tions in the amount of blood-flow; 2. That they do depend on alterations in the nerve-tissue effected, as all neuroses are, either by exhaustion, toxæmia, or remote irritation; 3. That the morbid processes giving rise to these states are diverse, and yet have much affinity, and may exist together; 4. That hyperexcitability, as a necessary result, tends to produce more or less paresis by exhaustion; 5. That paresis probably consists in slackening and cessation of normal vital chemical change, hyperexcitability in setting up of abnormal change, the former being comparable to an atrophy, the latter to a morbid growth; 6. That the therapy of either morbid condition needs to be modified by regard to the amount of the other coexistent with it.

THE DENTITION OF THE KOSTROMA PEOPLE.

By CHARLES S. TOMES, M.A.; and
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THE Kostroma people now being exhibited in London, independently of their hirsute appendages, are of great interest on account of the remarkable condition of their jaws.

The man, Adrian, has in the upper jaw only one tooth, apparently a lateral incisor, though Virchow describes it as a canine; whilst in the lower jaw he has four incisors, or probably three incisors and a canine; and, from their texture, these teeth are doubtless of the second dentition. The man gives no account of any milk-teeth; but it is only rea-

Fig. 1.—Adrian.

Fig. 2.—Feodor.

sonable to suppose that those at present existing were preceded in the usual way by the deciduous teeth. The boy, Feodor, has an edentulous upper jaw, and but four (temporary) incisors in the lower jaw. These

Fig. 3.—The Man's Upper Jaw.

Fig. 4.—The Man's Lower Jaw.

are fairly developed, and well placed as to position. The accompanying engravings, taken from photographs, give an excellent idea of the

personal appearance of the "hairy men"; whilst the woodcuts below show the jaws of Adrian and Feodor. The alveolar ridges of both jaws in the two subjects of this notice are not at all fully developed, and do not convey an impression of the teeth being retained within their osseous crypts, but rather of an absence of the dental organs altogether. Taking the face in its entirety, we observe that the jaws are the only parts that have apparently been dwarfed in the process of development, the malar region being normal in character. The angle of the lower jaw has, so far as can be ascertained, retained its natural

Fig. 5.—The Child's Upper Jaw.

Fig. 6.—The Child's Lower Jaw.

form, so that, when the mouth is closed, the lower teeth, lip, and chin project in much the same way that they would do in the case of a patient who had been deprived suddenly of all the teeth with the exception of the lower incisors.

A comparison of the upper jaws of the man and the boy with one another, and with normal jaws of various known ages, in which the Museum of the Odontological Society is very rich, reveals some relations of interest. The upper jaws were selected for this purpose, as there is, unfortunately, some doubt as to the accuracy of the model of the lower jaw of the man; that of the lower jaw of the boy is certainly accurate. The alveolar arch in Feodor's (the boy's) mouth corresponds very closely with that of a well grown child four years of age; that is to say, it is of just the same size and shape as an alveolar arch, which contains all the deciduous teeth in their places. Its posterior cornua fall short of those of children of five years, inasmuch as these latter are prolonged behind the last deciduous molar, to give space for the forming first permanent, or six-year-old molar. The alveolar arch in the man differs but slightly either in shape or size from that of the boy. Owing to its being rather less defined than that of the boy, it is difficult to measure it with the same accuracy; but it appears to exceed it very slightly in antero-posterior length, and only a little more in width. As has been already noted, this applies only to the alveolar border, and not to the whole upper maxilla. An abrupt bulging is noticeable in the upper part of the model, in the sulcus between the cheek and the alveolar border; and the malar processes are of large size, so that the face is broad and heavy.

It is, of course, unsafe to draw general conclusions from such scanty data; yet the relations existing between these two jaws seem to give some confirmation to the views as to the growth of the jaws set forth by Mr. Tomes, sen., and subsequently confirmed by Professor Humphry of Cambridge; for they indicate that the sole difference between the child's jaw and that of an adult is (disregarding a slight increase of width due to the greater breadth of the alveolar processes) a backward elongation of the cornua, strictly dependent on the successive addition of the posterior molars. For here is the alveolar portion of the jaw of a bulky man, the rest of whose upper maxilla is in no degree stunted, so far as we can judge, barely exceeding in size that of his child; and the explanation seems obviously to be that, as no posterior molars have been added, so no posterior elongation of the jaw has been effected. And the fact that the jaw of the boy has attained to its present size and form would seem further to indicate that the growth of the jaw up to a certain point is independent of the teeth, but that, after that point, its enlargement, which is actually little else than an elongation of its cornua backwards, is strictly and absolutely dependent on the successive additions of teeth posteriorly.

It should be added, to save misunderstanding, that the foregoing remarks apply solely to the form and size of the arch. The alveolar process, which is strictly dependent on the teeth which it carries for its depth, is in this respect necessarily deficient.