is in the median line, then it may go to one side or the other, and the operation is determined accordingly. Briefly, he tries to keep just in advance of the process. If, for instance, the cancer involves only the tonsil, he removes also the superior deep cervical nodes, while if he finds one of these glands enlarged, he removes all the glands on that side of the neck. Inasmuch as the deep lymphatic system is so closely associated with the venous, he generally removes the internal and external jugular on that side. The excised block, which he starts removing from below, then includes "fascia, fat, the salivary and part of the parotid gland, the sterno-mastoid and omohyoid muscles and part of the stylohyoid and digastric, the entire venous system, and all of the lymphatics and glands in this region." The deep nerves and arteries and muscles are not molested.

Crile found that 50% of the old cases died of local or pulmonary infection. To avoid this, in cases where the respiratory tract must be entered from without, he makes a preliminary tracheotomy, thus walling off the mediastinum by granulations and keeping the operative field separate. He cares for the danger from hemorrhage by clamping the carotid and by regulating the blood pressure

with his pneumatic suit. He avoids many cases of shock and exhaustion by careful examination prior to the operation. He further guards against trouble by a careful development of his technic. Some of his maxims are: Avoid blunt dissection and tearing, handling of diseased tissues and vigorous and repeated sponging; retract only on healthy tissues; use sharp dissection where possible; keep outside of diseased tissue; treat possible cancer tissue as you would a virulent infection, keeping it from contact with the healthy tissue.

Our first thought is that too many important structures of the neck are removed. But Crile finds that the deep muscles of the neck are easily able to take care of the motion of the neck, and that the venous circulation is readily and quickly compensated. In one case, he removed the internal and external jugular veins on one side. Later he was obliged to do a "block" operation on the other side. He found the small anterior veins dilated to the size of the old jugular vein and easily able to take care of its return flow. So he did not hesitate to resect the internal and external jugular veins on the opposite side, nor did the patient suffer any embarrassment, though all the jugulars were then resected.

His conclusions are "that since the head and neck present an exposed field, cancer here, unlike that of the stomach, the intestines or even the breast, may be recognized at its very beginning; that every case is at some time curable by complete excision; that the field of regional metastases is exceptionally accessible; that cancer rarely penetrates the extraordinary lymphatic collar of the neck; that the growth tends to remain localized here; that by applying the same comprehensive dissection as in radical cure of cancer of the breast, and by freely utilizing the modern researches of surgery, the final outcome in cases of cancer of the neck and head should yield better results than that of almost any other portion of the body."

In the particular case brought to your attention this evening, the question may arise as to whether this patient, who has since passed her eighty-sixth birthday, could have borne the radical neck operation. She has been relieved of much discomfort and her end will not be that which threatens such cases when not operated on.

In closing the writer would express his appreciation to Dr. John C. Berry and Dr. R. P. Watkins for being permitted to work with them on this case.

TWO CASES OF HYPERTROPHIC STENOSIS IN INFANTS.*

BY C. A. PORTER, M.D.,

Surgeon to the Massachusetts General Hospital.

CASE I. C. E. H. Entered Massachusetts General Hospital in my service on Aug. 10, 1909. Aged five weeks. Mother in excellent health; one other child. Normal delivery at the Lying-In Hospital, Boston;

* Read at a meeting of the New England Pediatric Society, Oct. 21, 1911.