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PART I.
ORIGINAL COMMUNICATIONS.

ART. I.—*Case in which several Metallic Bodies were found in the Stomach.* By ROBERT HARRISON, M. D., one of the Professors of Anatomy in the Royal College of Surgeons of Ireland, and one of the Surgeons of the City of Dublin Hospital.

ALTHOUGH the particulars of the following case present but little interest in a practical point of view, they may afford a subject for some interesting reflections to those who feel pleasure in collecting specimens of what is rare and curious in professional experience. In medical science, the principles of which are not altogether fixed, such cases are not without their use, as they occasionally involve considerations of general utility, and not unfrequently lead the mind of the thoughtful observer into a train of speculative reasoning, which prompts to further investigation and to more close inquiry, and thereby they may ultimately lead to the acquisition of useful knowledge, and to the elucidation of matters of obscurity and of interest. Under this impression I am induced to state some facts, which in

2 Dr. Harrison's *Case of Metallic Bodies in the Stomach.*

common with others I observed a few days since, in the abdomen of an old man of the name of Wall, whose body was brought for dissection into the school of this College. With the living particulars of this individual I am almost wholly unacquainted; and shall therefore only mention, that he had been, as I am informed, confined in a lunatic asylum in this city for many years, that his bodily health was in general good, that his habits and propensities were so mischievous as to render him extremely troublesome, and that he had an uncontrollable desire to seize every hard substance, particularly pieces of iron, that came within his reach, to taste and to secrete them. I am not aware, however, of any observation having been made, during his life-time, of any ill effects having arisen from an indulgence in this feeling. In the course of the dissection sufficient morbid changes were discovered in the brain to account for death, on those, however, I shall not dwell, as at present I merely wish to notice the appearances which were observed (at first accidentally) in the abdomen. When this cavity had been opened, the attention of those present was at once attracted to the peculiar dark tinge of all the small intestines, which were distended with fluid of the same colour. The stomach, though nearly empty, appeared of inordinate size, its left portion extending nearly as low as the left ilium; its coats felt remarkably thick; the peritoneum was free from inflammation, and with the exception of the two circumstances already mentioned, there was no other anormal appearance in the exterior of the alimentary canal. The liver was of the usual size and consistence; its colour, however, particularly in the right lobe, was peculiarly dark, not the mere effect of sanguineous congestion, but of the same deep ferruginous hue already noticed as so strikingly seen through the intestinal tunics. There was no bile in the gall-bladder. The spleen, pancreas, kidneys, &c., all presented normal characters. On pressing and examining the stomach and intestines, several very hard and irregularly shaped bodies were distinctly felt; one of these was

easily pushed with a slight force, which curiosity induced, through the arch of the colon, and was found to be a piece of iron of four or five inches in length. The stomach was then opened, and was found to contain a great quantity of dark mucous fluid, and several metallic substances, such as the rusty remains of large nails, long pieces of thin iron, like portions of iron hoops, a worn down blade of a knife, a large iron buckle with a pewter tongue, as that of a saddle stirrup, an iron hinge of a box or door, and several small pieces of metal, too thin and worn to admit of their original use or form being in any way recognized; four or five pieces, in the same state, were also found in different parts of the intestinal canal, in addition to that already mentioned in the colon.

It may be worth observing, that all these iron bodies had undergone considerable corrosion or solution, as if in a weak acid; and it was curious to observe how this disintegrating process had taken place in one direction in decided preference to another, so as to present a very distinctly fibrous structure, as if the decomposition had proceeded more readily in the direction in which the metal had been drawn or beat, than in an opposite or transverse course. It may also be worthy of remark to notice, that while the rim of the iron buckle is nearly worked through by the solvent agent in the stomach, the pewter tongue is unaffected, and presents its full form and size. The interior of the stomach presented the following appearances: the muscular coat was decidedly hypertrophied throughout, the cardiac orifice was unusually large, but the line of demarcation between the œsophagus and stomach was peculiarly distinct; the mucous surface of the left portion presented no appearance that could be considered very anormal, excepting the great development of the submucous glands, which were nearly as conspicuous as those in the crop of some granivorous birds. The pyloric portion of this organ was much more changed; the aperture of the pylorus was dilated to such an extent as to have obliterated the valve in toto; nothing but

4 Dr. Harrison's *Case of Metallic Bodies in the Stomach.*

the muscular ring denoted its former situation. The rugæ of the mucous membrane in the pyloric third of the stomach were unusually prominent, being elevated into firm, thick, vascular masses, so as to give the appearance of granulated projections or fungous growths; there was, however, no abrasion or ulceration on their surface, nor any unhealthy secretion, as in malignant or fungoid diseases, which these appearances at first view resembled. On an accurate examination it was clearly ascertained, that these soft vascular projections were merely excessive developments of the natural rugæ of the stomach. The whole of this surface was deeply tinged with the same ferruginous sediment, as has been already noticed in the fluid contents of the alimentary canal, and which obviously consisted of particles derived from the gradual solution of the metallic bodies which were contained in the splenic end of the stomach. In a depression between some of the granulated elevations that have been alluded to, a small opening through the stomach was observed; around this the coats were thin and hard, resembling the cicatrized circumference of a small ulcer, caused, in all probability, at some remote period, by some of those irritating substances, in the use of which the individual had indulged; it did not appear, however, that any of the contents of the stomach had ever escaped through this opening.

On submitting a portion of the coloured fluid matter, which was contained in the alimentary canal, to a careful examination, the presence of iron was easily detected. This metal was found in abundance both in the precipitate or sediment, which was collected from the intestinal fluid, as well as in solution in the latter; in the former it existed in the form of a sulphuret, in the latter it was combined with the muriatic and acetic acids.

When we reflect on the foregoing circumstances of this case we cannot fail to consider it as affording a strong instance of that truly surprising preservative power that exists in the animal economy, the influence of which we so frequently ob-

serve, not only in the resistance offered to the invasion of disease, but also in the successful contest it not unfrequently maintains against the determined destructive efforts of the suicide or the lunatic. As might indeed be anticipated, no system in the whole economy affords more remarkable facts in support of the foregoing remark, than the digestive apparatus, which may be regarded as the head and centre of organic life. Medical experience abounds in examples of the power of the stomach and intestines to resist the impression of deleterious substances, as well as to expel them from their cavity; there are, however, comparatively speaking, but few cases on record of mechanical irritants, such as have been mentioned in this case, continuing for any length of time in the alimentary canal, without producing any corresponding inconvenience or ill effect; for, with the exception of the very small ulcer in the stomach, there was no other appearance present which could be considered as decidedly diseased; even this ulcer did not seem to have produced any considerable inconvenience, nor to have admitted of extravasation of any of the contents of the stomach. Similar instances, in this latter respect, have not unfrequently occurred in my own observation of ulceration in this as well as in other parts of the alimentary canal, having existed during life, and yet no effusion of the contents had occurred. This fact evinces a power of adaptation in the parts affected to accommodate themselves to their altered condition, and thus more effectually to resist the fatal tendency of such a lesion in the structure of organs so essential to the continuance of life. I have frequently noticed, in the examination of bodies after death, in different parts of the intestine, distinct openings to exist, the obvious consequences of ulceration during life, and yet no extravasation had occurred, although on examining the parts engaged, and disturbing them from their former position, the contents of the intestine were then abundantly discharged, and close inspection shewed the free and distinctly ulcerated opening. This interesting fact may admit of explanation also,

6 Dr. Harrison's *Case of Metallic Bodies in the Stomach.*

by considering that the ulcerative process had occurred so very gradually as to admit of all the surrounding parts adapting themselves so accurately and so closely, as to prevent any effusion from the perforation in the canal; some slight lymphatic adhesion too, not unfrequently cements these connexions; add to which, the gentle and properly adjusted contraction of the muscular tunic keeping the edges in sufficient apposition to prevent any escape of the parts within. Again too, in intestinal ulcerations, the surrounding mucous surface not unfrequently presents a pulpy mass, in part filling up the opening, and thus contributing to produce the effect that has been stated; in addition to all this, it is to be recollected, that the parietes of the abdomen give a general support to all parts of the viscera, and thus prevent the formation of a cavity into which the contents of the affected viscus could be easily discharged; all these circumstances may account for the comparative unfrequency of abdominal effusion in consequence of ulceration of some of its hollow viscera, a phenomenon contrary to what might *a priori*, and without experience, be anticipated. From the foregoing statement it is not to be inferred, that effusion of intestinal matter never occurs as a consequence of ulceration, inflammation, and mortification of the viscera; on the contrary, it is by no means an uncommon sequela to peritonitis, when gangrene supervenes, for feculent effusion into the abdomen to take place to a great extent; and occasionally, too, in chronic and organic diseases of these viscera, fatal peritonitis is often, after protracted suffering, induced, and appears to have been the immediate effect of some part of the canal having given way, and allowed the escape of its contents, which have then become a continued exciting cause to the general serous inflammation which soon extinguishes the vital powers. Fatal effusion also frequently follows wound or rupture from blow of the abdominal viscera or of the urinary bladder. Ulcers in the stomach in general present a different appearance from that in the intestinal canal; the

surrounding mucous surface in the latter is often loose and pulpy, so as in some measure to conceal the opening ; whereas, in ulcers of the stomach, the edges and the tunics in the vicinity are usually thin and firm, as if cicatrized, and the whole has the appearance as if a portion of a circular or oval form had been completely cut out, and as if the serous and mucous borders had then become closely adherent. The appearances which were noticed in the mucous lining of the stomach, in the case under consideration, exhibit another proof of the adapting power of this organ to the new condition under which it was placed ; being now subjected to admit substances totally unfit for digestion, its capacity became greatly augmented, and a sort of reservoir was formed in which most of these bodies were retained ; the secreting powers of the stomach appeared greatly increased, from the distinctness of the gastric glands, and the unusual development and vascularity of the mucous rugæ, hence a more copious supply of viscid mucus wherewith to sheath the surface of the organ, and in some measure to protect it from the irritation of the rough metallic bodies contained in its cavity ; very probably also the peculiar gastric solvent fluid itself was increased in quantity and in intensity, with a view of decomposing the bodies which were immersed in it ; our knowledge, however, of the peculiar qualities of this fluid can scarcely admit of such a point being clearly ascertained, much less positively affirmed. The pyloric orifice was dilated to such a degree, that its delicate valvular fold was quite obliterated, and hence several very large pieces of metal had passed through this opening without inflicting any injury to its circumference. The liver and spleen appeared healthy ; the deep ferruginous colour of the former, however, is worthy of remark, as this phenomenon may be explained by, or adduced as a proof of, venous absorption, inasmuch as the vena portæ being the supposed agent for absorbing the ordinary fluid contents of the alimentary canal, and as it then branches through the liver with the same minute subdivisions as an artery, it is reasonable to

8 Dr. Harrison's *Case of Metallic Bodies in the Stomach.*

attribute the colour of this organ to the blood which it conveyed being strongly impregnated with this peculiar colouring matter; and this opinion derives confirmation from the circumstance of no other glandular viscus in this region being similarly affected, the pancreas, spleen, and kidneys presenting their ordinary appearances. This fact indicates the possibility of bringing medicinal agents into almost immediate contact with the structure of the liver. It is to be regretted that no bile was in the gall-bladder to admit of examination, so as to ascertain whether it also contained any unusual quantity of iron, as was found to have been the case in the bile of Cummings, the celebrated knife eater, recorded by Dr. Marcett, in the 12th vol. of the *Medico-Chirurgical Transactions*. Indeed among the several cases which are on record analogous to the present, none bears a more close resemblance to it, as far as relates to the appearances observed on dissection, than that of this individual. He was notorious for having swallowed several clasp knives with impunity at different times, and seldom suffered much inconvenience until the last performance, which may be considered as having ultimately put an end to his existence. He had swallowed thirty-five knives altogether, and lived ten years after the first experiment. On opening the abdomen after death, a black ferruginous tinge prevailed, which was also observable in the hepatic system. The colon was transfixed by a blade four and a half inches long, which was projecting into the abdomen; another was found stretching across the rectum, one end fixed in the muscular parietes of the pelvis. Although the intestines were thus perforated, no fæces had escaped into the cavity, and no inflammation had occurred. The stomach bore marks of altered structure; the lower end of the œsophagus and the upper orifice of the stomach were thicker than natural; the left, or splenic end, was natural, but the right was very much thickened; the mucous rugæ were unusually prominent, and there were granulated projections from their edges; the whole surface was slightly

coloured by the steel, the pylorus was natural, but the duodenum was much thickened. The contents of the gall-bladder partook of the black tinge of the abdominal viscera. On evaporating 150 grs. of the bile, which was black and alkaline, and then burning the dry mass in a platina crucible, the magnet immediately attracted ferruginous particles; the residue being also treated with muriatic acid and prussiate of potash, the quantity of Prussian-blue formed amounted to 0.5 grs. The presence of iron in the bile therefore was clearly shewn, and was proved by a comparative experiment on healthy human bile to be in much more considerable quantity than under ordinary circumstances. This appetite for knives is not very uncommon, and hence the medical journals and miscellanies afford descriptions of London, Prussian, Bohemian, and Brazilian knife-eaters; some of these examples have perished shortly after their first feat, others have lingered for years, and some few have wholly recovered. Several cases are on record of persons having this peculiar taste for hard substances, such as pieces of glass, stones, leaden bullets, pieces of money, &c. Borelli gives an account of a pantophogist who swallowed a hundred Louis-d'ors at a meal. Fournier relates the case of a slave who fell a victim to this appetite, whose stomach was found immensely enlarged, extending even to the pelvis; it might be compared to a sort of store-house, as it contained part of a stave nineteen inches long, and half an inch broad, two pieces of broomstick, six and eight inches long, twenty-two pieces of wood, a wooden spoon, a pipe of an iron funnel, three inches long and one broad, two pewter spoons, one of them seven inches long, a square piece of iron, weighing about two ounces, some nails, buckles, knives also; the whole weighing about two pounds. See *Dict. des Sciences Medicales*, Art. "Cas Rares."

It is a question not unworthy of consideration, whether such strange perversions from the natural taste, as have been noticed, are to be considered merely as the capricious indulgence of the lunatic or the idiot, or whether they may be con-

sidered, in some instances, as a timid and abortive attempt to commit suicide, either directly or slowly, as others, when labouring under severe mental depression, have been known to have resorted to total abstinence, in the hope of dying from inanition; or whether, according to the general principles of pathology, they may be referred to some peculiar state of the digestive apparatus.

Several cases of this description have been noticed by Dr. Good, in his *Study of Medicine*, vol. i. page 158, these he refers to the class of diseases which he calls “*Limosis pica*,” or “*depraved appetite*.” This desire for improper and indigestible substances may either proceed from a want of taste or discrimination, as in infants or in idiots, or from a corrupt taste, or an indulgence in a corrupt appetite. A longing for improper articles of food, however, often occurs in persons possessed of sound judgment, and may be occasionally regarded, not merely as the fickle wish of a whimsical invalid, but rather as a symptom of some functional disturbance, or of some peculiar condition of the system, and is not uncommon in chlorosis, pregnancy, and various species of mental emotion, &c. The substances longed for by those under these or similar circumstances, are often of the most indigestible, as well as disgusting quality, such as dirt of all kinds, coals, cinders, pieces of wood, paper, insects, small reptiles, &c. John Hunter, in his *Observ. on Diseases of the Army*, describes a longing desire to eat loam or clay, as an endemic disease among the blacks in Jamaica. It may be worth considering, whether such desires may not proceed from the unhealthy condition of the stomach itself, which, though not diseased in structure, may be impaired in function, and suffering perhaps from an excess of acid, or from the altered quality of its secretions, or from sympathy with some other organs in a state of disease or excitement, may labour under some peculiar irritability or uneasiness, which seeks for, and sometimes finds, a transient relief in the swallowing of earths, and various other matters, which are there sought for with an eager and indiscriminate and often a voracious appetite.