

and lasting until interfered with. These either arise from a blow or injury, in cases where the errant tooth is pushing away obstructions to its progress, or such as are accompanied by some less usual complication.

The diagnosis requires, first, the recognition of a hollow growth, and, secondly, the knowledge that it contains a tooth. The first is accomplished by physical examination, and would seem easy enough; yet a large proportion of the cases of removal of the bones for this disease were done through a mistake on this very point. The history of the case is not essential to this examination; yet an account of much pain, or cancerous tendency, would, of course, receive attention. An irregularity of its surface, polypi of the nose or pharynx, or a fungous appearance, are indicative of a solid tumor. A painless swelling of either jaw, of not very rapid growth, should always suggest the possibility of a cyst, and lead to a careful examination of every part of its surface, both over the cheek and within the mouth.* Fluctuation will usually be detected in certain places at least, although the greater portion may be bony and unyielding.† If these thinner spots be indented, perhaps they will return to their places with a crumpling sound which is pathognomonic of a cystic growth; if any doubt remain, an exploratory puncture, which is perfectly harmless, should always be made, as Dupuytren has well insisted:—"Je regarde une crepitation legère comme un symptome pathognomonique; ce signe merite beaucoup d'attention. S'il y a quelque doute on fait une ponction exploratrice; cette ponction et la crepitation, sont deux symptomes qui ne laissent aucun doute sur l'existence des kystes de cette nature."

The elimination of fluid accumulations in the antrum, old alveolar abscess or cysts containing blood, serum, or other matter, but not teeth, is more difficult. A decision from the above evidence alone would be impossible. There is one diagnostic mark, however, for these cases, which is of the highest value when it can be proved: this is the *absence of a permanent tooth* (which has never been removed) *some time after its appearance is due, in the neighborhood of*

the cyst, and whose place is quite likely to be filled by its temporary predecessor. This condition in the mouth, in connection with the swelling, would be an almost positive indication of its nature. While, on the other hand, if all the teeth are present and normal, it is one of the other diseases.*

The predisposing and the exciting causes of this affection should be separately studied. The presence of a tooth in the jaw which has never erupted is, in fact, the only one cause of the disease, since youth and other conditions which have been considered as such are only accidental. The teeth concerned are of the permanent set† and usually delayed in the jaw, either in consequence of the irregular or non-development of their fangs, their deep situation, or wrong direction, or else of the obstinate persistence of the temporary teeth in advance of them.

The exciting causes are often unknown and probably various. The attempts of the impacted teeth to reach the surface have an exciting action in certain cases; but on the other hand such teeth may lie quiet in the jaw during the entire life, and cause no trouble, or may be found enclosed in a cyst after all attempts at growth had been given up for years. That the disease should follow the extraction or aching of carious teeth, is not remarkable, considering how common these are at all ages; yet such irritation in some cases may have been the exciting cause as well as the obstinate resistance of a milk tooth to the advance of its follower. In the first and second cases given in the tables the disease was evidently excited by the blows which preceded. The additional presence of undeveloped teeth in the jaw is, of course, essential in all these cases, for without these the affection *cannot exist*.

(To be concluded.)

A CASE IN PRIVATE PRACTICE.

By E. P. HURD, M.D., Newburyport.

I WAS called to attend J. B., of this city, aged 23, married, on Sunday evening, Aug. 6th. His symptoms were those of bilious colic—severe griping pains in the bowels

* "They are generally at some parts as hard and as unyielding as the bone, so that if the examination be limited to these the mass will be supposed to be solid."—Syme, op. cit., p. 253.

† Judging from the *non-ossification of the old "gubernaculum"* and the cases which I have seen, I shall venture to say that that portion of the wall under the gum where the *missing tooth should normally have appeared* will always be found *membranous or else very thin*.

* Rare exceptions may occur to both these statements. Teeth may be indefinitely impacted or undeveloped, and yet produce no disturbance, or may be absent altogether—the missing member never having had an existence—or they may be the innocent participants of an independent growth, as where they become involved in solid tumors. A supernumerary and a temporary tooth have each been found at fault. (Appendix, Nos. 16 and 20.)

† One exception, No. 16.

and vomiting. He had come home from a ride in the afternoon, and had partaken freely of milk and green apple-pie. Diagnosis—irritation of bowels from undigested material. When the vomiting had been sufficiently quelled by small doses of submuriate and opium, I gave a purge of five grains of calomel, half a drop of croton oil and one fourth of a grain of opium. This operated freely at 2 o'clock, A.M., and gave so much relief that the patient slept.

Monday morning, Aug. 7th.—The pain appeared much relieved, but was occasionally troublesome. Some tenderness in right iliac fossa; tympanites and fever; pulse full and hard, about 80; head hot, and expression listless; tongue moist, with light creamy fur; stomach no longer irritable.

R. Tinct. aconite, gtt. xx.;
Fluid ext. ipecac., ʒij.;
Tinct. opii, ʒij.;
Aqua ad ʒiv.

S. A teaspoonful every two hours, to be taken with the ordinary effervescent fever mixture. Turpentine stupes to abdomen. Corn coffee for nourishment.

Tuesday.—Mr. B. had a tolerably comfortable day yesterday, having but little fever, perspiring a good deal, and suffering but little pain. The tinct. opii in the medicine kept pain in check. Diarrhoea, with thin, feculent evacuations. Tongue moist, pulse good. He had a chill at 4 o'clock, A.M. Quite high fever followed the chill. Diarrhoea appeared to give relief to pain and flatulence. In the afternoon the diarrhoea stopped, and, the tympanites and pain being aggravated, an enema of warm water brought a copious watery discharge, with expulsion of flatus. The discharges from bowels have been watery, but never mucoid. A powder of calomel two grains, and opium half a grain, was rejected by vomiting. Ipecac, aconite and laudanum mixture to be continued. Tympanites, tenderness and gurgling in right iliac fossa are well marked.

Wednesday.—Patient had enjoyed a good night's sleep. All the symptoms appeared better. Occasional attacks of pain, but the laudanum in the mixture relieved. Ordered half a teaspoonful of beef-tea every three hours for nourishment. Diarrhoea running on, but not profuse; stools resembled the dark, liquid dejections of typhoid fever. Gurgling in iliac region, but no petechiae. Dulness and hebetude very marked. Would doze most of the time.

Thursday.—Matters seemed to be progressing favorably. Fever of a mild type. Pulse regular and good. The pain occa-

sionally severe, and was only relieved by stupes and laudanum. Prescribed elixir vitriol with laudanum. Dulness continues; he appears to sleep, but is easily aroused.

Friday.—Augmenting tympanites. Pain more severe. More laudanum had been required. Bowels not moved during the night, and an enema was deemed necessary. This brought back the diarrhoea, and gave some relief. Thin arrow-root gruel was permitted; of this, however, he drank little. Cold water continually craved. Fever mild. No marked exhaustion. He insisted on getting out of bed to attend to the wants of nature. The ordinary debility of typhoid fever was wanting.

Saturday.—Fever more steady, and constantly increased tympanites and pain. Saturday night he got no sleep, though the laudanum was given in larger doses. Diarrhoea persistent.

On Sunday, leeches were applied over the tender region, followed by fomentations and poultices. This brought relief from the excessive pain. Sunday night, the pain returned with greater severity, and was only mitigated by the constant application of hot poultices. Little or no sleep. Tongue dry and smooth. Tympanites considerable. Ordered five drops oil of turpentine, in emulsion, with ten drops of laudanum, every two hours, thinking that the alternative action of the oil might be beneficial. I dreaded perforation of the bowel, and, acting on Dr. Wood's suggestions, thought the turpentine indicated.

Monday morning, Mr. B. appeared as well as the day before. Occasionally hot and feverish, and occasionally cool and perspiring, with soft and regular pulse. Tongue still dry. No complaint of the turpentine, which has been continued. Poultices appeared to give ease.

Noon.—Increase of tympanites and pain. Introduced into the rectum the enema tube, which helped expel much flatus. Dejecta very offensive, of dark, watery substance. Pulse natural.

Afternoon.—Pain increasing. Injected, hypodermically, one fourth of a grain of morphia. Carminatives (mint and anise) gave some relief by promoting expulsion of flatus both ways.

7 o'clock, P.M.—Mr. B. had slept one hour, and was more comfortable. Had had one discharge of dark offensive liquid from bowels, and passed water at 5 o'clock. Pulse 80. Considerable febrile heat, and dry tongue.

8 o'clock.—Was sent for in great haste. "Something had given way"; that was

the sensation, as he expressed it. Agitation, restlessness, vomiting of dark-green, bilious liquid. Pain and burning in stomach. I thought of strangury, and introduced a catheter and drew off a little urine, but without relief. I believed there had been perforation of the bowel by an ulcer, and escape of fluid into the peritoneal cavity. Drs. Gross and Snow were called in consultation.

Treatment.—Two grains of opium every hour till relief. Several doses were administered before pain and vomiting ceased.

Symptoms of collapse speedily set in. Pulse in one hour ran up from 96 to 160, and became small and thready. Body bathed in cold clammy perspiration. The usual supporting treatment was of no avail. At midnight he was nearly pulseless, yet his mind remained clear. Abdomen enormously distended, and now very hard. Percussion gave a dull sound. Fluctuation could be detected. The peritoneal cavity was evidently full of extravasated fluid and inflammatory serum.

At 11, A.M., he sank and died.

Was this a case of typhoid fever, attended, on the eighth day, with perforation of the bowel, and rapidly ensuing death from peritonitis? If so, it is an unusual case. Or was it more properly a case of enteritis, with perforating ulcer?

Could any other treatment have been more successful?

It is to be regretted that a *post-mortem* examination could not be obtained.

Selected Papers.

CONIC ACCOMMODATION IN THE COMPOUND EYE.

By RUSSELL MURDOCH, M.D.

DR. RUSSELL MURDOCH, at the last meeting of the Baltimore Pathological Society, showed how cones in the compound eyes of insects are adapted, *by reason of their shape*, to produce distinct images on the retina of objects *at all distances*, and that the single function ascribed to them—"of cutting off lateral rays, and admitting to the retina only such rays as directly face them"—is but a part of what they accomplish. He recalled the anatomical structure of these eyes—that they possess no crystalline lenses, and that the cornea, in different species, vary from concavo-convex, plano-convex to

bi-convex. The irides are frequently absent or rudimentary; but if present, are fixed, and therefore do not take any part in regulating the different amounts of illumination for varying distances. These irides are situated between the layers of the cornea, thus foreshadowing the future separation of cornea and lens. It was shown, therefore, that there was no provision for focal adjustment, such as is found in the higher type of eye; and *à priori*, he argued, any such adjustment, depending on the comparatively slow muscular action to accomplish it, would be totally inequale for the rapid flight of insects—as, for example, where the dragon-fly is pursued by the swallow, in the well-known experiment so often quoted.

He showed how parallel rays from distant objects are focused on the retina, and how the sides of the cones, being radii of the corneal sphere, surround and take the direction of these cones of rays. It is not so with rays from near objects, for these are divergent, and after passing through the cornea separate—or are too large for the cone, and, therefore, the most external ones, as the object approaches, are, one after another, lost on its pigmented sides. The central straight rays, limited in number by the amount of truncation of the cone, form a distinct image at whatever point they meet the recipient surface.

It might at first sight be objected to this hypothesis, that so few rays would interfere with adequate illumination; but the deficiency of rays is compensated by the greater illumination of each ray proceeding from a near object.

The fixation of the pupil and the absence of the ciliary muscle, are both introduced for the same end, viz.: to dispense with the appreciable interval required for muscular contraction. The great Mechanist, although apparently committing an oversight, has improved in rapid adjustment on the method best known to us, and the one we have adopted in all of our optical instruments.

He showed farther that the isolating function, usually ascribed to these cones, is another mechanical contrivance for dispensing with the still slower action of rotation which is found in the spherical eyeball. The isolation of cones, coupled with the prominent position of the compound eyes, allows of an unlimited field of vision, as well as an unlimited and simultaneous accommodation in different cones—one set of cones might be directed to, and would