Neither the mummifying method nor the retention of any small amount of pulp tissue in a root canal should be tolerated. Adequate methods of pulp removal have been evolved which are feasible in the vast majority of cases. This means removing from the root canals in an aseptic manner every particle of organic tissue, and sealing both ends of such an aseptic canal with a non-infectible filling material.

If a tooth is to be preserved under such conditions, the time required to perform such an operation properly should never be curtailed.

If for any reason it becomes impracticable to carry out a pulp operation on these lines the patient's interest is best served by the extraction of the tooth.

38 East Sixty-First Street.

OPERATION FOR EPITHELIOMA OF THE LOWER LIP*

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The ideal operation for lip cancer would be one that permitted the removal of the disease in block with the cervical glands and intervening tissue, as in the radical

Fig. 1.—Incision outlined and carried down to mucous membrane. Hemostasis made as complete as possible.

Fig. 2.—Mucous membrane flap dissected off. New lip beveled.

breast amputation. The method of Stewart¹ accomplishes this, but the resulting infection and sloughing is frequently extensive and severe, so that death has not infrequently occurred. Such a block dissection is unnecessary, however, because these epitheliomas seem to form their glandular metastases by embolism rather than by continuous growth along the lymphatics as in cancer of the breast. Moreover, the lymphatics draining the lips do not run over the point of the chin, which can be left to form a valuable support for the new lip.

Lip cancer, on account of the loose tissue of the lip and the constant motion of the muscles, is prone to infiltrate far beyond the visible ulceration, and one should therefore feel free to cut wide of the apparent cancer. The V incision does not accomplish this, and I prefer, when less than half of the lip at its middle is to be taken away, to use the diverging incisions of Cheattle.² When the lateral half, or more than half in the middle is to be removed, the usual operations described make a very tense lip and frequently result in

sloughing; other operations, as those of Estlander and Bruns, destroy the nerve-supply of the upper as well as the lower lip; others, as those of Von Langenbeck and Delpech, do not provide a mucous lining for the flaps, and those of Regnier, Diefenbach, Buck and Buchanan leave extensive raw areas. In my service, while we have not devised a new operation, we have combined the features of several others in the following fashion:

The operative field is anesthetized regionally after the method described by Eloesser.³ In passing, I should

Fig. 3.—Lip removed, leaving strip of mucous membrane attached to jaw. Flap separated from jaw (flap containing the facial artery).

Fig. 4.—Operation completed.

like to emphasize heartily my concurrence in his statement that when an operator has done mouth-and-face operation in this way, he will never go back to general anesthesia. The proposed incisions are outlined by tincture of iodine (Fig. 1), those surrounding the growth being half an inch away from visible and palpable new growth. The flap is formed by slightly diverging curved incisions running from the angle of the mouth and the base line of the excised area over the cheek to the neck. The flap should contain the facial artery (Fig. 3) and be somewhat broader at the base than at its tip. The upper edge of that portion of the flap which is to form the new lip is beveled upward and a mucous membrane flap dissected from the cheek above to form a new vermillion border (Fig. 2). All incisions are at first carried down to mucous membrane and fascia, and bleeding

Fig. 5.—Epithelioma of lip in patient aged 72.

Fig. 6.—Result six weeks after removal of half of lip and part of cheek of patient shown in Figure 5.

completely stopped before the cavity of the mouth is entered.

The mucous membrane is now cut through and the lip removed (Fig. 3), leaving a strip attached to the jaw in front. The flap is detached from the jaw, but it is not necessary to dissect it loose from the neck (Fig. 3). If the head is bent forward the flap will now slide into

3. Eloesser, Leo: Recent Advances in Regional Anesthesia, Cal. State Jour. Med., March, 1912.

* From the surgical service and laboratory of the San Francisco Polyclinic.

1. Stewart, J. Clark: The Radical Treatment of Epithelioma of the Lip, THE JOURNAL A. M. A., Jan. 15, 1910, p. 175.

2. Cheattle, G. Lenthal: Epithelioma of Lip, Practitioner, London, July, 1906.

place without tension and is sutured first to the strip of mucous membrane left in front. It is not necessary to remove a triangle from the cheek except when the cancer is at the angle.⁴ The rest of the mucous membrane and skin sutures are now put in place (Fig. 4).

Before the new vermilion border is sewed in place, hemostasis must be very carefully attended to, or the thin flap will be lifted off and die. The lower part of both incisions is left open and the drainage is taken care of by gutta-percha tissue. This must be left in for several days to prevent pocketing and thickening of the flap. If Steno's duct has been cut it is reinserted through a puncture hole in the mucous membrane and held by a single catgut stitch. After the operation the mouth must be carefully washed at frequent intervals with 0.25 per cent. compound solution of cresol, special care being used to irrigate between the new lip and the teeth. Two weeks later the block dissection of the neck is made in accordance with the principles laid down in a former paper.⁵

Figures 5 and 6 show epithelioma of the lip and appearance of the patient six weeks after operation.

162 Post Street.

MEDICAL SUPERVISION OF FACTORY EMPLOYEES *

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The modern factory is an epitome of human effort. So much depends on the physical condition of the men employed that it is curious that only recently has the employee received any attention. A change of this condition is now rapidly taking place, and more and more attention is being paid to the man problem.

In most factories this attention has taken the form of improved sanitary and working conditions and care of accidents. Natural progress toward increased efficiency, as well as recent compensation laws, is exerting pressure along new lines, and a scientific study of the physical condition of employees in sickness and health would seem to be the next step.

The problem has been worked out in a superficial way during the past year by a manufacturing plant in Worcester, Mass.,¹ employing about 1,200 men and women, the men greatly predominating. The methods employed and the results obtained form the matter of this paper.

It is obvious that before accurate work can be done with a large number of individuals, a definite knowledge of the physical condition of each must be obtained.

Our first step, therefore, consisted in making a complete physical examination of each employee in a small, well-equipped hospital and recording the same on a card for filing. The examination was made as complete as that given to patients admitted to a general hospital with the exception of the urinalysis, which was done only when some indication existed. We should have made a urinalysis in every instance if time had permitted. Where no defect was found the word "normal"

was stamped opposite the part examined, but all defects were carefully noted at length, and filled in on the diagram. At the end of the card, under "diagnosis," the most prominent defects were noted, as well as any general remarks on the case.

In each case the examination was carried on with no third person present, and after its completion the employee was told of any defects found and advised as to the best method of caring for himself. Thus, men having defective eyes were advised to see an oculist, those having hernias to procure trusses, while those with heart trouble were not only advised as to exercise, etc., but, when there was any sign of disturbed compensation, the patient was reported to the superintendent for change of work at the same wages. This was arranged in every case.

As far as we know no factory or corporation has up to this time made a complete physical examination of each employee, with the object of remedying any defects found which could be remedied. Railroads and certain other corporations demand a physical examination of employees from a selective point of view, but defects are not remedied. If severe, they prohibit the applicant; if slight, they are passed over. Under the system we are now considering, every effort is made to gain the cooperation of the workman in overcoming his defects and the company endeavors to assist him by slight changes in the type of his work where this is indicated.

Naturally when active contagious disease is discovered, the employee is discharged until in condition to work without danger to others.

It will be readily recognized that a large number of defects play only a small part in unfitting a man for work, but the constant drag of these little things in the long run acts as a marked handicap.

After a complete physical examination had been made of each employee and those found to be defective in any organ advised of their defects, the defectives were grouped by cross-index into regional defects; thus, all defective eyes were grouped under "eyes," defective ears under "ears," etc., etc.

A reexamination was then begun to ascertain whether the men had followed the advice given, and with what result. The result of the reexamination was most gratifying. It was found that in almost every case the men had followed the advice, and in many cases were already much relieved. For instance, it was found that the men with hernia had all procured trusses, and one went so far as to have the curative operation performed. The men with heart trouble, several of whom had disturbed compensation, were also much more comfortable, partly owing to slight changes in their work, and partly to the realization of their condition and what they must avoid.

It was evident, on looking over the eye defects, that glasses would be necessary. The men were called to the hospital and a free examination by a first-class oculist was offered them, without cost, provided that they would consent to buy the glasses prescribed. With eighteen exceptions the men agreed, and the company immediately made arrangements with a prominent oculist to examine the eyes and prescribe glasses and also to examine the defective ears more carefully. This work has been completed but the results have not yet been reported.

The examination of the lungs was extremely interesting because of the small amount of trouble found. The nature of the business (making grinding wheels) led us to expect a large number of cases of chronic

4. Sutton, Walter S.: A New Incision for Epithelioma of Upper and Lower Lips of Same Side, *THE JOURNAL A. M. A.*, Aug. 20, 1910, p. 647.

5. Ryckogel, H. A. L.: Special Factors Concerning Surgery of Cancer of the Lip and Tongue, *Cal. State Jour. Med.*, May, 1912.

* Read before the Worcester County Medical Society, Sept. 11, 1912.

1. Norton Company.