excepting the unaltered state of the tongue. I believe that the disorder of digestion accompanying the chisel-sound is sympathetic; for the tongue is not loaded as in atonic dyspepsia, nor red as in gastritis mucosa. Stomachics fail to relieve the dyspepsia that accompanies the chisel-sound, whilst mild antiphlogistic and counter-irritation readily afford relief. The pain after food I believe to be due in part to the upward pressure of the loaded stomach against the heart. Sometimes there are no symptoms whatever. In rare cases, weakness constitutes the sole symptom.

A case that occurred many years since made a deep impression on my mind. The man received no benefit from tonics nor from stimulants. I did not comprehend what was the matter with him, as I could not find any derangement of the natural functions. The lungs were not diseased, and the heart was normal, except that there was a single chisel-sound at the lower end of the sternum. I applied a minute blister over the seat of the sound, and gave blue pill with opium, and iodide of potassium in mixture with liquor ammoniæ acetatis. In a few days, the man was strong and well. There had been no change of diet, and no change of residence. This was the first case that convinced me of the importance of treating the chisel-sound when there is any complaint of weakness, discomfort, or illness.

In subsequent cases, also, I have never failed to notice an improvement in the strength of the individual, as well as the speedy disappearance of flatulence and other stomach disorder, under mild antiphlogistic remedies, with counter-irritation to the lower sternal region.

Prognosis. The affection under consideration is not dangerous to life. There is deterioration of the general health, but it is not great in degree, nor is it progressive.

I have not found valvular diseases of the heart to supervene upon the chisel-sound. I have noticed hypertrophy and the chisel-sound coexisting, but these cases have been exceptional. There has been, in these cases, a repetition of inflammatory attacks. If there be but few of such attacks, the mere continuance of the chisel-sound will not give rise to hypertrophy. There may, certainly, be an appreciable increase of the muscular tissue of the heart, but not to a great degree. The chisel-sound I have found coexisting with atrophy of the muscular tissue of the heart. The chisel-sound disease may accompany any cardiac lesion, but it has no tendency to originate any affection excepting hypertrophy.

Treatment. Treatment is not advisable for individuals in perfect health, presenting the chisel-sound as a physical sign merely; but, on the complaint of any ailment, treatment should be adopted. There are few diseases that are not benefited by the removal or diminution of the chisel-sound. Yet it would not be proper to employ this treatment in all acute diseases; it is only in some of the acute, whilst it is in nearly all chronic and subacute disorders, coexisting with chisel-sound, that benefit results from special cardiac treatment.

If there be valvular disease, or if hypertrophy or atrophy coexist with the chisel-sound, removal of the chisel-sound cannot be effected. The asperity of the sound can be diminished, but the sound cannot be removed. When chisel-sound is associated with spinal irritation connected with spinal curvature, it can be diminished, but not removed.

The treatment of xiphisternal chisel-sound consists in the use of mild antiphlogistics and resolvents, and in the local abstraction of blood, followed by counter-irritation. Thus—

(1.) Apply from two to six leeches over the lower part of the sternum, or between the xiphoid cartilage and the left nipple.

(2.) Employ a repetition of small blisters, two or four inches square in size, in the same situation.

(3.) Prescribe the following pills:—

℞ Antimonii pot.-tart. gr. ij; extract. hyoscyami gr. xviii.
M. Divide in pilulas xij, quarum sumat j ter quotidie.

(4.) Prescribe the following mixture:—

℞ Liquoris ammoniæ acetatis ℥ij; potassii iodidi ℥j; aquæ cinnamomi ℥ij. M. Cochleare amplum ter quotidie sumat.

(5.) The same mixture, with the addition of half a fluid drachm of tincture of digitalis.

If there be continuance of augmented impulse, as well as of pain, it may be necessary to apply leeches several times. Small numbers at one time are best suited to this affection. Where there is scarcely any increase in the force of the impulse, blisters, repeated several times, are sufficient, without previous leeching. Speedy relief to the feelings of the patient is afforded by this kind of treatment, and amelioration of the physical signs takes place with certainty. I formerly used blue pill with opium, but I prefer tartar emetic with hyoscyamus. I now proceed to relate the outlines of some cases. I regret that I have such scanty details to lay before the Society.

CASE I. Mr. S., a journeyman house-painter, residing in Rochester, applied to a surgeon on the 26th April, 1854. *Symptoms.*—Pallor; faintness; choking sensation in the throat; frothy secretion from enlarged glands in the pharynx; pain about the umbilicus; pain at the præcordia after eating, with flatulence; slight amount of hypochondriasis. Never had lead colic. No pyrexia present.

Physical Signs.—Cardiac dulness scarcely augmented either in extent or in degree. Single, systolic, rough chisel-sound, at the lower end of the sternum. No other morbid sign in the chest. He was treated by salines and laxatives, with taraxacum, but without benefit. He was placed on special cardiac treatment on the 1st May. He reported himself as better on the 3rd, and much better on the 10th. *Physical Signs* on the 15th May. Impulse feeble. No sound audible except the normal heart-sounds. The chisel-sound has disappeared. The pharynx was examined, and found to be papillated. A gargle of sulphate of copper and alum was prescribed. The man soon discharged himself as cured. No leeches were used in this case.

CASE II. Charles F., aged 43 years, shoemaker, residing at Chatham. *Symptoms and Signs.*—Vertigo, dyspepsia, anæmia. Urine of specific gravity 1010, non-coagulable. Augmented cardiac impulse and dulness, with chisel-sound. He applied to me on the 10th November, 1852, and left Chatham on the 20th, much better. Leeches and blisters were used.

CASE III. Mr. Samuel B., aged 51 years, market gardener, residing near Maidstone, of gouty diathesis. *Symptoms and Signs.*—Dyspepsia, headache, torpid bowels, chronic glandular inflammation of the pharynx, epigastric uneasiness, general weakness; tongue tuberculated. Cardiac dulness normal; impulse weak; chisel-sound at the lower end of the sternum. This patient continually takes medicines, and frequently consults medical practitioners. He states that he had inflammation of the liver about a year since. He consulted me on the 3rd June, 1854. He was placed on the treatment that I have recommended, and a silver lotion was prescribed for the pharynx.

Sept. 4th. He was much better in every respect. The chisel-sound soon disappeared. This patient's condition is very much improved, but he is never free from gouty dyspepsia.

[To be continued.]

CASE OF SPONTANEOUS EVACUATION OF THE CRANIUM.

By JOHN HATTON, Esq., Manchester.

Mrs. McD., an intelligent midwife, sent for me on Friday, April 18th, to see Mary Rolly, aged 25 years, who, for thirty-six hours, had been in slight labour of her third child. She stated that she had difficulty in making out the presentation. On examination, I was equally puzzled. The os uteri was dilated to the size of a crown piece, the membranes were exceedingly thick and tough; through

them I could distinguish the rough margin of a bone, which terminated at a right angle; and passing the finger backwards, there was traceable a similar rough edge of about the same extent. During the interval of pain, the bone was distinctly moveable.

The patient not having felt the child for a fortnight, I concluded that it was dead, and had become putrid, and that what could be felt through the membranes was one of the bones of the head—most likely the parietal—from its square shape, and its mobility. The os uteri readily yielding, I dilated it with the finger, and then ruptured the membranes, during which process a strong pain came on, and with it an immense gush of putrid cerebral substance, mixed with foetid discoloured water. The child was shortly expelled, with the forehead in advance.

On examining the head after birth, it appeared that what I had imagined to be the parietal bone was the frontal; that there was a total absence of the orbital plates on both sides, as also the superciliary ridges; that the only portions developed, were two square pieces, about an inch and a-half in diameter; and that the head was an enormous hydrocephalic one. It appeared, moreover, that the action of the uterus had forced the contents of the cranium through the left orbit, and that nature thus saved the accoucheur from the necessity of perforating.

Periscope.

ANATOMY AND PHYSIOLOGY.

FORMATION OF THE RICKETY AND MALACOSTEON Pelves.

DR. MATTHEWS DUNCAN has published in the *Edinburgh Medical Journal* for April, and also as a separate pamphlet, some notes on the formation of rickety and malacosteon pelves. The author states that the papers to which he is chiefly indebted are to be found in Henle and Pfeufer's *Zeitschrift für rationelle Medicin*, neue Folge, iii, Band. 1853. He also direct attention to M. Meyer's articles on the Ossification of Healthy Cartilage, on the same Process in Rickety Bones, on the Erect Position, etc., in several of the later volumes of Müller's *Archiv*.

The following is Dr. Duncan's article, slightly abridged:—

In the production of deformities of the bones rendered incapable of their natural resistance by rickets or malacosteon, there are two great causes to be considered, namely, the efforts of the muscles attached to the bones, and that part of the weight of the body, in the erect position, superimposed on the various bones. The sequel of this paper will justify the complete exclusion of the former of these causes from any important place in the explanation at least of the characteristic rickety and malacosteon pelves of the human female. This conclusion might almost be arrived at on *a priori* grounds alone. For, if we compare the irregular action of any muscle, or set of muscles, to the influence of the great and steadily acting weight of the body, the unimportance of the former will appear, on account of its comparative slightness in physical forces its essentially intermitting and temporary character, as well as the antagonism of the various muscles, not to speak of it, utter inapplicability, had it any imaginable force or duration, to explain the changes in conformation actually produced. It is, therefore, to the weight of that part of the body above the pelvis, in the erect position, that we direct our chief attention—a weight in regard to the centre of which, its action and its balancing on the pelvis, so many elaborate researches have been made. The weight in question is transmitted through the lumbar vertebrae to the sacrum, and thence, through the iliac bones to the acetabula.*

The researches of Meyer go very far to show that rickets and

malacosteon are, in their essence, the same; that they are both the results of a process analogous to, if not identical with, inflammation in the affected bones. The cause of the marked difference in the deformity of the rachitic and malacosteon pelves, must, therefore, be sought for in some secondary peculiarity in the affected parts.

In rickets, the still imperfectly developed bones are affected. At the time of the disease coming on, the completed masses of bone are firm, and equal to the amount of resistance required of them; and it is only in cases of long duration of the disease, or of its most severe forms, that these ossified parts lose the firmness and solidity requisite to obviate deformity in them. The masses of cartilage not yet undergoing the changes preliminary to their becoming ossified, retain also their elasticity and capability of resistance. On the other hand, the masses of spongy cartilage, prepared for ossification, and lying between the already ossified cartilage and that yet unprepared for ossification, are very soft and yielding. In malacosteon, the completely developed bones of the adult are attacked by the disease in a form analogous only to the very severest cases of rickets, where, as already said, the ossified parts come to be affected. All parts of the bone are simultaneously weakened and made yielding in cases of mollities ossium.

Rickety bones undergo changes of form by compression of the spongy cartilage already mentioned, and displacement of the parts connected together thereby. It is only in the severest cases that the solidified bony parts soften and bend. In such cases, the deformity produced may be the same as in malacosteon. Malacosteon produces a uniform and general weakness of the bones, so that the once dense and hardest parts are liable to break; the looser and spongy parts to bend, and, as it were, fold up under pressure. It will be afterwards seen how much the simplicity of the mechanical condition of the bones in malacosteon simplifies the problem of the explanation of the deformity produced.

In *limine*, it is necessary to define certain points, lines, and planes, which are to be referred to. The pelvis is divided into two half-rings or circles, the upper and lower. Of these, the former is formed by the sacrum and iliac bones, the latter by the ischia and pubic bones. The sacrum is divided into two parts, the upper or pelvic part separated from the lower or perineal part by a transverse line passing through the middle of the third sacral bone. The plane of the brim of the pelvis is divided into two parts, an upper and a lower, separated from one another by a line joining the two iliopectineal eminences.

In comparing the rickety and malacosteon pelves with one another, and with the normal pelvis, the profile and transverse sections are to be examined.

Profile Section (figs. 1, 2, and 3). In this, the following lines form, one with another, a triangle. 1, the conjugate or antero-posterior diameter (c); 2, the sacral line (κ), extending from the apex of the promontory (p) to the middle of the third bone of the sacrum (w); 3, a line from the last point to the upper part of the symphysis pubis (s), called the diagonal direct diameter (D). Through the plane of this triangle, at a point (τ), passes a line joining the two iliopectineal eminences. From this point, lines are drawn to the two angles of the aforesaid triangle at the promontory (p) and at the symphysis (s). These lines indicate the relative position of the two halves of the plane of the brim. In the normal pelvis, these two halves are, as is well known, almost in the same plane.

In three characteristic pelves, the measurements of these lines were as follows:—

	C.		κ.		D.
Normal pelvis	4.7 in.		2.7 in.		4.4 in.
Rickety pelvis	2.9 in.		2.6 in.		4.1 in.
Malacosteon pelvis	4.1 in.		1.5 in.		5.3 in.

The distances of τ from the promontory (τp), and from the symphysis (τs), were as follows:—

	τp.		τs.
Normal.....	3.1 in.		1.6 in.
Rickety	2.0 in.		1.1 in.
Malacosteon	1.9 in.		2.4 in.

The distances of τ from the conjugate c, were as follows:—

	Normal.....	Rickety	Malacosteon
	0.12 in., under the conjugate.	0.45 in., " "	0.72 in., above the conjugate.

The distance of τ from the middle of the third sacral vertebra (w), was in all the three pelves nearly the same.

From these measurements, it is evident that the two halves of the plane of the brim, which, in the normal pelvis, are almost directly continuous, form with one another, in the

* For a further elucidation of this subject, the reader is referred to a paper on the Mechanical Relations of the Sacrum, published by the author in the "Edinburgh Medical Journal" for August and September 1885. A copious abstract of this paper appeared in the ASSOCIATION MEDICAL JOURNAL for November 9th, 1885.