On the pathology, symptoms, and treatment of ulcer of the stomach : with an appendix of cases / by William Brinton.

Edw. H. Clarke

ON THE

PATHOLOGY, SYMPTOMS, AND TREATMENT

OF

ULCER OF THE STOMACH.

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PATHOLOGY, SYMPTOMS, AND TREATMENT

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ULCER OF THE STOMACH.

WITH AN

APPENDIX OF CASES.

By WILLIAM BRINTON, M.D.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS;
PHYSICIAN TO THE ROYAL FREE HOSPITAL;
LECTURER ON PHYSIOLOGY AND ON FORENSIC MEDICINE IN
ST. THOMAS'S HOSPITAL.

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MDCCCLVII.

TO

JOHN SIMON, F.R.S.

LECTURER ON PATHOLOGY IN ST. THOMAS'S HOSPITAL, ETC. ETC.

THIS BOOK

IS DEDICATED,

BY HIS FRIEND AND COLLEAGUE,

THE AUTHOR.

PREFACE.

THE following work is a reprint, with some alterations and additions, of various papers on Ulcer of the Stomach, contributed by me during the last few months to the *British and Foreign Medico-Chirurgical Review*, the *Lancet*, and the *Association Journal*.

How far its contents include anything novel, true, or useful, is scarcely for me to determine. I hope, however, that it may be described as collecting and incorporating facts hitherto scattered and little accessible; and as recording the existing state of our knowledge respecting this disease in a form calculated to facilitate those additions and corrections which Time is sure to bring.

The plan of my inquiry is too fully detailed in the following pages to demand more than a brief allusion here. Wishing to make that inquiry a study from Nature, I have drawn my materials exclusively from cases; either observed by myself, or recorded by others. The number of cases thus collected has, however, rendered it impossible for me to specify their sources, save

in those instances in which such a reference seemed peculiarly desirable.

The Reports in the Appendix (reprinted, with little change, from the *Association Journal*) are—as their dates suggest—a selection from numerous cases of this disease, such as a single year generally brings under my notice. They are intended chiefly to illustrate the more common (and therefore important) varieties of the malady. In reporting them, I have purposely omitted all irrelevant details. And in commenting upon them, I have limited my remarks to those which seemed at the time to be suggested by the specific—as distinguished from the general—features of each particular case.

Brook-street, Grosvenor-square,
January, 1857.

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ON

ULCER OF THE STOMACH.

INTRODUCTION.

In spite of the attention which has long been bestowed on the diseases of the stomach, it must be confessed that we know scarcely so much of them as of the diseases of other organs. Nor is this to be wondered at. For the physiology of the stomach is but now emerging from a state of obscurity, such as has necessarily involved many of its pathological changes. These changes, again, are often accompanied by little evidence of their occurrence in the living body. Indeed, exact physical information concerning them is almost denied us. The aids to diagnosis which auscultation has afforded in the diseases of the thoracic viscera, and chemistry in those of the urinary apparatus, scarcely find any parallel in the maladies of an organ which executes its work without perceptible sound or movement, and only dismisses its products from the body after a complex series of changes and admixtures. And although the symptoms which point to the stomach are not very difficult to recognise, while its disorders are both frequent and amenable to treatment, still these very facts, which have doubtless favoured the acquisition of information respecting them, seem rather to have opposed than faci-

litated stricter pathological inquiries, and have thus rendered our knowledge of the gastric diseases diffuse rather than profound, and generally useful rather than specifically accurate.

Disclaiming the possession of any novel or untried means of inquiry, we may nevertheless indicate one or two points in which the existing knowledge of these diseases seems to be peculiarly susceptible of improvement; and with reference to which their phenomena may therefore most profitably be investigated.

The careful physical examination of the belly will often afford those whose senses are sufficiently acute, an amount of information almost approaching to that yielded by percussion and auscultation in thoracic disease. The collection and comparison of the histories of large numbers of cases, will teach which are the more constant and essential of the symptoms present; and may thus sometimes obviate the errors so frequently made in the diagnosis of these obscure complaints. The minute study of these symptoms, as contrasted with the lesions found after death, will occasionally permit diagnosis to be referred to a degree which appears to border on temerity. The physiology of these organs will not only explain symptoms and aid prognosis, but will further afford a powerful engine of treatment. Indeed, we may find in the occasional successes of some modern forms of quackery, the strongest confirmation of what physiology teaches us with respect to the paramount importance of proper food, air, and exercise, to the healthy action of the digestive apparatus. Lastly, with suitable precautions against the many sources of

error which are connected with the digestive canal, the chemical and microscopical examination of its expelled contents will sometimes afford valuable information respecting its state.

The above remarks are especially applicable to the malady which forms the subject of the following pages. And they will therefore explain why the author begins what he hopes may form a series of Essays on the diseases of this organ, by an inquiry into the pathology, symptoms, and treatment of ULCER OF THE STOMACH.

It would not be very difficult to establish something like a title to precedence, on the part of this disease, over the other affections of the organ. For of what other gastric malady can we allege, that it occurs very frequently; that it may generally be detected in the living subject; that it runs a protracted course, at any stage of which it may be suddenly fatal; that it is usually curable; and, finally, that it is the result of a specific structural lesion, such as can be at once detected by an examination of the dead body? And if the statements implied in this question be but partially true, how can we justify ourselves in diagnosing cancer or dyspepsia, except by a process of inductive reasoning, which generally amounts to, and often specifically includes, a reviewal of the usual phenomena of this disease, prior to its rejection as the true explanation of the symptoms before us?

There needs little apology for reversing what might seem to be the natural course of description, and introducing the pathology of this disorder before treating of its symptoms. It was from the dead-house that

Cruveilhier first derived the information which even now forms the most valuable part of our knowledge respecting the gastric ulcer. Nothing short of a large number of necropsies can afford any valid basis for our conclusions as to the frequency of the disease, the age and sex it chiefly affects, and the modes by which it terminates. In like manner it is to the progress of the disease, as it may be deduced from the examination of a series of specimens, that we must look for the interpretation of its symptoms, and for the clue to its rational and successful treatment.

PART I.

PATHOLOGY.

Under the above heading I purpose to lay before the reader an outline of the information afforded by a careful examination of the gastric ulcer in the dead body, as well as of the chief deductions which that information more immediately suggests.

The sources of this information are of two kinds. On the one hand, for some years past, during which I have made the diseases of the stomach an object of special clinical investigation, I have had unusual opportunities for studying the ordinary appearances of this lesion in the practice of the Hospital to which I am at present attached as physician. On the other hand, there are many of its pathological details, with respect to which I have constantly felt the want of a far wider field of

observation than my own experience could afford. As one means of satisfying this want, I have undertaken a troublesome search through various Journals and Reports (British and foreign), as well as Hospital Museums, which have seemed to promise the kind of information I desired. I have thus been enabled to add to the numerous necropsies of this lesion which my own practice has afforded me, the results of about eleven hundred more, the majority of which have never before been collected, much less compared with each other.

The *frequency* of ulcer of the stomach may be best inferred from the number of times that this lesion has been observed in a given number of persons, dying from all diseases, and subjected to careful necropsy.

The few data of this kind that I have been able to meet with are the following:

Dr. T. K. Chambers* states that, in 2265 post-mortem examinations made at St. George's and St. Mary's Hospitals, ulcer of the stomach was present 22 times. But as cicatrices of ulcers are not mentioned in his valuable memoir, it may be a question whether we ought not to add to this number, what we shall by and by find reason to conjecture is the average relative number of scars—viz., an equal proportion, or 22. Even with this conjectural addition, however, the frequency of ulcer would be only 44 in 2265, or less than 2 per cent. of the total deaths.

The writings of Dr. Gairdner,† Dr. Habershon,‡ and

* London Journal of Medicine, vol. iv. p. 597. 1852.

† Private communication.

‡ Medical Gazette, vol. xxx. p. 612.

Dr. Handfield Jones,* have afforded me some results which may be conveniently grouped together in the statement, that they observed 11 open ulcers, and 4 cicatrices, in all 15 ulcers, in 435 autopsies; a proportion that corresponds to $3\frac{1}{2}$ per cent.

Jaksch† found that 2330 autopsies afforded 113 ulcers; of which 57 were open sores, 56 cicatrices. This is a proportion of somewhat less than 5 per cent., or 1 in 20 dead bodies.

Dittrich‡ gives the results of the examination after death of 396 adults; in whom he found 25 ulcers, 5 open, 20 cicatrized. This affords a total proportion of about 6 per cent., or 1 in 16.

Willigk§ examined 1600 bodies, and found 139 ulcers, 74 open, 65 cicatrized. This number corresponds to $8\frac{1}{2}$ per cent., or 1 in 12.

Lastly, Dahlerup‖ found 26 ulcers in 200 corpses; 20 of these 26 being open, 6 cicatrized. This affords the proportion of 13 per cent. to the total deaths, or 1 in 8.

As regards any general comparison of the above proportions, it is to be regretted that the brief accounts from which I am obliged to quote, do not specifically

* Transactions of the Medico-Chirurgical Society for 1854.

† Schmidt's Jahrbuecher, vol. xliv. p. 300. 1844. (From the Prag. Vierteljahrschrift, i. 3.) The 75 hæmorrhagic erosions he mentions, I omit, as not trustworthy evidence of commencing ulcers.

‡ Schmidt's Jahrbuecher, vol. iv. p. 302. 1854. (Abridged from Papellier's Inaugural Dissertation, Erlangen, 1854.)

§ Schmidt's Jahrbuecher, vol. iii. p. 92. 1853. (From the Prag. Vierteljahrschrift, x. 2. 1853.)

‖ Canstatt and Eisenmann's Journ. for 1842. (De ulcere ventriculi perforante, Havniæ, 1841.)

state whether the ulcers and scars above mentioned always occupied the stomachs of different individuals. But they seem to imply this fact. While the presence of an ulcer and a scar in the same stomach must be not only an infrequent coincidence, but a possibility which, in the small number of cases adduced by Dahlerup and Dittrich, might be almost dismissed from notice.

Assuming the accuracy of the above statements, we may sum up their more important results in the following propositions:—1. The ulcer of the stomach is so far from being a rare lesion, that evidence of its present or previous existence may be found in from 2 to 13 per cent. of persons dying from all causes; and that the ulcer itself, open and unhealed, may be observed in from 1 to 10 per cent. 2. The 7226 necropsies thus collected offer us about 360 ulcers, which are pretty equally divided into 190 open ulcers, and about 170 scars. These numbers tolerably correspond to a total proportion of 5 per cent.; which is divisible into $2\frac{3}{5}$ and $2\frac{2}{5}$ per cent. for these two conditions respectively. 3. The above range of frequency is so remarkable as to suggest some special cause or causes. These, however, could only be determined by a careful analysis of the class, age, and sex of the patients received into the Hospitals in which these observations were made. Failing such an analysis, I will only point out, that the maximum frequency of the ulcer (stated by Dahlerup) occurs in the spirit-drinking* population of Copenhagen; and that its larger proportion in the German Kranken-

* Some indirect confirmation of this remark may be gleaned from the writings of Huss, Carlson, and Sonden, relatively to the enor-

haeuser may be plausibly referred to the inmates of these institutions being, on an average, of greater* age, if not of more destitute circumstances, than the persons usually received into English hospitals.

The little I have been able to observe as to the frequency of the ulcer in the living subject, seems to confirm the experience of the British authorities mentioned above.

In order definitely to diagnose the existence of an ulcer of the stomach, I am in the habit of requiring the presence of a set of symptoms, the concurrence of which would certainly understate rather than exaggerate the frequency of the disorder. And yet I am disposed to think that at least 40 instances of this malady come under my notice yearly, in an Out-patient practice which numbers about 4000 new cases within this space of time.

Sex.—As has long been believed, the ulcer is more frequent in the female than in the male. Among the autopsies I have collected, are 654 which mention the

mous consumption of alcohol in the neighbouring country of Sweden. (Schmidt's Jahrbuecher, No. 76, p. 152.)

* Here again, though I am unable to adduce direct facts, I may claim for the above conjecture something more than a merely gratuitous character. For, as an indirect comparison, I may notice that Jaksch's 2330 necropsies include 188 ulcers, scars, or erosions of the stomach. This number of 188 includes 53 over sixty years of age, and 6 over eighty years. The published "Statistics of Guy's Hospital for 1855," show only one person over eighty in 404 dead. Hence it seems that the whole deaths over eighty in the English Hospital would not amount to a larger number (6 in 2400), than those of a single group of diseases in the German one;—a group which itself does not contribute more than five per cent. to the whole, and which could not possibly represent *all* the diseases of old age.

sex. Of these, 440 are female, and 214 male; numbers which nearly correspond to the proportion of 2 to 1.*

Age.—With respect to the ages at which the ulcer has been detected, I can only cite 226 necropsies that include perforations, open ulcers, and cicatrices, in natural proportions to each other. The persons in whom they were found had an average age of $42\frac{1}{6}$ years.

These 226 cases may be arranged in decades of years as follows:

	Between the ages of								
	0 & 10	10 & 20	20 & 30	30 & 40	40 & 50	50 & 60	60 & 70	70 & 80	80 & 90
Number of cases of gastric ulcer.	2	18	45	39	38	32	32	15	5
			65		77		84		

But in order to gather, from these numbers, the liability of living individuals of these several ages to become the subject of the ulcer, we must of course correct them by the comparative numbers of persons living in each corresponding decade. Such an arrangement (see next page) shows that the liability gradually rises, from what is almost a *zero* at the age of ten, to a high rate, which it maintains through the period of middle life; at the end of which period it again ascends, to reach its maximum at the extreme age of ninety. We may therefore conclude that the ulcer of the stomach is specially, though not exclusively, a disease of middle and advancing life.

This view is strongly confirmed by the following

* It is only in the 74 ulcers mentioned by Willigk (*loc. cit.*), that I have been able to correct the number of the ulcers in each sex, proportionally to the deaths from all causes, by the numbers of male and female subjects examined. The result has been to lower his previous ratio of 12 to 62, to one of not more than 12 to 55.

comparison of the liability to gastric ulcer with that of two other diseases of youth and age respectively—viz., consumption and apoplexy.*

	Between the ages of								
	0 & 10	& 20	& 30	& 40	& 50	& 60	& 70	& 80	& 90
Liability to ulcer of stomach, taking 100 as maximum	0	20	51	49	47	56	80	75	100†
To pulmonary consumption, with the same maximum	47	33	73	92	100	95	65	23	7⅔
To apoplexy (cerebral hæmorrhage?) with the same maximum . .	0	½	2½	7	16	40	61	100	69

The *situation* of the ulcer I deduce from 220 cases, that include scars, ulcers, and perforations indifferently, as observed in the successive necropsy of a large number of subjects. Of these 220 cases,‡ in 86 the ulcer occupied the posterior surface of the stomach; in 55, its lesser curvature; in 32, its pyloric extremity; in 13, its anterior and its posterior surfaces, often at two opposite places; in 10, its anterior surface only; in 5,

* These round numbers I have reduced from the Registrar-General's Returns for 1847.

† Against such a marked and progressive rise of liability it militates little to point out, that so many of these cases died of intercurrent maladies, that the date of detecting the malady has no definite relation to that of the occurrence of the lesion. Unless it be contended that an ulcer in the stomach tends to increase longevity, by warding off other maladies, I can see no other conclusion than the above: namely, that advancing age heightens the chances of such a lesion. I might easily adduce numerous cases in support of this deduction, which is one of great importance to the pathology and treatment of the disease. (See Appendix—Report, No. 7.)

‡ These 220 cases include 15 mentioned by Jaksch (*op. cit.*), in which the ulcer occupied both the posterior surface and lesser curvature. The latter I have excluded from the above numbers, but admitted into the 187 mentioned lower down.

its greater curvature; in 4, its cardiac pouch.* But in comparing these numbers, we must recollect that the various regions of the stomach merge into each other by such inexact and even changeable boundaries, that minute accuracy in speaking of them is quite impossible. For example, in such a nomenclature as the above, the lesser curvature, which is, in strictness, not so much a surface as a line, defined by the attachment of the gastro-hepatic omentum, really includes a variable extent of the adjacent portions of the anterior and posterior surfaces. In any case, however, these numbers claim a marked preponderance of liability for the posterior surface, the lesser curvature, and the pyloric pouch, over the anterior surface, the greater curvature, and the cardiac sac respectively; the ulcers in the three first situations together making up 187, or nearly 85½ per cent. of the whole.

In *size*, the ulcer is rarely much smaller than a fourpenny-piece, or larger than a crown-piece. But no precise limits can be assigned it. Thus an ulcer not larger than a pea may exhibit all the characteristic appearances of this lesion, and may give rise to fatal hæmatemesis, or to perforation. While, conversely, an ulcer has often been known to attain a diameter of five or six inches; or in other words, a superficial extent amounting to $\frac{1}{8}$th or $\frac{1}{9}$th of the total mucous surface of the organ.

The *shape* of the ulcer is usually circular or slightly

* The respective per-centages of ulcers in these situations are so nearly obtained by halving the above figures, that I have not thought it necessary to mention them separately.

oval. But an equal variation obtains in this respect. Thus, it is often oblong, its direction being either parallel or transverse to the axis of the stomach; and in rare instances it has formed a zone around the pyloric valve, or the neighbouring extremity of the organ. But some of these irregular shapes are evidently due to the fusion of two or more ulcers into one, by the progressive enlargement of their adjacent margins.

As regards the *number* of ulcers, two or more are frequently present in the same stomach. Out of 536 cases which specify such details, a plurality of ulcers was present in 113; a number that corresponds to rather more than 1 in every 5 cases, or about 21 per cent. Of these 113, 97 (corresponding to 463 instances of ulcer) offered the following numbers: in 57, there were two ulcers; in 16, three; and of the remaining 24, in which "several" ulcers were present, 3 cases offered four, and 2 cases five ulcers each; while in 4 there are reasons to suppose even this number was exceeded.*

Margin.—The appearances of the tissues in and around the ulcer are subject to just as much variety as its size and shape. In some instances, there is little or no evidence of inflammation in the neighbourhood of the lesion; which consists of a mere removal of the

* In addition to these, the reader will find in the Appendix of Cases an example in which five ulcers were present. Here, however, three of the five were probably due to the partial cicatrization of what was originally but one ulcer, so as to separate three open portions of the lesion by two intervals of cicatrix. Hence but three ulcers were originally present. And this solitary instance may perhaps suffice to suggest that some of the above plural or multiple ulcers were also due to the subdivision of a smaller number by a similar process.

mucous membrane over a circular space, that forms a shallow but level pit, with a sharp, smooth, vertical edge, as though it had been punched out. In other cases, which appear to form the majority, the mucous membrane that constitutes the immediate margin of the ulcer is somewhat swollen, so as to be raised a little above the level of the adjacent mucous surface. And a microscopic examination shows that this thickening, which is always accompanied by induration, depends upon an exsudation of lymph into the areolar tissue beneath the mucous membrane, as well as into the matrix of the latter texture itself. In short, there can be no reasonable doubt that we have here a slight but appreciable amount of inflammatory reaction ; and that, in respect of its nature, this reaction is closely akin to that adhesive inflammation of the peritoneum or neighbouring viscera to which we shall presently allude.

In many instances, indeed, the swelling and induration around the ulcer far exceed that just mentioned; and convert the mucous membrane, for the distance of half an inch, an inch, or more, into a thick brawny mass, which has been sometimes mistaken for cancer. Rarely, however, will a careful examination of the ulcer leave us in any doubt as to its nature. Even when best marked, the total increase of thickness in the parietes of the organ is but moderate. The exsudation which causes this increase of thickness is almost exclusively confined to the mucous membrane, and to the areolar tissue immediately beneath it: and consists of fibres, in which it is usually very difficult to find even moderate quantities of the cell-growth from which such fibres appear to be

developed. Hence the new substance has neither the structure nor the situation of the cancerous deposit. The mucous membrane itself, however thickened, remains in what is essentially a healthy state. Indeed, in many such instances it is little more than hypertrophied, in the strictest sense of this term. And, lastly, the history of the lesion would generally afford sufficient grounds for a decision, even prior to an inspection of its appearances.

The latter allusion we may connect with what seems to be the most obvious explanation of that maximum, minimum, and medium of inflammatory reaction and thickening, which we have indicated in the above remarks. As one might expect, the simple, punched-out ulcer is usually either a small or recent lesion, on the one hand, or is associated with a weakly or cachectic (in the female, often a chlorotic) state of constitution, on the other. While the maximum of thickening is generally found in connexion with the same circumstances which favour the occurrence of adhesive inflammation on the exterior of the stomach:—and among these, especially with a large size and long duration of the ulcer. It is however curious to notice, how frequently it occurs in comparatively young subjects, many of the best instances recorded having been persons of about the age of twenty or twenty-five. Still this fact does not qualify the preceding statement as to the usual duration and diameter of the indurated ulcer, but seems merely to express the degree in which the inflammatory process is capable of being heightened by the vigour of youth.

Such varieties in the size, shape, and appearances of

the lesion, as well as in the numbers in which it is often present, may well show in what a restricted sense we ought to adopt the nomenclature by which it is generally known in medical treatises. It is generally called *the ulcer*—often the *simple*, or *chronic*, or *perforating ulcer* of the stomach. Now as regards the word *ulcer*, an important exception may be taken to its use. For the comparison of any large number of specimens would conclusively show, that there is no specific or pathological distinction between "ulcer" and "ulceration" of the stomach; and that all the distinctive characters which the most minute description could assign to either, merge into those of the other by infinite gradations. It is true that the numerous or large ulcerations which are sometimes produced by a rapid process of destructive absorption, are pretty sure not to be accompanied by any of those appearances which imply even a moderate duration;—that they will not, for example, have raised edges or a hard margin, like most of the ulcers, and will rarely penetrate the larger vessels, or even the total parietes, of the stomach. But, practically speaking, all this only amounts to the statement of a very obvious fact—namely, that such lesions destroy so large a fraction of an organ essential to nutrition and life, that the unhappy subject of them generally dies before they have time to offer appearances of reaction, or is too prostrate to be amenable to the inflammatory process. While each of the other terms emphasised above might fairly be cited as illustrating the rule of *lucus à non lucendo*. The lesion is called *the* ulcer because it is essentially neither single nor definite in its nature

or origin, and is often present in the plural number. It is called the *simple* ulcer, because its characters are generally a compound of two processes of absorption and reaction, the latter of which certain instances show to be quite independent of the former. It is called the *chronic* ulcer, because its progress is sometimes so rapid as to penetrate the stomach and destroy life in a few days. And, finally, it is called the *perforating* ulcer because, in about seven out of every eight cases, it does *not* perforate.

The *base* of the ulcer, so long as it is formed by the tissues of the stomach itself, presents appearances similar to those of its margin. Its usually firm and hard consistence is derived, partly from the density of the areolar and muscular tissues originally present, partly from an increase of their cohesion, due to that infiltration of fluid or exsudation of lymph which inflammation generally brings about. In other (and by no means infrequent) cases, the progress of ulceration, apart from any such reaction, is betrayed by the soft, flocculent, or even gelatinous consistence of the floor of the ulcer; where we sometimes find flakes of dead tissue, the size of which almost entitles us to regard them as sloughs.

But since the ulcer, beginning in the mucous membrane, gradually extends through the coats of the stomach, in the direction of depth, as well as of surface, the nature of its base and margin is necessarily subject to continual change. Still, the mode by which it penetrates the various tissues of the stomach is so characteristic, that there is little alteration in the shape of the ulcer, so long as it does not pass beyond them.

The whole depth of the ulcer forms a cone, the base of which is at the free internal surface of the stomach, while its apex points towards the peritoneum. The smooth, sharp, vertical edge which forms the lateral boundary of the ulcer as it passes through the mucous membrane, is exchanged for a smaller and less regular circle where it reaches the sub-mucous areolar tissue. In like manner, the gradually narrowing aperture by which the ulcer eats its way through the subjacent muscular coat, dwindles, as it reaches the peritoneum, to what is little more than a point, corresponding to the centre of the conical ulcer. And it is in this point that the perforation which forms the last event of simple gastric ulceration occurs; generally as the immediate result of the rupture or detachment of that pale yellow slough into which the peritoneum has previously been converted, allowing the contents of the stomach to escape into the abdominal cavity.

It is obvious that a progressive increase in the depth of a gastric ulcer would always end in the perforation of the stomach. But this event is in most instances prevented or deferred by the occurrence of adhesion, which, by uniting this organ to some neighbouring surface, obliterates the peritoneal cavity at and around the base of the ulcer. The peritoneum covering the affected part of the stomach undergoes inflammation; its smooth serous surface acquires a dull, roughened aspect, and becomes the seat of an exsudation of coagulable lymph, by means of which it is soon fixed and united to the adjacent serous surface of any viscus with which it may be in contact.

The frequency of such intimate adhesion must, of course, depend chiefly on the number of protracted cases met with; of which protraction we may regard it as equally cause and effect. My own observations only entitle me to corroborate the statement of Jaksch, who found 22 such adhesions in 57 cases of ulcer; a proportion of about 40 per cent. The site of these adhesions, and the viscus to which they attached and fixed the organ, exhibited a tolerable correspondence with those parts of the stomach which we have already specified as the most frequent situations of the ulcer. Thus of these 22, 15 united the pancreas to the posterior surface, or lesser curvature, of the organ; 5 attached the pylorus or lesser curvature to the adjacent liver; 1 involved the mesentery; and 1 the spleen. But there can be little doubt that the formation of these adhesions is seriously affected by another cause:—namely, by the movement of the stomach upon the surface opposed to it. It is only thus we can explain the rarity of adhesion of the anterior wall of the stomach to the parietes of the belly, coupled, as we have already noticed, with a by no means infrequent position of the ulcer on this wall, and with what we shall see is an extreme liability to perforation when so placed. And it is interesting to notice, that the situation of the ulcer seems not only to regulate the occurrence of adhesion, but also to affect its structure, and thus to influence its efficiency as a means of protection against perforation. The adhesions which occupy the omentum are often little more than a thickening of the delicate fibrous tissue of the peritoneum by an interstitial deposit of inflammatory lymph; and are of

so little avail in warding off perforation, as to be ruptured by very slight exertions or shocks, such as coughing or sneezing with a moderately distended stomach. While the adhesions which unite the stomach with the liver or pancreas often possess a fibro-cartilaginous character, that almost precludes all danger of perforation.

The *duration* of the disease is very variable, and is in most instances rather to be deduced from the symptoms observed during life, than from the appearances found after death. The latter would, however, generally permit a conjecture. Thus, when we find a large, shallow ulceration, of irregular shape, unattended by any marks of adhesion on its peritoneal aspect, or by any elevation or thickening of its mucous edge, there is fair ground for presuming it of recent formation. While, conversely, adhesion and thickening around an ulcer, or an exactly circular shape, tend to show that a certain time has elapsed since the first occurrence of the destructive process. The clue sometimes afforded by the symptoms can hardly be alluded to here, save to point out that there is great danger of assigning to an ulcer far too long a duration, in consequence of the liability of the malady to a return. In fact, nothing short of a tolerably complete continuity of the symptoms during a series of years, entitles us to regard an ulcer as really open during the whole of the time. In like manner, unless the symptoms of ulceration during life were very marked and persistent, we should hardly be justified in denying that the ulcer before us might not have existed before the visible attack of illness that first called for medical advice.

Even with these limitations, however, the range of duration is remarkable. In what are certainly exceptional cases, the ulcer has been known to be fatal in as little as ten days: generally by perforation; sometimes by exhaustion, caused or hastened by vomiting; very rarely by hæmorrhage. But, in the majority of instances, a period of several weeks or months precedes the fatal event. And an extension of this period to years seems not by any means uncommon. Among cases of this kind—possibly relapses, but more probably continuous open ulcerations—I find in my notes one of 35 years, two of 30 years, three or four of 20, four or five of 15, and several of 10, 7, 5, and 4 years' duration.

The *healing* of such ulcers by a process of cicatrization appears to be much more frequent than is generally supposed. The examinations of Dittrich, Jaksch, Willigk, and Dahlerup, reveal a total of 147 scars and 156 ulcers, making the proportion of the former nearly equal to that of the latter. Against such results it can hardly be alleged that the supposed scars have really been mere local hypertrophies or thickenings of the mucous membrane, or fibrous deposits in its sub-mucous areolar tissue. While in their favour we may point out how easily cicatrices of small size might escape discovery, in less careful scrutinies of the mucous membrane of the stomach than those which appear to have been made by these observers.

The cicatrix by which the ulcer heals is therefore, on the whole, about as frequently met with as the ulcer itself. In other words, half the instances of this disease undergo what is probably a spontaneous cure.

The precise details of the process of cicatrization differ with the amount of destruction that has preceded it. Where the lesion has been of small size, and the ulcerative process has not extended deeper than the mucous membrane, the scar is sometimes little more than a mere condensation and thickening of the sub-mucous areolar tissue; and in outline (like the typhoid cicatrix) closely resembles the ulcer that preceded it. But in the majority of instances, it has a more characteristic shape. The gradual contraction of the lymph deposited at the base of the ulcer converts it into a hard and often thick, central mass; which gives off cord-like processes, that seem to radiate into the surrounding healthy tissues. The latter are themselves thrown into folds, as the result of the tension which this contraction produces. Where the previous loss of substance has been considerable, this process often seriously affects the shape and capacity of the stomach. In such instances the cicatrix corresponds to a constriction of the organ, which gives it more or less of an hour-glass shape. And in extreme cases, the contraction amounts to an absolute stricture, which impedes the transit of food, and thus gradually causes hypertrophy and dilatation of the over-distended segments of the stomach behind the obstruction. Such examples are, however, rare.*

The cicatrices which thus affect the calibre and shape of the stomach are generally those of large ulcers, that

* From the cases I have been enabled to collect, I should conjecture them to be scarcely one in 200 instances of ulcer; or one per cent. of the cicatrices by which they are conditionated. An instance from the author's practice will be found in the Appendix, (Report, No. 9.)

have remained open for a long period before undergoing the healing process. Hence they are often found associated with adhesion of the stomach to some of the neighbouring organs:—a circumstance which itself aggravates the perils of the gastric constriction, by still further embarrassing the muscular contractions of the stomach, and aiding its changes of shape. In most of these cases, the substance of the adhesion is so inseparably united with that of the cicatrix itself, that it is impossible to distinguish one from the other. Both are indeed composed of the same substance:—a fibrous structure, the elements of which gradually approach, but never fully attain, the development of the ordinary white fibrous tissue. There are three or four very interesting cases* on record, in which the ulcer has given rise to a peculiar dilatation and thickening of the pyloric end of the stomach, so as to convert this part into a kind of pouch, which could be distinguished through the anterior wall of the belly during life. The details of these cases scarcely render them susceptible of a common description, far less of a single explanation; but it seems not improbable that in all of them the accumulation of the gastric contents, which formed the immediate cause of the dilatation and thickening of the coats of the stomach, was chiefly due to a local failure of muscular contraction, itself the result of that destruction

* Cruveilhier (whose description of the gastric ulcer, twenty years ago, still forms the most valuable part of our knowledge respecting it) gives two instances of this kind. (Anatomie Pathologique, fol. 1835.) Another will be found (exceedingly well reported) in the Dublin Medical Journal (vol. ii. p. 494).

of tissue which the ravages of the ulcer had brought about. A full consideration of the origin of these pouches would lead us too far from our present subject. But as regards the cases naturally included in the term "ampliation of the stomach," we may point out that those caused by gastric ulcer seem to include representatives of two different kinds of dilatation, each of which may be traced in another class of ampliations of the stomach. Thus the stricture brought about by the contraction of the cicatrix of an ulcer usually gives rise to an obstruction, such as produces a state of hypertrophy and dilatation, strictly analogous to that variable admixture of these conditions which often complicates a scirrhus of the pylorus. But in rarer instances, with no material stricture or obstruction, we meet with a more localized dilatation and hypertrophy; engaging, it may be, no part of the stomach save its pyloric sac; and exactly corresponding, by its intestinal extremity, to some unusual destruction of the gastric parietes—to complete division of its muscular coat, or to a tunnelling of its sub-mucous areolar tissue by the ulcerative process, which raises a bridle or bridge of mucous membrane from off this areolar tissue, and thus constructs a new and abnormal channel for the food, such as allows of the complete disuse and collapse of the natural outlet of the organ. It is to these cases (some of which offer a curious analogy to the ravages of what is usually termed a dissecting aneurism) that I should specially apply the above conjecture; explaining the dilatation and hypertrophy with which they are associated as due to an embarrassment or failure of peristalsis, rather than to

any definite occlusion, such as seems to be definitely contradicted by the patulous condition of the ulcerous part. And by so much as any of them offered a true destruction of muscular substance, I think it would not be incorrect to regard them as analogous (at least in the locality of this destruction) to that mysterious and fatal class of dilatations of the stomach and intestine in which, with little or no hypertrophy, the tube appears to evince an extreme muscular atony, itself the cause of the ampliation, and often the mere result of some evidently nervous disease. In other words, hypertrophy and dilatation appear to be producible by destruction, as well as by obstruction, of the gastric parietes: and the paralysis of any segment of the alimentary canal involves its own dilatation, as well as the hypertrophy of the nearest healthy part behind it which can share in that dilatation. In short, as a matter of morbid anatomy, a patulous state of the canal does not disprove the existence of a mechanical obstacle: since such an obstacle is at once created by a mere failure of contraction. All interruption to peristalsis is indeed *pro tanto* obstruction; and if not compensated by hypertrophy, ends in dilatation.

There are other complications of adhesion and cicatrization which we may dismiss with a very brief notice. In some instances the surface of a broad ulcer becomes completely skinned over, while its firm and extensive adhesion to the neighbouring wall of the belly seems to prevent the complete contraction of the cicatrix. Here (just as in adherent wounds of the stomach, attended with much destruction of its walls) the mucous mem-

brane around the margin of the depression or fossa formed by the cicatrix becomes prolapsed and protruded into it, and is thus maintained in perpetual contact with the smooth base of the ulcer.* Where the adhesion is smaller and less substantial, it is sometimes drawn out by the constant traction the stomach exercises, so as to form a hollow and funnel-shaped tube, which is lined by the smooth quasi-serous surface of the cicatrix.

Perforation.—We have already alluded to the simplest and most frequent variety of perforation as being a mere extension of the ulcerative process to the peritoneum, followed by the sloughing or rupture of this delicate membrane, and by the effusion of the contents of the stomach into the peritoneal cavity, with the result of a fatal peritonitis. But before passing on to consider those modifications of this process which have sufficient pathological interest to deserve a brief notice, we may point out a few general considerations respecting the event to which the term "perforation" is generally applied.†

The history of a large number of such cases has been

* It is not impossible that the friction of such an abnormal surface may favour that recurrence of the ulcerative process which appears often to obtain in such cases.

† To avoid misunderstanding, I use the term "perforation" in its ordinary sense—namely, that of such a penetration of the walls of the stomach as allows the effusion of its contents into the peritoneal cavity. Of course pathological accuracy would require us to regard perforation as having taken place in all cases in which these walls had been penetrated, no matter what viscus or exsudation might stave off the ordinary consequences of this solution of continuity. (Compare the remarks on Report No. 6, in the Appendix.)

nearly as follows :—A person, often a young and apparently healthy female, in other instances dyspeptic or chlorotic during a variable time, has been suddenly attacked, soon after a meal, with excruciating pain in the belly, followed by all the symptoms of peritonitis, speedily ending in death. Such a rapid transition from apparent health to agonizing pain and death has naturally excited much attention; and has sometimes led to the suspicion of poison. But though the interest that has thus been attracted to these cases has given rise to much speculation respecting their nature and origin, still it has not hitherto led to their being collected and sifted in such a manner as to admit of any valid conclusions respecting many of their details. This defect the author has been anxious to supply, and has therefore brought together from various sources 234 instances of such perforation. And the information derived from these cases has suggested the following conclusions.

Firstly, as regards the *frequency* with which perforation occurs in the course of the gastric ulcer, it is evident that our conclusions can only be based upon a number of careful examinations of the ulcerous stomach, made quite irrespectively of this event.

From the results of such inquiries by Duval, Rokitansky, Dittrich, Jaksch, Chambers, Habershon, Gairdner, and myself, I have collected a total of 257 cases of open ulcer, out of which 69 had perforated the organ. This is a proportion of about 1 perforation to 4 ulcers: more exactly, 1 to 3·725. And if we assumed (as we have found good reason for doing)

that these 257 open ulcers represent about an equal number of scars, we should be led to conclude that not more than one in every 7 or 8 cases of gastric ulcer (1 to 7·45) terminated by perforating the walls of the organ :—a proportion which is equivalent to about 13·4 per cent.

Those of the observations I have collected which include scars and ulcers are less numerous and trustworthy than the data of the above calculations. Their more direct results, however, so far correspond with the preceding indirect estimate, as to afford us 137 cases of gastric ulcer, out of which 21 perforated. This is a proportion of about 1 to $6\frac{1}{2}$, or $15\frac{1}{3}$ per cent.

It is therefore evident that perforation is an exceptional occurrence in gastric ulcer ; and that we have little right to infer anything as to the malady in general from this its occasional termination.

The *sex* of these cases of perforation offers nearly the same proportion as that which we have deduced for the ulcer generally. The 234 instances collected consist of 160 females and 74 males ;—a ratio of about 2 to 1.

In respect of *age*, however, there is a remarkable contrast between the perforating ulcer and the ulcer generally. The latter we have found especially to affect the periods of middle and advancing life, with a frequency that gradually increases up to the extreme age allotted to Man. But the perforating ulcer seems not only to select another period of life, but to exhibit a marked contrast of age in the different sexes: the period of life in which it is most liable to occur being quite a different epoch in the male and in the female.

Of the cases of perforation which I have collected, 199 specify the exact age. This number is composed of 139 females and 60 males.

The most accurate contrast of these 199 cases, in respect of their age, is afforded by grouping them in epochs of seven years. Such an arrangement gives us the following table:

	Between the ages of										
	0 & 7	7 & 14	14 & 21	21 & 28	28 & 35	35 & 42	42 & 49	49 & 56	56 & 63	63 & 70	70 & upw.
Number of females affected with perforation	0	1	63	35	12	9	5	5	5	1	3
Number of males similarly affected	0	2	3	13	8	4	9	7	9	3	2

The liability to perforation at the various ages in the two sexes, can only be determined by calculating the numbers of these cases, relatively to the number of persons living at such ages. And, for the sake of comparing them with our previous conclusions respecting the ulcer generally, we had better reduce them to similar epochs of ten years. The following table is the result of such a procedure, taking the maximum female liability to perforation as 100:

	Between the ages of								
	0 & 10	10 & 20	20 & 30	30 & 40	40 & 50	50 & 60	60 & 70	70 & 80	80 & upw.
Comparative liability to perforation in the female	1	*100	62	15	14	11	2⅓	13	0
In the male	1	2⅓	20	13	22	23	13	5	15

* The liability for the whole of this decade is not more than 62. But as I have not been able to find a single case of perforation in the female between the years of eight and fifteen, and only one prior to the former age, I have judged it better to prevent this important fact from being buried in figures, which, after all, are but intended to suggest and illustrate our conclusions. The reader has therefore to remember that the above maximum refers to the six years of female life which intervene between the ages of fourteen and twenty.

The comparative liability of the ulcer to perforate in the two sexes at these different epochs, cannot be directly determined from the foregoing table. But we have already noticed that the proportion of the cases of perforation in the two sexes is precisely that of the ulcer generally: 2 females to 1 male. And since the liability of the ulcer to perforation would consist in the number of instances in which this event occurs, divided by the number of ulcers generally, the comparative liability of the two sexes to perforation (as deduced by the preceding table) will not represent that of the ulcers, until the number of these lesions have been made to correspond to each other. In other words, since the ulcer is only half as frequent in the male, by multiplying the lower row of this table by two, we obtain a plausible inference as to the comparative frequency with which the ulcer perforates in the male and female at the above ages:

	Between the ages of								
	0 & 10	10 & 20	20 & 30	30 & 40	40 & 50	50 & 60	60 & 70	70 & 80	80 & upw.
Comparative liability of the gastric ulcer to perforation in the female	1	62	62	15	14	11	2⅓	13	0
The same in the male	1	4⅔	40	26	44	46	26	10	30

Although we can lay little stress on the details of such a comparison, it seems to leave no doubt of one important conclusion, which is in striking accordance with information derived from other sources: namely, that the greater liability of the gastric ulcer to perforate in the female during the sixteen years that intervene between the age of fourteen and thirty, is so exactly compensated by a diminished risk of this event after

that period, that the total risk of the two sexes during the whole of life remains nearly equal.

Finally, by adding together the two columns of the last table, we obtain an average liability of both sexes, which it will be interesting to compare with the similar table that we constructed for the ulcers generally. Throwing two decades of years together, for the sake of simplifying the contrast, we get the following numbers:

	Between the ages of
	10 & 30 & 50 & 70 & 90
Comparative liability to gastric ulcer	71 ... 96 ... 136 ...175
Comparative liability of gastric ulcer to perforate in the same periods	169 ... 99 ... 85 ... 53

Here it is evident, that the general liability to perforation undergoes a constant decrease as life advances, even although the liability to the ulcer itself is just as constantly on the increase. The amount of these two converse alterations of risk we may regard as equal: and as being such that, from the age of thirty to that of seventy, the risk of gastric ulcer gradually rises to double, while the risk of perforation from gastric ulcer gradually sinks to one half, its former amount.

Further, by making the preceding tables the basis of a simple calculation, we may obtain a tolerable estimate of the proportionate frequency of perforation at different ages, in a given number of ulcers, and in both sexes. By multiplying the last row of figures by 7·5, we get a series of numbers of ulcers which may be supposed to represent those corresponding to these perforations. And by multiplying the first row by 6·37, so as to equalize the real numbers of ulcers observed at the above ages with the supposititious numbers, we obtain the corresponding

proportions of perforation as those which would be necessary to harmonize the two sets of numbers. Thus calling the first row of numbers α, and the second β, we get

	At ages between								
	0	&	30	&	50	&	70	&	90
α. × 6·37 =	452·3	...	611·5	...	866·3	...	1114·7		
β. × 7·5 =	1267·5	...	742·5	...	637·5	...	397·5		

Whence the real liability at the corresponding ages will amount to—

$$7{\cdot}5\left(\frac{452{\cdot}3}{1267{\cdot}5}\right) \quad 7{\cdot}5\left(\frac{611{\cdot}5}{742{\cdot}5}\right) \quad 7{\cdot}5\left(\frac{866{\cdot}3}{637{\cdot}5}\right) \quad 7{\cdot}5\left(\frac{1114{\cdot}7}{397{\cdot}5}\right)$$

In round numbers . . .	2 in 5	...	1 in 6	...	1 in 10	...	1 in 21	
Per-centage of ulcers fatal by perforation in both sexes	40	...	$16\frac{2}{3}$	...	10	...	$4\frac{3}{4}$	

Which, divided between the two sexes in the proportions already deduced for each, corresponds to—

Per-centage of perforations to ulcers in the male .	23	...	23	...	17	...	7	
In the female	59	...	10	...	3	...	2	

The average age of the male and female subject of perforation affords an equal contrast. In the female it amounts to not more than $27\frac{1}{2}$ years, while in the male this age is raised to $42\frac{1}{7}$ years. Comparing these averages with the numbers of each sex respectively living at these two ages, we may estimate the general liability to perforation as having the proportion of 11 in the male to 18 in the female.

Again, a careful inquiry shows that the whole of the excess of cases of perforation in the female ((F) 160 — (M) 74=86), falls on the sixteen years of life which intervene between the ages of fourteen and thirty ((F) 108 — (M) 17=91): while nearly two-thirds of that

excess belongs to the six years between fourteen and twenty. ((F) 54 — (M) 1 = 53).

Such a remarkable increase (or rather commencement) of liability to perforation at this particular* epoch of female life, naturally suggests the physiological events of this period as a more or less immediate cause of the occurrence. A further discussion of this topic would lead us too far into a consideration of the symptoms and causes of the gastric ulcer, to be attempted in this part of the present Essay. It may suffice to point out, that not only do the proportions of older females, and of males, who succumb to this accident, afford abundant evidence that it is essentially independent of any such cause, but that the circumstances of many of these cases themselves are such as inculcate great caution in coming to any definite conclusion on their causation. Some of them are expressly mentioned as not having arrived at puberty: others are recorded to have menstruated regularly, and even profusely: and finally, one of the most characteristic instances occurred in a person who, though supposed to be a female, was proved by a careful necropsy to be devoid of ovaries; and therefore, physiologically speaking, alike incapable of menstruation, or of any conceivable disorder of this function.

And whatever the relations which the various symptoms of such cases bear to each other, or however expedient it may be to regard these, with their age and

* Dr. Crisp has the merit of first establishing this important fact as the result of some interesting cases that have fallen under his own observation, and of a large number which he has collected, in the *Lancet* for 1843.

sex, and their liability to perforation, as constituting them a special group, there can be no doubt that we know nothing at present which would justify us in regarding them as pathologically distinct from others. On the contrary, there is every reason to affirm, that in a large number of the females who become the subject of the lesion at this epoch of life, it has precisely the same origin, course, termination, and appearances as the gastric ulcer of any other person, old or young, male or female.

The maximum and minimum ages scarcely deserve notice. The oldest case I am acquainted with is that of a man of eighty-two. The youngest instances in my notes are a girl of eight and a boy of nine years.

As regards the situation of the perforating ulcer, 191 of the cases just alluded to specify the part of the stomach affected. Of these 191, in 69 the ulcer occupied the lesser curvature; in 55, the anterior surface; in 11, the posterior surface; in 19, the pyloric extremity; in 10, the cardiac extremity; in 4, the middle of the organ;* and in no less than 24 there were two ulcers,† opposite to each other, on the anterior and posterior surfaces of the organ:—the former being the site of the perforation, while the latter was in most instances firmly adherent to the pancreas. In order more exactly to compare the situation of the perforating ulcer with that of the ulcer generally, we may increase all the above numbers by a proportion of $\frac{3}{19}$ths, which will convert

* In the two latter groups I have included one or two perforating ulcers equally referable to the large curvature.

† Dr. Crisp (*loc. cit.*) has noticed several cases of this kind.

their total, 191, into 220, the number of ulcers brought together in a preceding table. Such a procedure affords the following contrast of the two :—

—	Situation in the stomach.						
	Lesser curvature.	Anterior surface.	Posterior surface.	Anterior & posterior surfaces.	Pylorie extremity.	Middle of organ.	Cardiac extremity.
Number of gastric ulcers . .	60*	10	96*	13	32	5	4
Number of perforating ulcers occupying the same situations	80	64	12	28	22	5	12

We thus deduce that, though the posterior surface of the stomach is the part most frequently the seat of ulcer, yet that it is one of those least liable to perforation : while conversely, the anterior surface, though much more rarely occupied by the ulcer, is yet one of the most frequent sites of perforation.

But it will be useful to place these two sets of figures in a more natural relation to each other. Assuming that our previous estimate of the general proportion between perforations and ulcers was a tolerably correct one, it will not only enable us to do this, but will even afford us a tolerable clue to the proportionate danger of perforation in the above situations. For example, we estimated the frequency of perforation as 13·4 per cent., or 2 in every 15 cases of ulcer. Hence we may regard these 220 perforations as the result of ($220 \times 7\frac{1}{2} =$) 1650 ulcers: and by grouping these under the same pro-

* Here I have divided the 15 cases in which Jaksch states the ulcer to have occupied both these situations, into the proportions (10 and 5) of 86 and 55, and added them to the latter numbers.

portions for the different parts of the organ, we may re-arrange the preceding contrast as follows:—

—	Situation in the stomach.							
	Lesser curvature.	Anterior surface.	Posterior surface.	Anterior & posterior.	Pylorus.	Middle.	Cardiac extremity.	Total.
Number of examples of ulcer generally	450	75	720	97½	240	37½	30	1650
Number of instances of perforating ulcer	80	64	12	28	22	5	12	220
Per-centage of perforations to ulcers, in these situations respectively . . .	18	85	1⅔	28	10	13½	40	

Of course, we are not entitled to lay much stress on the details of this contrast, in which the regions are too vaguely assigned, the numbers too small, and the probable inaccuracies of one element multiplied seven times. Making every allowance, however, for all these sources of error, it still affords us a remarkable numerical confirmation of what we might, *à priori*, expect to be the effect of situation on the ulcer of the stomach. Seated on the anterior surface of the organ, the lesion is very likely to perforate its coats; placed on the posterior surface, it is very unlikely to do so. In other words, could we rely on the accuracy of the above figures, it would appear that, in the former of these two cases, the probabilities are about 6 to 1 in favour of the occurrence of perforation; in the latter they are about 60 to 1 against it. In short, the ulcer of the anterior surface is fifty times as likely to produce fatal perforation as that of the posterior surface. The relation of these surfaces to the occurrence of adhesion, and to the nature of the tissue which effects it, have been already pointed out.

One feature of the above table deserves, however, a passing allusion.

The reader can hardly have failed to notice the anomaly implied in the statement, that while the ulcer of the anterior surface perforates about 85 times in 100 cases, the double ulcer of the anterior and posterior surfaces only does so about 28 times in 100, or less than one-third of that proportion. Now, we can scarcely suppose that the usual tendency of the anterior ulcer to undergo perforation, is directly diminished to such a great extent, by the presence of another ulcer on the posterior surface. We are therefore left to conjecture some original or specific difference in the ulcerative process by which this anterior ulcer is produced. The curiously exact apposition of the two ulcerated surfaces in many of these cases appears to strengthen this suspicion: or rather, let us say, justifies our condensing it into the question, — Whether, in some of these instances, the anterior ulcer may not have been preceded and caused by the posterior one, the perpetual contact of which with this gastric surface has thus resulted in its secondary ulceration, just as the same irritating contact with the original ulcer often leads to ulceration or suppuration of the liver, pancreas, and spleen? That such a secondary ulceration should be less active, less intense, and therefore less likely to perforate, would not be very surprising.

The age at which perforation occurs would seem to be no way influenced by the site of the ulcer. Thus the average age of the subjects of perforating ulcer of the anterior surface of the stomach was forty-three years in

the male, twenty-eight in the female: or the same as the average age of the subjects of perforating ulcer in general. These numbers were deduced from 13 and 54 cases respectively.

It is scarcely more possible to substantiate any influence exercised by the sex of the patient on the situation of the perforating ulcer. Remembering, however, the small (and therefore unsafe) numbers with which we are here concerned, we may mention that in the female sex the perforation seems more liable to occupy the anterior surface (54 female to 13 male cases); the opposite aspects of the anterior and posterior surfaces (19 female to 5 male cases); the cardiac extremity of the organ (10 female cases to 1 male); while the pylorus is more frequently perforated in the male than in the female (12 male to 7 female cases).

And even if we reduce these numbers to a more natural proportion by doubling the rarer male cases, we shall find that these contrasts still remain sufficiently distinct. The perforating ulcer of the anterior surface, and the double ulcer of the anterior and posterior surfaces, would seem to be twice as frequent in the female; and the ulcer of the cardiac end of the organ, five times as frequent. While the perforating ulcer of the pyloric extremity appears to be between three and four times more common in the male than in the female.

There can be no doubt that mechanical tension of some kind generally forms the immediate cause of perforation, by rupturing the thin film of tissue to which the ulcer has already reduced the coats of the

stomach. Indeed, in a great majority of instances, the occurrence will be found to have taken place immediately after a meal; or in other words, with a distended stomach. And in less frequent cases we may find evidence of other mechanical agencies. Thus, in two of the above instances, the perforation appears to have been immediately brought about by vomiting;* in one instance, by a similar compression of the stomach by the abdominal muscles in the act of defæcation; in one instance, by the rupture of a delicate adhesion of the omentum to the anterior wall of the stomach, in the act of sneezing; in one instance (a girl of twenty), by the sudden constriction of the waist by a tight belt; and in one instance (a man of fifty-four), by the violent displacement of a kind of plug formed by the adherent omentum in contact with the exterior of the ulcer.†

Complete perforation of the walls of the stomach is generally accompanied by the sudden effusion of more or less of its contents into the cavity of the belly. But the degree and extent of this effusion is liable to great variety. One or two instances are recorded, in which the accident has given rise to none of its ordinary symptoms, and has been followed by no appearances of peritonitis in the dead body. In some of these rare and

* I am obliged to quote from memory another case that I think I have met with in some Journal, and in which an emetic, incautiously administered for the relief of certain symptoms regarded as dyspeptic, gave rise to the rupture of a gastric ulcer, and thus caused the death of the patient.

† In the Pathological Transactions (vol. vii. p. 191) will be found a case in which the accident seemed to have been caused by the jolting of a dog-cart in crossing a line of rails.

anomalous cases it seems very doubtful whether the perforation was really complete during life, or whether the aperture observed may not have been caused by the solvent action of the gastric juice after death upon the film of peritoneum forming the base of the ulcer. In others, the anomaly appears to have been due to the state of the patient having prevented the access of all symptoms; the perforation having occurred during the approach of death from the exhaustion produced by the ulcer, or by some independent disease. In equally rare instances the stomach appears to have been retained in such close apposition to the wall of the belly by the abdominal pressure, that scarcely any of its contents have escaped, save a small quantity of a clear fluid, which has (as it were) filtered between the surfaces of contact, and lit up the fatal peritonitis.

In other instances, the effusion of the gastric contents is confined to the immediate neighbourhood of the perforated spot; and the inflammation which they excite being equally limited, may be distinguished as circumscribed peritonitis. These cases are of course far less likely to be immediately fatal than those in which a wider extent of the serous surface is involved in the inflammation. Hence the patient often survives the first shock of the accident, only to succumb to the combined effects of peritonitis and gastric exhaustion. In other instances, however, a different result obtains: the portion of the peritoneal cavity circumscribed by the inflammation continues to suppurate, and is thus gradually converted into a chronic abscess, that finally discharges its contents at some point or other of its

exterior. There are about twenty cases of this kind on record. Their age and sex give me precisely those averages which we have already deduced for the accident of perforation generally. Their other features are almost as easily summed up.

As implied above, the circumscribed character of the inflammation appears due to the limited diffusion of the gastric contents; which, so far as they reach, seem always to excite this process. What restrains them in such narrow bounds it is not always easy to specify. Sometimes, however, it is evidently a deposit of lymph, caused by extensive adhesive inflammation around the ulcer prior to its perforation. Sometimes the delicate omentum forms a septum that bounds the lower surface of the sac. Sometimes the transverse colon lends a more or less temporary aid to the process: or a casual coil of some other part of the intestinal canal affords a similar assistance. Sometimes the aperture in the peritoneum seems too narrow to allow of more than an inconsiderable leakage, such as spreads very slowly on all sides of it. In any case, the rapid effusion of lymph has a strong tendency to render such localizations permanent, and thus to seal up the mischief within the limits to which such (almost fortuitous) mechanical causes have at the time confined it.

The opening of a gastric ulcer into the chest is generally accomplished by the mediation of such an abscess: less frequently by a recurrence or extension of the ulcerative process destroying an adhesion between the stomach and the diaphragm. The penetration of this septum has been known to be followed by instan-

taneous suffocation. In most instances, however, the fatal event is preceded by an interval, during which gangrene of the lung or other pulmonary lesions arise. The pericardium is very rarely opened.

The communication of the stomach with the exterior of the belly by a fistulous aperture seems, in most of the instances* recorded, to have been the result of a similar abscess, which has pointed and burst like an abscess of the liver.† The gastric fistula, once established, either kills by exhaustion, or (what seems more usual) gradually closes, just like the artificial fistula established in animals for the purpose of physiological experiment. Subsequently to its closure, the adhesion of the stomach to the anterior wall of the belly is sometimes drawn out into a cord, which is occasionally excavated by a funnel-shaped cavity, that is itself continuous with the inner surface of the stomach at its broad base, and is lined by a smooth membrane of a serous aspect.

The communication of the stomach with other parts of the alimentary canal, as the result of gastric ulcer, is generally independent of any such abscesses. The ulcerated part of the stomach becomes attached by lymph to some portion of intestine in contact with it; and a mere extension of the ulcerative process successively removes the parietes of the stomach, the lymph, and the coats of intestine, where these are united to each

* About six are all I can recollect to have met with.

† In one case of this kind, which was fatal by hæmatemesis, the abscess in front of the stomach communicated with a suppurating cavity, that occupied the areolar tissue of the rectus abdominis muscle.

other. As regards the situation of such abnormal apertures, there are one or two cases recorded in which the stomach has opened into the neighbouring segment of the duodenum; and about ten in which a similar communication has been brought about between the stomach and colon. The comparative frequency with which this segment of the canal is selected as the site of the communication, is of course referable chiefly to its situation and size.

The frequency with which ulceration implicates the liver and pancreas cannot be exactly estimated. But from the large proportion of ulcers that occupy the posterior surface and lesser curvature of the organ, these viscera must be very often attacked. The cardiac extremity of the stomach is so much more rarely the seat of the ulcer, that it is not surprising penetration of the spleen should belong to the rarer sequelæ of the malady. And as none of these viscera can be excavated by the ulcer unless they have been previously attached to the stomach by adhesive inflammation, the perforation which their excavation really implies has a much less dangerous character than where it opens the peritoneal sac. The chief danger, indeed, seems to be that of hæmorrhage, either from the larger vessels that occupy the upper border of the pancreas, or from those smaller ones that ramify in the substance of the liver and spleen for their supply. Gangrene of the two latter viscera is, however, by no means unfrequent. And of course, the adhesions alluded to may themselves at any time become the seat of further ulceration; which, without causing any new perforation of the coats of the

stomach, can open directly into the cavity of the belly, and cause a fatal peritonitis.

Hæmorrhage is another of the accidents connected with ulcer of the stomach which deserves a special inquiry. We shall hereafter see that that discharge of blood from the mouth or anus, which generally follows a considerable gastric hæmorrhage, constitutes one of the most frequent and important symptoms of the ulcer. At present we shall limit ourselves to a brief notice of its production, and shall especially treat of its significance as a termination of the malady:—in other words, as a cause of death.

In respect to the sources of such hæmorrhage, we may distinguish four: which, speaking generally, come into operation at different dates of the malady; and which certainly have a very different influence on its course.

In the first place, analogy and observation coincide to indicate that the congestion which often attends the commencement of ulceration of the stomach may give rise to a hæmorrhage from the vessels of the mucous membrane. But since, without any existing breach of surface, we cannot define the case as one of ulcer, while, with it, we can rarely exclude the possibility of its having been the source of the bleeding, such a cause of hæmorrhage is rather to be admitted as a probability, than stated as a fact.

The progress of the ulceration itself determines the three following varieties of hæmorrhage. As the breach of surface gradually involves the vascular mucous membrane, it successively erodes a vast number of vessels:—at first mere capillaries; then the minute

arteries and veins from which these capillaries ramify; and lastly, the small vessels of the arterial and venous plexuses that occupy the sub-mucous areolar tissue. The hæmorrhage determined by these numerous solutions of continuity is probably often arrested at once, by a coagulation of the blood within the open extremities of the eroded vessels. More frequently, however, it gives rise to a slow drain of blood in very moderate quantity. This, as it flows, mingles with the secretions and contents of the stomach, and gradually undergoes the usual changes of blood when exposed to the digestive action of the alimentary canal; exchanging its crimson colour for one which is almost black, and exhibiting (if in sufficient quantity for such a change to be visible) a viscid or tarry consistence. In rare instances the quantity of blood thus set free is much more considerable, and closely imitates the more important hæmorrhage which forms the third variety. In such cases we may conjecture the hæmorrhage to be increased by a sudden congestion of the ulcerous stomach.

The third and most serious class of hæmorrhages is one in which the bleeding comes from a large artery of the stomach. Consistently with this source, it will generally be found to occur at that later period of the gastric ulcer when, after penetrating the mucous and muscular coats, it reaches that interval between the latter and the peritoneal coat in which these vessels run; or when, in the case of an ulcer of the posterior surface, it has eaten into the adhesion fixing it to the pancreas, so as to erode the splenic artery that courses along the upper border of this gland.

The blood poured out by such hæmorrhage often exhibits the characteristic marks of its arterial source, even after it has been expelled by vomiting. In other instances, it possesses a colour and coagulation that vary with the amount poured out, the rate of its flow, the gastric contents with which it has been mixed, and a variety of other circumstances. In some cases it is rapidly effused in such vast quantity, that death ensues almost instantaneously; and it is only at the necropsy that its cause is revealed, in the shape of an enormous mass of clotted blood, that distends the stomach and a variable extent of the intestinal canal.

Such hæmorrhages have one feature in common with perforation—viz., that they generally occur soon after a full meal. The mechanical influence of distension of the stomach in disturbing the eroded segment of the vessel is too obvious to require any comment. It seems to be assisted by that afflux of blood to the organ which attends its digestive act. This view is confirmed by one or two cases on record, in which the hæmorrhage appears to have been excited by violent mental emotion.

I have not been able to bring together satisfactory data for any estimate of the frequency with which these larger bleedings occur. But in many cases—probably the majority—they are altogether absent during the whole progress of the ulcer. In many cases, again, they do not cause death. And even when they are fatal, it is rarely by only one attack.

In one or two instances the necropsy has shown a peculiar condition of the vessel, such as quite explains

the intermittent, though repeated, character of these hæmorrhages. The ulcer has cicatrized over its whole extent with the single exception of a point in the centre, which is occupied by the eroded artery. And the calibre of this tube has been found filled by a clot, the detachment of which from time to time has evidently allowed the hæmorrhage to take place, with long intermissions to its flow. Why the tissues of the artery present this contrast with the neighbouring cicatrix, we must for the present forbear to inquire.

The fourth kind of hæmorrhage has already been alluded to, as forming what is strictly a sequela of perforation, and consisting in the erosion of vessels that occupy the substance of the liver, pancreas, or spleen. These vessels are generally the small arteries and veins that supply the proper substance or parenchyma of the above glands. And the moderate hæmorrhage to which their breach of continuity usually gives rise, undergoes changes similar to that of the second variety.

If we now proceed to examine those cases of ulcer of the stomach which have been fatal by hæmorrhage, we may glean some interesting information.

Firstly, as regards the frequency of death from this cause, its proportion to the ulcer in general can only be determined directly from the statements of Williglk and Jaksch; which, put together, amount to a total of 261 ulcers, that include 13 fatal by hæmorrhage. This is a ratio of about 1 in 20, or 5 per cent.

Turning to more indirect (and therefore uncertain) methods, the cases recorded by Sangalli, Rokitansky, Dittrich, Jaksch, Williglk, and Duval, afford results that

precisely correspond with this. They show a total of 316 open ulcers, of which 32 were fatal by hæmorrhage. And assuming these 316 open ulcers to represent 316 scars, this would afford us a proportion of 32 to 632, or about 5 per cent.

On the other hand, the cases which I have collected, chiefly from British sources, seem to indicate that the ulcers fatal by hæmorrhage bear a somewhat smaller proportion to the number of ulcers generally. The various records I have looked over have afforded me 57 instances of this kind of death; while the same search has given me 235 instances of fatal perforation. And hence, if we assume* these numbers to represent the relative frequency of the two events, and further suppose our previous estimate of the frequency of perforation a correct one, we may conjecture that these 57 instances of hæmorrhage correspond to (235 × 7·45 =) 1751 cases of ulcer; which is a proportion of about 1 in 31, or $3\frac{1}{4}$ (3·26) per cent.

In 52 of these cases the *sex* is mentioned—34 being male and 18 female. The preponderant number of

* It is true we have no right to assume that such casual and independent records as those from which many of these instances were derived would include the two varieties of ulcer in exactly their natural proportion to each other. Still it seems by no means improbable that something approximating to this has really happened. Many of these instances are from groups of cases by pathologists whose researches (like those of Abercrombie, Cruveilhier, and others) were evidently directed equally toward all such lesions of the stomach. And of the scattered cases contributed by others, we may at least say, that the symptoms of a fatal gastric hæmorrhage are as likely to arrest attention, and thus to receive investigation, as those of the more frequent accident of perforation. While the errors of such numerous observations would in some sense correct each other.

males renders these instances of hæmorrhage a remarkable contrast with the cases of perforation already adduced. Indeed, since we have found reason to suppose that the ulcer occurs twice as frequently in the female as in the male, it would seem that the liability of a given ulcer to be fatal by hæmorrhage must be nearly 4 times ($34 \div \frac{18}{2} = 3{\cdot}8$) greater in the male than in the female sex.

The average *age* of these cases in the two sexes renders them an equally marked contrast with the cases of perforation. Out of 44 instances which specify the age, there are 30 males, with an average of $43\frac{1}{2}$ years (43·6), and 14 females with an equal average of $43\frac{1}{4}$ (43·2). The maximum and minimum ages are, in the male, seventy-eight and fourteen; in the female, seventy and twenty-two, respectively.

In 52 of these cases the situation of the ulcer is mentioned. In 24 it occupied the small curvature; in 17, the posterior surface; in 6, the pyloric extremity; in 2, the anterior surface; in 2, the cardiac extremity; and in 1, the middle of the organ. But a comparison of these sites with those of the ulcer generally* does not afford a contrast sufficiently marked to justify any further remark.

The exact source of the hæmorrhage is specified in 34 of the 57 cases. In 3 instances it was the substance of the liver; in 1 instance, the substance of the spleen; in the remaining 30 cases, a large vessel. And in 29

* For the convenience of the reader, I subjoin the following comparison, in which the above figures are multiplied by $4\frac{1}{4}$, so as to bring their total to an equality ($52 \times 4\frac{1}{4} = 221$) with the 220 cases

of these 30 cases the vessel itself can be named :—or to speak more exactly, 23 of the number specify the vessel; while in 6, the description is such that a practical anatomist could scarcely doubt of its identity.

In 16 of the 29 instances, hæmorrhage was the result of an ulcer which eroded the splenic artery in its course along the upper border of the pancreas. And, as we might expect, the majority (11) of these cases are described as ulcers of the posterior surface of the stomach; while 2 are stated to be ulcers of the lesser curvature, 1 of the pyloric extremity, and 1 of the middle of the organ. In the remaining 13 of the 29, the vessel which gave rise to the fatal bleeding was the superior pyloric or coronary artery. Which of these

of ulcer generally, with which we previously compared our 191 cases of perforation.

——	Situation in the stomach.						
	Lesser curvature.	Posterior surface.	Anterior & posterior.	Pylorie extremity.	Anterior surface.	Cardiac extremity.	Middle of organ.
Number of ulcers in general .	60	96	13	32	10	4	5
Number of ulcers fatal by hæmorrhage	102	72	0	25	8	8	4

It is true that the numbers of ulcers present in the two first situations seem to differ considerably from each other. But we must remember, that not only do these two parts of the stomach merge into each other by gradations which it is easy to confound, but also that they are liable to be affected by the distortion which a large and adherent ulcer can produce. While if we add together the cases belonging to both these situations, and include (as we ought) the instances of double lesion in the third column, we shall find the proportionate numbers of the general and special ulcer about equal to each other (60 + 96 + 13 = 169, 102 + 72 = 174).

two vessels, however, it seems often impossible to determine. And considering the complete continuity with each other which they usually offer, any such distinction would generally be arbitrary and useless. Indeed here, as in the case of the splenic artery, it is not unlikely that one of the larger branches of the vessel may sometimes have been mistaken for the trunk. Of these 13 cases, 11 were the result of ulcers on the smaller curvature of the stomach in the ordinary course of the eroded vessel; while 1 case is referred to the pyloric extremity, and 1 to the anterior surface of the organ.

The three ulcers causing excavation of the liver were all seated on the smaller curvature of the organ in contact with the gland; that penetrating the spleen on the cardiac extremity of the stomach, adjacent to this viscus.

Concerning the *exhaustion* or *starvation* which forms another of the fatal terminations of the gastric ulcer, it is much to be regretted that we have scarcely any numerical data to offer:—the more so that there can be little doubt, both of its frequency, and of its being sometimes preventable by suitable medical treatment. I have, however, collected 14 cases, in which it seems probable that the ulcer caused death in this way.

In about 7 of these 14, it seems probable that the exhaustion was produced, not so much by any direct influence of the ulcer on the digestive powers of the stomach, as by the vomiting of food to which it had given rise. And in one or two other cases it appears to be possible (though not probable) that the patient's

powers were materially enfeebled by moderate hæmorrhage from the lesion.

Do these numbers give us any clue whatever to the average frequency of this mode of death? I think not. Their number (14), compared with that of the cases (234) of perforation, and the frequency (1 in 7·45 cases) of this termination (as already adduced), would assign them a proportion of not more than one per cent. But Dittrich, after carefully excluding 34 cases in which the marasmus they caused appeared partially referable to the old age of the patient, still finds three per cent. (3 in 103 instances) in which death was caused by tabes referable solely to the ulcer. And in the last few months I have myself witnessed three or four fatal cases of this kind; besides many more in which the patient's life has appeared in considerable danger from this cause, although death has not resulted.

As respects the combinations of gastric ulcer with cancer of the stomach, they seem to be chiefly limited to a cancerous degeneration or deposit, that involves the hard brawny mass which we have already noticed as generally present, in variable quantity, in the base or periphery of an ulcer of long standing. In rare instances, in which the whole of the substance around the ulcer has been converted into a cancerous excrescence, it is chiefly by the shape and other characters of the ulcerated depression that (in the absence of any history of the case during life) we should discriminate between the cancerous degeneration of the hard margin of an ulcer, and the ulceration of a growth originally cancerous. But in the majority of such cases the decision

is less difficult. Indeed, the most frequent form of such a combination appears to be that in which a fungus (generally a bleeding one) shoots up from the basis of a gastric ulcer, the characters of which are in all other respects those usually seen in the ordinary lesion.

Lastly, as regards the complications of the gastric ulcer with diseases of other organs, the best information which I have been able to collect is derived from the writings of Jaksch, Dittrich, and Engel.* Comparing the statements of these observers, which refer to a total of some hundreds of cases of the lesion, we find them all agreeing as to the frequency with which the ulcer is associated with pulmonary tubercle. This complication appears to be present in about nineteen or twenty per cent. of the whole number of ulcers. Jaksch and Engel also correspond in stating the frequency of pneumonia and pleurisy at about twenty-seven per cent. Dittrich and Jaksch, again, agree in representing ten per cent. of the ulcers as associated with cancer of other organs. Engel finds ten per cent. to be connected with previous syphilis.

To these I may add the following cases of my own collection, which probably specify the chief cause of death, rather than the full results of a sedulous examination of all the organs. Diarrhœa and dysentery, 4 cases; renal disease, 2; ovarian disease, 1; pneumonia, 2; bronchitis, 1; apoplexy, 1; fever, 3; phthisis, 4; other independent disorders, 2 instances.

Even as regards what is said above respecting exhaustion as a cause of death, it is hardly necessary to

* Schmidt's Jahrbuecher, pp. 82, 237. 1854.

remind the reader how little exactness many of our conjectures must necessarily possess:—how difficult, for instance, it would often be, after the most careful study of the history of a given case, to say whether death had been chiefly caused by the exhaustion or impaired nutrition which had been for years the result of the presence of the ulcer, or by the moderate hæmorrhage which had once or twice occurred in its course, or by the (apparently casual) diarrhœa which had immediately preceded the fatal event.

And an equal uncertainty applies to all these remarks concerning the complications of gastric ulcer. They seem to indicate—what indeed there is little difficulty in supposing—that this long and exhausting malady, which is itself the expression of a serious lesion in one of the most important organs of the body, predisposes the constitution to a variety of other diseases; and renders unusually fatal many of those attacks of illness which, in the course of years, very few persons altogether escape.

But when we turn from this probable (though vague) relation of the gastric ulcer to disease generally, and proceed to inquire what are the special maladies to which it is peculiarly calculated to predispose the constitution, we find how little information is contained in such statements as the foregoing. For example, the per-centage of phthisis above-mentioned renders it one of the most frequent complications of the ulcer, while we have seen that it is that about which there is most agreement in the observations hitherto on record. But the significance of such a proportion must evidently

depend, not so much on its absolute amount, as upon a comparison of this with the average share taken by phthisis in the mortality from all causes. In other words, if the gastric ulcer really had any very direct or marked influence as a predisposing cause of phthisis, we should expect to find, not merely a large absolute number of ulcerous cases dying of this latter malady, but such a proportion as would considerably exceed the average ratio of the deaths by phthisis to those from all causes indifferently. But the deaths by phthisis, in persons of both sexes above the age of twenty,* amount to rather more than eighteen per cent. of the deaths from all other diseases. Hence the statement that twenty per cent. of the cases of gastric ulcer die of this malady, is one which, even if confirmed by a wider series of observations, will not by any means justify us in assuming a direct causative influence.

We may end this brief sketch by a summary which well illustrates how much we have yet to learn respecting even the more obvious pathological relations of this important malady. Let us assume (what, however, it would be very rash to assert) the accuracy of all the conjectures to which the preceding statements have led us. Let us suppose that, of every 100 ulcers of the stomach, 50 cicatrize, 13½ perforate its walls, 3¼ erode its larger vessels, and 2 or 3 kill by the sheer exhaustion and inanition they involve. We have still a proportion of about 30 ulcers in every 100 left quite unaccounted for. In other words, we have yet to determine the

* An age that we have seen may be taken as the commencement of that epoch of life during which the gastric ulcer chiefly occurs.

termination of nearly one-third of all the instances of this lesion :—and are ignorant whether the presence of an ulcer in the stomach heightens the liability to disease in general, or to certain maladies in particular ; or finally, whether the persons who are the subjects of such a lesion have merely the ordinary liability to most other maladies, failing the access of which, the ulcer does but anticipate, hasten, or increase that gradual failure of the nutritive functions which is one of the most essential elements of death by old age.

PART II.

SYMPTOMS.

In the preceding section of this Essay, I have attempted to sum up whatever information respecting the Pathology of the Gastric Ulcer I had deduced from the personal inspection or the records of about twelve hundred necropsies, in which this lesion had been found to be present.

In the following pages I propose to view the same malady from another aspect; and to analyse, as briefly as possible, the symptoms by which it is usually announced in the living subject. By doing so, I hope to illustrate many of the points alluded to in my former Essay, if not to add some interesting details to what is already known respecting the diagnosis of this disease.

However careful and accurate an observer of natural phenomena any one may be, his statements can have little value unless they are accompanied by specific information as to his opportunities and means of observing, their respective extent and delicacy, and the method by which he uses them. For want of such details, we constantly find remarkable discrepancies in the experience of two or more different observers, even where the subjects and instruments of research are such as involve but few and simple conditions of experiment. And when we turn from the simpler physical sciences to one which, like medicine, is not only more complex, but involves mysterious elements of life and disease that

our existing knowledge can hardly be said to appreciate, we find such discrepancies far more numerous and prominent. In short, the conditions of experiment are so multiplied, that all strict comparison is impossible.

This proposition will explain the limited use which I have made, in the following pages, of the hundreds of cases of ulcer of the stomach which I have collected from different sources. As records of disease, based on the observations of an almost equal number of independent authorities, they often afford us positive evidence of the most valuable kind; especially when we consider that, in every one of them, the significance of the symptoms noticed during life as evidence of the malady, has been certified by the subsequent necropsy. But though their more prominent features offer us what are sometimes very instructive contrasts, yet we cannot justifiably lay much stress on their minor differences. And any negative evidence we might extract from them would be all but useless. In other words, the absence of all mention of this or that particular circumstance from any one of these records constitutes no valid grounds for concluding it to have been really absent from the corresponding case;—an inference to this effect being only allowable where the narrative itself either distinctly expresses the fact, or as distinctly implies it.

But in calling attention to the imperfections of these records, I have no wish to exalt the comparative value of my own clinical researches. On the contrary, I would warn the reader, that equally grave defects are inherent to the observations of any single inquirer.

The successful clinical study of this malady (as of

most others) requires the observation and comparison of a great number of cases, at short intervals of time. Such a requirement is best supplied by the Out-patient practice of a large hospital. For the class of Hospital patients corresponds, in general, to that portion of the community most obnoxious to the gastric ulcer; which seems to fall with disproportionate severity and frequency on those who suffer from the ills implied by penury in this metropolis—excessive toil, insufficient and unwholesome food, foul air, mental anxiety, and those habits of intemperance which are the effect as well as the cause of such misery. But the disease generally has so chronic and subacute a character, that the sufferer rarely seeks and obtains admission as an In-patient, except where the hæmorrhage or peritonitis that occurs in its course immediately threatens life.

But Out-patient practice, however conscientiously conducted, offers some features which must not be forgotten when we make it a means of medical research. With opportunities for the most sedulous and minute study of symptoms in a large number of cases, it is often a very treacherous index of their course and termination. The severer examples of disease we may draft into the wards of the Hospital, and thus assure ourselves respecting the progress of the symptoms; and in the event of death, of their exact significance as revealed by the necropsy. But in other instances (which in this particular malady form the majority) the patient proceeds gradually towards recovery from the very beginning of the medical treatment; and in doing so, he often ceases to attend, without any previous intimation, at a

variable stage of the cure, such as seems to him to justify his dispensing with further medical advice. The physician is thus left in complete uncertainty as to whether the symptoms disappear or return; and in the latter case, what modifications they offer by comparison with those previously present, and in what way they terminate.

When these facts are taken into consideration, and especially when we remember that, in a large proportion of gastric ulcers, the diagnosis remains somewhat uncertain during a long period of their existence, it becomes evident with what reserve and caution we must receive the most accurate observation of symptoms only. Adding to this uncertainty the bias that even accurate and honest observers often seem to acquire during the study of a special malady, my readers will probably not think me too scrupulous if I regard the majority of cases not confirmed by necropsy as of little service for the study of symptoms, except by careful comparison with others in which this verification has been afforded us.

The statements in the following pages may therefore be regarded as derived chiefly from two sources:—1. The records of several hundreds of cases, affording in many instances little more than an outline of the chief symptoms present, but always verified by careful necropsy. 2. The personal study of about one hundred and fifty cases, affording minute details respecting symptoms, but only verified by necropsy in a small proportion of that number.*

* The reader who is desirous of referring to examples of these cases themselves, will find several recorded in the Appendix.

The statements obtained from these two sources exhibit a close agreement with each other. Their discrepancies are, indeed, chiefly negative: in other words, are for the most part explicable by the omissions inevitable in many of these brief records. But whether they are exclusively so, I must for the present decline to decide; and venture to indicate, as the most interesting question for future researches to answer respecting this malady—"How far can the symptoms of gastric ulcer vary from their ordinary formula; or, what anomalies of these symptoms, carefully observed and recorded during life, are compatible with the presence of this lesion, proved by an examination after death?"*

In what we may regard as typical cases, the history of ulcer of the stomach is made up of the following succession of symptoms:—The malady is announced by disturbances of gastric digestion; at first, mere uneasiness and pain in the epigastrium; then nausea and vomiting, or regurgitation, which expel the food previously taken, or a tasteless or acid watery secretion. At this stage of the disease, it is sometimes cut short by the occurrence of perforation, with its sequel of fatal peritonitis. Failing such an accident, the dyspeptic symptoms are next complicated by hæmorrhage from the stomach; sometimes a sudden and dangerous gush, oftener a slow and intermittent drain, of blood. The anæmia produced by this hæmorrhage is generally associated with a cachexia which seems to be essentially independent of it; being chiefly the result of the inanition necessarily implied by

* Further allusions to the same point will be found in a subsequent part of this Essay.

frequent vomiting of the food, or by large destruction of the gastric mucous membrane, and consequent impairment of its function. In young females, another symptom is often present, in the form of more or less complete amenorrhœa, which may be associated with either of these two states of anæmia or cachexia; in other words, may be connected with ulceration, with hæmorrhage, or with both.

The gradual acquisition of all these symptoms conducts the disease, in a variable period of time, to a climax, from whence we may next briefly trace it towards its termination. Retaining the liabilities to death by perforation, by hæmorrhage, by vomiting, and by exhaustion, which the above organic results of ulceration severally imply, the lesion often ends by one of these modes of dying, or by two or more of them in combination. In other cases, a spontaneous subsidence of these symptoms, in something like the inverse order of their occurrence, announces a recovery; or a similar amendment is only effected by careful medical treatment, such as quite entitles us to dignify it by the name of a cure. In less numerous instances, these symptoms continue with what is (for obvious reasons) rarely more than a moderate intensity, during a variable period of life; in the course of which their uniformity is from time to time varied by considerable fluctuations of severity. The remissions which form one extreme of such fluctuations sometimes merge into intermissions so complete, that we are left in doubt whether the process of ulceration has been merely reduced to a stand-still, or has broken out afresh after the cicatrization of the lesion. In any case, the protraction of these symptoms during many

years of life gradually complicates the impairment of nutrition they produce, with that naturally resulting from the approach of old age; mingled with which they then constitute an indirect or conditionating cause of death, the influence of which it seems scarcely possible to estimate with any exactness.

But the symptoms just enumerated vary so remarkably in different cases, that each of them demands a separate study.

Pain, which is usually the first in the order of occurrence, is also the most frequent and characteristic of them all. Indeed, we may doubt whether it is ever absent from the whole progress of any case. For though there seem to have been instances of gastric ulcer, fatal by perforation, in which no pain was complained of prior to the attack that marked this event, still it is obvious that we have no right to presume the absence of so common a symptom as pain in the region of the stomach, merely because a patient has failed to speak of it at the time, or has not referred to it during a brief and agonizing illness. But since, in one or two cases of open ulcer in my own practice, the pain has completely intermitted for several days at a time, shortly before the occurrence of death by exhaustion, we may regard it as just possible that this symptom might be absent during the few days that would sometimes include the whole course of the disease, in cases of rapid perforation.

The character of the pain is peculiar. Rarely or never does the sufferer describe it as* lancinating, stabbing, or

* This character would often distinguish the pain that attends scirrhus of the stomach.

stitching. In the earliest stage of the disease, it is little more than a feeling of weight,* sometimes a tightness, giving the patient an impression as though the food experienced a stoppage in his epigastric region. Retaining these dull and continuous characters, it then gradually becomes intensified into a burning sensation, and at last into a gnawing pain, that produces a kind of sickening depression, which is quite distinct from the nausea often associated with it.

The date of its access is also characteristic. In a vast majority of cases it comes on from two to ten minutes after the ingestion of food, and remains during the one or two hours which correspond to the period of gastric digestion, at the close of which act it gradually subsides and disappears. And when, as is often the case, it is accompanied by vomiting, it almost invariably ceases as soon as this act has emptied the stomach of its contents. In some instances, however, the pain follows deglutition immediately, instead of being preceded by the usual interval of a few minutes. In these cases there is a presumption that the cardiac extremity of the stomach is the site of the lesion: a conjecture which is of course strengthened by embarrassment in the act of swallowing, such as suggests its close proximity to the œsophagus.† In some instances, the pain imitates that of an ordinary form of dyspepsia, in only coming on half an hour, an

* These epithets are all derived from descriptions given by patients themselves.

† One or two instances of this kind have occurred in my own practice. (See Appendix, Report IV.) One is also detailed in the Wien Med. Wochenschrift for 1854, No. 51.

hour, or more, after eating.* Lastly, in what are generally either large lesions or protracted cases—often both—the pain loses the above character, becoming continuous during the intervals of the meals, and lasting days or even weeks without any intermission; or it even occurs chiefly on an empty stomach, and is alleviated by the ingestion of food.

The situation of the pain forms another of its characteristics. The place of its earliest appearance and greatest intensity, and to which it often remains strictly limited, corresponds to the centre of the epigastrium, or to the median line of the belly immediately below the free extremity of the ensiform cartilage. The portion of the epigastric region to which the pain is referred, forms a circular area of rarely more than two inches diameter,—sometimes, indeed, a mere spot of less than half this size.

But there are certain exceptions to the above rule. One of these, which is generally offered in the female, is apparent rather than real, and is due to that change in the situation of the cartilages of the ribs which is effected by the compression of stays, and which materially deepens the epigastric region in the vertical direction. In other instances, the pain is behind the ensiform cartilage instead of below it, or occupies the boundary of the epigastric and umbilical regions, instead of its usual site in the middle of the former. Finally, the pain sometimes lies a little to the right or left of the

* An instance of this kind was lately brought before the Pathological Society by me; and is mentioned in the *Lancet* for Nov. 24, 1855.

median line; or extends from a point of greatest intensity here towards either hypochondrium; or, in still rarer instances, is chiefly referred to the latter situation.

In some instances, the pain in the epigastrium is associated with a feeling of violent pulsation* or throbbing; in other cases, the same sensation is felt, independently of the paroxysm of pain, which it may even replace. It appears to be analogous to the throbbing of an abscess, and cannot be recognised by any external examination.

The dorsal pain, first described by Cruveilhier, constitutes almost as important a symptom of the gastric ulcer. As far as my experience goes, it generally comes on a few weeks or months later than the epigastric pain, and from this time forth is quite as constant and characteristic, if not as distressing. It is almost always felt as a gnawing pain, which, ranging in its vertical position from the spine of the eighth or ninth dorsal to that of the first or second lumbar vertebra, is usually "interscapular" as well as "rachidian."

Like the epigastric pain, it has a fixed seat, generally remaining at or near the spot of its first appearance during the whole progress of the disease. Like it, also, there are lateral as well as vertical deviations from its ordinary situation. But I do not think I have ever seen these remove it to a greater distance than one or two inches from the median line,—indeed, scarcely ever more than a single inch. Its worst attacks generally alternate —rarely coincide—with those of the epigastric pain.

How far the vertical deviation of the epigastric or spinal pain entitles us to conjecture a corresponding

* See Appendix, Reports III. and VII.

situation for the gastric ulcer, I am unable to decide. But one or two cases on record indicate such a connexion:—pain in the umbilical region being, for example, associated with an ulcer of the greater curvature. But with respect to the horizontal deviations of these pains, there is good reason for asserting that, where they are marked, they justify us in inferring a similar situation for the ulcer. The records that I have collected furnish me with about twenty instances of this kind: out of which about fifteen exemplify the concurrence of pain in the left hypochondrium with an ulcer of the cardiac extremity of the stomach; and four or five illustrate the same connexion between the right hypochondrium and the pyloric extremity of the organ. My own practice has also afforded me three or four cases, in which a similar deviation led me to predict the cardiac or pyloric situation of the ulcer during life. But I have found that the very local character of the dorsal pain often makes it a better test than the comparatively more diffuse epigastric pain. While I need scarcely add that the coincidence of the two in respect to this deviation is a far stronger testimony than either, unsupported, can afford; and that even this agreement requires to be confirmed by the presumption which may be derived from the other characters of this symptom.

Among the latter, we may first allude to the effect of pressure in increasing the pain. This is indeed a very important test, being one which, to speak with logical accuracy, converts what may be, for aught we know, a subjective sensitive phenomenon, into an objective one, that constitutes a far more trustworthy indication of

local disease. To use the expression which generally suggests itself to the sufferer, there is a soreness as well as a pain: the least pressure in the epigastrium is sometimes unbearable; the patient, if a female, is even content to forego the fancied advantages of her stays rather than endure the pain which the central piece of whalebone in these ingenious aids to disease often produces. In the majority of instances, the soreness is exactly limited to the part of the epigastric region already specified. As it is produced by the more or less direct application of pressure to the diseased structures, it is not to be excited by pressure on the unyielding spine. But, in general, one and the same pressure on the epigastrium will excite both epigastric and spinal pain: sometimes even the latter, chiefly or exclusively.

Of course it is essential to use such a graduated pressure as shall not involve parts more distant than the stomach: a pressure, in short, scarcely exceeding that with which we manipulate the belly in cases of suspected peritonitis or colic. I say this because it would otherwise be possible to make strange errors. Thus I have known cases of mere emphysema and bronchitis, in which deep epigastric pressure caused considerable distress (easily mistakeable for soreness), apparently from embarrassing the heart, which had gradually been forced down into the upper part of this region. It is not altogether superfluous to add another caution with respect to the above test. Not only must it be applied with great care and delicacy in the first examination of a supposed case of gastric ulcer, but, as a rule, we can scarcely be too reluctant to repeat it, even to verify an

expected amendment. At any rate, its effects are sometimes so injurious, that it is necessary strictly to prohibit the patient from all manipulation of the epigastric region, as well as from all pressure producible by dress (such as stays in the female) or calling (as is the case with shoemakers).

Whether the pain of a gastric ulcer is always increased by pressure, it seems impossible to decide. There is only one necropsy* on record—and this probably not of a true or spontaneous ulcer—in which it is distinctly specified that pressure was altogether devoid of such an effect. But I have once or twice met with cases which so nearly approached the symptoms of this lesion in all other respects, that I have been obliged to suspect its presence. The varying degrees in which pressure affects the patient in different cases, somewhat confirm such a suspicion, and indicate that even this characteristic of the ulcer may occasionally (though very rarely) be absent.

A more frequent explanation, however, of the supposed inertness of pressure in increasing the pain, may be found in the opposite effects producible by pressure applied in different degrees or in different situations. Thus, a curious instance lately fell under my notice, in which pressure on the base of the ensiform cartilage relieved the patient from the sense of stoppage, and the dull epigastric pain, which came on soon after eating. Even here, however, there was a circular area, about an

* Archives Générales de Médecine, 1823, vol. xx. p. 212. A soldier, aged twenty-three, died after twelve days' gastritis. Two ulcers were found.

inch below the apex of this cartilage, very moderate pressure in which brought on severe epigastric and spinal pain. And after the artificial diminution of the epigastric pain procured by such pressure, the dorsal pain soon became much more violent.

Another example of the same kind has since been observed by me (see Appendix, Report IX.). In this instance, the pain was evidently much relieved, not only by that pressure on the cartilages of the lower ribs which the prone *decubitus* can produce, but even by a moderate manual pressure on the fleshy wall of the epigastrium. Even here, however, deeper or more forcible intrusion gave rise to a great increase of the pain. Such anomalies in a less marked form appear to be anything but infrequent, and, on the whole, justify the conjectures, that pressure may either relieve or increase pain, according as it supports the periphery, or impinges upon the surface, of an ulcer: and that, where the lesion is so placed as to be exposed to direct mechanical interference, exceptions to the latter rule are of extreme rarity.

The effect of posture on the pain in different cases is more variable. As a rule, a severe paroxysm is relieved by the recumbent posture, no matter what may be the situation of the ulcer in the stomach. But the varieties of the recumbent posture—or, to speak technically, the *decubitus*—will often have no influence whatever in increasing or diminishing the pain. But in other instances they will afford a valuable confirmation to our diagnosis, and may sometimes even entitle us to conjecture the exact seat of the lesion.

The facts upon which this statement is based are the following:—Of the cases witnessed by myself, in which the symptoms have led me to diagnose an ulcer of the stomach, I have found about two-thirds exhibit a marked influence of posture on the pain. During a paroxysm some were obliged to lie prone, some supine; some on the right side, some on the left, some were even obliged to sit up. I say obliged to do so, including in this phrase equally those cases which were distinctly relieved by the selection of a particular attitude, and those which experienced a great increase of pain by adopting any other. In some of them, however, the painful posture could be borne for a minute or two, until the gradual increase in the severity of the pain forced their abandonment. In like manner, the less painful attitudes had generally been adopted, to the complete exclusion of that habitual decubitus which most persons naturally assume during sleep. The remaining third of my cases offered no peculiarity of decubitus; though in many of them the pain was relieved by rest in the recumbent posture.

The fewer cases in which the effect of posture upon the symptoms during life was compared with the appearances seen after death, have afforded me more specific information to the same effect.* That is, the first (and probably the larger) group shows a pretty close correspondence between the posture adopted and the site of the ulcer—the prone decubitus being associated with an

* Priority in observing this interesting connexion belongs to Dr. Osborne, of Dublin, whose other clinical remarks on the gastric ulcer (*Dublin Journal of Medicine*, vol. xxvii. p. 361) will well repay the reader.

ulcer of the posterior surface of the stomach; the supine with one of the anterior surface; the decubitus on the right or left side, with a lesion of the cardiac or pyloric end of the organ respectively. But, on the other hand, in some of the very cases where we might have best expected such a connexion, I have found it fail altogether;—a large chronic ulcer, exclusively limited to the pyloric pouch, having been associated with no change of an habitual decubitus on the right side; and an ulcer of the posterior surface, or of the small curvature, having been relieved by even the supine variety of the recumbent attitude.*

The presence of such a correspondence in certain cases, and its absence in others, naturally remind one of what may be called objective and subjective sensations in the normal action of nerves, and suggest the analogous distinction of objective and subjective pains in their abnormal states of activity. But such a distinction fades before any philosophical inquiry. Even in the commonest forms of irritation of a nerve, most of the minute mechanical conditions remain unknown to us: and yet until we can specify and determine these, we cannot assert that a given pain is not so far objective, as that it results from a local lesion of the nerve. In like manner, a careful consideration would probably conduct

* Even in these cases, however, we may probably distinguish that the decubitus fails to guide our conjectures, rather than absolutely guides them wrong. For the fact that the habitual decubitus remains unaltered, deprives us of all grounds for any inference. Again, in the absence of specific cause to the contrary, we might well expect that the efficacy of the recumbent posture in relieving the pain would be shared by all varieties of this posture.

us to the rather startling propositions, that all pain is subjective; that nothing but an elaborate organization at its periphery and centre enables any nerve to give an objective sensation; and that, even then, its objectivity is, strictly speaking, but very partial and imperfect.

The partially subjective character of the pain in gastric ulcer receives a good illustration from the manner in which it is often affected by mental changes. Amongst these we may specially allude to the depressing passions of sudden fear, anxiety, or anger, as frequently bringing on a paroxysm of pain, the severity and duration of which exceed those of the attacks produced by distension of the stomach with food. Here, however, the situation and character of the pain generally remain unchanged.

The effect of movement upon the pain closely corresponds to that of posture. As a rule, all violent bodily exertion is likely to be followed by an attack. While even the moderate exertion implied in walking, sustained so as to produce fatigue, generally brings about the same effect. And there can be little doubt that the relief generally afforded by the recumbent attitude is in great part due to the perfect rest it implies. In some instances which have fallen under my notice, the movements of locomotion have given rise to a peculiar sensation of dragging in the right hypochondrium, such as induced me to suspect adhesion of the stomach to the liver. In one of these instances I have been able to verify this conjecture by a necropsy.

With this effect of adhesion I may mention another, that well illustrates the accuracy of an old observation

respecting the symptomatology of the liver. In two or three cases, the adhesive inflammation uniting the ulcerated stomach to the surface of the liver has been accompanied by that pain in the right shoulder which has long been regarded as characteristic of (superficial?) hepatic inflammation.

It has been suggested that the pain of gastric ulcer is connected chiefly with the extension of the disease to the peritoneum, or with its involvement of the cardiac or pyloric orifices. That either of these peculiarities would, on the whole, tend to increase the pain, there is good reason to suppose. But that intense and continuous pain is quite independent of them both, is affirmed by a large number of cases, is indeed amply substantiated by some (Reports V., VI., IX.) of those detailed in the Appendix.

The pain is also affected in a special manner by various kinds of food. As already mentioned, its worst access or paroxysm generally has a close (though not exact) correspondence with that period of gastric digestion during which the organ is most distended with food. It is increased by the ingestion of hard or indigestible substances; and is mitigated by a pulpy milk diet. There are also many articles of food which have an irritating effect quite independently of their consistence. Amongst liquids, few are more generally unbearable than ordinary tea and beer. Finally, all hot substances are usually productive of great pain.

But exceptions to all these rules are occasionally seen. The pain is sometimes unconnected with the ingestion of food; sometimes relieved by it. And I have known

even brandy, or hot water, to be taken by a patient with this object. While careful inquiry has satisfied me that beer is sometimes (especially in the aged) well borne by the stomach, and is advantageous to the organism generally.

Lastly, in the young female subject of gastric ulcer, the pain often appears to be affected by the access of menstruation. About a dozen cases of this kind have fallen under my observation during the last few months. A careful inquiry into these cases has led me to the following conclusions. In one or two instances, the supposed ulcerous pain has seemed to be really quite distinct from that previously present, being abdominal and lumbar (instead of epigastric and dorsal) in its site, unaffected by pressure, unconnected with vomiting, and, in short, dysmenorrhœal in its nature. This conclusion has in some cases been irresistibly established by the fact, that pain of this kind has recurred at the menstrual periods, long after every symptom of the gastric malady has disappeared. But in other instances, it has been impossible to doubt that the access of the menstrual flux has had a specific (sometimes even an habitual) influence in provoking and increasing the ordinary pain of gastric ulcer, with all its usual concomitants of tenderness to pressure, vomiting, peculiar decubitus, &c. The nature of the relation between the pain and the menstrual epoch is best shown by its mode of access —commencing, as it usually does, between twenty-four and forty-eight hours before the appearance of the flux, when it generally begins to subside, to disappear about twenty-four or thirty-six hours after the commencement

of free sanguineous discharge. It is thus connected more intimately with the menstrual *molimen* — with that disturbed state of the abdominal innervation which precedes the flux — than with the flux itself. (See Appendix, Reports I., II.)

The *vomiting* which forms the next symptom of gastric ulcer is far from exhibiting such specific characters as those just affirmed of the pain which generally precedes it. It usually occurs when the paroxysm of pain has reached its greatest height; forming in this respect the crisis of the attack. Though generally preceded by a few efforts or retchings, it is rarely of a violent character; indeed, the distension of the stomach which prevails at this time, suffices to render it a very easy and painless variety of sickness. Once begun, it seems rarely to end without completely emptying the stomach of its alimentary contents:—an act of expulsion which usually affords complete relief to the pain, but sometimes leaves a slight burning sensation, that only disappears after an interval of two or three minutes.

The chief varieties of the vomiting relate to the following details. Firstly, as regards the date of the malady marked by its access. Though generally preceded by the characteristic pain during several weeks, it sometimes comes on much earlier; occasionally almost as soon as the pain itself. In respect to the nature of the substances vomited, these vary chiefly with the precise date of this act. Soon after the ingestion of food they are of course alimentary; at a later period they have an acid character, which is often an intensely sour taste to the patient himself; and still later, are

sometimes mixed with bile. Lastly, in those rarer instances in which the act of vomiting comes on quite independently of the ingestion of food:—for example, shortly after rising from a night's sleep—it expels a glairy alkaline fluid, that consists chiefly of the saliva swallowed prior to the attack. In the latter instance, the vomiting (which is often periodic) is frequently connected with habitual drunkenness; especially with the collapse that follows a debauch.

As regards the frequency with which this symptom is present in cases of gastric ulcer, I have no exact and trustworthy estimate to offer. My own experience would induce me to believe that it occurs in the majority of instances, and is rarely or never absent from the whole course of the malady, except in the rapidly perforating ulcer of the young female. Sometimes, however, it is so easy in its character, and so limited in the amount of gastric contents which it expels, as to be confounded with regurgitation:—a symptom which not only ushers in the vomiting in many cases, but occasionally remains as its sole representative throughout the whole course of the malady. The records I have collected afford one example of its absence in an ulcer that remained active during four years. In other cases it has been only represented by slight nausea. In others it has been limited to a single attack, or to the very close of the disease. Such evidence is indeed confirmed by the well-known effect of a strict regimen in alleviating this symptom, which in many cases only comes on after a full meal, and is at once suppressed by reducing the food to a minimum of the least irritating alimentary sub-

stances that we can select. Among other circumstances that favour the access of vomiting, there is but one which seems to have any very close and constant relation to its frequency and intensity—namely, the size of the ulcer. This is, however, often connected with a long duration of the lesion, and with its intimate adhesion to neighbouring organs: two characters which might independently favour the occurrence of vomiting.

The danger of this symptom it is difficult to exaggerate. There can be no doubt that it is the immediate cause of a considerable proportion of the deaths from gastric ulcer; indeed, my own experience entitles me to predict that more exact information will hereafter prove that the mortality thus produced is one which far exceeds that brought about by hæmorrhage, and approaches the large per-centage due to perforation.*

It is not difficult to explain the dangerous character of this vomiting. By expelling the greater part of the food shortly after its reception into the stomach, it starves the patient with a rapidity that will be determined chiefly by the quickness of its access, and the completeness with which it empties the organ. And in addition to the effects of inanition, it adds the fatigue implied by such violent and abnormal action of the nervous and muscular systems.

The next symptom of the gastric ulcer is *hæmorrhage.*† Since the process of ulceration itself implies a

* Compare p. 51.

† I have purposely avoided the use of the word *hæmatemesis* in speaking of hæmorrhage as a symptom of gastric ulcer. One chief reason for my doing so has been the fact (till now too little noticed

solution of continuity* in the coats of some of the vessels of the stomach, nothing short of a simultaneous obliteration of these tubes can prevent some effusion of their contents. And hence it is not very surprising to find that the myriads of such tubes concerned in every lesion are rarely occluded with that quickness, precision, and universality, which would be requisite to suppress all hæmorrhage from their interior.

How far the hæmorrhage which occurs in ulcer of the stomach may be attributed to mere congestion, it is impossible to determine. But from the analogy of this lesion to ulcers seated elsewhere, we may fairly presume that the same degree of congestion which generally

in the history of this malady), that blood effused into the stomach often escapes being vomited thence, and can only be detected in the fæces. And as it would seem pedantic to burthen our professional vocabulary with the addition of some such word as *hæmatokopræsis* to express the latter (and even more frequent) of these two results of hæmorrhage into the stomach, I prefer to lay the chief stress on the pathological occurrence, rather than on its obvious symptomatic consequences. There are still more valid objections to the use of the term *melæna*, which, though bequeathed us by Hippocrates, implies both vomiting and purging, and expressly connotes a peculiarity of the matters thus expelled from the alimentary canal—namely, their black colour—which is neither constant nor essential.

* With respect to the occurrence of "hæmorrhage by exhalation," through the coats of the vessels, apart from any solution of their continuity, little need be said. "We now know that this doctrine is incorrect; that the walls of even the finest capillaries have no pores of appreciable magnitude, such as would be necessary for the transit of blood-corpuscles; and hence that the extravasation of these structures is a proof that some bloodvessel has been ruptured. That amongst the myriads of these minute tubes present we often fail to detect the exact seat of the lesion, need of course little surprise us."—[Art., Stomach and Intestine, by the author, in the "Cyclopædia of Anatomy."]

attends ulceration might constitute an efficient immediate cause of the bleeding. Still, as the hæmorrhage almost invariably occurs soon after a meal, and is often distinctly traceable to the ingestion of an unusual quantity of food, we are left to suspect that the influence of this inflammatory congestion is far surpassed by that afflux of blood which attends the act of gastric digestion, as well as by the mechanical disturbance which distension of the stomach would necessarily inflict on the diseased vessels that occupy the ulcer itself.

In the preceding section I have alluded to the varieties of hæmorrhage in respect to their source: and have classified them as coming from the minute vessels of the gastric coats; from the chief branches or trunks of the arteries which run in the sub-serous areolar tissue external to the stomach, before being distributed to these coats; and lastly, from the vessels that occupy the parenchyma of the adjacent liver, spleen, and pancreas, and become involved in the ulceration after the stomach has contracted adhesions to one or other of these organs. I have also noticed the relation of these varieties to the depth—and therefore, other things being equal, to the date and duration — of the ulcer, as well as to the amount and appearances of the blood effused.

There are no data for determining the frequency of those scanty hæmorrhages which are poured out, in the earliest stages of the ulcerative process, from the minute vessels of the mucous membrane, and its sub-mucous areolar tissue. But it is certain that they occur in a large majority of cases. And it is probable that they are present in numberless instances, in which no symptom

reveals them. For since a small quantity of blood does not excite vomiting, it depends entirely upon a casual coincidence of these two symptoms—hæmorrhage and vomiting—whether the former is revealed by the latter. And unless the attention of the patient be particularly directed to the examination of his stools, a moderate quantity of blood may also leave the intestinal canal by this natural channel, without ever being detected.

In all cases of this kind, the blood undergoes the ordinary changes which attend its exposure to the action of the fluids of the stomach and intestine. The moderate quantity of blood generally poured out not only becomes mingled with the various ingesta and secretions which may chance to be present, but gradually undergoes a kind of digestive process, that has the effect of greatly modifying its colour and consistence. Wherever the extravasated blood has been sufficiently exposed to this action, it will be found to have acquired a dark, grumous, or even black colour, and a peculiar tarry or almost pultaceous consistence. A small quantity of blood thus altered by digestion sometimes even simulates the colour and appearance of inspissated bile.

Hence the following precautions are often necessary in respect to this important symptom of gastric ulcer. We must never presume its absence because the patient has failed to notice it. Our inquiries must be directed equally to the matters vomited and to the stools. As regards the former, we must question the patient, not only as to what he may have recognised as blood, but as to the characters of all the substances he has vomited. And the matters habitually rejected from the stomach

should be submitted to a strict and repeated microscopic examination; care being taken to select such specimens as are free from all admixture of food—at any rate of animal food containing blood-corpuscles. Precautions of this kind will often show that a comparatively clear fluid deposits a sediment containing blood-corpuscles in considerable quantity, and perhaps ranges in other specimens from the same patient, through a brownish ropy mucus, to a grumous fluid having the ordinary "coffee-grounds" appearance of blood thus altered by digestion. A similar examination will sometimes be useful in the case of the blackened fæcal evacuations to which gastric hæmorrhage gives rise. Dilution with water will generally distinguish inspissated bile. But if not, the microscope will at once set the question at rest. The ingestion of the salts of iron is a source of error that may of course be easily detected by inquiry; though I have known the inky vomiting which has accidentally followed the administration of this drug immediately after tea, excite considerable alarm in the mind of a patient and his medical attendant.

The proportionate frequency of those larger hæmorrhages which are due to the vessels external to the stomach becoming involved in the ulceration, is just as uncertain. But from my own experience I should conjecture that they occur in not more than one-third of the gastric ulcers which come before us in ordinary practice. And I have elsewhere adduced reasons for supposing that they are fatal in from three to five per cent. of the whole number of these lesions which the most sedulous examination can detect in the dead body.

The symptoms of such hæmorrhages illustrate and confirm the proposition implied above—namely, that the blood poured out from the ulcer into the stomach scarcely exerts any specific action as an emetic or a purgative, but seems to excite vomiting or diarrhœa chiefly by its quantity; in other words, by the mechanical stimulus which its distension of these segments of the intestinal tube implies. Soon after a meal, the patient begins to experience an unusual fulness and weight in the region of the stomach; attended (sometimes even preceded) by feelings of syncope. Nausea rapidly supervenes, and ends in the vomiting of a large quantity of blood; which may either be partially coagulated, or, if rapidly effused and rejected, may retain a colour and fluidity that testify to the arterial character of its source. In other cases (and I am disposed to conjecture, chiefly in those rarer instances where the hæmorrhage, besides being less considerable in quantity, occurs independently of the meal time) the blood is effused in considerable quantity without exciting any vomiting whatever; and is passed at once, through the pylorus, into the intestine, which it leaves more or less rapidly with the stools. Lastly, in very exceptional cases, the rapidity of the hæmorrhage is so great that it distends the stomach, and more or less of the intestine, with a single gush; and the patient faints and dies before any expulsive act can take place, or diminish the enormous clot which the necropsy reveals as the cause of his sudden decease.

The *state of the bowels* in this malady seems devoid of all connexion with any special features in the anatomy of the lesion. Constipation is, however, the rule

in the great majority of cases. The frequency of this state appears to have a twofold cause. Firstly, the ulcer itself generally opposes the reception, and ensures the expulsion, of ingesta; and thus deprives the intestinal canal of those contents which require, and provoke, the act of defæcation. Secondly, there is a definite quiescence or stagnation (so to speak) of the intestinal walls—an arrest or exhaustion of peristalsis—which is produced by peritonitis, by vomiting, and probably also by intensely painful affections of the stomach: and which is therefore especially marked in many instances of gastric ulcer, where all these circumstances concur. Diarrhœa is so much the exception, that we may doubt whether its frequency is much greater than might be expected, supposing it quite independent of the ulcer. But, as already intimated, copious hæmorrhage from the lesion generally gives rise to looseness of the bowels, though without producing any modification of the ordinary epigastric pain. A significant contrast to these facts is afforded by ulcers situated in the first portion of the duodenum (or in the immediate neighbourhood of the stomach), which give rise to diarrhœa with much greater frequency than the gastric ulcer. There can be little doubt that this difference is due to that simple law of the peristalsis of the alimentary canal, which connects the movements of the most distant parts of the intestine, while it confers a comparative isolation on those of the stomach. At any rate, copious and frequent diarrhœa, especially where attended with hæmorrhage, ought always to arouse suspicion with respect to some lower segment of the intestinal canal than the stomach: and

should direct inquiry to the precise seat of the abdominal and dorsal pain, as well as to the symptoms of those maladies—phthisis, or typhoid fever—which are generally associated with ulceration of the ileum and cæcum.

Amenorrhœa is present as a symptom of the gastric ulcer in so many of the female cases of this malady, as to require a special consideration.

There are no data which would entitle me to make any definite estimate of the frequency with which the presence of this symptom coincides with the existence of the ulcer. But I have found reason to conclude that, on the whole, regular menstruation is far more common than is generally supposed. This fact is quite in consonance with what my inquiries have revealed respecting the total numbers of males, and of females either past the menstrual epoch, or not arrived at puberty, in whom the lesion has been detected by careful necropsy.

Further, even in the female during this epoch, a careful inquiry seems to indicate that this symptom associates itself with different groups of the lesion, in very different degrees.

It is in the chronic ulcer of middle-aged women that the catamenia are least affected. Many of the cases in which the ulcer has lasted for ten or fifteen years, are recorded to have menstruated regularly; some even profusely. Indeed, in some the malady has lasted throughout the whole menstrual epoch of life, without exercising any appreciable influence on this function.

The coincidence of amenorrhœa with copious hæmorrhage from the ulcer is certainly more frequent. But in

most of these cases, the relation between the two symptoms seems to be a very natural and obvious one. The amenorrhœa not only follows the hæmorrhage, but is caused by it, just as it would be ensured by any other serious hæmorrhage, or by that drain of nutritious fluids which both pregnancy and lactation imply. In other instances, the amenorrhœa precedes the hæmorrhage. But since hæmorrhage is not more frequent in these cases than in cases of chronic ulcer in general, there is no ground for asserting the efficiency of suppressed menstruation as an independent cause of the bleeding. In like manner, there is rarely any connexion between the date of the hæmorrhage and the menstrual period. And finally, whatever has been said by authors respecting the liability of the gastric ulcer to give rise to a periodical hæmorrhage that forms a vicarious menstruation, I do not know a single well-authenticated instance of the kind on record.*

There is, indeed, but one group of gastric ulcers with which amenorrhœa seems to have any frequent or direct relation—viz., the perforating ulcers of the young female.†

* The only instance I know of which approaches the characters of a vicarious menstruation, is one mentioned by Cruveilhier (Anatomie Pathologique, fol. 1835, vol. i.), apparently on the sole testimony of the patient some years after. A periodic hæmatemesis replaced the menses "when these failed to appear, which happened often enough." It was accompanied by the expulsion of membranous tubes from the bowels; was unaccompanied by pain; and did not prevent the patient from working in the open air. Without more explicit information as to the date of the hæmorrhage with respect to the expected menstruation, the length of the menstrual period, and of the longest exclusively vicarious flux (for its frequency alluded to seems rather to militate against its duration), this case is hardly to be relied on.

† This important fact we owe to Dr. E. Crisp, whose collection

In speaking of symptoms collected for the first time after the death of the patient (as has happened in many of the scattered cases of this kind which I have collected from different sources), there is so little hope of accuracy, that I do not think it worth while to state exact numbers. It may suffice to say that the majority of these cases exhibit scantiness or absence of the menses as one of the most prominent features of their history; that in many of them the amenorrhœa was accompanied with a state of pallor and anæmia, which was (somewhat rashly) termed chlorosis; that some, however, menstruated regularly and copiously; a few profusely; while a few had never arrived at puberty.

With the latter of these statements we may connect an allusion to a still more frequent condition of the same kind. Many of the so-called cases of amenorrhœa and chlorosis are instances of delay in the appearance of the menses, rather than of their suppression or interruption.

The age of many of the female subjects of these perforating ulcers corresponds to what we should expect from such facts. It is one which closely approaches to the average epoch of puberty, and the year or two immediately following; but which does not exhibit those

of cases, leading to this result, I have noticed in the preceding part of this Essay. The meritorious industry of this gentleman has been so little recognised by some English authors on the gastric ulcer, that I am anxious to offer him this acknowledgment. One or two inaccuracies which I have detected in his citations scarcely deserve notice, except in so far as they justify me in assigning to the connexion between the lesion and the amenorrhœa an explanation somewhat differing from his.

fluctuations above and below this average age which would be requisite to assign it to the exact access of puberty itself. Still, the coincidence between the amenorrhœa and the ulcer is an unquestionable fact. And the first question concerning this fact suggests itself in the form of an alternative:—Does the amenorrhœa cause the ulcer, or the ulcer the amenorrhœa?

The first of these two questions I think we must answer in the negative: not only because the ulcer is present in the male sex, and in the neuter monster,* at the same age, as well as in the female at all other ages, but because, in the female at this epoch of life, the exceptions to the presence of the supposed cause are too numerous to be compatible with such a causation. Indeed, to the various cases of regular menstruation thus alluded to, we might plausibly add a large proportion of those in which menstruation had delayed its appearance, as well as all those in which puberty was absent. For surely many of the former would scarcely be instances of amenorrhœa, just as all the latter are certainly disqualified for this epithet.

In favour of an affirmative answer to the second question, or of the view that it is the ulcer which causes the amenorrhœa, we may point out that, in most of these cases, the dyspeptic symptoms which correspond to the establishment of the lesion have themselves preceded the deficiency or cessation of the menses; and that such an explanation, as it would receive no contradiction from the mere age of these cases, would find its parallel in the case of other grave constitutional disorders, which

* Compare p. 32.

scarcely any pathologist would doubt to be the cause of the amenorrhœa by which they are frequently accompanied. A good illustration of this kind of suppression of the menses may be found in the tuberculous cachexia which often selects this epoch of female life as the period of its fatal attack; and which, though often associated with chlorotic symptoms, can generally be distinguished from true chlorotic amenorrhœa by a careful physical examination, aided by an accurate inquiry into the family history of the patient.

A careful observation of the details of that constitutional state which accompanies the amenorrhœa of these gastric ulcers, affords some confirmation of the above view. That state it is customary to speak of as "chlorotic." But I have never yet seen an instance that would suffice to establish the pathological identity of the cachexia present in this group of gastric ulcers with that of true chlorosis; nor do I know of any authentic records of such a case. The differences of the two states are, indeed, essential. The cachexia that attends the ulcer, even when best marked, is devoid of every characteristic symptom of severe chlorosis. The pallor, even where extreme, offers no trace of that greenish hue which the very name of chlorosis (χλωρὸς, *green*) connotes. The dyspnœa on exertion, and the soft bellows-sound, are much less distinct. And lastly, there is little or no œdema of the subcutaneous areolar tissue.*

* This paragraph is quoted (almost *verbatim*) from some remarks on a case which offers a good example of the peculiarities of this group of gastric ulcers, and which will be found in the Appendix, Report I.

As the age of these subjects of the gastric ulcer advances, it is not uncommon for the amenorrhœa to cease, all the other symptoms of the lesion remaining unaffected. In rarer instances, the so-called chlorosis also diminishes and disappears. But the most satisfactory proof that the amenorrhœa is not in any sense the cause of the chlorotic symptoms, is afforded by some still rarer (though well authenticated) examples, in which the ulcer has been attended by a marked degree of this cachexia, without any interruption whatever to regular and copious menstruation.

But it is obvious that the above view does not at all explain the connexion between amenorrhœa and perforation; much less the fact that the ulcer is more liable to affect the menstrual function at this age of female life than at any other. Nor do I think that any sufficient materials for such explanations are at present accessible to the pathologist. It would, however, be easy to suggest that a periodic hæmorrhage like the menstrual flux might well be more easily affected during the struggles of the constitution to establish and maintain it, than when the organism had become accustomed to its recurrence, or strengthened so as to be more indifferent to the loss of blood it implies.

A much less vague and conjectural influence appears to be exercised by this epoch of life on the characters of the ulcer itself. That its great liability to perforation is not due to the ulcerative process sharing in the vigour and activity of youth (as has been suggested by an excellent authority), must, I think, be evident, when we consider the true physiological meaning of vigour on the

one hand, and ulceration on the other. Vigour of ulceration is indeed weakness of health; nay more, vigour of constitution, supposing an ulcer already present, would oppose its progress, and limit or diminish its ravages, would ward off its perforation by thickening its margins, depositing lymph on its surface, and gluing the peritoneal surface of the stomach to some adjacent organ.

But it is more satisfactory to state a conclusive fact than to point out what seems an abuse of terms.* And since there can be no reason for denying to the male sex the vigour and activity such a theory ascribes to youth in general, the fact that the increased tendency to perforation at this age is limited to the female, may spare us all further reasoning on the subject. We need only add, that all the peculiarities of the symptoms and appearances seen in this group of ulcers refer the above

* In saying this, it is but justice to the able author above alluded to (Dr. T. K. Chambers), to point out how much general truth his doctrine includes, and how closely (by a modification of the above terms) it corresponds to that diminished liability to perforation which we have found (p. 31) to be one of the chief features acquired by the lesion in advanced life. In other words, the tendency to perforation in the gastric ulcer of youth is chiefly seen in the young female, or is limited to one sex, and to a brief epoch of life. But the diminished liability of old age, though it must obviously be contrasted, not with mere youth, but with all the adult (including middle) life, is a fact which might perhaps be conveniently suggested and recollected by the aid of this doctrine, if at the same time that we thus modified the epochs to which it is applied, we substituted for "vigour" or "activity" the less equivocal term "rapidity," in speaking of the ulcerative process. Even with both these modifications, however, great doubt is thrown upon the doctrine by the long duration of some of the perforating ulcers of the young female, as well as by the appearances of reactive inflammation so frequently met with in the gastric ulcers of advanced life.

tendency not so much to any special activity of the ulcerative process, as to the absence of that inflammatory reaction by which its destructive advance is often checked, and its worst effects warded off.

The *cachexia* generally associated with the ulcer at other ages of life appears to have precisely the same import as that already suggested for the chlorotic state which represents it in the young female. Like the latter, it seems to be essentially not so much a symptom as a congeries of symptoms: a state that expresses the injury inflicted on the organism by a variety of causes. The wearing effect of long and frequent paroxysms of pain, the fatigue and inanition implied by frequent vomiting, the drain of frequent or copious hæmorrhage, the loss of digestive power involved in the destruction of the stomach, and finally, the mere age of the patient—are circumstances every one of which probably shares in producing the cachexia that is often present.

As already intimated, it is probable that this cachexia, which is best marked in ulcers of tolerably long standing, and therefore in middle-aged or elderly people, corresponds to the chlorotic symptoms and the amenorrhœa above noticed as generally present in connexion with the gastric ulcers of the young female. And my own experience entitles me to presume that it is rarely altogether absent; that, contrary to what is generally stated on this point, a person suffering from a gastric ulcer scarcely ever wears an appearance such as any observant practitioner would mistake for that of a person in health Nay more, I might add, that the physiognomy of the disease is so peculiar, that I have sometimes been fore-

warned of its presence by the mere sight of the patient's features in a crowded Out-patient room at the Hospital. With many characters that would often leave us in complete uncertainty as to whether the cachectic aspect was due to ordinary chlorosis, to tuberculosis, or (in later life) to the cancerous diathesis, the sharp lines that long and constant pain, and partial starvation, have worn in a patient's face, sometimes afford what is almost a *differentia* characteristic of this disease. At any rate, this peculiar expression of countenance is, on the whole, a safer indication than mere anæmia, emaciation, or exhaustion can alone afford.

The *perforation* which sometimes occurs in the course of gastric ulcer is notified by symptoms so intense and characteristic, as to require but a very brief description. After more or less distinct indications of the ulcer have existed during a variable period of time, the patient is suddenly attacked by a violent pain in the epigastrium, which rapidly spreads over the belly. Its diffusion is accompanied by the appearance of all the ordinary symptoms of peritonitis; the wall of the belly becomes extremely tender to pressure; the patient assumes an attitude which relaxes the muscles of this part; there is an absence of the usual respiratory movement here, which is rapidly followed by great tumefaction of the abdomen, and tympanitic distension of the bowels. If a strict physical examination of the belly be insisted on, the peritoneal cavity will be found to contain fluid—usually those contents of the stomach which have streamed through the aperture in its coats, increased by the subsequent addition of an inflammatory effusion.

The continuance of these symptoms generally destroys the life of the sufferer in from twenty-four to thirty-six hours; but death is often preceded by a period of comparatively painless collapse.

Rarely does the train of symptoms that follows perforation offer any marked deviation from the above type.

In many instances, however, a remarkable paroxysm of pain precedes the occurrence of perforation. This intense pain—the duration of which varies from a few minutes to several hours—is, I believe, generally due to a leakage of the gastric contents through that thin film of rotten tissue, to which, at this period, the coats of the stomach are reduced. In consonance with such an explanation, a more chronic pain of similar character has sometimes been found associated with a complete matting together of the stomach and all the neighbouring viscera by a large quantity of lymph, without any visible perforation of the coats of the stomach, or any escape of its contents.

The symptoms of those various modifications* of the process of perforation which were alluded to in treating of the pathology of the gastric ulcer, offer few peculiarities worthy of notice. Partial perforation, allowing of a subsequent repetition (or rather extension) of the accident, or leading to abscess, would of course be distinguished by symptoms which, though differing from each other in every particular instance, would yet offer the general features of being more local, more chronic, and less intense, than those of ordinary perforation fatal by general peritonitis.

* See p. 38 *et seq.*

There are other circumstances attending the accident which might almost be enumerated among its symptoms. As stated elsewhere, it almost always occurs after a full meal; and is often distinctly traceable to mechanical violence, such as coughing, sneezing, concussion or constriction of the belly. The sensations of the patient frequently verify the nature of the accident, by distinctly appreciating that something has given way in the belly, and thus caused a gush of fluid that has lit up the agonizing pain which has followed it. Lastly, the presence of a communication between the cavity of the stomach and that of the peritoneum is sometimes indicated by the recurrence of similar pain after each ingestion of liquid food or medicine.*

Ampliation, or enlargement of the stomach, as a result of the constriction produced by the cicatrix of a gastric ulcer, constitutes a variety of the malady which of course brings with it a special train of symptoms. Into these, however, my present limits forbid me to enter. It is enough to point out that their connexion with the ulcer is both infrequent† and indirect; while they are present in instances of ampliation from so many other causes, that nothing short of a history revealing those general symptoms of the ulcer already described would entitle us to refer any particular case to this origin. A good example of this kind will be found recorded in the Appendix (Report IX.).

* As in a case recorded by Dr. J. B. Harrison (On the Perforating Ulcer of the Stomach and Bowels, pp. 18, 19).

† Infrequent, as not occurring much oftener than once in 100 cases; indirect, as implying in most instances a previous cessation of the ulcerative process, or healing of the ulcer.

The *Ætiology* of the gastric ulcer has hitherto been rather a subject for conjecture than for any successful inductive inquiry. And the author cannot flatter himself that his own researches will place it in the latter category. But since every exposure of error is a step towards the detection of truth, he ventures briefly to sum up whatever fragments of information he has been able to glean in this respect.

There can be no doubt as to the physiological circumstances which predispose to this disease. Old age, privation, fatigue, mental anxiety, and intemperance are such frequent coincidents of its occurrence, that we are fully entitled to regard them as its more or less immediate causes in a large proportion (I think we might say a majority) of cases. Of these, the influence of advancing age seems, from my inquiries, to be that which is most distinct and indisputable, and which rests on the broadest numerical basis of facts. But that careful clinical study of the malady which my Hospital opportunities have afforded me, leaves me just as little doubt with respect to the remarkable influence of poverty and intemperance.

We have found reason to qualify the ordinary notion with respect to the influence of the period of female puberty, and its attendant disturbances of health, in the production of the gastric ulcer. At least, we have seen that this particular epoch predisposes, not so much to the occurrence of ulcer, as to a peculiar character and termination of the ulcer; that it is a want of reaction, resulting in a tendency to perforation, rather than a proneness to ulceration, which our existing data would

entitle us to assert. And even should this opinion be hereafter modified by a larger series of cases than I have been able to bring together, there will still be such a preponderance in the total formed by the gastric ulcers of the male, and of the middle-aged and aged female, as to exclude the above group from any general significance with respect to the ætiology of the disease.

Respecting the influence of the puerperal state, as well as of lactation, I can say nothing from personal experience, save that, in the few instances in which these conditions have been coincident with gastric ulcer, the connexion has seemed to me explicable by well-known physiological laws. In the former state, for instance, the ulceration has often seemed to be a relapse or recurrence of a similar morbid process, which has been suspended during pregnancy: in the latter, to be partially referrible to the exhaustive effect of excessive or prolonged suckling on a feeble constitution—perhaps sometimes aiding an analogous relapse. And I am not aware that there are any numerical data which would justify (or rather require) the supposition of any more direct influence being exercised by either of these conditions in the production of gastric ulcer.

The specific diseases with which the gastric ulcer has been observed to concur, seem to have far less influence than the above physiological conditions. Tubercle, pleurisy and pneumonia, syphilis, ague, and fever, are the maladies which are most frequently revealed by the necropsy or the previous history. But the per-centage of tubercle in cases of gastric ulcer does not seem to exceed its average in all persons indifferently. And the

same statement will probably apply to all the other diseases above mentioned. It would seem, too, from my own inquiries, that these cases of gastric ulcer do not exhibit that family history of phthisis which we should expect, on the supposition of there being any causal connexion between the two diseases, and which we certainly find, under similar circumstances,* in the pulmonary form of tubercular disease.

Many of the peculiarities of the gastric ulcer appear to be explicable by the circumstances of stomach-digestion. Ulceration having once taken place, the ulcer is prevented from healing, and even increased, by those great and sudden alterations in size which the organ undergoes at different periods of digestion; by the chemical and mechanical irritation of the food; and by the solvent action of the gastric juice upon the languid tissues which form the periphery and base of the ulcer, or upon the scarcely-organized lymph which has been poured out in this situation.†

But in respect to the ætiology of the lesion, such explanations are useless. For it is of little avail to explain what happens after ulceration has once taken place, when the very point at which we want to arrive is—Why ulceration takes place at all; and especially, why it singles out this particular organ.

It may be said, however, that the continuance and

* Careful inquiry among the same class of Out-patients has shown me a remarkably hereditary character of the pulmonary tubercle to which they are so liable. (Compare the Author On Life Assurance, 1856, p. 12; also the Report of the Brompton Hospital for 1849.)

† Compare Dr. Budd's Lectures On Diseases of the Stomach, *Medical Times*, 1853, vol. vi. p. 618.

extension of the gastric ulcer form its chief characteristics: that the cicatrices of ulcers are frequently found in the intestine; and that the peculiarities of the ulcer of the stomach, as contrasted with the ulcer of any other part of the alimentary canal, consist in its long duration, its gradual enlargement, and its reluctance to cicatrize.

I should be sorry to throw undue discredit upon an explanation possessing so much practical truth and value as this certainly does. But it is the duty of those engaged in clinical researches to subject to strict scrutiny every view which is not already established on an irrefragable basis. Now, not only are there good grounds for presuming that we have no series of facts (such as the careful records of systematic necropsies would afford) sufficient to establish the propositions these statements imply, but all the information as yet at our disposal is such as to inculcate the greatest caution in receiving them. The ulcer of the stomach appears to cicatrize, probably in many cases without medical treatment directed to this end, in about fifty per cent. of its total numbers. It does not seem to perforate oftener than about once in eight cases. No doubt, the class of intestinal ulcers, as a whole, offers a larger per-centage of cicatrices, and a smaller of perforations, than the above numbers. But the truth of the above propositions assumes an amount of these numerical differences, such as we have at present no right to assert.

Further, if we examine into the details of those two classes of lesions which would be grouped under the terms "gastric" and "intestinal" ulcers, we shall find reason to attribute still less value to the above nume-

rical differences. For we have seen that the majority of ulcers of the stomach cannot, in the present state of our knowledge, be traced to any specific constitutional disease. While we know that almost all those intestinal ulcers we are now contrasting with them, merely form the local expressions of a general malady, by the nature, date, and duration of which they are themselves dictated and regulated. The typhoid fever reaches its term, and the exulcerated agminate follicles generally heal over; the attack of dysentery subsides, and its ravages in the large intestine are more or less repaired; but the phthisical cachexia continues and increases, and therefore the ulcers it has produced also remain and extend. It is not altogether impossible that ulcer of the stomach may be sometimes due to a chronic vice in the organism, which dictates its occurrence, duration, and cessation, like the typhoid, dysenteric, or tubercular states of the constitution in these cases respectively. But in default of all evidence to show that this represents a frequent form of the lesion, there is at any rate sufficient difference between the two classes of gastric and intestinal ulcer to forbid the unqualified reception of any pathological theory which regards them as alike in all save their mechanical and chemical circumstances. Besides, it seems very easy to overrate the influence of the circumstances above alluded to as tending to retard the process of cicatrization in the ulcer of the stomach. Wounds of this viscus heal with great facility, not only in the domestic mammalia usually selected for the purposes of physiological experiment, but in the healthy human subject. Indeed, in both man and animals, all

fistulæ of the stomach seem to progress naturally towards closure and cicatrization, although placed under conditions which appear to be less favourable to such a result than those of ordinary wounds or ulcers. While, as already mentioned, the ulcer itself heals with a frequency that can scarcely be explained by any theory which makes the circumstances of the digestive process so principal or special a cause. Lastly, every organ is adapted to its circumstances, and is generally organized to resist any unusual exposure that these may imply.

The morbid appearances which attend the commencement of the ulcerative process would probably throw some light on its causes. But unfortunately, these still remain almost unknown to us. Direct observation is almost impossible. Analogy has little value. And the scanty and imperfect conjectures that both of these sources afford, are scarcely even consistent with each other, much less susceptible of a common application to any single view of the ætiology of gastric ulcer.

In respect to the former, however, I may notice that several necropsies have shown ulcers of the stomach associated with more or less circumscribed patches of marked congestion, ecchymosis, or extravasation, which have been regarded as the beginnings of similar lesions in the neighbourhood of these ulcers. A similar (though quite distinct) class of appearances, constituting the "hæmorrhagic erosion" of Rokitansky, is believed by him to represent the mode by which the ulcer commences. But, to say nothing of the comparative rarity of these appearances in conjunction with the gastric ulcer, I do not think any one conversant with the irre-

gularities that often affect the distribution of blood after death in the digestive canal, would like to assert the first class of phenomena to be distinctive of commencing ulceration. And the last is not only partially open to the same objection, but appears to be quite a distinct disease from gastric ulcer, continuing an indefinite time without showing the slightest disposition to merge into it, and exhibiting a somewhat different train of symptoms.

In still more exceptional cases, we find another class of phenomena, concerning which I may repeat the doubts already expressed respecting the above hæmorrhages. A distinctly oval or circular depression has been found in the neighbourhood of an ulcer of the stomach; or the mucous membrane has exhibited an appreciable softening of the same size and shape—once or twice in conjunction with a reddish or darkish tinge of discoloration. Here, again, I ask, what proof have we that these depressions or softenings would have become ulcers, or even that they existed during life? Analogy, however, though it does not answer this question with a definite affirmative, at least affords us a strong presumption. That ulceration of the duodenum, which often follows severe burns, and which I have carefully avoided hitherto introducing into these discussions, because its situation, cause, and appearances, alike seem to me essentially distinct from ulcer of the stomach, has been all but seen to begin in this way.*

Such facts and analogies perhaps entitle us to hazard

* See an observation by Mr. Prescott Hewett in the Transactions of the Pathological Society, vol. i. p. 258.

a conjecture, with which we will end these vague and unsatisfactory guesses at truth. Not only is there every reason to deny the existence of any specific disease that can lay claim to the title of "*the ulcer of the stomach*," but all the varieties that affect the form, progress, situation, numbers, and terminations of this lesion, seem to find their parallel in the causation of the malady, both as regards the organism generally, and those first departures from the normal state which inaugurate the local mischief. In short, we have no more right to talk of *the* ulcer of the stomach than of *the* ulcer of the leg; no more reason to assume an invariable commencement of the gastric ulcer by hæmorrhage, or by softening, or by a sub-mucous deposit of lymph, than we have to restrict the beginning of what is evidently a similar process of destructive absorption in the limb, to an ecchymosis, a pimple, a superficial abscess, a burn, or a varicose vein. And just as our every-day experience assures us that external or cutaneous ulcers may begin by either of these lesions—may have, that is, either of them as its immediate and conditionating cause, and yet retain a general identity of that ulcerative process to which they are chiefly due—so not only do these very facts afford us fair grounds for supposing a similar diversity in the case of the ulceration that affects the stomach, but all that we have been able to glean respecting it confirms this analogy. The variety of diseases with which it appears to be connected, the equally numerous and diverse physiological conditions that favour its occurrence, can only thus be explained. Ague, fever, or the vascular disturbances of female puberty, might perhaps

be supposed to facilitate or cause ecchymosis. But to convert this effusion into an ulcer would require a process of destructive absorption that no mere extravasation would explain. While the influence of old age, or privation, or fatigue, which throws little or no light on the precise local change that ushers in the ulceration, exactly concurs with the efficacy of these circumstances in the production or promotion of ulceration elsewhere. In like manner, to grant that the circumstances of digestion often retard the healing of a gastric ulcer—and the marked effect of treatment specially directed to these circumstances proves no less—is to concede nothing more than what, *mutatis mutandis*, we may verify for an ulcer of the leg, in which the same result is equally under the influence of such physical circumstances as posture, pressure, and the like. Nay more, the analogy not only applies to these details, but appears to illustrate some of the remarkable facts elicited in the preceding section of this Essay. Here I found reason to conclude that the epoch which immediately follows the access of puberty in the female imparts to the gastric ulcer certain peculiar characters which may be best defined as a more or less complete absence of that inflammatory reaction that generally engages the base and margins of the lesion. And the large experience of Mr. Critchett has observed a similar character in the ordinary cutaneous ulcer at the same period of life; associated, too, with an analogous cachexia, and with an equal disturbance of the menstrual flux.* Indeed, the resemblance

* Critchett On Ulcers of the Lower Extremity, p. 107 *et seq.* London, 1849.

of the two lesions is completed by the facts, that in both the ulcer precedes the amenorrhœa, and often exhibits an aggravation of its symptoms at the menstrual periods.

Diagnosis generally.—From what has been already stated with respect to the great varieties to which each of the symptoms of gastric ulcer is liable, we might deduce, on merely arithmetical grounds, the infinite modifications that will necessarily result from their combination. Of these it is scarcely an exaggeration to say, that they make each case of ulcer of the stomach unlike every other. And they especially suggest two questions respecting the diagnosis of the malady. (1.) What is the minimum of evidence that will justify us in affirming the existence of an ulcer of the stomach during life? (2.) What are the diseases with which it is most likely to be confounded?

1. *What is the minimum of evidence that will justify our affirming the existence of an ulcer of the stomach during life?*—A specific answer to this question it is impossible to give. But I am inclined to think that nothing less than all the chief symptoms enumerated entitle us to pronounce a decided opinion. In other words, unless the pain possess the characters attributed to it, unless this pain be accompanied by vomiting, and unless there be evidence of hæmorrhage having occurred in the course of the malady, there is no sufficient basis for a definite diagnosis of the existence of a gastric ulcer. The date, duration, and frequency of the pain chiefly indicate some morbid condition of the mucous membrane of the stomach. The vomiting adds, that

this disease implies great irritation of the nervous centres connected with the organ. And it is reserved for the hæmorrhage to show that the disease is such as to involve an absolute breach of continuity in the structure of the stomach.

But I have not the slightest doubt that an absolute enforcement of this rule of diagnosis would lead us to overlook a vast number of cases; and might thus be the occasion of grievous errors in practice. In point of fact, beyond the limits of secure diagnosis, there are a large number of cases in which we may justifiably entertain strong suspicions that the symptoms are due to this lesion.

In saying this, I am desirous to be understood as speaking chiefly of my own clinical researches. But though I dare not lay much stress on the negative evidence derivable from the symptoms recorded in many hundreds of cases of perforation or hæmorrhage scattered through various Journals,—for in a large number of these there may not have been such repeated and minute investigations of the symptoms during the life of the patient as to justify us in denying the presence of all indications of disease save those mentioned,—still it is probable that some of them afford strictly accurate records of all the dyspeptic ailments that have preceded the fatal attack. And hence it is very possible that the numerous cases in which more or fewer of the above symptoms are not recorded, include instances in which they were really absent.

But much more trustworthy evidence of such irregularities in that train of symptoms which characterizes

gastric ulcer, is constantly being brought under my notice in Hospital practice. As might be expected, a moderate hæmorrhage readily escapes the notice of both the patient and his medical attendant. And even where the former habitually inspects the stools, or the physician calls in the aid of the microscope to an examination of any suspicious egesta, the irregularity of its occurrence may baffle all attempts to verify it for months together. In like manner, the vomiting seems to be sometimes (though much less frequently) absent from the history of the malady, during a great part of its course, or merges into a trifling regurgitation after meals, such as we hardly dare consider its representative.

Indeed, a careful consideration of the details already brought forward affords a tolerably complete explanation of many of the most anomalous cases of ulcer of the stomach at present on record. It is true that we are not entitled to assign any exact limit to the degree in which obscurity or absence of the preceding symptoms may render latent the lesion they usually announce. But their slow succession in a majority of cases might alone prepare us for their absence in a minority. The delay of this or that particular symptom may not only deprive us of the (multiplied and not merely added) probability it contributes to our diagnosis, but may merge two or more stages of the malady into one, or may even reverse their order of sequence. The lesion itself may be fatal at any period of its progress ; and if thus fatal, it is obvious that the casual delay of any symptom—perhaps for a period not greatly exceeding that of the interval which generally precedes its being added to the previous

symptoms—would be scarcely tantamount to its specific absence, even though it might, as a matter of mere narrative, never have occurred.*

It is in obscure and uncertain cases of this kind that it is most important for us to be thoroughly acquainted with the whole characters of the disease, as shown in its more chronic and typical forms. The pathology of the lesion in general must supply any casual deficiencies in the physiognomy (so to speak) of the particular instance. Above all, we must remember that it is our first duty to be useful; and that suspicions which fall far short of a definite diagnosis, may yet be sufficiently important to dictate the whole plan of treatment. Suppose, for example, that we are consulted by a patient for protracted or severe dyspepsia, which has seriously affected the general health, and is associated with pain and tenderness in the epigastrium, and pain in the interscapular region, increased or provoked immediately after the ingestion of food. If, on further inquiry, it turns out that this pain is especially called forth by proteinous substances, or by hot liquids, and that it is affected as above described, by movement, rest, and posture, there can be little objection to our keeping steadily before us the possibility of a gastric ulcer. Such a suspicion, it is true, guides us to a specific course of treatment: but that treatment involves neither pain nor danger of any kind, and scarcely more severity of diet than many a dyspeptic sufferer would gladly submit to in order to secure the removal of his distressing symptoms. If unfounded, it does no harm; but if well founded, it effects incalcu-

* Compare Appendix, Reports VII. (Case 2) and IX.

lable good. Indeed, it is hardly too much to say that, by treating such cases as ulcer of the stomach, we may often cure what we cannot diagnose; and may thus far witness a triumph of the Art over the Science of Medicine—if one may venture on such a paradox—which the most laborious pathologist would scarcely be sorry to see more frequent than modern research generally allows it to be.

These remarks will especially apply to such symptoms when they occur in connexion with amenorrhœa in young females who have lately attained the epoch of puberty. Here the absence of hæmorrhage, and the little attention such persons habitually give to mere dyspeptic symptoms, often conspire to obscure the diagnosis: even while a careful inquiry into the history of the malady, and a sedulous examination of the epigastric region, together afford us only too much reason to suppose that the patient is in imminent danger of death by perforation of the stomach.

2. The second question—*With what diseases is gastric ulcer most likely to be confounded?*—could only be fully answered by details of cases such as I cannot here adduce. Dyspepsia, chronic inflammation, "hypertrophy" and cancer of the stomach, disease of the duodenum, gall-stones, abdominal aneurisms, enteric tuberculosis, and a variety of other diseases too numerous to mention, may all present degrees of resemblance to gastric ulcer, which the variable symptoms of this lesion render much more suggestive of error than is the case in the maladies of many other organs.

The above observations render it unnecessary to dilate

upon the means by which we should generally distinguish between dyspepsia and gastric ulcer. In a great majority of cases, there is little difficulty in deciding which of the two maladies is present. But in some cases the distinction is by no means easy. And there are good reasons for conjecturing that of all the Protean forms which dyspepsia may assume, that called the morbid sensibility of the stomach is the one which is most likely to include cases of ulcer; or, in other words, if really independent of this lesion, is most likely to be mistaken for it.

Of all the other diseases just enumerated, there is none in which the resemblance to ulcer is so close, and a definite opinion respecting the latter disease so important, as in the case of cancer of the stomach. Hence we may enumerate (though we cannot fully discuss) the chief considerations on which their differential diagnosis would generally depend. The cancerous disease especially affects the epochs of middle and advancing life. Its symptoms rarely date from more than twelve or eighteen months prior to the death of the patient. It is associated with the cancerous cachexia: often with cancerous disease of other organs. In many cases it forms a hard but moveable tumour in the epigastrium. Its pain generally has a more lancinating character, and a time of appearance that belongs rather to the later stage of gastric digestion than to the few minutes that succeed deglutition. Its hæmorrhage is more scanty; and, on the whole, later in the history of the malady. Its vomiting is also generally late; rarely of many months' continuance; and expels what the microscope will

often show to be cancerous cells. But unless unusually distinct, scarcely one of these characters possesses much independent value. The gastric ulcer is frequent in middle and advancing life. It may destroy life in a few days or weeks. It is often associated with cachexia; which, again, is sometimes quite undistinguishable from that of cancer. It is not unfrequently accompanied by pulmonary disease, such as can tolerably simulate secondary cancer of the lungs. The lymph by which an ulcer adheres to the liver or to other viscera may give rise to a tumour which can be felt through the wall of the belly. Its pain may affect a lancinating character, and be deferred until some time after meals. Its hæmorrhage may have the moderate amount, and the "coffee grounds" appearance, ordinarily seen in that of cancer. And unlikely as it may seem that many of these separate and infrequent contingencies should combine to obscure the diagnosis of any single case, such instances do really occur. Once or twice I have myself met with cases of this kind, in which there was nothing to justify any definite diagnosis between the two diseases, and in which the moderate ulceration detected months before death has offered no symptoms during the whole time which could warrant its being definitely diagnosed as malignant or the reverse. (See Appendix, Report VI.)

PART III.

TREATMENT.

THE means by which we endeavour to effect the cure of this disease may be all grouped together as subservient to one or other of the following purposes. Of these purposes it is not too much to say that, just as they constitute the special indications of our treatment, so the efficacy of any particular remedies we may select will depend chiefly on the accuracy with which the latter severally fulfil them. To remove all local obstacles to the cicatrization of the ulcer; to support the constitution in effecting this process; to remedy the results the lesion may have already brought about; and to limit or arrest some of the more prominent symptoms by which these results are usually betrayed: — this is what we endeavour to do, and can often really accomplish, towards the cure of an ulcer of the stomach.

In briefly glancing at these remedies, we will accord to medicines, as distinguished from diet, a rather unmerited precedence, and consider them first. Such an order is, perhaps, the more convenient, that the mitigation of symptoms which they can certainly effect is generally the first step towards the slow and progressive cure of the malady.

The question of *bleeding* is one that might almost be left unnoticed, save by a simple protest against either the general or local forms of depletion. A malady

which not merely originates, but consists in, a process of destructive absorption ; which, in most instances, implies hæmorrhage, in many, a dangerous or fatal loss of blood ; which is generally attended by symptoms of extenuation and cachexia ; and which specially affects the poor, the intemperate, the ill-fed, the wretched, and the aged,— is not one in which any presumable local benefit can counterpoise the obvious mischief producible by even a moderate loss of blood. That a few leeches to the epigastrium will often afford relief to the gnawing pain which torments the sufferer from gastric ulcer, I see no reason to doubt. That vascularity is (to speak somewhat vaguely) a condition of pain, and that that redistribution of the blood which even a small general bleeding can bring about may therefore for the time diminish suffering, seems also very probable. But that depletion will give more than temporary relief, and that its constitutional effects can have any but a most mischievous local reaction, may be absolutely denied. Assuming such a denial to be true, the adoption of local depletion in this malady may be compared with the ignoble and shortsighted policy of the drunkard who stills his stomach by a dram, which afterwards helps to cause the very craving it has for the moment appeased.

But such a view of the effects of bleeding by no means applies to other forms of that revulsion which some French author has characteristically termed the "moiety of medicine."* Blisters, turpentine stupes, mustard poultices, dry cupping, and hot fomentations, are exceedingly useful adjuncts of this kind to internal reme-

* "La révulsion, c'est la moitié de la médecine."

dies. The symptom which seems to me chiefly to demand the application of such means of revulsion is that of pain, especially of that continuous gnawing pain which, in severe cases, sometimes occupies even the intervals of taking food. The epigastrium is generally the most convenient site for applying them. But when the chief pain is referred to the dorsal region of the spine, it will often be found more effective to chuse this place for their application. As regards the particular agent to select, the above enumeration tolerably represents the order of their severity. Blisters are generally most useful in young and well-nourished subjects, and in comparatively recent cases, when they are not by any means contra-indicated by pallor of countenance; the less so, indeed, that this symptom appears to be sometimes partially due to gastro-intestinal congestion. Tartar-emetic is rarely or never advisable: it is too painful and troublesome, and lowers the patient too much, even if it does not sometimes give rise to other and more specifically antimonial effects on the system. Turpentine and mustard, which spare even that limited expenditure of the *liquor sanguinis* involved by the serous effusion of a blister, are preferable in old and chronic cases in which the strength is reduced, and have the further advantage of being repeatable at shorter intervals of time. Lastly, in cases where the powers of the system are exhausted by constant vomiting; and where (what is rarely the case) the pain* still forms a very prominent symptom, dry cupping is the best means

* The pain generally becomes greatly diminished on the access of exhaustion: a fact which requires no explanation.

of mitigating it. Indeed, it is efficacious even in those depressed and languid states of the circulation in which turpentine or mustard lose much of their effect.

One unpleasant consequence of such applications I may mention, though it would rarely afford a definite and practical contra-indication to their use. In two instances that have fallen under my notice, in which the necropsy revealed old adhesions between the stomach and the wall of the belly, blisters gave rise to a marked increase of the pain. A somewhat similar uncertainty attends the application of hot fomentations to the epigastrium, since in many instances these seem to increase the pain by raising the temperature of the subjacent parts, including the seat of the lesion.

A still more valuable remedy, of precisely the opposite kind, may be often found in the local application of cold by means of ice. In many cases of obstinate vomiting or severe pain, great relief may be obtained by frequently swallowing small lumps of pure ice. And in cases of hæmorrhage its use is almost indispensable. Here, too, it is sometimes advisable to apply it externally, by means of a bladder partially filled with powdered ice, and kept in contact with the epigastrium for a few minutes at a time.*

* The use of external cold being strictly empirical, both in these cases generally and in any given instance, it is hardly worth while to inquire into any imaginary danger of congestion of the ulcerated organ by revulsion of blood from the cooled abdominal surface. But how efficiently the stomach itself may be cooled by ice applied to the epigastrium, is illustrated by a converse fact,—namely, that an enema of cold water at 45° Fahr. soon lowers the temperature of the anterior wall of the belly by three or four degrees. (Compare E. H. Weber in Müller's Archiv, 1849, Heft 4, p. 273 *et seq.*)

The drugs recommended for the relief of this malady are so numerous and diverse, that it is scarcely possible to avoid some classification in treating of them. And considering how moderate is our acquaintance with the action of many of them on the healthy or diseased organ, the only justifiable approach to a classification is one that considers each with relation to those special symptoms which experience seems to show that it can relieve. Here, as in many other diseases, we must both chuse and classify our remedies on an empirical basis; and use their known physiological and pathological effects chiefly as means of suggesting their trial, explaining their action, testing their efficacy for the disease in general, or forbidding their application to the particular case. To accord to our limited knowledge of this kind a higher function than such a suggestive and deliberative one, would often lead us to overlook, or even refuse, excellent remedies. To rate it at a lower value would soon lead us to confound recoveries and cures, and thus repeat the most dangerous (because the most seductive) fallacy of homœopathy.

The relief of severe and continuous *pain* is best effected by sedatives, and especially by opiates. The form in which these may be best administered is determined chiefly by the state of other symptoms. Where severe pain is accompanied by very frequent vomiting, a small pill of solid opium, or of the watery extract of this drug, is often better retained than any other form of opiate. Where diarrhœa is present, the compound kino powder is an excellent remedy; with which we

may combine what is calculated to allay both the flux and the pain—the trisnitrate of bismuth.

There are probably few drugs which have enjoyed a more durable or extensive repute than this preparation of bismuth in many gastric affections attended with much pain. In the "morbid sensibility" of the older writers (a form of dyspepsia which, there can be no doubt, will always include a certain proportion of gastric ulcers, and which probably included a still larger number when this disease was comparatively unknown to the physician), the bismuth is constantly praised as an efficacious sedative. And my own experience quite corresponds to that of other observers in this respect. In doses of from ten to twenty grains, at intervals of six or eight hours, either alone or in combination with five to ten grains of the compound kino powder, it has often had a remarkable effect in relieving the pain, vomiting, and diarrhœa so frequently present in this malady.

The mention of this preparation of kino seems to demand some allusion to the other vegetable astringents. Diarrhœa is so seldom a dangerous symptom of gastric ulcer, that they will rarely be indicated in this way. And their value as tonics is greatly diminished by their tendency to cause constipation, as well as by the gastric irritation that large doses in the liquid form often excite in the ulcerated stomach. They have, however, been commended in what is called *pyrosis*, with the plausible notion of checking that excessive secretion from the stomach, to which this watery vomiting is supposed to be due.

The frequency with which pyrosis occurs in ulcer of the stomach, renders it advisable to correct the errors implied in the above statement—errors which imply assertions that ought to form the explicit results of pathological inquiry. Without going quite so far as to affirm that the secretion of the stomach is, under all circumstances, acid, we may safely assert that there are no sufficient reasons for believing that it is ever otherwise. And except in those rare instances in which the fluid vomit of pyrosis consists largely of ingesta, a careful chemical and microscopical examination will generally show that it is composed almost exclusively of saliva, which, often poured forth in increased quantity as the result of gastric irritation, is conveyed into the stomach, either by unconsciously trickling down the œsophagus, or by being propelled through this tube in the usual process of deglutition.

It is not easy to give any satisfactory explanation of the operation of bismuth in these cases. To say that it is a sedative, is merely to express, by a vague generalization, its efficacy in relieving pain; and is neither more nor less correct than it would be to call it an astringent, because, in other diseases, it often restrains and checks diarrhœa. How far both these effects are akin to those of the salts of lead is difficult to determine, though its affinity to the latter in some other respects may partially suggest such a comparison.

Thus there can be little doubt that it is often decomposed by the sulphuretted hydrogen of the alimentary canal, and converted into a black sulphuret of the

metal.* And, in one or two instances, I have assured myself that its administration has given rise to the formation of a bluish-red line along the dental edge of the gums, analogous to (but wider and redder than) the line of sulphuret of lead in the same situation, which constitutes the well-known test of the presence of lead in the system.†

It is not often that *flatulence* constitutes a very distressing or prominent symptom of gastric ulcer. Depending, as it does, almost solely‡ on a decomposition of the food introduced into the alimentary canal, unchecked by the agency of the gastric and intestinal secretions (by which such decomposition is normally limited and restrained)—its presence in gastric ulcer implies a derangement of these secretions, which is not by any means necessarily (or even often) present. While a still more efficient reason for its absence is found in the fact, that any food in excess of what the quantity and quality of the secretions can digest, is pretty sure to give rise to an act of vomiting, by which it is soon expelled from the stomach.

We do, however, sometimes find cases of gastric ulcer, in which the long interval that precedes the worst attacks of pain after food, and the extreme distension complained

* A decomposition which it probably shares with the salts of lead, iron, mercury, arsenic, and many other metals.

† The bismuth used in these cases was carefully examined by me, without a trace of lead being detected in it.

‡ Here, as elsewhere, the author has thought it better to refrain from introducing into a practical essay any debated points in the physiology of digestion. The reader who is interested in such matters will find the grounds of the author's opinions in his Essays, "Stomach and Intestine," in the Cyclopædia of Anatomy.

of by the patient, refer the symptoms (at least in part) to such a passive origin. It is chiefly in these cases that the remedies usually administered for the common or flatulent form of dyspepsia, appear to be most serviceable. Amongst these we may enumerate the alkaline carbonates (preferably the bicarbonate of potash), the action of which seems to depend in great degree on their neutralizing the lactic and other acids developed by gastric decomposition; and the hyposulphite of soda, which appears to have a specific influence in checking that development of confervoid growths that constitutes (or, at any rate, invariably accompanies) the more complete forms of fermentation in the contents of the stomach. With the former I have found it advantageous to combine small doses of the iodide of potassium. And of all the bitter infusions, I have found none so beneficial, in this flatulent nausea, as the calumba. The subjoined formula is one that I have frequently prescribed, with the best effect, in the flatulent dyspepsia of gastric ulcer:—

℞. Potassii iodidi, gr. j.
Potassæ bicarbonatis, grs. xv.
Tincturæ aurantii, ʒss.
Infusi calumbæ, ʒviiss.
M. Horâ secundâ post cibum sumitur.

Vomiting, by far the most dangerous and important of all the symptoms of the lesion, is also that which is, on the whole, the least amenable to the influence of drugs.

That variety of vomiting which accompanies the painful nausea and flatulence just alluded to, may often be relieved by the remedies mentioned, especially by the

calumba mixture. Where it resists them, the hydrocyanic acid, the effervescing mixture of citrate of potash, or both these in combination, will sometimes allay it. But I have not found much benefit from creosote, and think that the salts of ammonia (in which I include the effervescing mixture of the citrate or tartrate) generally do more harm than good. Indeed, there are many cases of obstinate irritability of the stomach in which we are ultimately obliged to extend the latter statement to all the drugs generally recommended for the purpose of checking vomiting. Practically, I have long come to the conclusion, that where one or two of the above remedies appear to be inefficacious, it is better not to risk irritating or exhausting the stomach by what are really new experiments. In these terrible cases, in which the ulcerated organ is often so irritable that vomiting is produced by the smallest quantity of the blandest food, what, indeed, can we expect from the contact of unnatural and nauseous ingesta like many such drugs? Did experience show that they really checked vomiting, it would be absurd to demand a full explanation of the way in which they produced this effect. But as I can confidently assert that they often fail to do any good, however carefully administered, and that the treatment which abdicates their use is far more successful, it is obviously important to consider how far that treatment is more rational than the plan it claims to surpass.

That variety of vomiting which occurs in gastric ulcer could be readily shown, from any analysis of a large number of cases, to possess all the ordinary relations of

this act to the system at large—to be composed, so to speak, of all the ordinary elements of the process; to be by turns either due to, or chiefly connected with, central and peripheric (or cerebral and gastric) irritation; to be favoured and opposed by the ordinary *juvantia* and *lædentia* of activity or distension, and inactivity or emptiness, of the stomach respectively.

Now it is according to these circumstances that we may best classify the vomiting present in different cases of gastric ulcer. And the same circumstances will also in great extent dictate the means for its treatment.

For instance, the kind of vomiting most frequently seen in these cases, and that which is usually the first to appear in the history of the malady, occurs as the climax of that paroxysm of pain which begins shortly after a meal, and is referrible in great part to the distension of the stomach; increased, it may be, by flatulence, and perhaps aided by the stimulating effect of food and gastric juice on the raw surface of the ulcer. As such, it ends so soon as the organ has voided its contents. And it is best treated by limiting the amount of ingesta, relieving flatulence, and neutralizing undue acidity.

In the gastric ulcer of drunkards I have several times noticed a morning paroxysm of vomiting, sometimes (but not always) accompanied by pain. This vomiting, which occurs on an empty stomach, seems to be chiefly cerebral: in other words, the result of that general depression by which the effect of the alcoholic stimulus subsides. In exact consonance with this explanation, it is not unusual to find it occurring quite independently

of gastric ulcer; while it is generally and habitually solaced or appeased by a dram. And of the drugs that one may more justifiably prescribe with the same object, few have greater efficacy than opium, which may be preferably given in the solid form, as a small pill.

The vomiting sometimes assumes a greater frequency, so as to be excited by any small quantity of food, or even to be repeated when the stomach is void of all alimentary contents. In many of these cases it is not easy to say whether the act is chiefly cerebral or gastric:—whether it is mainly kept up by habit, or by the debility of the patient acting on a nervous apparatus whose normal functions have been shaken or reversed; or whether it is still, in some sense, the result of a stimulation or irritation applied to the ulcerated surface itself. In most instances, however, the associated pain points pretty conclusively to the latter view. Here it is extremely important rightly to appreciate the principles of our treatment. And, in accordance with the above suggestions, instead of ranging over the drugs to which experience or tradition attribute the power of allaying vomiting—which we may often do with little more success than if we were attempting to arrest sea-sickness by the same means—it should be our object to afford the stomach as complete and prolonged a repose as the necessities of the organism will allow. As regards drugs, the interruption to such repose, which their administration implies, will often do far more harm than their specific medicinal virtues can possibly do good. And though ice and iced water are less objectionable, yet there are some cases in which the same rule will apply

to these simple and unirritating sedatives, even in the smallest quantities.

As respects food, our task is often much more difficult. There are instances in which the patient is already so much exhausted by the inanition which protracted vomiting implies, that any severe plan of diet—such as involves simple food in very small quantities, or protracted abstinence—becomes quite inadmissible. Indeed, the patient is not unfrequently in a state which would itself demand the sedulous administration of food and stimulants, if these were not contra-indicated by the state of that organ into which they must first pass.

Hence in all cases in which there are any appearances of exhaustion, we cannot be too watchful over the effect of any system of diet we may have thought it advisable to adopt. It is, indeed, extremely difficult to gauge to a nicety how small a quantity of food will prevent inanition, and at how long intervals we may administer it. But it is well to bear in mind, not only that vomiting implies the total loss to the system of the food it rejects, as well as of fluids which are almost as valuable, but that the act itself rapidly exhausts the various nervous and muscular tissues by which it is chiefly effected. On this ground, the retention of a very small quantity of food is far preferable to the vomiting of a large one, even though the latter act leaves a greater surplus behind it in the stomach. And it is often important to begin by a decided plan of diet, even where the patient's weakness would necessarily forbid it being persisted in. For the habit of vomiting once so far broken through that the stomach can tolerate a minute quantity of any food, it

is frequently easy to advance to larger quantities, and better qualities, of nourishment, without provoking any return of the sickness. I shall allude further to these points in connexion with the subject of diet.

The occurrence of vomiting with dangerous frequency and intensity ought, however, always to suggest the adoption of another form of administering both food and medicines; a form which, while it concedes to the diseased organ the most perfect repose, has the great merit of completely obviating the above contra-indications. I allude to the use of enemata, by means of which we may often gain a day or two of complete rest for the stomach, and thus interrupt, by a like interval of absolute tranquillity, the hitherto habitual vomiting. Those who have had the gloomy duty of battling with all the resources of their art against the starvation gradually inflicted by obstructive cancer of the œsophagus, must have been occasionally struck by the length of time to which life can sometimes be protracted by a sedulous adoption of this plan of nourishing the system. In spite of perfect occlusion of the œsophagus, and in spite even of that additional extenuation which is produced by the cancerous cachexia, or by secondary cancerous deposits in the lungs or liver, the patient may be kept alive day after day—one might almost say week after week—by such alimentation. Cases of this kind at any rate show* how much enemata may be made to compensate

* It is very possible that the analogy between the obstructed œsophagus and the ulcerous stomach is so far imperfect as that the gastric mucous membrane of the former remains capable of secreting an abundance of healthy gastric juice, so long as any food whatever

a temporary disuse of the stomach; and how safely, in obstinate vomiting, we may by their aid allow the stomach the rest it needs. The substances best made use of are milk, raw eggs, strong unsalted beef-tea, and in extreme cases, even brandy and water or opium.* To these I may add a suggestion, for which I have to thank Dr. F. Hawkins, and the usefulness of which I can substantiate—namely, cod-liver oil.

The adjustment of the size and frequency of these enemata, as well as their choice, must be chiefly determined by the features and by the experience of the particular case. It should, however, always be our object to keep such enemata of the smallest possible size. And, as a rule, it is rarely advisable to repeat them at intervals of less than four hours. The ingestion of liquids may be best accomplished by external applications, such as wet bandages around the legs, prolonged bathing of the hands and arms,† &c. &c. With such appliances, the patient may easily be restricted to merely

enters the organ; while that of the latter may often be robbed of its secretory powers by the circumstances of its disease. Indeed, the symptoms of large gastric ulcers point to at least a partial effect of this kind. But I do not think that this conjecture, even if proved to be correct, would modify the practical deduction stated above.

* Here, as elsewhere, I have sacrificed accuracy of arrangement to usefulness; and have overstepped the not very definite boundaries of food, stimulants, and drugs. In speaking of the above remedies, however, I am for the time regarding both of them as stimulants; which, with diverse rapidity and certainty, may not only arouse the flagging powers of the system, but may economize (and therefore substitute) a certain amount of food.

† To which milk might doubtless be sometimes added with great advantage; at any rate, with no detriment.

moistening his mouth and fauces from time to time with a few drops of liquid.

Hæmorrhage is another symptom which requires to be treated with especial reference to the pathology of the lesion that produces it. The scanty flux that occurs in the earlier stages of gastric ulcer, such as often amounts to little more than a streak or two of blood in the vomit, or a dark coloration of the stools, scarcely demands any special treatment, beyond that which it is necessary to adopt in all cases of gastric ulcer. But where it occurs in a more advanced stage of the ulcer, or amounts to a considerable quantity of blood, we are justified in directing a more special (if not exclusive) attention to it. And as the stomach is amenable to the local action of any astringents we may introduce into it, as well as to that general action which their absorption into the system may induce, our means of arresting hæmorrhage are, other things* being equal, much more efficacious than in the case of bleeding into the lungs.

The course I generally adopt is dictated, partly by the above conditions, partly by the existing state of the patient. In respect to the latter, I may again incur the suspicion of leaning too much towards an expectant mode of treatment, if I state, that where there is reason to suppose that the bleeding comes from a large vessel, and is for the time arrested, it is better to limit our treat-

* Amongst such qualifying circumstances as those hinted at by this phrase, we may specially notice the intimate relation of pulmonary hæmorrhage to the mechanism of respiration; and the fact (established in Part I. of this Essay) that a large majority of the gastric ulcers fatal by hæmorrhage involve the erosion of a considerable arterial trunk.

ment to the negative plan of conceding the stomach the most perfect rest. A little ice from time to time, if the patient be very thirsty, or complain of much pain; a rigid observance of the supine posture; and the minimum of food (preferably of boiled milk) that will support life—such are the simplest and best precautions we can take to avoid the disturbance of that clot which alone intervenes between the life and death of the patient during the first few days that immediately follow a copious hæmorrhage from a gastric ulcer. A more frequent and moderate oozing justifies (and demands) a more styptic plan of treatment, especially where there is no great tendency to vomiting present. Turpentine, and the sesquichloride of iron, which have, I believe, been recommended with this view, are both open to the grave objection of often exciting nausea and vomiting, even in moderate doses and dilution. The formula I most prefer consists of about ten grains of gallic acid, dissolved in an ounce of distilled water by the aid of about ten minims of the dilute sulphuric acid. But in some cases of this kind, in which the pain has led me to prescribe bismuth and compound kino powder, the bleeding has seemed to be arrested by these astringent drugs.

Lastly, whatever the nature or amount of the hæmorrhage, the internal and external application of cold by means of ice, and the rigid observance of the dietary already referred to, is an indispensable part of the treatment.

The *cachexia* which generally accompanies the ulcer, as well as the hæmorrhage which, in varying amount, usually occurs in some part of its course, unite to consti-

tute one of the most important indications of treatment. This cachexia, which is the worst effect of all the other symptoms, and which constitutes (I am convinced) one of the most frequent causes of death in the general history of the malady, not only modifies and limits our application of the remedies hitherto specified, but practically measures the general success of our treatment.

The difficulty it sometimes opposes to that local treatment by which the ulcer is best allowed to heal, has already been alluded to. The system of stimulation it sometimes dictates, we shall again revert to in speaking of the dietetic treatment of the malady. At present we may chiefly view it as indicating the exhibition of *tonics* in all cases in which the state of the ulcer does not absolutely forbid the introduction of these remedies into the stomach.

Amongst the various remedies included in this class, the preparations of iron claim the foremost rank. The pathology of that chlorotic condition which is simulated by the gastric ulcer of the young female, as well as the results of the hæmorrhage often implied by the lesion, alike point to these preparations as the best means of furthering that growth of the red corpuscles of the blood, which may obviate that state, or repair these losses. And experience quite confirms such anticipations of the efficacy of iron.

The chief precautions necessary to observe in its use, seem to be the following:—Frequent vomiting, or excessive and continuous pain, contra-indicate it. And even when these symptoms have partially yielded to other remedies, it is better to begin with the very

mildest preparation of the metal, such as the ammonio-citrate, or ammonio-tartrate. They should always be given either with, or immediately after, food:—a general rule in using them, which the presence of an open ulcer makes doubly important. And the various soluble salts of the metal should always be given in combinations that allow them to retain this form. In other words, the use of the insoluble oxide, either directly or indirectly (as in the compound iron mixture a few hours after being made up), should generally be avoided.

The bitter vegetable tonics are, on the whole, less important; though, in combination with other remedies, they are often useful. Thus the infusion of calumba is not contra-indicated by any moderate amount of vomiting; and that of quassia may often be given with iron. Lastly, of all the ordinary combinations of mineral and vegetable tonics, none is so elegant and so generally useful, in the later stages of convalescence from gastric ulcer, as a mixture of sulphate of quina and iron, kept in solution by a few drops of sulphuric or hydrochloric acid. Indeed, whenever the stomach will bear quina (as it certainly will in the majority of cases after suitable preparation), a course of this energetic tonic, during at least a few weeks, is very advisable. And in those instances in which the ulcer itself seems to be a sequela of ague, such a rule becomes, for obvious reasons, still more valid.

The use of *aperients* in this malady requires the greatest caution, although, in many cases, they can hardly be dispensed with. It is impossible to doubt that (as a rule) they are given in this and other diseases much

too indiscriminately, and often with very prejudicial results. How far they are really necessary in any given case, is, however, a question which it will often be extremely difficult to decide. Still we may recollect, that where little food is taken, or much rejected from the stomach, the bowels often contain so small a quantity of excrement, that the need of defæcation becomes less frequent and urgent—to say nothing of that abdominal stagnation (if I may use such a phrase) which the mere act of vomiting itself tends to produce. On the other hand, there can be no doubt that constipation can seriously increase both the pain and vomiting of gastric ulcer. Indeed, I have, in one or two cases, noticed a definite and repeated coincidence between paroxysms of these symptoms, and an accumulation of fæces in the colon. But, not to speak of the clue the statements of the patient will generally afford us, a careful examination of the belly will almost always assure us whether the large intestine is really occupied by even a moderate amount of fæces.

When an aperient is definitely indicated by appearances of this kind, few remedies answer better than castor oil. A moderate dose (six drachms to one ounce) of this purgative can often be taken, in the ordinary way, without at all increasing the pain or vomiting. But where the latter symptom is of frequent occurrence, it is much better to resort to enemata, either of castor oil in emulsion, or of some combination of this drug and the decoction of aloes with the gruel that is usually the vehicle of such remedies. As a rule, large enemata are

not advisable, distension of the abdomen being very liable to increase the gastric pain and uneasiness.

The milder aperients sometimes required during convalescence may be given under limitations similar to those already alluded to for the stronger purgatives. When their use can be avoided, it is better to omit them altogether. Indeed, on the subsidence of the more serious symptoms, the state of the bowels often affords a fair test of the efficacy with which the tonics administered are acting upon the system. In any case, an occasional dose of the compound rhubarb pill, mixed if need be with an equal quantity of the compound extract of colocynth, is quite sufficient; or a dinner pill of one or two grains of the extract of aloes may be given daily, with the same object. Of course, the slightest symptom of relapsing pain or nausea would quite contra-indicate such remedies. But a proper study of the patient's diet will often enable us altogether to dispense with the use of aperient drugs.

These brief allusions to aperients naturally suggest some mention of the *mercurial* preparations which so often enter into their composition. It would be a dereliction of duty in me not to express the strong opinion I entertain against the employment of mercury in these cases, in any form, and under any pretence whatever. I believe that I have known one or two instances in which the ulcer has been definitely produced by the administration of mercury for other maladies; and am certain that I have witnessed relapses which could only be attributed to a similar cause. A single calomel purgative

has even appeared to undo all that months of sedulous treatment had been able to effect towards the relief of a gastric ulcer.

With a different feeling, I venture to allude to some other remedies, the efficacy of which has been greatly extolled in this malady. The preparations of *silver*—and especially the oxide and the nitrate—have been alleged to possess a therapeutical effect of the most marked kind. Indeed, it is suggested by some of the advocates of the nitrate of silver, that it heals an ulcer of the stomach just as it would an ulcer of the leg;—that it stimulates the languid atonic ulcer to a new action, and soon brings about a process of granulation.

It would be presumptuous in me to question the excellent effects of this caustic in the external ulcers to which surgeons often apply it; though I suspect benefits are often attributed to the stimulus of its application, which depend rather on that coagulum or crust of organic matter which it forms, and by which it so admirably shields and compresses the subjacent granulating surface. But as regards its internal administration, I have no hesitation in saying that, as ordinarily prescribed, it is absolutely inert; that the benefits which have been observed under its use, are due either to the diet or adjuvant remedies also adopted, or to the curative efforts of Nature; in short, that the above estimate of its value really reflects and repeats the fallacy—*post hoc, ergo propter hoc*—which lies at the basis of the fancied cures vaunted by the homœopathic quack.

In specifying the facts on which I ground this opinion,

I limit myself to the doses and combinations in which it is generally prescribed.

The constitutional effect produced by the salts of silver when absorbed into the system, I may altogether eliminate from the question. Without going so far as to deny that they have any constitutional action, I may at least assert that none such has ever yet been proved; that they "may be cautiously exhibited for a considerable period without producing any obvious changes in the corporeal functions;"* and that the only evidence adducible to prove their influence over the constitution, consists in the rare amelioration of epilepsy, or the still rarer appearance of an eruption, under their use. And, even apart from any such absurdly defective evidence, there can be no doubt as to the results of their ordinary use. For that blue colour of the skin which testifies to their absorption and reduction throughout the body is so specific an event, that, in its absence, we have no right to assume any definite series of constitutional effects whatever.† And as the most zealous partisans of these drugs carefully stop short of producing this unsightly and permanent change of colour, we are justified in supposing that whatever effect their doses have, is exclusively a local action on the mucous membrane to which they are applied.

Now, as regards any such local action, it is of little

* Pereira's Materia Medica, vol. i. p. 692.

† Thus, for instance, the constitutional effects of lead are rarely (if ever) produced without its characteristic blue line around the gums.

consequence whether the half-grain or grain usually given be in the form of a pill or a solution. Far from its giving rise to any symptoms of reaction or irritation, such as we see (and the patient feels) when we apply any form of this caustic to an external or internal surface, the pain and irritation, the feverishness and nausea or vomiting, which have been sometimes noticed to result from the remedy, are expressly regarded as indicating an over-dose. In fact, all evidence of direct stimulation as a result of the remedy would probably be interpreted as proof that it had been wrongly administered.

And just as the absence of all such evidence of the stimulant effect of the drug leaves us in very great doubt whether its known physiological action is really exerted on the gastric membrane, so its equally well known chemical reactions convert this doubt into denial.

We will say nothing of the chlorides of the food, the chlorides of the gastric juice, the chlorides of the bread-crumb in which it is often exhibited. Suppose all these sources of decomposition carefully avoided,—a supposition, however, that is really untenable,—the chlorides of the saliva and œsophageal mucus swallowed with the pill, and of that mixture of these secretions with the bile which occupies the fasting stomach, would suffice (and more than suffice) to convert any ordinary dose of nitrate or oxide of silver into this insoluble compound. And what chance a tiny pill has of seeking and finding in the stomach a resting-place that exactly corresponds to the ulcer, or what chance an ounce of liquid has of being uniformly diffused over the gastric surface of about 180

square inches, and then of super-saturating the mucus of the same place, it would be really absurd seriously to inquire.

I need scarcely say that, in urging these objections to the efficacy of the oxide or nitrate of silver, nothing is further from my intention than to deny that patients have ever recovered under its administration. But considering that we may allege the same fact of almost every curable malady, under the administration of every "panacea" with which quackery has ever afflicted mankind, few would be inclined to lay much stress on it. Indeed, its explanation is sufficiently obvious. Pathological research conclusively shows that ulcers of the stomach often undergo a spontaneous cure. The careful system of diet which it is customary to adopt in conjunction with the remedy, is itself sufficient to account for all the benefits observed. And I am persuaded that the physician who judges of the efficacy of his remedies without allowing for the natural tendency of disease to recovery, and for the effect of proper diet and regimen, while he shrinks from testing their traditional virtues by a careful scrutiny of their physiological effect in the healthy subject, and their therapeutic* influence apart from diet,—that such an one, I say, has little to prevent him from exchanging one system of credulity for another, and enlisting under the banner of any the most abject quackery of the day.

* Such a therapeutical influence—a matter of immediate and frequent experience—as is illustrated, under just these circumstances, by bismuth, alkaline carbonates, and many of the so-called "carminatives."

Diet.—The comparative importance of this element of treatment has already been alluded to. So far as I can judge, it is impossible to cure ulcer of the stomach by any remedies, in the absence of proper regimen. It is probable that in many of those cicatrized ulcers which have been verified by a necropsy, the patients' own feelings had guided them to such a diet as might fairly have been regarded the agent of their recovery. It is quite certain that many cases have been cured by the observance of a rigid system of food, which has been prescribed by the medical attendant to the exclusion of all drugs.* Hence, though the latter are (in my opinion) invaluable as aids to a strict diet, they are powerless as substitutes for it. And in no disease is it therefore more important for the physician to protest against that common error of the unprofessional public, which looks upon the deglutition of a certain quantity of more or less nauseous drugs as the sole condition of their cure.

The system of diet which experience shows to be the best treatment for this malady is based upon certain simple and well-ascertained principles in the physiology of digestion; such as have but to be mentioned, to be at once admitted as unquestionable. The sufferers from this disease find their symptoms greatly aggravated by copious meals; by animal food; by hard, tough, and indigestible substances; by hot food or drink; and lastly, by irritant substances. While, conversely, the use of a bland non-azotized food, of soft pulpy consistence, at a

* The case of Béclard, the French anatomist, seems to have been an example of this kind. He died at an advanced age, after a long period of perfect health; and the scars of two ulcers were found in his stomach.

cool temperature, and in small quantities, not only relieves the symptoms, but often, if steadily persevered in, altogether cures the malady. And every one of these circumstances precisely corresponds to what the physiology of digestion and the pathology of the lesion might, *à priori*, teach us to expect. The organ which the ulcer occupies is stimulated to activity by the mere ingestion of food. It is stretched and distended by a large meal. And just as the ulcer will necessarily share in these effects, so its raw surface will be stimulated by the heat, and by any irritant qualities, mechanical or physiological, which the food may possess. Lastly, as it is the express function of the stomach to dissolve the proteinous constituent of the food, the amount of this constituent present in the diet adopted will not only, to some extent, measure the degree and duration of the activity of the organ, but may also specially affect the ulcer by regulating the quantity of gastric juice secreted into the general cavity of the stomach which the lesion occupies.

The various requirements hinted at in the preceding statements are best fulfilled by milk diet, given in small quantities, at frequent intervals. This fluid, the natural food of the young animal, and the model alimentary mixture of the scientific cook, not only contains all the substances necessary for the organism, in suitable proportions to each other, but in a state which specially favours their digestion, and involves no mechanical irritation of the stomach. The quantity of protein, for example, is such that there is little risk (as in the case of even the purest articles of vegetable food) of our de-

priving the organism (perhaps already exhausted by disease or age) of its necessary supply of this indispensable constituent of food. While, conversely, it probably does not much exceed the proportion required by the needs of the system.

It is chiefly by the irritability of the stomach, as tested by the frequency and facility of the vomiting, that we must be guided in our selection of this or that particular form or modification of milk diet. Where the stomach is excessively irritable, the milk may be sometimes better borne when diluted with half or one-third its bulk of lime water, or after a preliminary boiling. In rare instances, a little fresh curd, mixed with a thin pulp of arrow-root boiled in water, seems preferable even to these. As a rule, however, good new milk is far more easily taken than either of these modifications, and the chief efforts to adjust it to the stomach are to be made by carefully regulating its quantity.

Where the more moderate irritability of the stomach allows a better chance of food being retained by the organ, it is very important to give articles of diet which possess greater consistence. This is best effected by mixing with the milk any of the purer varieties of starch, and boiling them together into a thin pulp, which of course must only be taken when cooled. Arrow-root is especially to be recommended for this purpose. Sago and tapioca are generally less easily borne. The gradations of quantity and frequency must also be carefully prescribed for the patient. The advantage of taking a single spoonful of such food for a meal consists in the fact that not only is all distension of the stomach thus

avoided, but also that the food is thus enabled to leave the stomach shortly after entering it, becoming merely impregnated, as it were, with gastric juice, before it passes on into the duodenum, to receive its complete solution there.*

The frequency of such meals must of course be regulated by their quantity, as well as by their effect on the stomach. Thus supposing them not to excite vomiting, from eight or twelve meals of a single table-spoonful or dessert-spoonful of the above articles of food will not be too much during a whole day—a number which would obviously demand their being repeated as frequently as every two hours.

As convalescence begins and proceeds, it is important to keep up as rapid an advance in the scale of diet as prudence will allow. We may first vary the pure starch of arrow-root by passing on to sago or tapioca, before venturing on the moderately proteinous ground-rice, or rye- or wheaten-flour. Ground-rice I have generally found well borne; and both in respect to its consistence and composition, it forms, with milk, an excellent staple food, on which many persons can live without risk for days and weeks together. Wheaten flour is best given in the shape of biscuit-powder, or bread steeped in boiling water, and pressed through a muslin sieve while still hot (bread jelly), boiled with milk. Sugar must be added with great caution, as it is very apt to provoke flatulence.

* The grounds of this statement will be found in the author's Essays, 'Stomach' and 'Intestine' (Cyclopædia of Anatomy, Supplement, pp. 315, 349, 398).

It is chiefly when, from such a diet, we desire to advance to ordinary animal food, that the greatest difficulty will generally be felt:—a difficulty which a foreigner unacquainted with the barbarous processes by which we cook our food could scarcely appreciate. Strong beef-tea is rarely well borne, and boiled or roast meat is too sudden a change; indeed, if badly chosen or cooked, it may do serious mischief. It is my usual practice to begin with some boiled white fish, such as sole or brill, carefully freed of all bones, and mixed with mashed potatoes or water arrow-root in small quantity. But a tender meat very slowly stewed, so as to form what the French call "bouilli," is almost as good, though far less likely to be obtained by most patients. Of course it would be quite possible for a recovered patient to live on vegetable food with the aid of milk. But so few persons can be trusted or expected permanently to isolate their habits from those around them, that we have practically no choice but to arrange for their return to the ordinary diet of health. There are many other articles of food (the suggestion of which belongs rather to cookery than to physic) that must be taken with the same precautions as to quantity and consistence which we have already mentioned for the milk diet.

The idiosyncrasy of the patient often obliges us greatly to modify any such plan as the preceding. Sometimes water may be advantageously added to the milk, though it can be rarely altogether substituted for the more nutritious fluid, unless something stronger than arrow-root be given with it. Some patients can soon take an egg beaten up with their farinaceous food; while in

others it evidently aggravates the (previously improved) symptoms. Some take cold tea with advantage; although, as a rule, this fluid ought to be strictly prohibited. In short, the diet—nay more, the cookery—in each case requires careful observation, as well as great prudence and tact. Every change is to be regarded as in some degree an experiment, the carefully observed results of which can alone justify or forbid its continuance.

Stimulants.—The question of employing stimulants naturally claims our notice in connexion with diet, although we have already briefly alluded to them in speaking of the drugs sometimes indicated by that exhaustion or cachexia which, in varying amount, it is usual for gastric ulcer to produce. As a rule, it is indispensable to avoid all use of alcoholic stimulants. Even in the extreme exhaustion produced by protracted and frequent vomiting, it is generally advisable so far to keep to this rule as to administer whatever alcohol seems necessary in the shape of an enema.

The rare exceptions to this rule are rather to be hinted at as contingencies than stated as facts. In respect to absolute experience, I have certainly known one or two glasses of sherry, and even one or two tumblers of beer, to be taken daily without much appearing to impede the cure of what seemed to be an ulcer of the stomach. But I do not think the comparatively slight mischief which the disobedience of these patients produced is at all incompatible with the rule above laid down. So many of the middle-aged subjects of this lesion are persons of intemperate habits,

and so much does the lesion itself increase the depression and cachexia which these habits produce, that it is quite possible the constitutional advantages of a moderate amount of stimulus may sometimes exceed (in other words, more than neutralize) the bad effects of that local irritation which the raw surface of the stomach is sure to suffer from its application.

Of course, if any form of alcohol were admissible, it would be a pure dilute fluid (such as weak cold brandy and water) in very small and frequent doses. Raw spirits, brandied or strong wines (such as Marsala and sherry respectively), are inadmissible, from their irritant effects. And such compound or artificial drinks as ordinary port, beer, and champagne, are still more objectionable, their sugary or fermenting constituents generally aggravating the injurious effect of their alcohol to a remarkable extent. The effect of the true or natural wines in small quantities I am hardly qualified to speak of, though, from one or two instances, I am entitled to believe them much less hurtful.

Opium.—This antagonism between the local and constitutional effects of alcoholic drinks in the gastric ulcer may well suggest the inquiry, whether there are no stimulants which may afford us the advantages of alcohol without its disadvantages? The importance of this question will excuse my pointing out, that what I have already had occasion to say respecting the merits of opium will, to some extent, apply to the class of sedatives in general. But the peculiar stimulant effects of opium make it by far the most valuable of them all.

Respecting the operation of this drug in gastric ulcer,

I might say much that would be both interesting and true, but nothing that would include those elements of accurate physico-chemical research on which alone a conscientious physician ought to base his theory of the action of this or any other medicine. As regards mere facts, I am quite certain that, though the pain often present in these cases is of course an additional indication for the use of opium, yet it is by no means the chief (far less the only) guide to its administration. It is not as an anodyne, not even as a sedative, that opium seems to be most useful. On the contrary, my experience would lead me to conclude, that it is especially in ulcers of long duration, of large size, of obstinate character, and in broken exhausted constitutions, that this invaluable remedy comes most fully into play: —and that the condition these circumstances presuppose being present, its use is not one whit less advantageous, even though the habitual pain is but trifling, or though (far from having to replace the customary alcohol of the drunkard) it is prescribed for a patient who has been always of temperate (or even abstemious) habits.

In short, I am anxious specially to urge upon the profession the importance of giving opium in this dangerous and frequent disease, with just the same views as those with which I suspect it has long been employed in phthisis, or (a still more apt illustration) in diabetes. To relieve this or that pain, to check great irritation or undue secretion of this or that mucous membrane, supposing such symptoms to be present. But to support the strength, to buoy up the nervous system, and to check the waste or expenditure of the tissues generally,

whether the above local symptoms are present or no. That it is thus opium aids to heal a gastric ulcer, I can scarcely doubt. And that, in this way, the same drug which diminishes the saccharine constituent of a diabetic patient's urine,* may also check that destructive absorption which a gastric ulcer expresses and measures, is quite in accordance with all that we know respecting its power of lessening bodily waste.

But I am more anxious to state the fact of its usefulness in combating this lesion, than to explain the principle upon which it does so. It is, therefore, with very

* The therapeutics of diabetes are even now the subject of such striking differences of opinion and keen discussion, that the above statement demands some further allusion. Several years ago I had under my care, in the Royal Free Hospital, a group of two or three cases of diabetes, and availed myself of this opportunity for a very careful and thorough inquiry into the value of various remedial agents on this deadly disease, as shown by the degree in which the saccharine contents of the urine diminished under their use. The chief conclusions I came to may be very briefly summed up. The diet usually adopted in such cases accomplished a great deal; and certain modifications of it, in special instances, appeared to effect a little more. Opium procured a very decided advance on the benefits secured by diet. But neither alkalies, alkaline carbonates, strychnia, cod-liver oil, permanganate of potassa, nor many other of the drugs from time to time vaunted as specifics by the indiscreet zeal of their partisans, appeared to produce any definite advantage whatever. Proper variation of the conditions of observation always negatived any fancied benefit at first observed under their use. Some sedatives, however, appeared to imitate the effects of opium, at a long distance of value.

Many months afterwards, I happened to converse with Dr. Garrod on this interesting topic. To my great satisfaction, I found that he had, at the same time, been engaged in a precisely parallel series of researches, conducted, however, with much greater chemical skill than my own could pretend to. These researches had led him to what were substantially the same conclusions.

great pleasure that I have found my own experience of its efficacy in ulcer of the stomach confirmed by the statements of other observers with respect to its uses in ulcer of other parts of the body. The reader may take the analogy of the two classes of ulcerative lesion at what it is worth; and may estimate at a higher or lower rate that remarkable parallelism which the pathological details I have established respecting gastric ulcer exhibit with those of the ordinary ulcer of the leg, as shown by Mr. Critchett's able treatise. But should he be disposed to think favourably of statements founded on such wide research as mine have been, he will probably hardly fail to be struck by their perfect agreement with the independent results of a better authority in the treatment of a kindred disease. Allowing for the situation of the lesion, and for a variety of details which that situation chiefly dictates, there is hardly any difference between the opinion I have come to respecting the efficacy of opium in ulcer of the stomach, and that which has been so clearly and happily put before the profession by Mr. Skey,* as the result of his large hospital practice, with respect to its benefits in ulcers of the limbs.

As regards the mode of administering opium, where vomiting is moderate, or where diarrhœa is prominent, the compound kino powder is a very convenient formula. But when vomiting is at all excessive, or resists a combination of this powder with bismuth, the drug is generally better borne in the solid form; either as a small pill of the watery extract, or a few grains of the com-

* Report of Clinical Lecture, the *Lancet*, vol. i. p. 88, 1856.

pound soap or styrax pill, two or three times a day. The effect of opium given in this way seems to be often quite as striking as in ordinary ulcers of the leg.

For the same elderly or intemperate class in which opium is so generally beneficial, other sedatives will occasionally afford similar (though less marked) results. Hyoscyamus, conium, belladonna, and other extracts of this kind, are thus sometimes beneficial, though I have rarely had occasion to resort to them. The extract of hemp sometimes answers admirably; indeed, were its effects more uniform, it might often be advantageously substituted for opium itself.

In all cases, the return of the convalescent from gastric ulcer to his ordinary diet, should by no means end his precautions with respect to the disease. Many months after a complete recovery, I have known a single excess bring back the whole train of symptoms, with all their attendant dangers. It is therefore only after the lapse of a long period of perfect health that we are justified in suspending the system of diet now described. And no lapse of time will permit the person who has once suffered from this disease to lay aside many of the above rules. The patient ought, in fact, always to retain the habit of taking food in small quantities; making up, if need be, for this by a greater frequency of meals. His food ought not only to be well chosen, and good of its kind, but well cooked and carefully masticated, so as to secure its reaching the stomach in a proper pulpy consistence. And hot food and drink ought to be systematically avoided.

We may end these suggestions by offering two pre-

cautions respecting the mechanical treatment of gastric ulcer which ought never to be neglected.

Firstly, as regards its situation, it is very important to avoid all pressure on the epigastrium, especially where there is much tenderness of this region to such interference. The injurious effect of tight stays, or of any hard substance (such as the end of the last used by shoemakers), is of course obvious enough; though I have reason to believe such pressure may rupture a stomach without its habitual application previously producing much pain. But in the examination which the physician has to make (and which is sometimes imitated afterwards by the patient), we are ourselves bound to remember this injurious effect of pressure; and to be not only very gentle in our manipulations, but very sparing in our repetition of them.

Secondly, all violent exercise must be avoided. In cases were life was threatened by hæmatemesis, or by constant vomiting, few would forget to adopt this precaution; indeed, the feelings of most patients would soon enforce the recumbent attitude, even if the medical attendant did not prescribe absolute rest in the supine posture. But in persons who merely regard their complaint as an aggravated indigestion, it becomes more necessary to state such a rule;—a rule, the infraction of which may be punished at a moment's notice by the terrible accident of perforation, and is almost always attended with both local and constitutional results in the form of pain, vomiting, fatigue, or exhaustion.

APPENDIX.

REPORT I.

ULCER OF THE STOMACH IN THE YOUNG FEMALE, COMPLICATED WITH AMENORRHŒA: TREATED SUCCESSFULLY.

Case.—E. D., an unmarried female servant, aged nineteen, was admitted as an Out-patient of the Royal Free Hospital on the 11th of May, 1855.

She had always enjoyed excellent health until about nine months prior to the above date. Her menses commenced at the age of sixteen, and occurred regularly up to this time, or during about two years. Towards the end of July, 1854, the present illness began, by a violent attack of symptoms which were regarded as due to indigestion. These symptoms consisted of severe pain in the epigastrium, which came on immediately after eating, and, if not interrupted by vomiting, lasted about an hour and a half: and vomiting, which expelled the food previously taken, sometimes with a quantity of blood, which was rarely more than enough to streak the other substances present. After a short time, the appearance of blood in the matters vomited became less frequent. The vomiting also diminished in frequency; but it was never absent for any considerable period: and, when absent, it was generally replaced by more or less nausea. The pain also remained, with scarcely any remissions, except such as were procured by abstinence from food. Latterly, indeed, both these symptoms had resumed their original frequency and

severity, so that almost every meal was followed by severe pain, which only terminated when the food had been rejected from the stomach.

The first access of pain occurred in what should have been an interval between two menstruations. But it was followed by complete amenorrhœa. This state had not lasted long before the patient's friends noticed her altered appearance: she had become somewhat thinner; and her complexion, naturally ruddy and fresh, had acquired a marked pallor. Both the amenorrhœa and the pallor continued up to the time of her admission. The periods corresponding to those of the catamenia were not marked by greater severity of the gastric symptoms.

On examining the abdomen, the greatest intensity of the pain was referred to a place in the median line, about two inches below the apex of the ensiform cartilage. Around this as a centre, there was an exceedingly sore and tender spot, of circular shape, and about two inches in diameter. The tenderness was almost limited to this region. But from the periphery of this circle the pain extended, indistinctly, into both hypochondria, at the time of the paroxysm; and often ended by reaching downwards nearly to the umbilicus —an extension which was stated by the patient to be attended with a feeling of tumefaction in the front of the belly. There was a moderate amount of pain in the interscapular region of the spine, at about the level of the tenth dorsal vertebra. This she could distinguish from the lumbar pain that had sometimes preceded menstruation, prior to the present illness. Her decubitus was on the left side; and lying on the right side brought on severe pain in the left margin of the epigastric region just described; soon, however, alleviated by turning so as to bring the left side undermost. The bowels were generally constipated; the appetite capricious, though sometimes voracious.

The only difference which I could detect between her aspect and that ordinarily seen in chlorosis consisted in the pallor

being devoid of that green tinge which names the latter disease; and in the shortness of respiration on exertion being perhaps less marked, as well as the first sound of the heart less affected. But all these peculiarities would have been so readily explained as due to a minor degree of this cachexia, that, in the absence of the gastric symptoms, I should doubtless have looked upon the case as an example of chlorosis of moderate intensity.

Diagnosis.—The above symptoms, taken in conjunction with the account which the patient gave of herself, afforded fair grounds for the conclusion that she was suffering from an ulcer of the stomach. The character of the pain, the frequency and severity of the vomiting, the hæmorrhage which accompanied their access, and the amenorrhœa and pallor they had produced, left little doubt that such a lesion was present.

There was nothing, however, to justify any conjecture as to the situation of the ulcer. From its duration, it might perhaps have been guessed that the lesion could hardly be low down on the anterior surface of the organ, where adhesions are rarely strong enough to form any efficient protection against perforation. But as there are instances recorded, in which an ulcer in this wall of the stomach appears to have lasted nearly as long as the nine months just specified before finally penetrating the peritoneal coat of the organ, I could not lay much stress on so weak an argument. Taken in conjunction with the decubitus, and the rapidity with which the pain followed a meal, it could at most afford me a vague presumption that the ulcer was placed near the lesser curvature, and the cardiac aperture, of the organ. Such a presumption is so far confirmed by the numerical results of the necropsy of the ulcer* as that the lesion is very frequently placed in this situation.

A far more important point, however, suggested itself with reference to the supposed lesion. The age of the patient, and

* Compare Part I. p. 10, of this Essay.

the disorder of menstruation which accompanied the gastric symptoms, fully entitled me to suspect that the ulcer possessed certain characters, materially influencing the prognosis, as well as the diagnosis, of the disease. In other words, the pathology of the gastric ulcer teaches us that, in such circumstances, the lesion often exhibits no trace of inflammatory reaction in its base or margin, the process of destructive absorption being quite unaccompanied by any deposit of lymph around it internally, as well as by adhesion of the stomach externally to neighbouring organs. In short, the ulcer is unusually liable to perforate the stomach. Hence, assuming that I was right in my diagnosis, it followed that the patient was not improbably in imminent peril of her life.

Treatment.—From the account the patient gave of herself, I found reason to suspect that she had lately been falling into a very irregular and injudicious system of diet: at times almost starving herself, to mitigate the pain and vomiting; and then again eating a copious meal when her resolution gave way under the influence of prolonged hunger.

To remedy the mischief produced by such alternate starvation of the system and repletion of the stomach, was obviously the first indication of treatment. But as regarded the vomiting, her imprudence seemed to have had so marked a share in encouraging this symptom, that I did not expect to have much trouble in subduing it, if I could but enforce a better system of diet. This system was therefore thoroughly explained to her; and, in accordance with it, she was directed to take nothing but arrow-root, boiled in milk, and allowed to cool, in quantities not exceeding a single tablespoonful, about every two hours, if no vomiting intervened.

As regarded drugs, the state of her general health rendered me very desirous of administering tonics, especially the salts of iron, with as little delay as possible. I therefore ordered her a mixture containing the sulphates of iron and quinine (a grain of each) in an ounce of water, thrice daily; and told her that, if (as I thought most probable) the vomiting was

checked by the next day, she might then begin this mixture. The constipated bowels were relieved by a dose of castor oil: and in a day or two, finding the pain and vomiting much better, I ordered her a pill consisting of two grains of extract of aloes, with two grains of sulphate of iron, to be taken once a day before a meal. This pill soon relieved the constipation; and her amendment steadily continued, until it attained the degree indicated in the following report.

June 8th.—She has had only one attack of complete vomiting since commencing the above plan, and has latterly lost all sense of nausea. The pain has also diminished greatly; indeed, she asserts that there is scarcely any left. The soreness in the region of the epigastrium has also disappeared. In short, all that she now owns to is an occasional feeling of sinking, which is distinct from either nausea or pain, and comes on chiefly when the stomach is empty of food.

July 6th.—The above sense of sinking has become much less frequent and marked. There has been no appearance of the pain or vomiting since the last report. The colour has rapidly returned to her face, and she is perceptibly stouter. Pulse fuller and firmer.

On July 11th she had a scanty return of menstruation. This was preceded by pain in the lumbar region, which came on about twenty-four hours before, and lasted until the appearance of the catamenia. The pain in the loins was accompanied by slight pain, which she refers to the lower part of the epigastrium. But, besides that the situation of the latter sensation was below that of the original pain, it seemed to be quite unconnected with any trace of soreness, nausea, or vomiting, as well as with any symptom of uneasiness after the ingestion of food. From these characters, and from its complete disappearance when the menstrual flux was established, there could be little doubt that it was not a relapse of the gastric pain, but was merely one of those flying pains which are so frequent during the menstrual crisis.

The subsequent history of the case afforded a somewhat

unsatisfactory comment upon this conjecture. The patient appeared to consider herself quite recovered; and although I was anxious to watch the permanence of her amendment, she shortly after discontinued her attendance. This was hardly to be wondered at; for her dyspeptic symptoms had vanished, her health and strength seemed all but restored, and, lastly, the amenorrhœa (a symptom which, with most females of the lower classes, generally receives a degree of notice quite disproportionate to the other features of a malady) had apparently ceased.

Remarks.—The only comments I shall make on the foregoing case relate to that peculiar group of gastric ulcers to which it belongs.

This group, occurring in the young female during the few years which immediately follow the advent of puberty, is characterized, pathologically speaking, by a peculiar want of inflammatory reaction on the part of the lesion; such as deprives it of the usual protection against perforation, and thus facilitates and increases its liability to this event. This increase of liability is such, that we may estimate that a gastric ulcer in a female at the age between fifteen and twenty is from seven to ten* times more likely to cause death, by perforating the coats of the organ, than it would be, supposing the female to have reached the age of forty. And it seems not improbable that the contrast between the ulcer of the male and female at the same age (from fifteen to twenty) would exhibit a difference of liability far exceeding even this; —thirty or forty times greater in the female than in the male.

The symptoms of this case are of especial interest, because they illustrate what I believe to be the true relation of the amenorrhœa to the ulcer in the above group. The priority of the gastric symptoms in this particular instance, as well as in others of the same kind which have come under my

* Compare Part I. p. 28.

notice, seems to prove, that the amenorrhœa in these cases is the result of the ulcer, and is not in any way concerned in the production of the lesion:—that, in fact, the suspension of this periodic hæmorrhage is a result of the same law as that which often gives rise to its cessation in even the earlier stages of phthisis and other constitutional disorders, and which normally suspends it during pregnancy and lactation.

A careful observation of the details of the constitutional state that accompanies this amenorrhœa, affords some confirmation of such a view. This state it is customary to speak of as "chlorotic." But I have never yet seen an instance that would suffice to establish the pathological identity of the cachexia present in this group of gastric ulcers with that of true chlorosis. Nor do I know any authentic record of such a case.

The differences of these two constitutional states are illustrated by what has been above said respecting the symptoms present in this unusually well-marked example. The pallor, though extreme, was devoid of all trace of that greenish hue, which the very name *chlorosis* connotes. The dyspnœa on exertion, and the soft bellows-sound, were also much less considerable than in this disease. Lastly, there was little or no œdema of the legs; a symptom which rarely fails in moderately severe cases of chlorosis.

It would of course be rash to assert that an inconsiderable degree of true chlorosis would so necessarily offer all these characters as to be at once distinguished from the pallid cachexia and amenorrhœa of the gastric ulcer, or from the not very dissimilar state sometimes present in phthisis, or heart-disease. But such rare exceptions to the above distinctions are themselves the strongest practical argument for insisting on their importance. Certain symptoms are, as a rule, present in chlorosis. That they are rarely absent is therefore not merely a suspicious feature of any particular

case in which they fail to occur, but one which calls for the strictest scrutiny of various important organs—the stomach, lungs, and heart—before we can justifiably assume that the cachexia, which constitutes one of the chief elements of the patient's malady, is its cause and essence, and, therefore, the chief object of treatment.

Lastly, in spite of the imminent danger of perforation which forms the most serious feature of this group of gastric ulcers, there is no reason to suppose them less curable than other varieties of this lesion. On the contrary, if there be any difference in this respect, it is rather in their favour. Rest, however, is generally an indispensable part of their treatment. Occurring, as they so often do, in a class of persons who (either as domestic servants or as shopwomen) are deprived of fresh air, and engaged in constant toil during many hours daily, it is occasionally necessary to enforce this rule by an explicit statement of the dangers they incur by regarding their dyspeptic symptoms as due to mere indigestion. Tight lacing, again, is an evil habit, common among those persons, which seriously aggravates their peril; both by constantly compressing the stomach and irritating the ulcer, and by supplying an efficient mechanical cause of perforation. It is one of the contingent advantages of blisters to the epigastrium, that they ensure at least a temporary intermission to this constriction, which no moderate amount of pain or discomfort will induce many women to forego. The simple starch and milk diet, by which vomiting is best allayed, may be gradually exchanged for the food usually taken in health, with much greater rapidity than is the case in the gastric ulcer of older persons. Indeed, both as regards food and drugs, the stomach is rarely so irritable and prone to vomiting as in the ulcer of larger size, and longer duration, which occurs in the middle age of adult life. Hence quinine is well borne, and is productive of great benefit. An ordinary rhubarb or colocynth pill, or a grain or two of aloes, is frequently a very convenient aperient. Finally, iron seems to have an influence

on the lesion (and, if we may distinguish, on the accompanying cachexia), which is even more direct and unmistakeable than in other groups of gastric ulcer;—an influence which really approaches, if not equals, the efficacy it has long been known to possess in true chlorosis.

REPORT II.

ULCER OF THE STOMACH IN THE YOUNG FEMALE, COMPLICATED WITH AMENORRHŒA: TREATED SUCCESSFULLY.

Case.—E. S., an unmarried female servant, aged twenty-two years, was admitted an Out-patient of the Royal Free Hospital on the 13th of November, 1855. As a child, her health had been good. She began to menstruate at the usual age, and continued to do so regularly almost up to the above date. The quantity of the flux had, however, gradually become more scanty during the last five or six months; though it was only at the last menstrual period prior to her application at the Hospital that its decrease amounted to complete amenorrhœa.

About two years before the date of her admission she began to suffer from symptoms of severe indigestion:—especially from capricious (generally deficient) appetite; pain in the region of the stomach and between the shoulders, usually coming on about an hour after eating; and irregular (mostly sluggish) action of the bowels. After about twenty months of these symptoms, vomiting, which had previously occurred but rarely, gradually became very frequent. And at the end of about four months more it increased to such a degree, as scarcely to allow any meal to be completely retained by the stomach. This state was accompanied by a great increase in the severity of the pain, as well as by a considerable alteration in its character. Latterly, though it came on shortly after meals,

as an intense pain, it was almost continuous during the whole day, as a dull burning soreness.

On examination, the pain was distinctly referred, in front, to the centre of the epigastrium, and posteriorly, to a point corresponding with the spine of the eighth dorsal vertebra. In the first of these two situations, it was accompanied by extreme tenderness to pressure. And both pain and tenderness could not only be traced a little distance outwards from this central point in all directions, but could be followed with much more distinctness and intensity towards the cartilage of the seventh rib forming the anterior edge of the left hypochondrium, behind which point they seemed to end abruptly.

The access of this pain, in its severest form, generally occurred about fifteen to twenty minutes after eating. It was provoked by almost any kind of solid food. It was relieved by drinking small quantities of warm tea. But it was especially diminished by the recumbent posture. And as regards the varieties of this posture, although the patient could lie on her back or on either side, yet she found that, during the exacerbations of the pain, it gave her great relief to lean forward, in an almost prone position, at the same time that she shielded the epigastrium from pressure by placing an arm or a cushion under her chest. Another fact she had noticed was, that any exertion which at all shook the stomach, such as walking quickly, or coughing, gave rise to a very painful jerking or pulling sensation, in a point corresponding to the centre of the epigastrium. The most careful inquiry failed to elicit any satisfactory evidence of hæmorrhage from the stomach, either in the matters rejected by vomiting, or in the alvine evacuations. She thought she had once observed a faint streak of bloody mucus in the former; but had not noticed the latter enough to state anything about them.

The aspect of the patient was remarkably pallid and waxy, but not emaciated. The first sound of the heart had a soft blowing character, perceptible enough, but not by any means strongly marked. The pulse was feeble—about eighty per

minute. The breathing was not remarkably short on making those slight exertions to which the pain almost limited her. The legs she had occasionally noticed to swell a little at night; but on examination (at 3 P.M., after she had been up all day), there was no positive œdema, although the general relaxation of her flesh almost amounted to puffiness in the subcutaneous areolar tissue.

Being unable to admit her as an In-patient on the day of her first application, I ordered her a tolerably large blister (about five inches by four) to the epigastrium, and a powder composed of trisnitrate of bismuth, ten grains, compound powder of kino, seven grains, thrice daily; and enjoined on her the diet I usually enforce in such cases,—namely, a thin pap made of arrow-root boiled in milk, and allowed to cool, in very small quantities, at intervals of two hours or less, as the stomach would bear it.

About three days after, she again presented herself in the Out-patient room. She had lost all vomiting—a result which she attributed chiefly to the blister. But the pain, though slightly diminished, was still exceedingly severe, and almost continuous. And on my explaining my opinion of her state, so far as it seemed advisable to do so, and urging her to come into the Hospital as an In-patient, she at once acceded to my request.

On her entering the Hospital, I immediately ordered her to bed. And I might almost say that the whole subsequent treatment consisted in the enforcement of perfect rest in this attitude, and of the diet and medicine already alluded to.

After about ten days of this procedure, the pain was so much alleviated that she was allowed to get up for a short time daily, avoiding, however, all pressure of her dress on the epigastrium; the powders were exchanged for a solution of the citrate of iron; and the diet was varied by the introduction of bread instead of arrow-root, ground rice, and sago, into the milk. An occasional aperient of rhubarb pill, and even of castor oil, was now necessary. And finally, after

gradually returning to her ordinary food in small quantities, replacing the citrate of iron by the sulphate of quina and iron, and cautiously permitting more exercise from day to day,—her recovery seemed sufficiently complete to allow of her being discharged from the hospital on the 21st of January, 1856. She had menstruated during her stay in the hospital. On leaving it, the only dyspeptic symptom remaining was that she found meat, in large quantity, gave her a slight sensation of discomfort or "weight" in the stomach. Her colour, appearance, pulse, were all normal. In short, I did not hesitate to regard her as cured.

Fortunately, however, there was no necessity for risking the permanence of her amendment by an immediate return to her employ. When ready to leave the Hospital, she received a letter of recommendation to the Institution for Convalescents at Walton-on-Thames, where she remained a month. At the end of February she left this invaluable Institution, and presented herself again at the Hospital, ruddy, comparatively stout, and healthy in every respect.

Her last menstruation had been attended with a symptom too interesting in its relation to these cases generally not to deserve a passing notice. Two days before this flux, she experienced a sensation of pain exactly in the spot in which the epigastrium had previously been affected. This pain, which was accompanied by the lumbar and abdominal pains frequently felt during menstruation, was relieved by lying down. It was distinguished from the epigastric pain previously felt, not only by its much slighter intensity, but also by its being quite unaccompanied by any tenderness or soreness externally, and by any sensation of nausea or vomiting. It gradually subsided as the flux came on, and had completely disappeared at the end of the first day of menstruation.

Remarks.—The above case is characterized by the important circumstance—that it includes no satisfactory evidence of hæmorrhage, either by vomiting or stool.

Undoubtedly the absence of this symptom renders the

diagnosis less secure than usual. Still we are bound to remember that, in a considerable per-centage of ulcers of the stomach, the hæmorrhage is of so limited an amount as to pass off exclusively by the bowels; and that in a large proportion of these instances, it must depend upon mere accident whether it is, or is not, observed by the patient. In other words, to refuse to diagnose gastric ulcer in all cases in which there is no distinct evidence of hæmorrhage, would be to overlook a large number of examples of this dangerous and important disease.

It is therefore chiefly by the character and course of the other symptoms that we have to determine how far any case is entitled to this diagnosis in spite of such a deficiency. And I think the above instance is a good example of the degree in which a typical character of these symptoms may almost compensate for the absence of evidence of hæmorrhage. The reader who will compare the account of this case with that of the preceding one will probably be struck by the close similarity which the two offer, not only in their age and circumstances, but especially in the leading characters of the pain and sickness, and in their effect on the constitution.

As regards the details of this case, there scarcely seemed to be anything that would justify a conclusion as to the site of the ulcer. But any such conjecture would have been as follows. From the extreme tenderness, the lesion might be supposed one of the anterior surface; indeed its duration, and the dragging effect of bodily movement, entitled me to suspect that it was adherent to the epigastric wall of the belly. But while the site of the pain seemed to suggest that the ulcer was on the left of the median line, the date of its access after eating appeared to indicate that it was neither near enough to the cardia to be affected by deglutition, nor low enough down in the cardiac pouch to receive the alimentary bolus in its direct descent towards the left end of the greater curvature. And an acceptance of these suggestions gave a tolerably definite situation, at or near the centre of that

part of the anterior surface which would lie to the left of a vertical line through the middle of the small curvature.

Such a guess (for really it was little more) so far corresponded with the absence of much hæmorrhage, as that it indicated a spot where there is rarely any large vessel that the ulcer can erode.

Nor was it at all contradicted by the peculiar decubitus the patient adopted during the worst paroxysms of pain. That she could often lie in any other attitude with relief to the pain, may be taken as indicating that the ulcer was scarcely on any surface which such postures would place undermost. And I am entitled to conjecture that this special modification of the prone position is almost characteristic of an adherent ulcer of the anterior gastric surface. The relief this attitude affords such an ulcer is probably due to its bringing (and keeping) the delicate adhesions beneath the lesion in close contact with the apposed epigastrium, the respiratory movements of which it would further limit. Amongst two or three cases of this kind, I may refer especially to one reported in the *Archives Générales de Médecine* (2nd Series, vol. viii. p. 215), in which such an adherent ulcer, attended for years by this symptom, ended in a fistula, and was verified by a necropsy.

The relief experienced by warm tea may seem almost a paradox, when contrasted with the remarkable pain this liquid is generally stated to produce in cases of gastric ulcer. But another case which has lately come under my notice seems to afford this paradox an interesting explanation. In the latter instance, warm tea produced a momentary relief; which, in the course of a few minutes, gave way to a marked aggravation of the pain. Hence I am disposed to think the effect of hot liquids may be thus interpreted. As regards the sore itself, their influence is generally (if not always) an increase of the pain; they act, in short, on the eroded ends of the gastric nerves just as they would on those of any other nerve, in any other part of the body. But when applied to the surface of the

ulcerous stomach, without coming into contact with the lesion itself, they give rise to an afflux of blood, which may ease the pain of the ulcer by the revulsion it excites.

The moderate degree of amenorrhœa in this case was no doubt partially referrible to the absence of severe hæmorrhage. The relation between the lesion itself, and the disorder of menstruation it often introduces, is too complex to be considered here, further than to state the fact—that while amenorrhœa often occurs without being preceded by copious hæmorrhage in the gastric ulcer of early puberty, large or repeated bleedings are pretty sure to be followed by it at any epoch of menstrual life. The reason for this causal relation is obvious.*

The access of pain noticed during the menstrual crisis was another very interesting point. A similar attack was noticed in the last Report. In that case, I did not consider myself justified (from the patient's manner and statements) in assuming that the menstrual pain was identical in situation with the ordinary pain of the gastric malady. But in this, as well as in another case that has since been seen by me, I have been able to assure myself that there was such an identity of site. All three, however, presented the differences which I laid down as proving that the menstrual pain was no real relapse of the gastric disorder, but merely a modification (though a very interesting one) of those flying pains so frequent during the menstrual crisis. In all, the attacks continued during convalescence, when every symptom of the gastric ailment had long disappeared. In all, the pain was unaccompanied by soreness, by nausea or vomiting, and by pain or uneasiness after food. Lastly, in all, the pain was accompanied by pains in the loins and belly; and, commencing about forty-eight hours before the flux, ceased from eighteen to thirty-six hours

* This connexion is well illustrated by a case recorded in the *Medical Times and Gazette* (1852, p. 94), and in which there was a tumour in the left inguinal region, produced (as the necropsy showed) by the impaction of nine ounces of pins in the stomach. The hæmatemesis provoked by these pins had been followed by five years of amenorrhœa and emaciation.

after its complete establishment, without leaving any further symptom behind it. Indeed, I have before me notes of a similar case, in which such pain occurred during the convalescence of a patient who had suffered nearly thirty years from gastric ulcer; and who, when I last saw her, had remained nearly a year perfectly free from this menstrual pain, as well as from every symptom of the malady.

Such cases seem to decide that the aggravation of symptoms which frequently* attends the menstrual periods is not necessarily connected with any equally sudden and marked aggravation of the ulcerative process itself.

The treatment adopted in the case now reported hardly requires much notice. Considering the chlorotic symptoms present, some would perhaps have thought it scarcely right to enforce a rigid dietary, and protracted lying in bed. But the results were satisfactory. Such rapid and complete recoveries seem to indicate that, in this malady, a careful diagnosis of the lesion, and implicit obedience on the part of the patient, will often allow of cures being effected by means which, at first sight, appear disproportionately few and simple. But a similar statement might be extended to most other gastric maladies, respecting which it is not too much to say that physiology alone can guide the physician.

REPORT III.

CHRONIC ULCER OF THE STOMACH IN THE MIDDLE-AGED FEMALE: TREATED SUCCESSFULLY.

Case.—F. H., an unmarried woman, formerly in affluent circumstances, aged forty-eight, of cachectic and emaciated appearance, was admitted as an Out-patient on the 5th of June, 1855.

* Compare Part I. p. 32; and Part II. p. 74.

Her malady had continued, with little or no intermission, for twenty-seven years. At the age of twenty-one, she was attacked by pain and tenderness in the epigastrium, spreading with diminished intensity into the left hypochondrium, and coming on soon after meals. This state had lasted about twelve months, when, after suffering from an unusually severe fit of pain, she vomited three or four pints of dark and partly clotted blood. The expulsion of this blood was speedily followed by a diminution in the severity of the pain. But it left behind it all the previous symptoms of "indigestion," to which were occasionally added attacks of vomiting.

During the twenty-one years which intervened from this time up to the period of her attaining the age of forty-three, she states herself to have been a constant sufferer from the same symptoms. At this latter age, the pain increased in severity and frequency. And, a few months after, she experienced another attack of vomiting of blood, the amount of which she cannot estimate at less than from one to two gallons. The greater part, if not all, of it was coagulated. By this vomiting of blood the pain was again relieved. But her life was in the most imminent danger: she lay in bed for several months: and it was fully two years before she recovered her strength.

For the last six months, the pain has again increased to such a degree, as to make her apprehend another of these dreadful bleedings. And, in addition to this symptom, the vomitings to which she has always been occasionally subject have become of constant occurrence; so that she believes she vomits everything she takes. The only modification of her regular menstruation has been after these attacks of hæmatemesis; and even then has been limited to a reduction in the amount of the catamenia. Pulse small, regular, about seventy. Tongue clean.

On making an examination of the epigastrium, the pain and tenderness were found to occupy their ordinary situation in cases of gastric ulcer:—the spot of their greatest intensity

being placed exactly in the median line, about two inches below the point of the xiphoid cartilage. Around this as a centre, the region of tenderness to pressure extended within a radius of nearly an inch and a-half; the morbid sensibility seeming to reach further (and more distinctly) towards the left hypochondrium than in any other direction. The usual pain in the back is also present, but occurs far less frequently than the epigastric pain, which it generally accompanies. It occupies the median line, at about the level of the spinous process of the tenth dorsal vertebra. The vomiting after food is generally prolonged beyond the mere expulsion of the different alimentary matters; and then often brings up an acid fluid, to the quantity of half a pint or a pint. The act is very easy in its character, causing the fluids which it expels to gush from the mouth with little or no feeling of effort.

The decubitus is distinctly affected. She has for many years accustomed herself to sleep on the left side, but hesitates to ascribe this habitual posture to her malady. If attacked by severe epigastric pain when in the recumbent posture, she has to sit up for a time, to render it at all bearable. Subsequently, she is obliged to lie on the left side, from finding that the pain not only becomes easier, but disappears much more rapidly than when she lies on the opposite side.

The pain has its usual character of a dull soreness or burning. Its access is rarely earlier than ten minutes, or later than twenty minutes, after eating. It is sometimes accompanied, sometimes substituted, by a peculiar throbbing or pulsation in the epigastrium.*

The above symptoms afforded little room for doubt as to the nature of the malady. Indeed, in respect to its duration, the hæmorrhages that had occurred in its course, the character of the pain, the frequency of the vomiting, and, lastly, its effect on the patient's appearance, it might almost be regarded as a typical instance of ulcer of the stomach.

* With respect to this symptom, compare Report VII. p. 195.

Could any exact site be assigned to the ulcer? This question, which naturally suggested itself as a sequel to the above diagnosis, I was inclined to answer in the affirmative. An ulcer which had lasted so long without perforating the stomach could hardly be supposed to occupy the anterior wall of the organ, especially without affording any physical indications (on a careful examination of the epigastrium) of the adhesion which would generally be requisite to ward off this catastrophe. The very copious hæmorrhage which had twice occurred justified the suspicion that the lesion had laid open some one of the large gastric arteries; in other words, that it involved that part of the stomach externally to which these vessels take their course. Hence there was a fair ground for conjecturing that the ulcer occupied either the lesser curvature or the contiguous upper part of the posterior surface; and had eroded the splenic or the superior pyloric artery. Such an inference was confirmed by the peculiar decubitus of the patient, and by the attitude which a severe attack of pain forced her to take; since both of these postures would have the effect of removing the weight of the contents of the stomach, as well as the pressure of adjacent organs, from these parts of the gastric surface into the greater curvature and the cardiac sac. The interval of time prior to the appearance of the pain which followed a meal strengthened this supposition, by indicating that the ulcer was *not* in the immediate neighbourhood of the cardiac orifice.

As regarded the treatment, the vomiting was evidently the most urgent symptom present. To remedy this, I placed my chief dependence upon a rigid system of diet, the principle of which was carefully explained to the patient. She was directed to take nothing but arrow-root boiled in milk, and not to attempt more than a single dessert-spoonful of such food at a time. If this remained on the stomach, she might repeat it a dozen times in the day. A powder, consisting of seven grains of the trisnitrate of bismuth, and three grains of the compound kino powder, was also ordered to be taken thrice daily.

June 13th.—Under the above system, the vomiting has been limited to about once every day; and the pain and soreness in the back is diminished. Ordered to vary the arrow-root with sago, tapioca, and especially ground-rice.

June 20th.—Has had no vomiting whatever since the last report. The pain in the back and left hypochondrium has also disappeared. The soreness in the epigastrium is diminished; but it and the throbbing still occur from time to time. Ordered to take a little light pudding, made with an egg; and to substitute biscuit-powder for the ground-rice occasionally. For medicine, to take five grains of the citrate of iron thrice daily, dissolved in an ounce of water, with her food; and eight grains of the compound rhubarb pill, as an occasional aperient.

June 26th.—No pain or vomiting since the last report. Still a good deal of soreness and tenderness to pressure.

July 6th.—Fasted for five hours, and took a fatiguing walk. This imprudence was immediately followed by an attack of pain having the same character as previously, and relieved by the recumbent posture. It was not increased by cautiously taking a small quantity of the customary food, but returned about three hours after this meal.

July 14th.—Since the last report, was alarmed by a thunder-storm; and the mental agitation thus produced gave rise to an attack of pain in the left hypochondrium, which only went off after maintaining the recumbent posture about an hour. Has had no return, however, of the epigastric or dorsal pain; and the soreness in the former of these regions is much diminished. Ordered to take strong beef-tea in small quantities, suspending it if any pain or nausea followed its use.

September 4th.—Has continued the same system of diet and medicine, with the very best effect. Is much fatter in flesh, and clearer in complexion. Has had no return of pain or vomiting. Has only once experienced slight nausea, about an hour after a meal, under circumstances of great mental agitation.

From this time she continued to improve. Her emaciation gradually diminished, and she gained a little colour. She became able to take a little fish or tender boiled meat. And finally, at the end of October, she discontinued her attendance, after having experienced no attack of pain or vomiting for nearly four months.

Remarks.—To those who are imperfectly acquainted with the clinical history of gastric ulcer, there might seem to be a strange disparity between such a dangerous lesion of twenty-seven years' standing, and the simple diet and remedies above specified as the means of its cure.

But while the above brief reports afford an outline of the treatment pursued, and of its gradual effects, they omit many details which might perhaps be usefully alluded to in a clinical lecture. And they are silent respecting one of the chief conditions of the successful treatment of this, as well of many other maladies—namely, the character and conduct of the patient. The patient was an intelligent and educated woman, who not only understood the explanations given her respecting the plan of treatment to which she was to be submitted, but had sufficient self-control generally to obey the rules enjoined upon her. Added to this, she appeared to have been of temperate habits throughout life.

To illustrate the clue which these facts afford to the results of her treatment, I may refer the reader to another case of the same malady which came under my care at about the same time (REPORT V.) :—a case which, at the outset of its treatment, was certainly in a far more favourable condition for the operation of remedies. As regards appearance, colour, strength, and general health, the instance just referred to offered greater reason to hope for a cure than that now under consideration. But the details of its history showed (what, indeed, we might well have expected) that, in applying a treatment which consists of perfect rest and a rigid system of diet, as well as of the administration of certain drugs, it is utterly useless to fulfil the latter element of the curative

process while neglecting the two former; and that mental and bodily fatigue, and a mode of feeding which alternately starves the system and distends the stomach, may together frustrate all attempts at a cure, especially in a constitution previously shaken by free living.

Lastly, I need scarcely say that it is impossible to answer for the permanence of even a cure like that described above. The removal of the symptoms during a space of four months, and the manifest improvement of the patient's health and strength which has followed that removal, together leave no reasonable doubt that the ulcer has thoroughly healed. But it will depend very much on the nature and thickness of the cicatrix what protection it can afford against a reopening of the lesion by any sudden or great distension of the stomach, just as it will be determined chiefly by the state of the constitution whether there will be any recurrence of the ulcerative process. And the practical conclusion that we may deduce from these well-ascertained facts in the pathology of this disease is a most important one. It is only after the lapse of a very long period of perfect health that we are justified in suspending the system of diet that has effected the cure. Indeed, for years after, the patient ought to retain the habit of always taking food in very small quantities; of ensuring its proper pulpy consistence by the most careful cooking and slow mastication; and of avoiding hot food or drink, excess of azotized aliment, mental or bodily fatigue, and all substances which popular belief or personal experience afford reasons for supposing to be indigestible or unwholesome.

[In March, 1856, F. H. called upon me to show the permanence of her recovery. She had not experienced any return of her former symptoms; and had gained much flesh, so as to look quite like a different person, though still rather lean. She had only taken meat occasionally, and had rigidly observed the above rules of diet.]

REPORT IV.

ULCER OF THE STOMACH IN THE MIDDLE-AGED (INTEMPERATE?) MALE: TREATED SUCCESSFULLY. RELAPSE, FOLLOWED BY A SECOND CURE.

CASE.—T. P., an athletic day-labourer (an "excavator") aged forty-five, applied at the Royal Free Hospital on the 26th of June, 1855.

He had always been very healthy. Like most of his class, however, he was in the habit of drinking large quantities of beer: generally from three to ten pints in the twenty-four hours.

Four years ago his attention was gradually called to a pain in the epigastric region. This pain was most intense about one and a half inch below the apex of the ensiform cartilage, but it extended downwards, with diminishing severity, to the neighbourhood of the umbilicus. It never reached to either hypochondrium, and was quite unattended by any pain in the back. It was greatly increased by eating, and it enforced an habitual decubitus on the right side; fifteen or twenty minutes being the extreme period that he could lie on the left side, owing to the increased severity of the pain while he was in this posture.

The medical treatment to which he submitted himself for this attack, effected its cure in the course of a few weeks.

About seven weeks ago, he was suddenly seized with vomiting, and brought up half a pint of dark clotted blood; and about a week after this hæmatemesis, the pain returned, with much the same symptoms as those from which he suffered four years before.

At present he appears to be a strong man, of ruddy complexion, and muscular conformation. But his face has a worn expression of habitual pain, and he states himself to have lost

flesh during the last few weeks. His pulse is about seventy in the minute, firm, and regular. His tongue is loaded with a thick white fur, the quantity of which is increased towards the posterior part of the organ.

His chief pain occupies the epigastrium in exactly the situation of the pain which was present in the previous attack, and is associated with extreme tenderness to external pressure. But, in addition to this, he suffers from considerable pain in the median line of the back, between the lower angles of the shoulder-blades, or at about the level of the tenth dorsal vertebra. The pain has the same character in both of these situations, and is described by him as a dull burning sensation. But the spinal pain is much less intense and frequent. And the two are rarely present simultaneously with great severity: at least, so much of alternation is observable between them, that the dorsal pain is rarely excessive, save when the epigastric pain is absent. The decubitus of the patient offers the same peculiarities as those attributed to it in the attack four years ago.

The relation of the epigastric pain to the ingestion of food constitutes a very peculiar and interesting feature of the case. It occurs immediately after deglutition. To speak more exactly, the patient often feels the alimentary bolus descend to the epigastrium on being swallowed, and after "working about" in that region for a minute or a minute and a half, return at once into the mouth. But the effort by which it is rejected is distinctly an act of vomiting. Easy as it is, it is preceded by a retching, and is attended by an exercise of the abdominal pressure. And when the act of vomiting fails to occur, the pain excited by the entrance of the bolus into the stomach generally lasts about two hours.

For the last week or two, however, there has been little intermission to the vomiting; and it now occurs on almost every occasion. His appetite is good, but the smallest quantity of his ordinary food is instantly rejected. Fluids, such as tea, coffee, or beer, are also vomited at once. And

not only violent bodily exertion, but even very moderate exercise, such as walking, immediately brings about the same result.

Diagnosis.—The previous history of the patient, and the character of the existing symptoms, left me little doubt that his malady was an ulcer of the stomach. The situation and character of the pain and vomiting, as well as the hæmorrhage from which he had suffered a few weeks before, afforded sufficient evidence to entitle me to diagnose the presence of such a lesion.

In addition, however, to this general conclusion, a careful study of the symptoms afforded me fair grounds for conjecturing the exact site of the ulcer. That the entrance of the alimentary bolus into the stomach was followed by the characteristic pain immediately, instead of after the customary interval of five to fifteen minutes, seemed to indicate that the lesion was situated somewhere in the immediate neighbourhood of the cardiac orifice of the œsophagus. Indeed, the "working about," of which the patient was sensible, might be plausibly explained as due to the ulcer being near enough to the lower end of this tube to be affected by that violent muscular contraction, and prolapse into the stomach, with which the œsophagus generally concludes its peristalsis.* I need hardly point out the distinction between such a rejection of the alimentary bolus, and that which occurs as the result of obstruction in the œsophagus itself. In the latter case, the patient's sensations generally appreciate an obstruction to the onward passage of the food during deglutition; nay more, they can often specify its site: while, since the act is not, strictly speaking, one of vomiting, it is neither preceded by nausea or retching, nor accompanied by the exercise of any perceptible pressure on the part of the muscular wall of the belly.

* With reference to this partial and temporary intus-susception of the œsophagus, I may refer the reader to my Essay, "Stomach," in the Cyclopædia of Anatomy, Supplement, p. 311.

But before assuming the accuracy of the above conjecture, I had next to test its merits by inquiring how far it agreed with the other peculiarities of the case. The painfulness of the decubitus on the left side obviously strengthened it, by indicating that the lesion occupied a part of the stomach which became the lowest in this posture, and thus received a greater amount of pressure from its own contents, or from the superincumbent organs. While the amount of the bleeding, which appeared to indicate that a large vessel had been laid open, could only be rendered compatible with the above pain and decubitus, by supposing that the hæmorrhage was derived from the coronary artery of the stomach, or from one of its larger branches to the neighbourhood of the cardia.

I offer no apology to the reader for troubling him with such conjectures. Whatever weight he may be disposed to assign to them, he will probably agree with me, that it is only by a resolute determination to push our conclusions as far as the symptoms afford any clue for doing so, that we are likely to advance in the clinical study of many of these obscure diseases of the abdominal organs. Remembering the uncertainty of our conjectures, we shall not, I think, be disposed to lay undue stress upon them. And it is only by recording all the minute details of a diagnosis, in the earlier period of the malady, that we can derive the full advantages which, in the event of the case having a fatal termination, may be subsequently afforded by its necropsy. The facilities which a Hospital appointment offers for such contrasts of symptoms during life and appearances after death, not only constitute one of the most valuable rewards for the excessive toil it often implies, but render it a post the holder of which has a serious responsibility to the profession in general.

Rightly to fulfil this responsibility is no easy task. And nothing renders it more difficult than a timidity which hesitates to compromise itself by a diagnosis. Our opinions must often be doubtful; the balance of probabilities, weigh it as

dispassionately and prudently as we can, often inclines but slightly in favour of this or that view as to the nature or details of a given malady. But, after all, some opinion must generally be formed, if only as a basis of treatment. And it is no paradox to assert that, even where such a diagnosis proves to have been wrong, it may still (relatively to ourselves) have been right. In other words, forced as we often are to judge by circumstances, the circumstantial evidence of disease, like that of crime, will occasionally mislead us. In the main, however, it does not do so: and the contrast of the careful records of the symptoms and diagnosis of an interesting case, with its necropsy, will either encourage us by proving our accuracy, or, what is far better, will show us why we were mistaken, where was the flaw in our logic, or the error in our interpretation of symptoms.

For the present, however, I can pursue this digression no further. Nor can I add (what would perhaps be more interesting to the reader) an account of the general evidence which a large number of such cases have afforded me, in support of conjectures like those I have brought forward in this and the other cases published in these Reports. I may mention, however, that, since recording the above diagnosis, I have met with a curious illustration of its probable accuracy in an instance of gastric ulcer which has been reported in a Foreign journal. The symptoms of this case agree with those just detailed as regards the decubitus of the patient, and the relation of the pain to the act of deglutition. And the necropsy showed that the stomach was occupied by an annular ulcer, which encircled the cardiac aperture immediately below its junction with the œsophagus.*

Treatment.—June 26th. He was ordered to take arrow-root, boiled in milk and allowed to cool, in quantities not exceeding a single tablespoonful, at least every two hours; and with increased frequency as soon as the vomiting became

* Wiener Medicinische Wochenschrift, p. 51. 1854.

less urgent. The pain being for the time excessive, he was prescribed a moderate dose of morphia, with a few grains of bismuth, thrice daily. As the vomiting soon appeared to be checked, the day after commencing this plan I ordered him an ounce of castor oil, which was retained on the stomach, and procured two or three copious evacuations from the (hitherto constipated) bowels.

July 6th.—There has been scarcely any vomiting since the last report; but he has had occasional attacks of pain, lasting an hour or two. They do not, however, exhibit any appreciable connexion with the scanty meals mentioned above, but occur indifferently before and after the ingestion of this food. On one occasion, he has brought up about a teaspoonful of blood, with about a quarter of a pint of an acid fluid. Tongue still furred as before. Ordered to vary the preceding diet, by substituting ground rice, sago, and tapioca, for the arrow-root.

July 10th.—He has had very little pain in the epigastrium since the last report, though the pain in the spine is somewhat increased. Complains of the monotony of his diet. Ordered to take a small quantity of strong cold beef-tea, and repeat it twice or even thrice daily, if well borne by the stomach. A blister to be applied to the painful region of the spine. Omit the morphia.

July 13th.—An egg which he has been allowed to take since the last report, beaten up in a little cold tea, brought on a severe attack of vomiting. With this single exception, however, there has been no vomiting, and scarcely any pain, during the last four days. His tongue is much cleaner, and he is sensible of much less pain in lying on the left side. States that he feels greatly improved. The beef-tea seems not to cause the slightest uneasiness. To take eight grains of the citrate of iron thrice daily, in an ounce of distilled water.

July 17th.—No pain or vomiting since the last report. The soreness and tenderness to pressure in the epigastric

region have also greatly diminished. Ordered on no account to repeat the manipulation on which he founded this statement.

July 24th.—Tongue much cleaner. In all other respects, remains as at last report.

From this time, his diet was gradually enlarged, and his amendment steadily continued up to the period of his discharge from the hospital, at the end of August, or about six weeks from the cessation of the pain and vomiting. He was requested to continue attendance as an Out-patient.

A few weeks after his discharge, he returned to the Hospital, apparently in much the same state as when first admitted. He stated that he had received an injury of the leg, for which, among other remedies, a surgeon who attended him had prescribed some pills, apparently of a drastic purgative nature. They had made him extremely sick, and purged him; since which, the pain and vomiting had returned, and were, in his opinion, as bad as ever.

There was not much reason to expect a very successful result from treating a man of his habits and circumstances as an Out-patient: and, owing to want of room in the Hospital, he could not be re-admitted that day as an In-patient. On the day fixed for his admission, he failed to come; and since then I have seen him no more.

Remarks.—I have already alluded to all that seems worth noticing with respect to the diagnosis of this case; and, in the previous Reports, the outlines of the above plan of treatment have been sufficiently explained. Hence there are few points of any practical importance left for me to notice.

The influence of intemperance in the production of gastric ulcer is one which can only be established by the careful collection and analysis of a large number of cases. But habits of this kind seem to be so frequently connected with the occurrence of this lesion for the first time in strong and well-nourished men of middle age, that it is scarcely possible to

avoid the conclusion that such an influence does often obtain. And the instance under consideration offers us a good example of this coincidence.

The manner in which the symptoms were suddenly aggravated by an error of diet, such as would perhaps hardly be expected to give rise to very marked results, is especially interesting. Where, as in this case, the general health and state of the constitution do not contra-indicate so restricted a diet, I think we can hardly do better at first than adhere punctiliously to the simple regimen originally prescribed by Cruveilhier, into which we may afterwards gradually introduce the various alterations mentioned above.

The blister in this case had, as is not infrequent, a marked influence in diminishing the dorsal pain.

Was the patient's account of his relapse a true one, especially as regards the cause to which he attributed the return of his symptoms? From what I have often seen in such cases, I should be disposed to think it might be. Once or twice I have known the symptoms of an ulcer of the stomach greatly aggravated by a dose of salts, an aloetic mixture, or a pill containing a grain or two of calomel, with three or four of the compound extract of colocynth: in fact, by such an aperient as few would hesitate to prescribe, supposing the exact nature of the malady unknown to them. Examples of this kind teach us, I think, almost to limit our selection of aperients to castor oil and enemata. The beneficial effects of the latter are generally restricted to the unloading so small an extent of the large intestine, that we are often obliged to use some more efficient aperient. But I have never known the castor oil do any mischief; and believe that even constant vomiting is scarcely a valid contra-indication of its use.

Lastly, the above case well illustrates some of the difficulties which frequently attend the treatment of this malady—especially among the classes who form the majority of our Hospital patients. There is often no way of administering the necessary diet and regimen except by the careful discipline

and attention attainable in the wards of an Hospital. And even after thus effecting what seems to be a cure, the patient sometimes returns on our hands, reduced by accident, disobedience, or intemperance, to a state which again taxes all that our care or skill can bestow, with what is scarcely any hope of a permanent cure.

Whether the ulcer had really cicatrized in the above case, it is, of course, impossible absolutely to certify. But from the gradual nature of the amendment, and the length of time during which the symptoms had been completely interrupted, it is probable that it had thus healed. I have known a similar intermission last many months (instead of six weeks), and yet a single large meal of unusually indigestible food has brought back the whole train of symptoms, ending in the speedy death of the patient.

[Early in June, 1856, T. P. was again admitted into the Hospital under my care, having suffered during the whole of the intervening time from more or less aggravated symptoms of the same kind as those mentioned above.

He was treated much as before. A small blister, a rigid dietary of milk and farinaceous substances, and trisnitrate of bismuth with compound kino powder, soon allayed the pain and vomiting. The latter symptom seemed indeed, from the first, not quite so frequent or severe as on his first admission. The above drugs were soon exchanged for four or five grains of compound styrax pill thrice daily, under the use of which opiate there was very little of that distressing craving for food which had rendered him so difficult to manage in his previous illness. Shortly after, this treatment was modified by adding to the above pill quinine and sulphate of iron, in gradually increasing quantities, and by allowing him to return, with the usual gradations, to something like the diet of health, beer only excepted. The opium was then gradually diminished. Finally, towards the middle of August he was again discharged cured, after having remained free from all symptoms of gastric disease for many weeks together. From his habits,

however, it seemed very doubtful how long this amendment would be allowed to last.

The above combination of quinine, iron, and opium, is (I may add) one of the best formulæ for prescribing them in irritable stomachs, and may be taken with the greatest benefit in cases where either of these drugs in the liquid form would give rise to great inconvenience—such as nausea, vomiting, headache, or loss of appetite. The difference between the pill and the mixture is probably due to the slower solution of the former, and to the comparatively smaller gastric surface on which its direct action is exercised.]

REPORT V.

ULCER OF THE STOMACH IN THE MIDDLE-AGED (INTEMPERATE?) MALE, ENDING IN DEATH BY EXHAUSTION.

Case.—B. R., aged fifty-four, during the greater part of his life in affluent circumstances, and a free liver, had suffered nine years before from a severe gastric affection. A careful inquiry elicited that this affection was chiefly characterized by great pain and tenderness in the epigastrium, increased by eating; by a sensation of "sinking in the stomach," felt chiefly in the morning; and by occasional vomiting, now and then of a black colour.

For this malady he consulted several medical friends. By them he was frequently cupped on the epigastrium, prohibited all alcoholic drink, and placed on extremely lowering diet and medicines. He firmly believed that he was almost killed by this plan of treatment, when he at length consulted Dr. Roots, who immediately reversed this procedure, and ordered him quinine and iron, with mutton chops, and three glasses of wine daily. Under this system he rapidly recovered, and

remained quite free from all gastric uneasiness during about eight years.

Unfortunately, however, his circumstances, for a long period getting worse, at length involved him in a Chancery suit; and it is to the mental anxiety thus brought about that he attributes a return of his symptoms, about nine months before coming to the hospital. From this period they never left him, until his admission as an out-patient on the 22nd of May, 1855.

At this time he presented, at first sight, the aspect of a healthy, though spare man, of fifty years of age: his colour was rather ruddy, and the only peculiarity noticeable in his face was its anxious expression. But on a closer scrutiny of this expression, it revealed the characteristic worn and haggard look which I have found to be frequently associated with the chronic gastric ulcer of middle-aged persons. His pulse was good, and about seventy per minute; his tongue furred, especially posteriorly; his bowels acted regularly; his appetite was very bad. The pain of which he complained was referred to two situations, the epigastrium and the spine. In the former there was one very tender spot, of about the size of a half-crown, just below the free termination of the ensiform cartilage; and around this a less intense and constant pain, that often extended towards both hypochondriac regions. The dorsal pain was a fixed gnawing, which was most intense about one inch to the right of the spine, on the level of the twelfth rib. Both were relieved by lying down. His usual posture in bed—on the right side—was the same which it has been for the last twenty-five years. The pain became worse immediately after eating, especially after hot food; but was not so much increased by a meal as during the attack nine years before. But he had constant vomiting, and was unable to retain any food whatever.

The first efforts of treatment were directed to the vomiting, which was evidently the most urgent and dangerous symptom present. He was ordered the trisnitrate of bismuth, in ten-

grain doses, thrice daily; and for sole food, milk and arrow-root, boiled together so as to form a thin semifluid pulp, and then allowed to cool. Of this pulp he was enjoined never to take more than a single tablespoonful at a time, but to repeat it as frequently as the stomach would permit.

June 5th.—He had strictly pursued the above plan, and the food thus taken had been generally retained. The epigastric pain had somewhat diminished in intensity, and had at the same time become more diffuse. The dorsal pain had quite disappeared. He was recommended to vary the above diet by substituting for the arrow-root, sago, tapioca, and especially ground-rice.

June 10th.—The vomiting was now almost limited to the early morning, and to one or two occasions in the day, when he had allowed himself to go too long without his food. Ordered citrate of iron, five grains, thrice daily, in an ounce of water; and to vary his food still further, by mixing small quantities of biscuit powder with the arrow-root or sago, before boiling it with the milk.

June 16th.—The vomiting had quite ceased, and the epigastric pain had almost disappeared, being limited to an occasional "twitch," often followed by a slight eructation, after which it soon subsided altogether.

June 20th.—He was tempted to take a large cup of cocoa, which immediately brought on a violent relapse. The pain became intense; and, after extreme nausea, he vomited a small quantity of the cocoa. As he still had some of the bismuth powders by him, he recommenced taking them, and with apparent relief.

June 26th.—Ever since the last relapse he had been troubled with a return of the pain in the back, accompanied by slight hiccup and occasional eructation; and he noticed that deep pressure in the epigastrium increased this pain. Of course he was strictly forbidden to make any such experiments on himself in future.

June 28th.—Again broke his rules of diet by eating a

copious meal of fish, which was followed by a lapse precisely like the preceding. It subsided, however, much more rapidly, and in four days quite disappeared.

July 7th.—His appearance to-day was very worn and depressed. A relative who came with him explained that, in his anxiety to fulfil some business engagements, he had for the last three days been walking ten or twelve miles a-day, and allowing eight or nine hours to elapse without taking any food. Every such walk brought on the dorsal pain and nausea, often vomiting. And, on eating, he also experienced a similar access of the dorsal pain and nausea, which, after waiting a few minutes, sometimes diminished so as to allow of his going on with his meal. But there was still no pain referred to the epigastrium. Ordered a small blister to the painful part of the spine; to continue the bismuth as before; and to take beef-tea, in addition to the other articles of food, at frequent intervals.

July 12th.—The pain was completely removed by the blister; and he seemed to be going on very favourably in all other respects.

On the 25th of July he became worse again—a change which was again probably due to mental anxiety and overwork, and to his having neglected to take food with sufficient regularity.

On the 30th the vomiting returned, with even more frequency than before; the bowels became constipated, and rapid exhaustion set in.

Under these circumstances, every effort was made to arrest the vomiting, and to support his failing strength. The bowels were at once relieved by castor oil, and the sickness then checked by effervescing draughts containing hydrocyanic acid. Brandy and water and beef-tea were administered at frequent intervals, in addition to small quantities of his usual milk food; and the pain was much alleviated by the administration of small lumps of ice. But though the rapid improvement of these symptoms at first permitted some hopes of his rally-

ing, he soon began to sink, and finally died, exhausted, on the 8th of August.

The necropsy showed that the ulcer occupied the posterior surface of the pyloric extremity of the stomach, and the adjacent portion of the duodenum; being shared about equally between the two. Its shape was oval; its extent was about sixteen square inches of surface; and its edges were somewhat raised and thickened. But there was no adhesion of the stomach to any of the adjacent parts.

Remarks.—In considering the details of this interesting case, we are first struck by the history of the attack nine years before. Of this, one can only say, that though it was possibly the result of mere hæmorrhagic erosion, yet the symptoms then present, as well as the great liability of the gastric ulcer to recur even after years of complete cicatrization, unite to render it much more probably an attack of the same disease which ultimately destroyed the patient.

Such a supposition is by no means contradicted by the ill success of the antiphlogistic treatment first adopted for it. In point of fact, far from being always curable by this plan, the gastric ulcer is just as little susceptible of a routine treatment as any other malady; every symptom requiring to be carefully studied, with a view to the selection of those minutiæ of food and medicine, on which the issue of many ailments more or less directly depend.

As regards the diagnosis of the case when first seen by me, the symptoms would scarcely allow any one conversant with gastric disease to doubt that there was an ulcer of the stomach. From its being apparently the recurrence of a previous lesion, this ulcer might be regarded as not improbably a large one;—a suspicion which was confirmed by its symptoms. From its long duration, it might be conjectured to be on some other surface of the stomach than its anterior wall. And the situation of the dorsal pain suggested, as a mere conjecture, that it was seated in the pyloric extremity of the organ; a guess that the sex of the patient rather confirmed than

otherwise. But there was nothing else in the character of the pain to support such a view; while the habitual decubitus of the patient (on his right side) rather militated against it. Hence I remained in doubt on all these points, even up to the death of the patient.

In respect to the symptoms of the case, it is important to notice how remarkably the symptoms of even large structural lesions of this kind are liable to be influenced by mental emotion. It seems not by any means impossible that the views of the patient (a most intelligent man) as to the cause of the last attack of the disease were correct. While the variations in the pain and other symptoms, which mental excitement and depression often produced in the course of his malady, were scarcely less marked than those produced by bodily fatigue or important errors of diet.*

Lastly, since the treatment of gastric ulcer cannot possibly be discussed within the limits of this hasty sketch, I shall confine myself to pointing out some of the principles which this particular case seems best to illustrate.

Our object is twofold: to support the patient's strength, and to avoid or allay the local irritation caused by the ulcer. And the extent to which we can fulfil the first of these indications is frequently determined by the degree in which the symptoms do not claim our attention to the last. That is, on the one hand, there are cases in which we may with advantage imitate the plan successfully pursued during this patient's first attack:—cases in which there is little vomiting, and but moderate pain; and in which the milder ferruginous tonics,† and a good, or even generous, diet may be given with the greatest benefit. While, on the other hand, even where a

* A similar influence of the mind upon the body is well exemplified in the case of a patient now under my care for a large tumour (I think a hepatic cyst) in the belly. Experience has taught him forcibly to check a current of desponding thought, in order to avoid the severe attack of pain which it almost invariably produces.

† I confess I should scarcely like to prescribe quinine in most of these cases, except in a solid form, as in an opiate pill.

dangerous vomiting threatens starvation, and obliges us to confine ourselves to minute quantities of the simplest food, it should be our care, as the irritability of the stomach diminishes, not only to see that the frequency of these meals shall, as far as possible, compensate for their small bulk, but that the patient's dietary should be varied and extended from day to day as much as prudence will allow us. And hot food should be carefully avoided.

It is to the physiology of digestion that we must look for our best guide in fulfilling the first of these two indications. The lesion involves an organ which, since it has for its office the solution (or rather the digestion) of the various protein compounds, is necessarily roused to a hurtful activity by their introduction into its cavity. Nevertheless, as these compounds are indispensable to the organism, we can never forego their use; much less in that state of exhaustion which the disease or age of the patient often implies. All that we can do is, to take care that their quality shall (as in the case of the milk diet above mentioned) favour their digestion, and shall involve no mechanical irritation of the ulcerated surface of the organ; that their quantity shall be limited to the probable need of the system, and shall be such as allows them to leave the stomach soon after being received into it. Finally, we must return to the diet of health by slow and safe gradations in both the quantity and quality of aliment. For this purpose, I generally vary the milk food by gradually passing from the almost pure starch of arrow-root, to sago or tapioca, before venturing to the moderately proteinous ground-rice; by going from this to biscuit powder, or bread-jelly; and by proceeding thence to beef-tea and boiled fish, before commencing meat. But to specify the circumstances which guide our selection of each article of food, or warrant our progress onward, would make me exceed my present limits. Much, indeed, often depends on the idiosyncrasy of the patient.

Lastly, as regards the drugs most useful in checking vomiting, and allaying irritability, I have found nothing which (as

a general remedy for the mixture of these symptoms present in most cases) equals the trisnitrate of bismuth. This, where the vomiting is not very severe, may often be advantageously combined with opium or the compound kino powder. In very severe cases of vomiting, the above mixture of the ordinary effervescing draught with prussic acid is often of great benefit; as is also ice. When these fail, it is better not to attempt any other drugs. Blisters rarely fail to relieve excessive pain; except where there is adhesion of the stomach to the wall of the belly, in which case they sometimes increase it. And I need scarcely add that, as a rule, blood-letting is quite inadmissible.

REPORT VI.

ULCER OF THE STOMACH IN THE MIDDLE-AGED FEMALE, ENDING IN DEATH BY EXHAUSTION: COMPLICATION WITH PULMONARY TUBERCLE.

With the preceding case of ulcer of the stomach, fatal by vomiting and exhaustion, it may be profitable to compare the following instance, which, though analogous in some of its circumstances, such as the age of the patient and the mode of death, differs so much in others, as to afford a good illustration of the remarkable diversity of the symptoms which attend this formidable disease.

Case.—M. N., aged forty-eight, a single woman, who earned a toilsome livelihood by charing, had always been healthy up to the age of forty-six. About this time, she began to suffer from nausea and retching, which, however, never merged into complete vomiting; and her menses, hitherto always regular, suddenly ceased. After these symptoms had recurred irregularly for about a twelvemonth, she discharged a large quantity of clotted blood *per anum*. Six

months subsequently to this hæmorrhage, she began to experience severe pain and tenderness in the region of the stomach, followed by vomiting of a fluid resembling coffee-grounds. Rapidly reduced by the continuance of these symptoms to a state of extreme debility and exhaustion, she applied at the Royal Free Hospital on the 6th of July last, and was immediately admitted as an In-patient, under my care.

On examination, I found that the belly in general was flaccid, and the bowels almost tympanitic on percussion. The whole of the epigastric region was tender on pressure; and this morbid sensibility, which extended into the left hypochondrium, seemed best marked a little to the left of the median line, about midway between the apex of the ensiform cartilage and the umbilicus. And, although I was obliged to be very gentle in my manipulations of this region, I could make out a slight dulness to percussion, and hardness to pressure, beneath (and quite distinct from) the edge of the left lobe of the liver.

The patient had a very cachectic appearance. She was not merely somewhat emaciated and blanched, but her skin had the muddy hue often seen in the cancerous diathesis. She had little muscular power: her pulse was about ninety, and feeble; tongue slightly furred posteriorly; decubitus unaffected. The more intense attacks of gastric pain rarely came on earlier than an hour after eating; sometimes on an empty stomach. The vomiting generally ended (and relieved) an attack of pain. The pain had a dull burning character.

On reviewing all these symptoms, I had no hesitation in diagnosing ulceration of the stomach. But I found it impossible to decide whether this lesion was the result of a simple ulcer, or of a cancerous deposit, in the coats of the organ. It is true that the supposition of a simple ulcer was favoured by the duration of the malady: by the copious discharge of blood a year before; and by the absence of any perceptible symptoms of cancer in other organs. But the origin of the malady at the close of the menstrual epoch of life, the cachectic

aspect of the patient, and the late period of the disorder at which the pain had become a prominent symptom,—were all circumstances which seemed to point to a malignant character of the lesion. While the dulness and hardness which I could distinguish in the region of the pylorus afforded a still more significant indication of the same kind.

In the course of a few days, a little additional information was gleaned. The point of greatest dulness and tenderness was first found to shift toward the right side of the epigastrium; and then, a day or two after, it vanished altogether, apparently from the pyloric end of the stomach being overlapped by the flatulent transverse colon. And, about this time, a small dose of castor oil, which was administered to relieve obstinate constipation, brought away a fæcal evacuation, containing about an ounce of fluid blood.

These facts, however, afforded no very decided aid to my diagnosis. Whatever the cause of the slight epigastric dulness and hardness, it differed from an ordinary scirrhous pylorus in being much more sensible to pressure, and much less bulky and heavy; in having no distinct outline; and in undergoing little or no vertical movement in the abdominal cavity. But it offered no symptom which was not perfectly reconcilable with the notion of a moderate cancerous deposit, of soft consistence, occupying the pyloric pouch of the stomach, perhaps limited to its posterior surface, and uniting it to the adjacent liver. Hence, always conceding the possibility of a simple ulceration, I inclined to the greater probability of its being—either by origin or complication—malignant.

In any case, there could be no doubt as to the treatment. Hopeless as was her condition, much could evidently be done to alleviate the pain, to check the vomiting, and to support her failing strength. She was ordered hydrocyanic acid in an effervescing mixture; turpentine fomentations to the epigastrium; small quantities of brandy with cold water; and a generous diet, containing (in addition to strong beef-tea,

milk, and eggs) a small quantity of roast meat once a day. Under this plan, and a rigid enforcement of the recumbent posture, the attacks of pain and vomiting became very infrequent, and her strength appeared to increase. In a few weeks, however, the previous symptoms returned; and were accompanied by a cough, attended with slight expectoration of purulent mucus, and the signs of a small cavity in the middle of the right lung. The prostration thus brought about gradually increasing, she died on the 9th of October.

The necropsy showed that the symptoms were due to a simple ulcer of the stomach. The lesion was about two inches in diameter, and occupied the posterior surface of the organ, at the left extremity of the pyloric sac, and close to the lesser curvature. The upper half of the ulcer corresponded to a mass of lymph, which united the left lobe of the liver and the stomach, by a firm and almost ligamentous connexion. The lower part of the ulcer opened, by an orifice as wide as the diameter of the ulcer on the mucous surface, into a small sac, the margin of which consisted of a thin filmy adhesion, no thicker than ordinary peritoneum. On raising the stomach, this serous film gave way, so that the contents of the organ began to stream into the cavity of the belly, through an aperture just above the pancreas. The superior pyloric branch of the hepatic artery passed along the floor of the ulcer, barely covered by the lymph which occupied this part; and one of its larger branches to the coats of the organ seemed to have been the source of the copious hæmorrhage that had occurred during life.

Remarks.—A single case of this kind, carefully observed, suggests a number of useful reflections. Among these, my limits only allow me to allude to the following:—

As regards the diagnosis arrived at, we learn the general lesson, that, while it is often easy to grasp the chief or essential feature of a disease, it is sometimes all but impossible to carry on our inductions so as to include all its details. Even as regards these details, however, it is interesting to notice

how nearly we can approach to the truth. Especially, it is encouraging to find with what accuracy the physical exploration of the belly informs us of the state of the viscera within. Few who had seen this preparation for the first time after death, would have thought it possible to verify* the presence and effect of the moderate amount of lymph which bound together the stomach and liver during life. But the specific signs that I made out were additionally trustworthy, from their having been detected some months before the necropsy revealed their import.

The circumstances calculated to mislead the diagnosis have already been alluded to. But some of them deserve special mention, from the erroneous views which they may serve to refute.

It is generally supposed that ulcer of the stomach interferes but little with nutrition; and hence that the presence of extreme cachexia, in a case otherwise doubtful, would tend to indicate the cancerous character of the lesion. But the clinical study of gastric ulcer quite contradicts this view. During youth, it is true that we often meet with cases—chiefly of comparatively recent occurrence—in which there is little emaciation or wasting; and sometimes, though more rarely, no very marked loss of colour. But, in middle or advancing life, it is very unusual for an ulcer to exist—much more to remain open for any length of time—without giving rise to a degree of cachexia and exhaustion, such as it is often quite impossible to distinguish from those seen in cases of cancer. And, since it is during these epochs of life

* Where everything depends on minute accuracy, I may be excused if I allude to some of the means by which I am accustomed to pursue it in such cases as that we are discussing. At the time of making a physical examination, it is my practice to delineate on paper all the signs it affords, so as to add to my notes of the case, a map of the belly, specifying the site of its different viscera, and the sound, resistance, &c., they offer. And, lastly, in examining a case after death, I read over the written diagnosis before making the necropsy.

that both* maladies are most liable to occur, it is important that we should not lay any undue stress on a sign which would so often mislead us.

The imminent risk of perforation that threatened the life of the patient, is another interesting feature of this case. Strictly speaking, perforation had indeed occurred long before. In other words, the wall of the stomach had long been penetrated by the ulcer; and its floor, now formed entirely of new tissue, was the seat of the ulceration. The gradual destruction of the lower half of this mass of organized lymph had excavated a kind of small sac, external to the stomach itself, and communicating with it by the large orifice of the ulcer. And there can be little doubt that, had the patient not died of hæmorrhage and exhaustion, the delicate parietes of this sac would soon have given way, and thus caused an effusion of the gastric contents into the cavity of the omentum behind the stomach. Such a secondary form of perforation is almost the only one by which an ulcer of the posterior surface of the stomach could generally open into the peritoneal cavity.

Lastly, the termination of this case well exemplifies the danger which, in ulcers situated on this aspect of the stomach, more than compensates the diminished risk of perforation. The very adhesion which here opposes penetration of the organ, by binding it down to the apposed pancreas and liver, brings it into close proximity with the large branches of the cœliac axis. And any extension of the ulcerative process in the adherent lymph is pretty sure to denude and erode one or other of these vessels, with the result of a dangerous hæmorrhage. In the instance before us, though the ulcer was situated too far to the right to touch the splenic artery, it involved the next most frequent source of such copious hæmorrhage: namely, one of the primary or secondary gastric branches of the hepatic trunk.

* Compare Part I. p. 10.

The cavity in the right lung had the size of a walnut; and there was a scanty deposit of crude tubercle scattered throughout the opposite organ. This complication, again, is by no means uncommon in ulcer of the stomach.

REPORT VII.

ULCER OF THE STOMACH IN THE AGED: ILLUSTRATED BY CASES.

In opposition to the generally received opinion, I have elsewhere* shown, by an analysis of more than a thousand necropsies of this disease, that it specially, though not exclusively, affects the periods of middle and advancing life. Arranging 226 cases in decades of years, and comparing their respective numbers with the proportionate numbers of persons living at the same ages, I have deduced that "the liability to gastric ulcer gradually rises from what is almost a *zero* at the age of ten, to a high rate, which it maintains through the period of middle life; at the end of which period it again ascends, to reach its maximum at the extreme age of ninety." This proposition I might illustrate by citing several cases which have occurred in my own practice, but shall content myself with adducing one or two that have lately come under my notice.

First let me say, that I think it right to exclude from this group of senile ulcers of the stomach those instances in which the lesion has, to all appearance, merely been retained from the date of its first occurrence in middle life. Practically, such cases are very rare: unless interrupted by a temporary cicatrization, the ulcer is generally so far fatal, that the person who is the subject of it dies at the beginning of old

* Part I. p. 9.

age, exhausted by the scanty and imperfect nutrition its presence implies. And, pathologically, I am convinced that it is important to recollect the tendency of old age, as such, to cause—that is, to originate, as well as to perpetuate and protract—this lesion. Whether this causation be direct or indirect, there can be little doubt that it is far more effective and frequent than any other which our present information entitles us to deduce. While it may be united in one vague but tolerably trustworthy formula—impairment of nutrition—with that influence of fever, ague, and mercury, in the production of gastric ulcer, which various scattered cases that have come under my notice quite entitle me to conjecture.

Case I.—M. W., aged seventy-one years, by occupation a nurse, was admitted an Out-patient on the 16th of October, 1855. She had married young; had had one child; and had always menstruated regularly up to the age of sixty, when she ceased to do so, after a continuous flux of about nine weeks' duration.

At the age of sixty-six, her previously excellent health was disturbed by the access of various dyspeptic symptoms—chiefly of pain in the epigastric region after meals, with frequent attacks of diarrhœa. These symptoms continued, with varying intermissions, for about four years, when the pain in the epigastrium, hitherto only attended by nausea, began to be associated with vomiting: at first only at long intervals of time, afterwards more frequently. Two months after the first attack of vomiting, there was added to the epigastric pain a similar sensation between the shoulder-blades. For the last few months before her application at the Hospital, all these symptoms had greatly increased: the pain and vomiting were constant; the former very severe; and the diarrhœa frequently amounted to five or six stools daily, which were sometimes of a deep purple or black colour for many days together.

On examination, the pain in the epigastrium was found to occupy its ordinary position, about an inch and a half below

the apex of the ensiform bone of the sternum; and appeared to have its ordinary character of a dull burning sensation, accompanied by great soreness or tenderness to external pressure. The pain in the back was situated at about the level of the ninth dorsal vertebra, ranging almost from beneath the lower angle of the left scapula to the centre of the spinal column. The pain in both these situations was relieved by the recumbent posture. The only perceptible affection of the *decubitus* was, that she dared not lie on the left side, on account of the severe pain and sense of pulsation which this attitude invariably brought on. The pulsation, which she described as a beating, did not appear to be due to any increase or irregularity of the cardiac contractions, but rather to an increased perception of them. Scarcely any article of food could be taken without bringing on the pain and vomiting, but warm tea was especially provocative of both. With all these gastric symptoms, the pulse maintained a tolerable force, and no very remarkable frequency (about eighty per minute). But her face had a look of exhausting physical pain and depression, quite distinct from the ordinary expression of old age.

The treatment first adopted consisted in the administration of the trisnitrate of bismuth and compound powder of kino, in doses of ten and four grains respectively, thrice daily; and in the prescription of the same diet* as that already described in the preceding Reports. Hot fomentations were also ordered to be applied to the epigastrium during the paroxysms of pain.

October 23rd.—She is already remarkably improved. She states that the powders gave almost immediate relief to the pain from the time of her first taking them. The vomiting, which was also at once diminished, now scarcely occurs more than once every other day, and is then almost limited to one or two retchings. The bowels are now confined instead of relaxed. I ordered her to continue the same diet

* A milk and farinaceous diet in very small, but frequent, meals.

and drugs; and to take five grains of the compound rhubarb pill as an aperient occasionally.

November 13th.—For the last fortnight, she has had no vomiting whatever, and little or no pain. The bowels are still rather inclined to be constipated, and require ten (instead of five) grains of the rhubarb pill to act upon them. She has kept steadily to the milk and farinaceous diet, which has lately been extended from arrow-root and ground-rice to wheaten flour and bread, boiled in milk. But she has been afraid to leave off her customary pint of beer daily; and as she is quite certain that it has always been well borne by the stomach, I am obliged to concede this point, only stipulating that she should observe the same rule as to the small quantity to be taken at once, which I had laid down for the rest of her diet. I ordered ten grains of the citrate of iron, in an ounce of water, thrice daily, instead of the powders.

November 28th.—She has cautiously taken a little tender boiled mutton without any return of the pain or sickness.

January 8th, 1856.—She has remarkably improved in appearance, so that she now looks quite as healthy as many people at the age of seventy. No pain, nausea, or vomiting, since the last report.

April 4th.—She has attended regularly at intervals since my last report. Remains, according to her own account, quite well. But, on being closely pressed, she owns that she is still unable to lie on the left side, on account of the pulsation still perceptible to her in this attitude; and that she has once or twice had slight diarrhœa, accompanied by twinges, or rather feelings of uneasiness in the epigastrium, in the course of the last three months, which the powders she has kept by her have instantly relieved. Still her own impression evidently is that she is cured; and her improved appearance quite confirms this view of her case.

To-day (April 29th) I have again seen M. W. She remains quite well, and can lie on the left side with scarcely a

trace of the pulsation alluded to. No gastric uneasiness or diarrhœa since last report.

[December, 1856.—Remains in the same state.]

Remarks.—Although the symptoms of this case seem somewhat less acute than they often are, still they offer no essential distinction from those seen in younger subjects of the same malady. It may, at first sight, appear strange that the constitution of a person of the age of seventy should have been able to bear up against such protracted and constant vomiting. But the frequency of this act is by no means always in exact proportion to its completeness. In other words, even where vomiting follows almost every meal that is taken, it often ceases as soon as it has relieved the stomach of a part of its contents: a fact which sufficiently indicates the importance of limiting the quantity of food taken by the patient at any one time to something less than will give rise to this unnatural and fatiguing act.

There seemed no sufficient grounds for any conjecture as to the exact seat of the ulcer in the stomach. The situation of the dorsal pain appeared rather to indicate that the lesion occupied that part of the organ which lies to the left of the spinal column. The extreme uneasiness and pain that attended the decubitus on this side pointed to the same conjecture. But such an effect of this posture is so frequent, while the ulcer of the cardiac pouch is so rare (less than* two per cent. of these lesions), that one can scarcely avoid believing that the mere dragging of the dependent cardiac pouch in this posture, or the weight of the liver above it, can aggravate the pain of an ulcer in the lesser curvature (the commonest site of the lesion). The ulcer of the cardiac pouch, too, appears to be often associated with an extension of the epigastric pain into the left hypochondrium:—an extension of which no trace could be verified in this instance. Hence the only conjecture that offered itself referred the ulcer to

* Compare Part I. p. 10.

the neighbourhood of the smaller curvature (preferably its posterior surface); near its left extremity, and not very close to the œsophageal opening.

The information elicited from the patient at her visit of April 4th, perhaps entitled me to doubt, not only the permanence of her recovery, but even the complete cicatrization or closure of the ulcer. Virtually, it was evident that the case might fairly be regarded as a cure; especially after the stomach had been tested by a convalescence of six months, and latterly, by much greater freedom of diet than was at all warrantable. But, in the absence of specific information as to how far this particular ulcer had cicatrized, I felt bound to remember the intermissions of all symptoms that sometimes occur in the progress of cases in which the subsequent course of events, and the necropsy, together indicate that the ulcer has never healed. In short, the temporary suspension of symptoms, under appropriate diet and remedies, does not by any means prove the ulcer to have closed: and in this instance it was chiefly the length of time that had elapsed since the disappearance of all the symptoms, which entitled me to hope cicatrization had really occurred.

In one respect, the treatment of these cases of senile gastric ulcer offers us a difficulty that is frequently almost insurmountable. It is that, while the locality of the disease requires the simplest food, the state of the constitution in these patients, and their previous habits of life, often imperatively demand the administration of some stimulus. Only by careful trial can we often determine what stimulus to give. Where, as in this case, beer can be borne, it is unreasonable to forbid it, although it is generally most hurtful, especially when taken with a meal. On the whole, weak cold brandy and water is the form of alcohol most frequently borne. Where all wine or spirit is inadmissible, it is best to make use of opium with the same view. In the solid form, as a small pill, and in doses of a quantity and frequency adjusted so as not unduly to disturb the brain, it is often the best stimulant

we can give. Where opium disagrees, the Indian hemp will occasionally subserve a similar purpose, though I have not found its effects very certain or uniform.

Somewhat similar to the above is another case, which came under my notice a few weeks ago.

Case II.—C. H., a woman of about sixty years of age, married at twenty-four, had had one or two children, and several miscarriages; subsequently to which she menstruated regularly up to the age of forty-two. About four years before applying at the Hospital, she began to suffer from a sense of weight and pressure in the epigastrium. This soon increased in severity, and was associated with nausea, and with pain between the lower angles of the scapulæ. The pain generally came on immediately after eating, and was never delayed beyond fifteen or twenty minutes from this time. It was relieved by lying down, and especially by lying on the right side. But in the worst paroxysms it was eased by the patient taking a sitting posture, at the same time that she bent her body forwards. About a year after the appearance of this pain, she experienced two or three weeks of unusually severe suffering, at the end of which period she noticed that her stools contained blood: in the first instance about half a pint, part of which was clotted. About a year ago, vomiting began to form a frequent symptom; and the pain extended downward from the epigastrium towards the umbilicus. But the vomiting and the hæmorrhage have never yet coincided, so as to give rise to hæmatemesis; though, only the day before I last saw her, after two or three hours of severe pain and trembling, she had expelled a copious stool, mixed with at least half a pint of clotted blood.

Case III.—Another instance was lately brought under my notice, in which a gentleman, of about eighty years of age, who had been healthy through the previous part of his life, but had for the last two years suffered from symptoms re-

garded as dyspeptic, died suddenly of copious hæmatemesis. The necropsy showed that the bleeding came from an artery (probably the coronary) eroded by an ulcer of the stomach.

I may end this brief Report by alluding to one characteristic of the gastric ulcer in the aged, which is too important to pass unnoticed: namely, its comparatively little risk of perforation. The facts on which this statement is based will be found detailed in the Pathological section of this Essay.*

REPORT VIII.

HÆMATEMESIS FROM ULCER OF THE STOMACH: ILLUSTRATED BY THREE CASES.

To the various cases of gastric ulcer already reported, I now add a brief account of two or three in which the symptoms justify my inferring this lesion to have been the cause of dangerous hæmatemesis.

Case I.—E. D., a married woman, aged fifty-two years, addicted to gin-drinking, was delivered of a child by craniotomy about seventeen years ago. During the long confinement to bed which followed this operation, she began to suffer from pain in the epigastrium after taking food; sometimes attended by nausea, and after a time, by pain between the shoulder-blades. From that date to the present, she has never been free from these symptoms, at frequent but irregular intervals. Menstruation always regular.

In April, 1855, the epigastric pain became much more severe, and was accompanied by a feeling of tightness in the same region, extending into both hypochondria, as well as by the frequent eructation of a large quantity of watery fluid.

* Compare Part I. p. 31.

After these symptoms had lasted about a month, she one morning vomited about a quart of dark grumous blood. During the same evening, and the following day, the vomiting recurred two or three times, expelling altogether (she believes) a gallon of blood. From this time she was relieved of the feeling of tightness in the chest. But the pain not only came on immediately after eating, and continued for an hour or more, unless relieved by vomiting, but gradually became continuous in the intervals of her meals. And she began to vomit her food frequently.

In April, 1856, she experienced an increase of pain and weight in the stomach, as well as of tightness across the chest. After this exacerbation had lasted about a month, as before, the hæmatemesis recurred, coming on in the morning, returning in the evening, and amounting altogether to about three quarts of dark and partly clotted blood. The next day (May 17th), she was admitted into the Royal Free Hospital.

The waxy, bloodless appearance of her skin and tongue quite confirmed the statements she made, as did also the black, tarry-looking stools she passed for the next two or three days. On examination, the pain in the epigastrium was found to occupy a situation about an inch and a half below the apex of the ensiform process, over a circular space of about two inches diameter. It was accompanied by great tenderness to pressure, and sometimes extended into the left hypochondrium; the cartilages forming the anterior edge of this region also giving rise to pain when pressed inwards. The pain in the back corresponded to the body of the tenth dorsal vertebra, and did not extend perceptibly on either side of the median line. The pain in both these situations was relieved by the recumbent posture. As regards the *decubitus*, she was only able to lie on her back and right side, the worst paroxysms of pain being much increased by lying on the left side—an attitude which also produced a painful feeling of pulsation. The tongue was clean, excepting quite at its pos-

terior part, where it was somewhat furred. She complained of some thirst. Her pulse was about seventy-six, and jerking. Her skin cold and moist. Her bowels open daily. Menses still regular.

The patient was at once ordered to bed, and directed to remain there. For drink, she was prescribed iced water, to be sipped in very small quantities, at frequent intervals. Her food was limited to an occasional dessert-spoonful of cold boiled milk. And for medicine, she was ordered a mixture consisting of ten grains of gallic acid, dissolved in one ounce of distilled water, by the aid of ten minims of dilute sulphuric acid.

The next day, having had no return of the bleeding, a small quantity of arrow-root was given, boiled in milk, so as to form a thin pulp, and allowed to cool. About two days after, ground-rice was substituted for this, and she was allowed to take it about a dozen times a day, in quantities not exceeding a table-spoonful at each meal.

At the end of about a week, during which time she had had no return of the hæmorrhage, and scarcely any nausea or pain after the first day or two, it was found that she was beginning to pilfer from the food of other patients, and had managed in the night to steal some brandy ordered for a person suffering from fever. From information received, it appeared impossible to expect any adherence to the diet prescribed, or even to ordinary temperance. She was therefore made an Out-patient about ten days after her admission.

(No return of pain, vomiting, or hæmorrhage, up to June 20th, the date of her last appearance.)

Case II.—M. B., unmarried, aged twenty-one years, began to menstruate in her sixteenth year, and continued to do so quite regularly for about two years. She then gradually became sensible of "indigestion," which was manifested by a feeling of weight in the stomach, coming on about an hour

after her meals, and often attended by nausea. There was no vomiting, and no tenderness on pressure in the epigastrium. She now occasionally missed a menstrual period.

These symptoms had lasted about twelve months when she first applied to me, about two years ago. After two months of sedulous attendance (during which time she was treated chiefly by the administration of quinine and iron, with gentle aperient doses of compound rhubarb pill, and careful dieting), she appeared quite cured in every respect.

In a few months, however, the above symptoms returned. And about two months prior to her admission as an In-patient, she again consulted me. At this time the sensation of weight in the epigastrium had increased to a feeling of downright pain in that region, referred to a spot about the size of a half-crown-piece, on the median line, about two inches below the point of the ensiform cartilage. It was occasionally (though not often) accompanied by pain in the anterior margin of the left hypochondrium. The pain in both of these situations was alleviated by the recumbent posture; but the particular attitude (or *decubitus*) did not seem to have any influence upon it. There was no tenderness whatever on pressing either of these regions with moderate violence. For the last few days, too, she had noticed a dull, burning pain in the median line of the back between the shoulder-blades, at about the level of the eighth dorsal vertebra. This pain, on the whole less frequent than that in the epigastrium, alternated with it in its worst attacks, and, like it, subsided about three or four hours after meals. The bowels were constipated, the menses regular. She had only vomited her food about three times at intervals of many weeks.

For these symptoms I had recourse to the same remedies as those which she had previously found so beneficial. Beginning with the bismuth, I subsequently prescribed bicarbonate of potassa and infusion of calumba, to allay her flatulent nausea. From these remedies she had passed on to the citrate of iron, which appeared to be doing her much good;

although her occupation as a servant not only prevented her from paying implicit obedience to the rules of diet suggested to her, but seemed to involve more toil than her strength would support. In short, she considered herself progressing steadily towards recovery.

Early on Saturday morning, the 7th of June, she was attacked with severe pain in the epigastrium, which, unlike all preceding paroxysms, was attended with great tenderness to pressure, and lasted throughout the whole day without any remission. At about four P.M., it was accompanied by marked nausea, that gradually increased up to about half-past two A.M. on the Sunday morning, when she suddenly vomited about two or three pints of dark clotted blood. The pain now became much easier, and there was no vomiting (although much nausea) up to eight A.M. Between this time and eleven A.M. she vomited three times — chiefly water and saliva, with a slight tinge of blood. The same morning she was admitted into the Hospital as an In-patient.

The treatment now adopted was precisely the same as in the case of E. D.; excepting that the constipated bowels once or twice required to be relieved by enemata of gruel and castor oil. The nausea and pain completely subsided in the course of a day or two; and she has since remained in the Hospital, gradually returning by the usual scale of food to the diet of health. The citrate of iron has been latterly substituted for the gallic and sulphuric acid; and she is now (June 24th) permitted to rise an hour or two daily.

(Her subsequent convalescence was quite satisfactory.)

Case III.—In both the preceding cases the hæmorrhage was moderate, and was limited to one or two attacks. But an instance which came under my notice about three years ago offered a contrast with them in many respects. Here the patient, a middle-aged woman, of temperate habits, who had had several children, had suffered about twenty years

from marked symptoms of gastric ulcer, and had experienced several attacks of copious hæmatemesis—the last only a few months before her admission into the Hospital as an In-patient. The hæmatemesis for which she came under my care, amounted to nearly a gallon of blood, and recurred several times in the first few days that followed her admission. These and the preceding losses of blood had reduced her to an extreme state of depression and exhaustion, such as gave rise to the most serious apprehensions, even apart from the danger of any further return of the bleeding. She lay supine, unable to stir, scarcely able to speak, and not only blanched, but emaciated, to an extreme degree.

After arresting the hæmorrhage by ice and gallic acid, I resorted to opium, not merely to allay the severe pain still present, but also to repress the symptoms of delirium which were appearing, by means of a stimulus less dangerous to the diseased organ than that of alcohol. Her convalescence was of course a very tedious one, requiring several months. But long before it could be regarded as quite complete, she left the Hospital to become an Out-patient, suffering from no symptom save a moderate degree of debility. About two years after her complete recovery, I had the satisfaction of seeing her again at the Hospital; still rather lean, but ruddy, strong, and healthy in every respect.

Remarks.—In commenting on some of the details of the preceding cases, I may briefly state one or two important propositions with respect to the hæmorrhage of gastric ulcers, based upon the facts mentioned in the Pathological section of this Essay.

The hæmorrhage which occurs in cases of ulcer of the stomach may be distinguished as regards its source into four classes:—mucous, sub-mucous, arterial, and visceral. In other words, it may come from—(1), the minute vessels of the mucous membrane; (2), the arterial or venous plexuses in the areolar tissue, between this membrane and the muscular coat; (3), the larger arteries in the sub-serous areolar tissue

external to the muscular coat; or (4), the substance of the liver, spleen, or pancreas, penetrated by an adherent ulcer.

Of these four sources, the third seems by far the most frequent origin of large and dangerous hæmorrhages. At least two-thirds of the cases of gastric ulcer directly fatal by such losses of blood are lesions of the splenic, coronary, or superior pyloric arteries, or of some one of their primary branches.

As a rule, the erosion of either of these vessels only takes place after the adhesion and fixation of the ulcerous portion of the stomach. Hence, as a corollary to this fact, the hæmorrhage generally occurs in a comparatively old or chronic lesion.

Two of the above cases offer what is by no means an unusual feature in the history of such hæmorrhages; namely, their being preceded by an aggravation of the local symptoms of the ulcer, and especially of the epigastric pain. In the first, in which this premonitory pain lasted about thirty days, there is little reason for doubting its general import. As the ulcer spreads and deepens, it lays bare the plexus of nerves which surrounds some artery, prior to eroding the vessel itself; and thus causes a severe pain, which is, in a great degree, the result of the lesion of these nervous trunks. Even where the premonitory exacerbation is (as is more usual) of only three or four days' duration, the same explanation will apply. But when (as in our second case) it only lasts a few hours before being interrupted by hæmatemesis, we might sometimes be in doubt whether it was not the result of hæmorrhage, or (in other words) a mere consequence of distension of the stomach by the effused blood.

Apart from the uncertain test which the mere absolute duration of these symptoms might afford (nearly twenty-four hours being, for example, a far longer period than would generally elapse before a copious hæmorrhage of this kind would end in vomiting), the signs indicative of such bleedings offer us characteristic differences. The hæmorrhage, even when only beginning, seems to allay the pain that has preceded it.

The blood having no specifically irritant influence on the stomach, flows into this organ, either until a feeling of syncope is produced by its loss, or until nausea is excited by the distension of the organ. The nausea then increases, so as to end in vomiting.

The independence of these latter symptoms would be well illustrated by a comparison of any number of such hæmorrhages. Generally occurring as they do, in the state of distension of the stomach that follows a large meal (a state which mechanically completes the rupture of the bloodvessel that yields them), the nausea and vomiting which this state so greatly facilitates often precede all feeling of syncope. But in exceptional instances, in which the hæmorrhage comes on in an empty stomach, the organ has been known to be distended by an enormous quantity of blood; the loss of which has brought about a fatal syncope before any nausea or vomiting has occurred.

It is hardly too much to say, that the mere act of vomiting may in some cases have a conservative tendency as regards the organism generally. It empties the stomach, and therefore allows such a contraction of the muscular parietes of this organ as permits the wounded vessel to close. It acts by a kind of revulsion on the vessels of the stomach, withdrawing part of their contents by those violent actions of the muscular and nervous systems which it implies. And from these causes it rarely fails to appease the pain of the ulcer; just as, supposing the hæmorrhage not to recur, it offers what experience shows is generally an excellent chance of a permanent cure of the lesion.

With respect to the treatment adopted, little need be said. If the above doctrine respecting the probably arterial source of such hæmorrhages introduce any modification into our therapeutics, it will be that of rendering us more cautious and decided in all that relates to the mechanism of the bleeding. Perfect rest in the recumbent posture, a minimum of the blandest food, and the application of cold, both externally

and internally, to the bleeding organ, are measures which at once suggest themselves under this head. In like manner, since the situation of the eroded vessels allows the drugs we prescribe to be topically applied to them, we may obviously derive advantages from the internal administration of styptics, far beyond any we can attain in the case of many other hæmorrhages. The chief caution we have to observe is with respect to their action on the mucous membrane itself;—to avoid, for example, all such styptics as seem likely to irritate this structure, or excite vomiting.

The formula above mentioned appears to me quite free from this objection; which, again, I think would generally contra-indicate the use of muriate of iron, or turpentine.

The necessity of stimulants after very great hæmorrhages sometimes gives rise to a serious difficulty in connexion with the practical treatment of these cases. As a rule, opium is the only remedy of this kind which it is advisable to give by the mouth; and even then only in the solid form, and in combination with astringents. In extreme cases, it is probable no physician would hesitate to pour brandy down the throat of a patient who seemed to be dying of syncope from such hæmorrhage. But in circumstances of less immediate urgency, enemata of brandy and beef-tea realize many of the advantages of stimulation, with less hazard of excitement of the gastric vessels. The possibility of transfusion being useful, deserves also to be borne in mind.

Lastly, I may allude to an interesting aspect of the second case: namely, the doubt which long hung over its nature, and which the hæmorrhage alone could finally dissipate. The aspect of this patient, even in her first attack, had excited my suspicions; and her relapse to some extent confirmed them. But as there was little pain, no tenderness, and scarcely any vomiting, I felt that there was nothing to justify my inferring the existence of gastric ulcer. It was only when all these symptoms had assumed their characteristic distinctness, and the hæmorrhage had added another specific element

of the diagnosis, that such a conclusion could be come to. Cases of this kind confirm the accuracy of such accounts as have been brought forward by Dr. Crisp, and other observers, in which the symptoms during life have been deficient to a degree that must have rendered it unjustifiable (and indeed impossible) definitely to diagnose an ulcer of the stomach. And nothing can be more important than to recognise the occasional occurrence of such cases. To say little of the importance of not over estimating the precision of our means of diagnosis, the existence of such anomalous cases of inveterate dyspepsia, depending on latent ulcer, is especially to be recognised; inasmuch as, by adopting the proper treatment, the lesion that our science fails to recognize, it is often quite within the resources of our art to cure.

REPORT IX.

FIVE ULCERS OF THE STOMACH: WITH HYPERTROPHY AND DILATATION FROM A CICATRIX OCCUPYING THE PYLORUS, AND HOUR-GLASS CONTRACTION FROM A CICATRIX IN THE LESSER CURVATURE.

Case.—M. M., an unmarried female servant, aged twenty-three, was admitted an In-patient of the Royal Free Hospital, on October 1st, 1856, in a state of partial exhaustion.

It was very difficult to extract from her any precise and satisfactory account of herself. But, as far as could be ascertained, she had been suffering for about three years from her present symptoms, with occasional remissions of their severity. She complained of pain in the chest (which, on examination, proved to be the epigastrium), somewhat alleviated by slight pressure; and obliging her, in its worst attacks, to assume a prone position. This pain was espe-

cially severe about half an hour after meals: and often ended by vomiting, which appeased it. During the whole three years, she had suffered from a deficiency of the menses, a decrease which had for the last few months amounted to complete amenorrhœa. Occasionally she had pain in the lumbar region; but not in the ordinary (interscapular and rachidian) situation of the dorsal pain generally present in gastric ulcer.

Her lungs and heart, on examination, seemed healthy. Her pulse was about eighty-five, rather feeble. Her skin was cool. Her body was flaccid and emaciated. Her face, thin, worn, and weary-looking, was exactly the physiognomy so often seen in protracted cases of ulcer of the stomach. Bowels constipated.

A careful physical examination of the belly showed that there was a considerable enlargement of the stomach. Scarcely overlapped on the right side by the thin edge of the right lobe of the liver, the outline of the stomach could be traced on each side, above, to the level of the fifth ribs, and below, to a line considerably lower than the umbilicus. Below this, some small intestine could just be distinguished intervening between the stomach and the pubes. On the right side, the cæcum could be traced upwards into the ascending colon, which passed for some distance alongside the distended stomach, retaining its characteristic sound with perfect distinctness until lost in the gastric sound near the anterior edge of the right hypochondrium.

On inquiry, it appeared that for some time back the vomiting had become less frequent in its occurrence, while the matters rejected were of large quantity (four or five pints at a time), and of a dark greenish-brown colour. No blood had ever been known to be discharged by stool or vomit. Deep pressure in the epigastrium produced decided uneasiness; though the patient persisted in stating that she was accustomed to relieve the pain by moderate pressure (as in the prone posture) on this part of the belly.

The *diagnosis* of the case, as ulcer of the stomach, was thus embarrassed by one or two circumstances, which claimed a careful consideration. With no evidence of hæmorrhage, no rachidian pain, and little tenderness of the epigastrium, the symptoms were at any rate deficient in that typical distinctness generally met with in ordinary instances of gastric ulcer, especially of such long standing. But while the pain, the tenderness, and the *decubitus*, all pointed to a local or gastric cause of the vomiting, the characters of that vomiting conclusively added, that the stomach was obstructed somewhere in the neighbourhood of the pylorus. The distended state of the stomach confirmed this conclusion. And this brought me, practically, almost to an alternative. Was that constriction of the pylorus which probably caused this obstruction the result of scirrhus, or of contraction caused by the cicatrization of an ulcer?

Considering the youth of the patient, the long duration of her malady, the absence of any pyloric tumour, and the equal absence (so far as one could detect) of any hepatic or pulmonary deposit, I could not hesitate to prefer* the latter alternative, and to interpret the symptoms as due to an ulcer of the pylorus, giving rise to a cicatrix, which constricted and obstructed the stomach in this situation.

In the serious state of exhaustion in which the patient was admitted, little could be hoped from treatment. She was treated chiefly by opium, with a gentle aperient dose of castor oil; and by a carefully regulated diet, consisting chiefly of milk and ground-rice, or bread, boiled together to a pulp, and allowed to cool. Under this plan, the pain was soon greatly diminished, and the vomiting reduced to about once in every second or third day. But her exhaustion continued, and

* The relative frequency of extreme dilatation in the two disorders may be estimated at five and one per cent. in gastric cancer and ulcer respectively. But the relative frequency of the two diseases probably reverses this proportion, and equalizes the above difference. So that the relative numbers afford no conjectural aid to the diagnosis of any given instance.

gradually deepened into collapse, of which she died, on the ninth day after her admission. Latterly, she had been able to take a little egg-flip without much increase of the sickness. But her comparative repugnance to food rendered it difficult to administer either this or other articles of diet as freely as could have been wished.

The necropsy was made eighteen hours after death. On laying open the belly by a crucial incision, its contents were seen in the following position. (Fig. 1.)

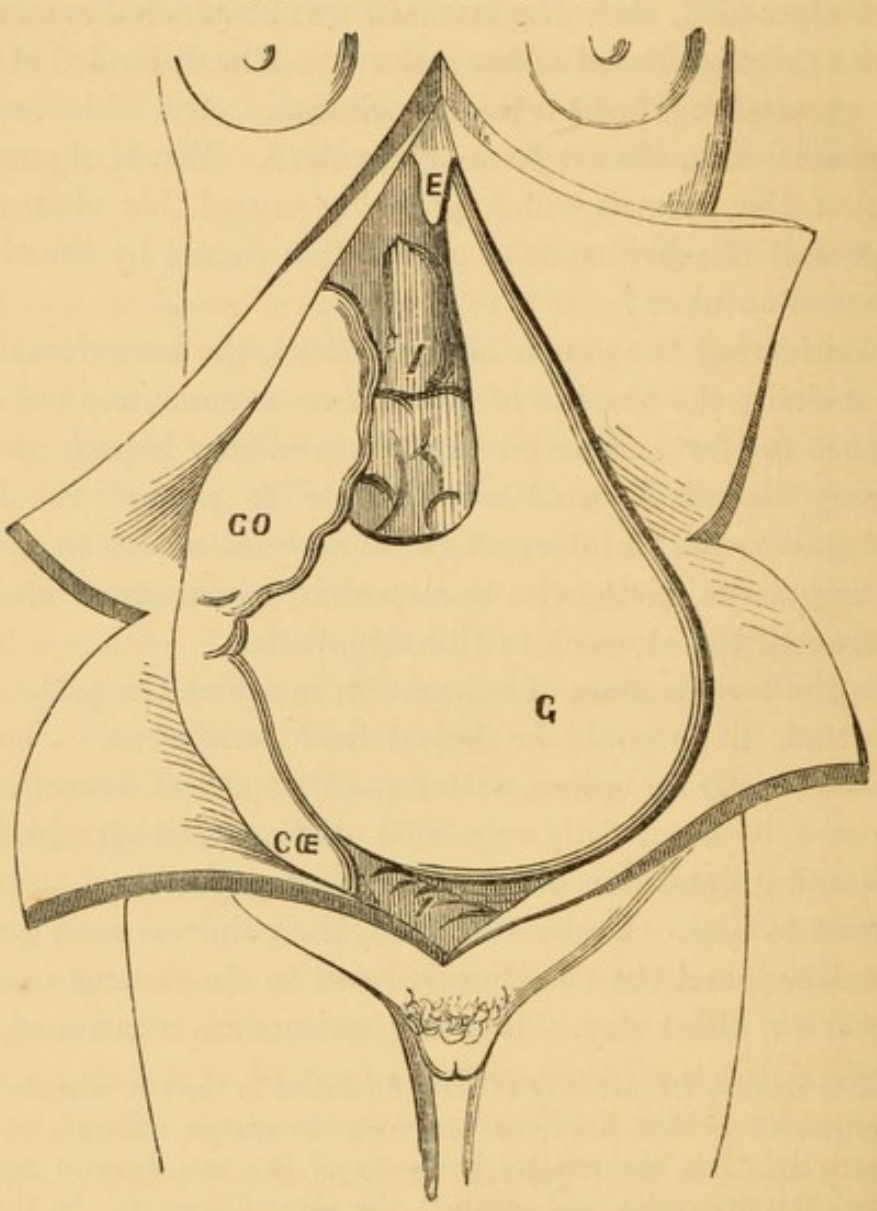


Fig. 1. — E. Ensiform appendix. I I. Small intestine, G. Stomach. CO. Colon. CŒ. Cæcum.

The stomach (G) descended even lower than the line at which its lower border had been mapped out during the life of the patient. This descent appeared due to flatulent distension produced by the commencement of putrefaction in its contents. Its pyloric end passed behind the ascending colon (CO), usurping the ordinary peritoneal attachment of the duodenum to this bowel. Above its lesser curvature were seen a few coils of small intestine (I); and a still smaller quantity (I) of this segment of bowel lay below the greater curvature. The "transverse" colon was almost vertical, and lay behind the ascending segment, which latter passed up the right side of the belly from the cæcum (CŒ).

On removing the large stomach, it was found to have the shape represented by the accompanying outline. (Fig. 2.)

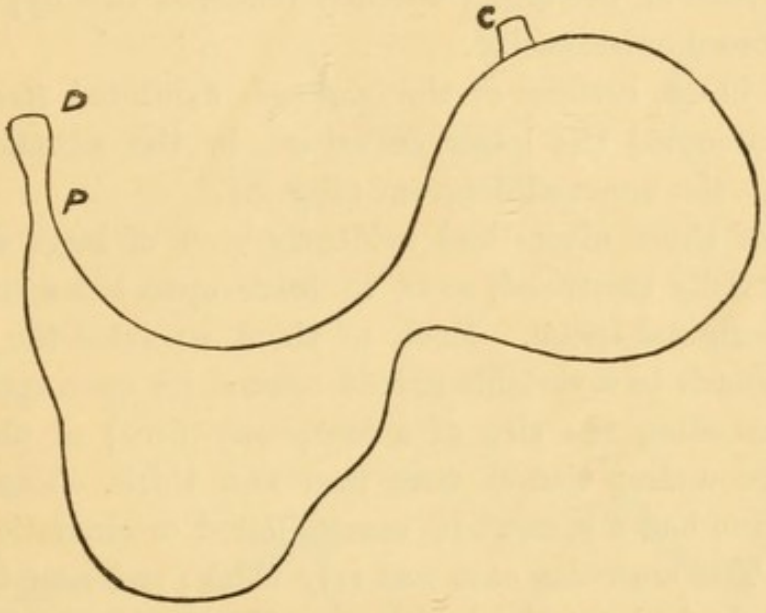


Fig. 2. — C. Cardia. P. Pylorus. D. Duodenum.

Constricted rather to the left of its middle by an inflection of the greater curvature, which reduced its diameter to about one-third of its average elsewhere, it was thus divided into two sacs of nearly equal dimensions. And at the pylorus, a still more effective narrowing engaged it for about one and a quarter inch, suggesting an almost complete occlusion of its calibre in this situation.

The fluid contents of the stomach about filled the pyloric sac, when this part was lowest. On emptying them out, they amounted to about two and a half pints of a greenish fluid, similar to that which had been vomited during life. Hence, allowing for a moderate distension of the whole organ, its capacity might be estimated at about six or seven pints—an amount which, taken in conjunction with the loss of capacity inflicted on the stomach by the central constriction, evidently implied great dilatation of its walls.

Since the thickness of these walls was somewhat greater than natural, it followed that this dilatation was also associated with much hypertrophy. And on laying open the stomach along its greater curvature, so as better to expose the expected ulcers on its lesser curvature, the retraction of the parietes of the organ speedily rendered this hypertrophy still more unmistakeable.

The inner surface of the stomach exhibited five ulcers, which occupied the lesser curvature, in the situations indicated by the annexed diagram (Fig. 3).

All of these ulcers had evidently been of large size; but had partially cicatrized, so as to leave open but a small part of the original lesion. Each of them wrinkled the coats of the stomach to a variable extent around its open spot (in no case exceeding the size of a fourpenny-piece) of ulceration. The surrounding tissues were firm and thick. The mucous membrane had a somewhat mammillated or cirrhotic appearance. The muscular coat was very thick; and near the ulcer was sparingly intermixed with new fibrous tissue. The peritoneum was unaffected; save that, opposite the ulcer which caused the median constriction of the stomach, the gastro-hepatic omentum was unusually laden with fat.

On a careful examination of the floor of each of the ulcers, the softish diffluent cicatrix-tissue of which it appeared to be formed, seemed to be alike in all five; except that the second ulcer from the cardia (and the neighbouring mucous membrane) here and there offered minute adherent coagula. With

this exception, the appearances were quite as explicable by the supposition of a partial post-mortem digestion of the firm and tolerably organized tissue which constituted the floors of the ulcers, as of any active ulcerative process going on up to the period of death.

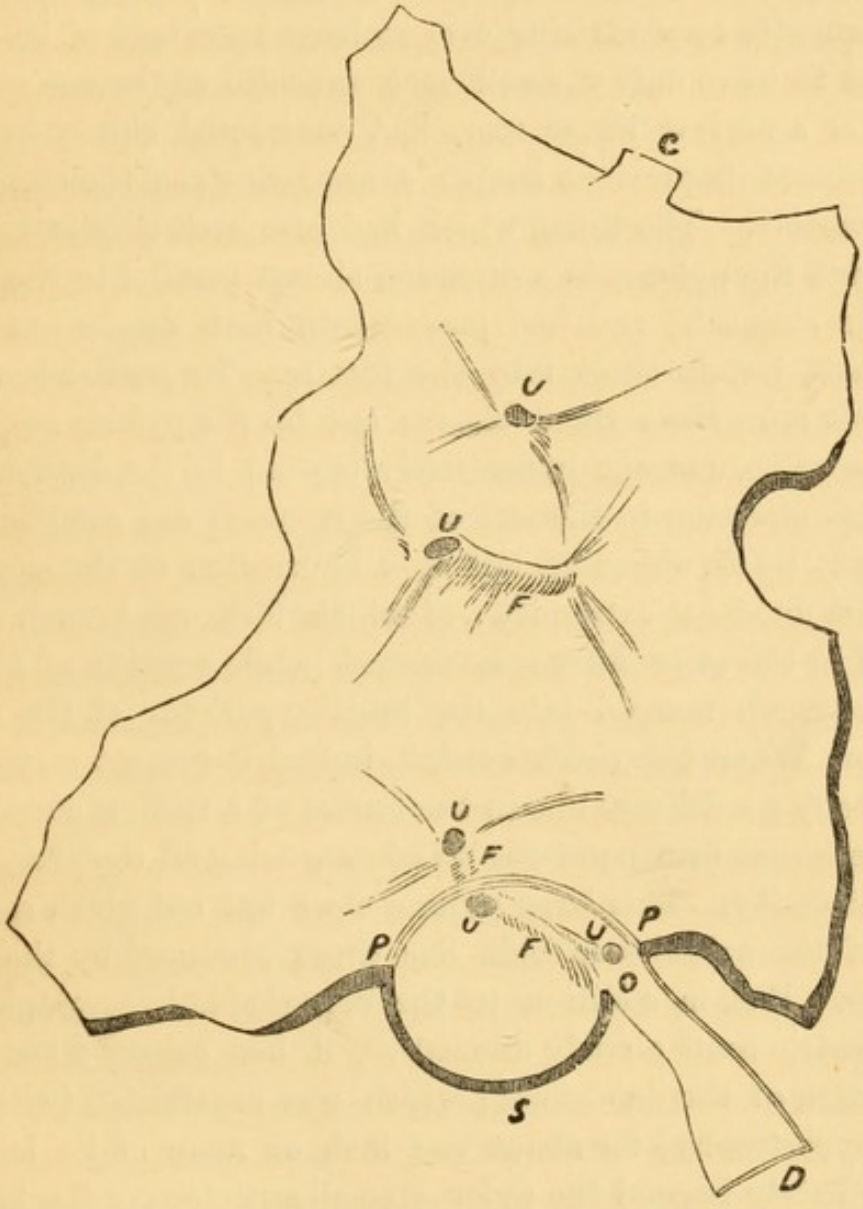


Fig. 3.—C. Cardia. P. P. Pylorus. D. Duodenum. S. Duodenal sac. O. Obstruction. U, U, U, U, U. Ulcers. F, F, F. Fibrous cicatrices.

By washing the ulcerous spots and their neighbourhood with a very gentle stream of cold water, it appeared evident that there had originally been but three ulcers, each of large

size. The smallest, near the cardia, seemed to have been an almost circular ulcer, which, subsequently to its partial cicatrization, had contracted pretty regularly, so as to form but a few radiating wrinkles of mucous membrane. The second, in the middle of the stomach, had apparently been a long ellipse, placed transversely to the axis of the organ: and, subsequently to cicatrizing over so large an extent of its surface as to leave only a small spot unhealed at the one extremity of a narrow linear scar, had contracted chiefly in the direction of its previous length, so as to constrict the stomach transversely. The third, which had also been elliptical, had occupied the pylorus in a direction almost parallel to the axis of the stomach; and had passed into both duodenum and stomach, but furthest into the former. Its partial healing had left open three small ulcers; one in the pyloric sac, one on the valve, and one immediately beyond in the duodenum. And its direction to the axis of the stomach was complicated not only by an obliquity, but by a bifurcation of the cicatrix near its duodenal extremity; of which fork one branch soon ended in the ulcer before mentioned, while another of about equal length merged into the healthy parietes of the duodenum. Where this cicatrix ended, indeed, it was not very easy to specify; a delicate line in the centre of a trifling eminence of somewhat firmer mucous membrane being all that revealed its extremity. This large pyloric ulcer had not given rise to any of the wrinkles or folds like those produced by the two others. But, in addition to the remarkable hypertrophy of the gastric coats already alluded to, it had caused a peculiar condition of the duodenum; which was constricted (without any hypertrophy) for about one inch or more of its length immediately beyond the pylorus, on all aspects save the lower, where it was dilated and hypertrophied, to what was (comparatively) at least an equal degree with the hypertrophy of the neighbouring stomach, in the form of a small pouch. On slitting open this pouch it was seen to be exactly limited at its lower end by the bifurcate portion of the cicatrix

already alluded to. And the constriction of the duodenum below it seemed to have been produced exclusively by the contraction of this cicatrix, and its dragging on the tube beyond; just as the dilatation above it was ascribable to the accumulation of gastric contents behind this obstruction.

The relative situation of these ulcers and their cicatrices may be somewhat explained by the accompanying diagram. (Fig. 3.) The difference between the thickness of the walls of the duodenal sac and the adjacent segment of duodenum is no way exaggerated either in amount or abruptness.

The heart was unusually small and flabby. The left pleura exhibited some old adhesions to the subjacent lung. The other organs were healthy.

Remarks.—The special features of the above case may be comprehended under two aspects; those which relate to the absence (or at any rate, the indistinctness) of some of the usual symptoms of ulceration, and those which concern the presence of the symptoms characteristic of dilatation.

As regards the first, it may be pointed out that marked anomalies in the history of a disease like gastric ulcer cannot justifiably be inferred from mere negative evidence like that obtained in the above case. When first seen, the patient was suffering from exhaustion and partial collapse, such as evidently rendered her incapable of searching her memory for the symptoms of by-gone months or years with the accuracy one could have wished, even had her intelligence and truthfulness permitted (which they did not) implicit reliance on her statements.

This point is the more important, from the great interest that attaches to such anomalies, and their direct bearing on the question of diagnosis. The history of the disease is generally a long one. In the succession of its numerous symptoms, not only the time, but the order of their appearance, is liable to vary. And hence, though the present condition of any patient in respect to every one of these symptoms may be ascertained with little difficulty by the physician,

their features (or even their occurrence) in the past history are by no means so easy to decide upon. Great tact and patience are often necessary to extract from the sufferer, absorbed in the misery of the present moment, the minute details of the malady as they gradually complicated each other many months before. And in instances like the above, it sometimes seems not only useless, but almost cruel, to press upon an exhausted patient an inquiry which can only be answered satisfactorily by a considerable mental effort.

It is difficult to avoid believing that many of the anomalous cases of gastric ulcer on record are based upon insufficient evidence of this kind. The patient, dying in the agony of perforation, has not alluded to previous pain of comparatively trifling severity; or, sinking in collapse, has failed to distinguish between mere eructation and vomiting. Convinced as I am by experience that the anomalies of these symptoms of gastric ulcer are both interesting and important, I must still emphatically protest against the reception of any evidence of this kind. Whenever doubts are to be decided, or obscurities cleared up, nothing is valid, save the skilled observation of the medical practitioner himself. In other words, our conclusions must be based substantially on the clinical evidence which the present time affords us; and the patient's voluntary statements (much more his extorted answers) can only be useful so far as they are confirmed or interpreted by direct observation in other and similar cases. The disease is unfortunately far too common to render such caution more than a temporary delay of our conclusions respecting these anomalies.

So far as I have myself seen, the chief variations in the symptoms of this malady seem explicable in two ways. Firstly, in the pathology of the lesion itself, dictating these anomalies by corresponding variations in the situation, depth, extent, &c., of the ulcer;—variations such as either diminish or increase the pain, hæmorrhage, &c., usually present.

Secondly, in the succession of the symptoms, where, by a merging of several stages into one, by a reversal of their order, or (even more frequently) by a temporary delay in the appearance of this or that particular feature, the outward character of the disease is remarkably altered, with little or no modification of its morbid anatomy. In other words, many of the most anomalous cases which it has hitherto fallen to my lot to see, have been rather akin to a delay of one or two symptoms during a period not greatly exceeding their ordinary intervals of appearance, than to any specific absence of them. So that it is chiefly the acute cases which are anomalous, the chronic are generally typical.

The effect of pressure in the above instance perhaps illustrates these cautions with respect to our unqualified acceptance of a patient's statements. Confident as she was at first that pressure did not pain, but relieve her, she soon confessed that a moderate degree of it really gave rise to considerable pain.

The aid to diagnosis afforded by the patient's peculiar physiognomy—by the characteristic expression of her face—I can scarcely venture to estimate. But it was doubtless considerable.

The evidence of dilatation had a twofold import: reacting (so to speak) on the general character of the case, as well as fixing its details.

As regards the detection of this state, nothing can be more easy. A moderate degree of that delicacy of percussion and manipulation which is now habitually brought to bear on diseases of the thoracic cavity, often throws just as useful, if not as distinct, a light on the diseases of the belly. It is scarcely too much to say that a physician has no more right to overlook or mistake a distended stomach, than a surgeon a fractured limb. With other parts of the canal, it is often less easy to decide the degree or site of the distension. For greater clinical accuracy, it is often advisable to map out the

viscera upon the abdomen, inch by inch, with pen and ink, so as to sum up in one glance all the information afforded us by such physical examination.

The peculiar straight or almost incurved outline of the left side or great curvature of the stomach was thus noticed during life. But, strange as it was to find this in conjunction with great distension of the cardiac sac above, and of the pyloric sac below, I dared not refine upon the diagnosis sufficiently to predict a median constriction as well as a pyloric obstruction. Tight lacing often drags the two parts of the stomach asunder in a very similar manner; and I could not see any very definite reason why both the cardiac and pyloric sacs of an obstructed stomach might not dilate without involving the middle of the organ in an equal degree of dilatation. Indeed, any anomaly in the shape of the less accessible parts of the liver, or any similar displacement of this organ, might (I thought) disguise or efface that regularity of curve which we should generally expect to unite the lower or left border of two such gastric pouches.

The alternative already alluded to between cancer and cicatrized ulcer may seem too broadly stated. But though I am aware that cases have occurred in which an enormous and fatal dilatation of the stomach has been unaccompanied by any pyloric obstruction, yet not only the rarity of these cases, but their more acute course, and their very different symptoms, would generally afford a distinction. They are, in fact, rather a gastric tympanitis, than a true obstruction of the stomach; a diseased relaxation of the walls of the organ, rather than a mere occlusion of its terminal orifice.

But the symptoms pointed to—(1) active ulceration, and (2) a cicatrized ulcer. Did they therefore indicate the coincidence of at least one ulcer with one cicatrix, or the imperfect cicatrization of a single ulcer? To this question, again, I could find not even any conjectural answer during life; save that the presence of two or more ulcers, or the coincidence of ulcer and cicatrix, is by no means uncommon, while the

obstruction of the stomach by the contraction of a still unclosed ulcer is extremely rare. But the rarity of dilatation itself deprives this fact of all claims to specific or diagnostic value.

Lastly, it is almost impossible to decide, even by the aid of the necropsy, whether these ulcers were really cicatrizing at the time of death. Comparing the symptoms of the patient at her admission with her subsequent amendment, it is difficult to avoid suspecting that for some time at least this process was taking place. But while it is my impression that the patient ultimately sank rather from the long inanition brought on by the number and duration of the lesions, and the protracted vomiting which had preceded her admission, than from any extension of the ulcerative process during her stay in the Hospital, I confess that the appearances are equally reconcileable with the view of a recurrence of ulceration in the partially cicatrized ulcers. In any case, it is probable that a destructive process of some kind (absorption, ulceration, or dissolution) had attacked the feebly organized lymph last deposited in these cicatrices during the few hours that immediately preceded death.

REPORT X.

SUPPOSED IRREDUCIBLE HERNIA OF THE STOMACH: ILLUSTRATING THE SYMPTOMS OF GASTRIC ULCER.

The pathology of any given organ receives few better illustrations than from the rare instances which afford us the means of contrasting the results of injury with those of disease. In the case of the nervous system, the delicacy of its texture renders these two classes of its lesions far more closely parallel to each other, than is the case with organs the structure of which better enables them to resist external violence. But even in those parts of the body in which the mechanical

effects of injury are least definite and calculable, and in which the peculiar connexion of the sympathetic system of nerves with the cerebro-spinal centre adds a further element of obscurity to the diagnosis, by depriving us of that information which is elsewhere afforded by the phenomena of sensation and voluntary movement—even here, careful comparison will often throw an invaluable light on the symptomatology of the particular organ or structure. Like the rude sketches of an artist of genius, the symptoms are all the more impressive from the fewness and boldness of the outlines by which they are indicated. To speak less metaphorically, the previous health of the patient often renders these indications of lesion unusually valuable, by excluding all those secondary phenomena—those refractions, as we may call them, of the primary effects of the mischief—which often colour or obscure the results of idiopathic disease. Practically, indeed, there can be little objection to our summing up the chief peculiarities of these cases of mechanical injury, in a diagnostic point of view, by the statement, that they represent the minimum of the various symptoms that betray the true diseases of the corresponding organ; and hence that their careful study may sometimes materially aid us in penetrating the obscurity of these visceral maladies.

Such observations especially apply to injuries of the various parts of the intestinal canal. And they may therefore suitably introduce a brief description of an interesting case which lately came under my notice; and which, at once diagnosed by me as being probably a hernia of the stomach, offers some interesting analogies to the cases of gastric ulcer already reported.

Case.—G. G., a tall, robust coalheaver, aged forty-five years, was engaged in his usual avocation, about four hours after a tolerably hearty dinner, on the 29th of December, 1853. He was lifting a heavy sack of coals from the ground on to the back of his work-mate; and while thus stooping

forward, some one startled him extremely by touching his back. The shock made him throw back his body by a sudden and violent extension of the spine; and at this very moment, he felt something snap in the pit of his stomach. At the same time, there came on a pain in the epigastrium. This pain soon acquired a sharp stabbing character. It was attended with nausea, but not with vomiting. Half an hour afterwards he had a stool, not, to his knowledge, an unnatural one.

The next morning, after taking what seems to have been ordinary aperient medicine, prescribed for him by his medical attendant, he began to pass a considerable quantity of blood in his stools; and for about seven or eight days, none of the urine evacuations were altogether free from this admixture. On the second day after the injury, he twice passed more than a pint of nearly pure blood; but at the end of the week, the quantity of blood was not more than enough to give the stools a purplish black colour.

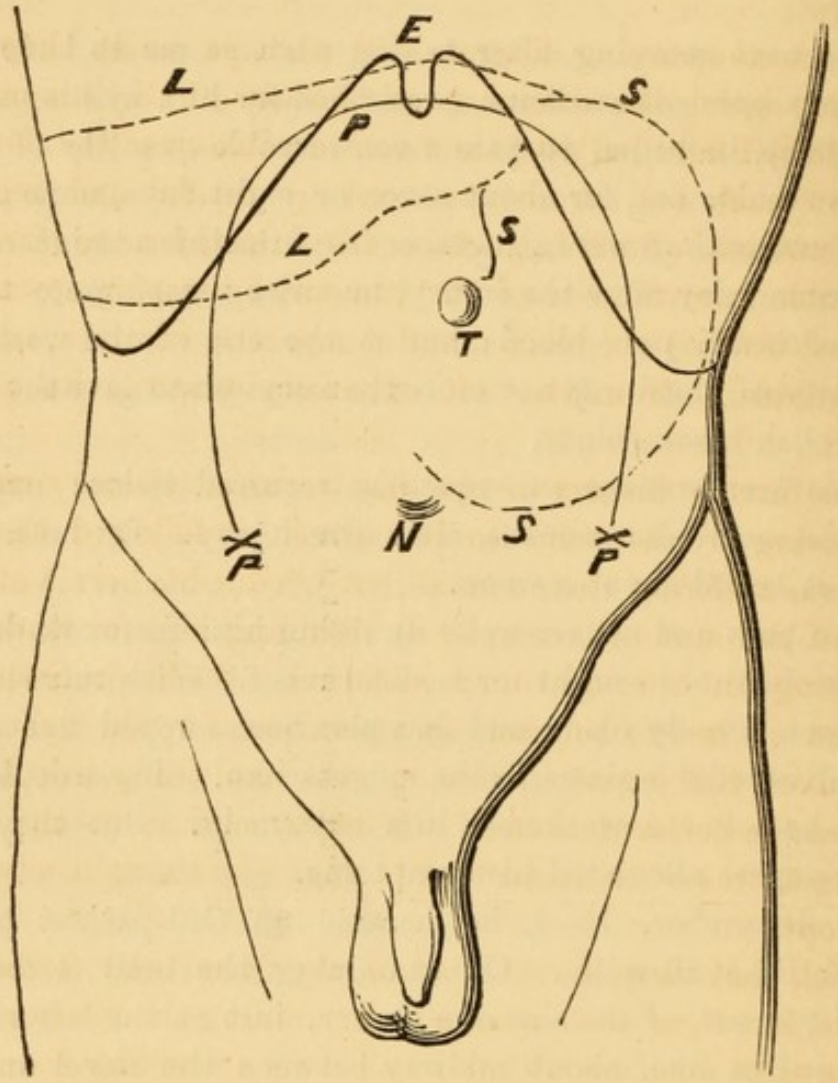
This hæmorrhage subsequently recurred twice: once six months, once nine months, after the injury. On both occasions it lasted about a week.

The pain and nausea quite unfitting him for work, he has at various times sought for medical relief. With this view, he has been largely bled; and has also been cupped five times, and blistered five times, in the epigastrium. These depletions have, he believes, weakened him extremely. But they have in no degree alleviated his symptoms.

In December, 1854, he became an Out-patient of the Royal Free Hospital. On examining the belly, I found a small tumour, of the size of a cherry, just on the left side of the median line, about midway between the navel and the ensiform cartilage. The convexity of the tumour could be detected by the eye, but its size and shape could only be appreciated properly by careful manipulation. It was tough, rather elastic, quite unchangeable in size by any pressure; and its deepest portion or contracted neck was tightly and

immovably embraced by the sheet of tendon that here covers in the *rectus abdominis* muscle, through an aperture on the inner side of which muscle it evidently protruded. As far as one could judge, it had none of the usual soft, doughy feel of omentum.

He generally suffers from more or less pain in the neighbourhood of this tumour. The exact situation of this pain usually corresponds to an arched line (P, P, Fig.), the convex



centre of which is at the ensiform cartilage (E), while its bases or extremities, below (**), tolerably coincide with the meeting point of the umbilical, hypogastric, lumbar, and iliac regions of the belly. The pain is referred to this situation even when it is immediately excited (as it readily is) by pres-

sure or manipulation of the tumour. It is relieved by the recumbent posture; and is rendered much more severe by stooping, and by muscular exertion. Its worst paroxysms are accompanied by nausea and loss of appetite. During the twelve months it has been present, the patient has lost flesh, strength, and colour; indeed, his general health has seriously suffered; while the severe pain to which even moderate exercise gives rise, quite precludes him from earning his living.

The accompanying diagram will perhaps assist the reader in appreciating the situation and relations of the tumour (T). The dotted lines indicate the relative position of the liver (L) and stomach (S), as mapped out by careful and repeated examinations. Such inquiries confirm the inference obviously deducible from the site of the tumour, by tracing towards it (almost into it) the relaxed and tympanitic stomach, in passing gradually from the left extremity towards its pyloric pouch.

The further history of the case is unsatisfactory enough. Supposing my diagnosis to be correct, it followed that the man was suffering from a small but irreducible hernia of some part of the stomach, completely disabling him for work, and inflicting on him continual suffering. Such circumstances seemed to me to suggest an operation for the relief and return of the impacted viscus. On explaining this to the patient, he declared himself willing to submit to any remedial measures of the kind that it might be thought advisable to adopt.

With that view, I sent him to my friend and former colleague, Mr. Fergusson, who, after examining the tumour, came to the same conclusion that I had done respecting its nature, and decided to operate. But, just before the time fixed for the operation, the patient's resolution failed him, and he absented himself altogether. A few weeks ago (September 4th, 1856), I saw him again, according to his own statement, decidedly worse, and suffering from more pain than before.

Remarks.—Without venturing to regard the above diagnosis as more than a probability, we may at least assert, not only that it explains a larger number of the circumstances connected with the case than any second opinion, but also that these circumstances are scarcely compatible with any other diagnosis. The pain, the nausea, the aperture in the aponeurosis, and the characters of the tumour, decidedly indicate the protrusion of some mobile, flexible, and important portion of the contents of the belly;—some part, in short, of the digestive canal or its immediate attachments. But, to say nothing of the situation of the tumour, and its consistence under manipulation, the date and amount of the subsequent hæmorrhage were such as any mere impaction of omentum could scarcely explain. The injury and the constriction might therefore be regarded as involving the tube itself.

That the portion of tube thus impacted was stomach, and not intestine, seemed deducible, not only from the situation of the tumour, and its relation to the traceable outline of the flaccid and mobile stomach, but also from the complete absence of all symptoms of obstruction of the canal. Had either small or large intestine been impacted in the form of such a tumour, even by but a portion of its calibre, or by its free edge, still the mechanical and physiological results of so much constriction would almost to a certainty have occluded the cavity of the tube; at any rate, would probably have impeded the normal transmission of its contents. The pathology of hernia does indeed abundantly show how easily the worst results of strangulation are brought about by no greater occlusion than such a partial impaction of the bowel would imply.

It is hardly necessary to add that neither depletion, counter-irritation, nor mercury, could reasonably be expected to relieve the symptoms produced by such an accident as that above described. It is, however, not at all impossible that, at the date of its first protrusion, the tumour might have been reduced by proper manipulation; especially with the aid of

chloroform, or of the local application of ice. At the time I first saw it (nearly a year after the accident), any such proceeding was quite out of the question.

I regret that I cannot refer to the three or four cases of this kind which I know to have been recorded by various observers. It is my impression that none of them quite resemble the above in the precision of their history and symptoms, and that one or two of them have been mere instances of painful epigastric protrusions, reducible by pressure, and relieved by proper bandaging.

THE END.

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