A CASE
OF
NECROSIS OF THE JAW AND OTHER
BONES
FROM THE FUMES OF PHOSPHORUS.

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UPON the table are the jaws and some adjacent bones of a lad, æt. 18, who had been exposed for a long time to the fumes of phosphorus.

He had been employed in the match trade for several years ; from 1868 to 1871 in carrying fresh matches, and from the latter date to the end of 1872 in preparing phosphorus paste.

He was small for his age, barely five feet high, weighing a little over five stone, and looking much younger than he was. The mischief appears to have commenced about the middle of December, 1872, when the foreman noticed that the lad seemed to be ill, and shortly afterwards he could no longer work on account of pain in the jaw, which he referred to toothache. In January a molar was extracted, but without

relief, and the pain continued up to the date of his admission into the hospital, on the 29th March, 1873. At that time he was suffering greatly. The whole face, but especially the region over the lower jaw on the right side, was very painful, tender, much swollen, and the tense skin was pale and shining. The gums also of both upper and lower jaws were unduly vascular and very tumid. These symptoms increased until at length there was suppuration, and then, on April 14th, the lower jaw was found bare and evidently in a state of necrosis. After this he appeared for a while to be relieved, but soon the acute pain, swelling, and other symptoms were renewed in the region of the upper jaws; first on the right side, and soon after on the left. There was much suppuration here also, and at length it was evident that these bones were dying or dead. From time to time several loose teeth were removed. During the whole of this period he was very ill; his pulse varied from 100 to 120, occasionally even to 150 or 160, and his temperature during the more active mischief from 102° to 103° . Full doses of morphia were necessary to secure some sleep, and he became much emaciated. Occasionally, too, he suffered from obstinate diarrhœa. The suppuration was during the greater part of the time profuse, and the fœtor intolerable. This, even with the utmost care, could be only partially controlled by antiseptics.

On the 1st of August, six months before death, it was decided to attempt the removal of the lower jaw. The bone was divided in front, and each half was drawn out without difficulty and with scarcely any hæmorrhage. At this time there was not sufficient firmness in any part of the region to indicate the formation of new bone; but in the course of a week or two afterwards there was distinct evidence of new bone on either side about the angle, which gradually extended.

The patient rallied remarkably after the operation. The discharge was much reduced, and for a while he gained flesh and strength. There was no apparent diminution of sensibility in the skin of the chin. But in September severe pain returned, with abundant discharge and diarrhœa. There

were three or four sinuses in the cheeks between the orbits and mouth, and the whole of the hard palate was exposed. From this period until his death his condition varied at intervals. For some days he would be comparatively free from pain, sitting up and even cheerful. Then he would be entirely prostrated by a fresh accession of suffering and suppuration, and thus he was gradually worn out, and sank exhausted on the 22nd of January, 1874.

The following bones were denuded of periosteum and dead:—

On the right side.—The whole of upper maxilla with the central incisor; the malar; the external and internal angular processes of frontal, and the part in contact with the lachrymal and nasal bones; the lachrymal and nasal bones except at base; all the internal pterygoid plate and the front part of the external pterygoid plate of sphenoid, and a narrow strip of the orbital plate of the greater wing adjacent to the malar; all the palate bone; the inferior spongy bone, and the back part of the middle one; the os planum of ethmoid, which, however, was whiter than the other bones.

On the left side.—The whole of upper maxilla, with all the teeth; the orbital surface, especially at the back part, being less stained; all that part of malar adjacent to upper maxilla; the portion of palate bone attached to the specimen (see woodcut), with the exception of the orbital process; the inferior spongy bone; the lachrymal, which was less stained above than below; the nasal except at base; the os planum of ethmoid, which was whiter than the other bones; the vomer, except a strip in middle third of right side, which was still covered; below it was quite separated from the crest of maxilla and palate bones; the perpendicular plate of ethmoid behind.

In some parts the surface of the bones has a worm-eaten appearance, and in others is coated with a rough deposit.—The whole of the lower maxilla, which was removed during life, including even both condyles, with the two molar teeth on the left side. The enamel has been removed from the grinding surface of one of these, which appears

as if porous. Some portions of the front surface of the jaw especially of the right ramus, are coated with the pumice-stone deposit.

The new lower jaw which has been formed is shown (see figs. 1 and 2).

This is perhaps one of the most perfect specimens of the kind ever seen. In size, shape, and development, it is very remarkable. The bone is solid and dense, and in two pieces

only. The greater portion constitutes the whole of the bone, with the exception of the right ramus. This was united to the body by fibrous tissue, and separated during maceration. In size and form, and especially in the absence of alveolar portion, the jaw very nearly resembles the edentulous maxilla of a very old person.

Fragments from the surface of the left angle removed for examination differed in structure from adult bone chiefly

FIG. 2.

in the want of well-marked canaliculi and of well-defined laminae. No doubt in deeper portions the bone is yet more perfect in structure.

The remarkable features of this case are: the extent of the necrosis, and the degree to which the lower jaw has been reproduced.

The specimens belong to the Museum of St. Bartholomew's Hospital.