did not figure these orifices; and Magendie did not believe in their existence.

The systemic lymphatics were at one time supposed to arise from the blood-vessels, arteries, or veins; or from the ducts of glands. This conclusion was arrived at in consequence of the results obtained by forcible injection of the lymphatics, or from the lymphatics being found to contain the special secretion of glands. *Monro secundus* and William Hunter taught that they arise in the spaces of the cellular tissue; and both claimed the discovery. Fohmann arrived at the conclusion, from injecting the lymphatics with mercury, that they form dense networks in the interior of the tissues; while, according to the views of other observers, they arise in lacunæ or cavities lined with a layer of endometrial cells, most abundant in young and rapidly growing tissues. Cells resembling lymph-cells also lie free in the intestinal tissue.

Reference was made by the lecturer to the investigations of von Recklinghausen and others with regard to the relation of the origin of the lymphatic capillaries to the connective tissue spaces. These spaces have many characters in common with the lymph-lacunæ. The characteristic cells have been found in them by His and others; and histologists have come to regard all cavities lined in this way as giving origin to lymphatics. The bursæ mucosæ are to be regarded as holding an intermediate place between the lymph-cavities and the serous membranes.

Dr. Curnow next spoke of the connections of the lymphatics with the surfaces of serous membranes. Von Recklinghausen traced solid particles from the surface of serous membranes into the lymphatics; and described small perforations or *stomata* through which this passage took place. His observations were confirmed by Dybkowski, Schweigger-Seidel, and Dogiel; and Klein has recently described the stomata in the pleura. There are two kinds of these openings; *stomata vera*, and *pseudostomata*. The *stomata vera* are either (a) openings leading directly into lymphatic vessels; or (b) simple discontinuities of the epithelioid lining, opening into a lymphatic veins. Those of the class *a* are found on the peritoneal lining of the diaphragm, and on the omentum and pleura; and those of class *b* have been seen in the omentum of rabbits and the mesentery of the toad. The pseudostomata consist of superficial branched cells lying in the lymph-canalicular system.

The synovial membranes of the joints do not present any direct communication with the lymphatics. But few lymphatics have been found by Sappey under the epithelioid layer of the vascular system generally, though Hunter described them as abundant in this situation. In the skin, the lymphatics are most numerous in parts distant from the heart. In the small intestine, they are specially arranged for the absorption of fat, and are prolonged into the villi. In the large intestine and in mucous membranes generally, their arrangement is the same as in the skin. Lymphatics are present in the filiform papillæ of the tongue, but not in those of the œsophagus. There are numerous lymphatic vessels in the interfascicular connective tissue of nerves. The existence of the "peri-vascular spaces" of Robin and His has been regarded by Kölliker and others as a pathological appearance. Lymphatic sheaths, however, can be readily demonstrated as surrounding blood-vessels. The lymphatics of muscular tissue are large, but apparently pass only a short way into the substance of the fibres.

CASE-TAKING BY NOTATION.

By HENRY VEALE, M.D.,

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IT is unfortunately a matter of daily experience, that the obstacles to the successful study and practice of medicine are great and numerous. In the first place, a long and severe training of the senses and of the intellect is requisite to enable the student of medicine to observe accurately and to interpret aright the symptoms of disease. In the next place, the phenomena of disease are not only extremely numerous, complicated, and difficult to appreciate, but they are also so constantly varying in degree or quantity, even when they are of the same kind, that the unaided memory can seldom recollect all the changes that have occurred in the course of any protracted case. Errors in diagnosis, however, arise more frequently from the omission to observe what ought to have been duly seen and recorded, than from our inability to observe or to retain the facts in the memory; and it is almost invariably acknowledged that the systematic examination of the patient and the recording of the facts elicited constitute the most certain safeguards for exact and rational practice. Here, however, a serious difficulty arises. The ordinary method of case-taking entails a vast expenditure of time and trouble; for, apart from the inevitable prolixity of verbal descriptions, it is not every one that has "the pen of a ready writer," and it is seldom that men are found combining with the faculty of correct observa-

tion the ability to describe rapidly yet briefly and with graphic force all the essential features of a case and to omit those of no importance. In hospitals connected with medical schools, the large staff of students and other medical attendants enables this difficulty to be overcome to a considerable degree. Elaborate case-taking is there the rule; and most hospital physicians will acknowledge that it is in great measure owing to the fulness and accuracy with which the cases are recorded, that the results of hospital observation are more reliable than those of general or private practice. But in other hospitals, and in general practice, medical men seldom have time to write out notes of their cases, and thus a large amount of important work fails to contribute to the progress of medical knowledge. During epidemics also, and in certain of the emergencies of military and naval service, numerous as well as accurate records of cases would be especially valuable; but they have hitherto been rarely made, because the medical attendants have, on such occasions, had neither the time nor the means for case-taking according to the usual methods.

Considerations of this kind led me many years ago to devise a plan for recording the ordinary symptoms of disease with greatly increased rapidity, but yet without any material sacrifice of precision; and the following is a brief description of the same. This method, which may be described as "Case-taking by Notation," consists in giving a numerical value to certain of the ordinary symptoms of disease, in making an arbitrary use of certain symbols, in adopting a limited number of constant abbreviations, and in recording the observations in a tabular form arranged according to the different systems of the body. The note-books that I have used for the purpose have varied in size from a small duodecimo to a large foolscap octavo, according to the object that I have had in view in recording the cases; but the size which I have found most suitable for all purposes is an oblong note-book, a little over eight inches long and about five inches wide, because this admits of being ruled so as to be available for all ordinary cases of disease, whether acute or chronic, and to present at one opening the state of all the systems of the body.

I shall subjoin a representation of one such opening, but I shall add thereto two columns which do not appear in my note-book. One of these will simply indicate the several systems of the body; the other will contain an explanation of the symbols or abbreviations that are employed in the illustration. I shall suppose that I have to record the observations made in a case of enteric fever with pulmonary complication and a damaged heart, on the tenth day of the disease (see Table).

Of course, the number of columns for the daily record will vary with the width of the note-book, and it will be seen that the abbreviations are usually both simple and suggestive. *Fr.*, for example stands for frontal region; *H.c.* for hypochondriac region; *H.g.* for hypogastric, and so on; but, as regards the chest, it is desirable occasionally to be somewhat more precise. This part is therefore divided first into right and left (*r.* and *l.*). Next, as each half of the chest has three aspects—the anterior, lateral, and posterior—each of these is subdivided into three regions—the upper, middle, and lower; and these regions are numbered consecutively, thus: anteriorly, I, II, III; laterally, IV, V, VI; posteriorly, VII, VIII, IX. The numeral I, therefore, stands for the supraclavicular and subclavian region; II for the mammary; III for the inframammary; IV for the axillary; V for the infra-axillary; VI for the lower lateral; VII for the suprascapular; VIII for the interscapular; and IX for the infrascapular. If still greater precision be needed, each of these regions may be further subdivided into two, when *1a.* will stand for the supraclavicular space; *1b.* for the subclavian space, and so on; but practically this is seldom required. On some occasions, it is necessary to use the Roman numerals to indicate these regions, the common or Arabic numeral being reserved for another signification, which I shall now explain.

There are certain symptoms or conditions—such as pain, thirst, debility, and the like—which appear to the observer to vary in degree or quantity more than in quality. Pain, for instance, may be described by the sufferer as dull, sharp, burning, lancinating, stabbing, and so on; but these expressions vary not only with the sensations, but perhaps even more with the intelligence and education of the patient. They have consequently very little diagnostic value. What the physician has to note and appreciate is, as far as possible, the amount or degree of pain, and this may be expressed on a scale of intensity ranging from 1 to 5—1 being equal to slight pain; 2 to severe pain; 3 to very severe pain; 4 to agony; 5 to extreme agony—such, *e.g.*, as that of the worst kind of angina pectoris. But pain may also be either constant or paroxysmal—*i.e.*, intermittent; and the abbreviations *c.* and *int.* would stand for these terms respectively. The notation (III, *l. c.* 2), then, opposite the word pain, if expressed in words at full length, would signify that severe and constant pain was felt in the anterior part of the left chest in its inframammary region.

Decubitus.—Opposite to this term, the letter *d.* signifies *dorsal*, and *r.* signifies *on the right side*. The other abbreviations required are *l.* = left—*i.e.*, on the left side; *s.e.* = reclining, or semierect; and *or.* = orthopnea, when from any cause the patient is obliged to sit up in order to be able to breathe.

Name.	Mary Fleming.	(N.B. These two columns are not contained in the note-book.)	EXPLANATIONS.
Date.	Dec. 1, 1878.	Dec. 2	
Day of Disease.	X.	XI.	
Pain	Fr. (III. l. c. 2.) II. r.		Nervous System.
Decubitus.....	D. and R.		
Sleep	4, Ir.		
Intellect	Del. noe. ∞ cl. dy.		Locomotion and Nutrition.
Debility.....	3		
Wasting.....	2		
Swelling	II. r. ty.		Digestive System.
Skin	(F. fl.) d.		
Eruption	Ab. l. ent.		
Anorexia	3		Genito-Urinary System.
Thirst.....	3		
Tongue.....	d. 3 [br.] r.		
Vomiting	(a bi.) ? c.		Circulatory System.
Dejections	5 fl. cl. b. s.		
Liver	n.		
Spleen	+ t.		Respiratory System.
Menstruation, etc.	P. II. 4.		
Urine.....	24 oz. r. ā.		
Spec. gravity ..	1024		Circulatory System.
Albumen & pigment	.1 Br.		
Urates	+		
Chlorides	—		Respiratory System.
Sugar.....	0		
Pulse.....	120, v. f. Rec.		
Rhythm	Ir. and int.		Respiratory System.
Impulse	5-6. 4", inv.		
Dulness V	4		
..... T	1" 11"		Respiratory System.
Sounds	1 v. f. 2, n.		
Bruits	S. b.		
Respiration	Ab. 40		Respiratory System.
Dyspnoea	3		
Cough	3 h		
Sputum	3 oz. rus. v.		Respiratory System.
Expansion	3, 6, 9, l.		
Percussion note.	3, 6, 9, l. d.		
Breathing.....	2, 5, 8, l. pu.		Respiratory System.
.....	3, 6, 9, l. tu.		
Prolonged expiration	3, 6, 9, l.		
Vocal resonance	3, 6, 9, l. br.		Respiratory System.
Dry râles	3, 6, l. fr.		
Moist do.	3, 6, 9, l. s. c.		
Temp. 9 A.M. ..	103°		Respiratory System.
..... 2 P.M. ..	105°		
..... 9 P.M. ..			

This is the representation of the note-book mentioned above.

Sleep.—In regard to sleep, it is well to note, as nearly as possible, the total number of hours during which the patient has slept, and the numeral expresses this; but the abbreviations *n.* and *ir.* are also useful to indicate normal and irregular or broken sleep respectively.

Intellect.—Here it may have to be noted that the mind is *cl.* (clear), or *d.* (dull), or that there is *del.* (delirium), which may be *c.* (constant) or *int.* (intermittent). A state of delirium alternating with lucid intervals would be expressed by the notation *del. ∞ cl.*; this latter being the general sign to express a variable condition.

Debility.—Of this condition, five degrees may be noted, viz.: 1 (weak); 2 (very weak); 3 (only just able to walk); 4 (only able to stand); 5 (unable to rise in bed).

Wasting.—The numerals 1 to 5 express the degree: 1 (slight loss of weight); 5 (extreme emaciation).

Edema.—*Swelling*.—*Æ. S.*; the parts affected being distinguished by the appropriate abbreviation.

Skin.—Under this heading, the face or countenance should be described: *e.g.*, *F. p.* (face pale); *F. fl.* (face flushed). As to the skin, it may be *s.* (sallow); *j.* (jaundiced); *sw.* (sweating); *d.* (dry); there may be *sw. ∞ d.* (sweating alternating with dryness), or there may be *sw. noc.* (night-sweats), etc.

Eruptions.—Here, *ent.* (the rose-spots of typhoid); *m.* (the rash of measles); *sc.* (scarlatinal); *pap.* (papular); *sq.* (squamous); *ves.* (vesicular); *t.* (the rash of typhus).

Anorexia.—It is so seldom, comparatively speaking, that the appetite in disease is in excess, that it is more convenient to use the heading "Anorexia", of which there may be five degrees: 1 (slight loss of appetite), and 5 (complete disinclination for food); but, if it should be requisite to note an extreme desire for food, it is only necessary to write "Appetite" over "Anorexia", and to express the degree by one of the numerals 1 to 5.

Tongue.—The quantity of fur or coating can also be expressed on a scale varying from 1 to 5; and the tongue may be *d.* (dry), *m.* (moist), *w.* (white), *y.* (yellow), *br.* (brown), *bk.* (black), *gl.* (glazed), *ap.* (covered with aphthæ), [*w.*] *r.* (white with red edges), or [*r.*] *y.* (red in the middle and yellow at the sides), etc.

Vomiting.—The sign ? here indicates nausea, but actual vomiting is to be noted by the numeral which corresponds with the number of times that it has occurred. The abbreviations *Bi.* (bilious), *Bl.* (blood), *fl.* (watery), *M.* (mucus), *Æ.* (aërated or frothy), *B. s.* (streaked or stained with blood), are those most frequently required.

Liver.—After this heading, it is generally sufficient to record an increase or decrease of size by the notation + or -, as the case may be; but, if greater precision be requisite, the rib or interspace at which dullness on percussion commences in the mammary line should be noted, as well as the extent downward in inches, thus: "Liver IV 6" would indicate that dullness commenced at the fourth rib and extended downward for six inches. Note in like manner for the midaxillary line.

Spleen.—A similar proceeding should be adopted for the spleen, with the exception that the percussion should be made and noted for the axillary line, and transversely, but not for the mammary line.

Dejections.—Numerals are used to record the number, and the abbreviations—*bi.*, *bl.*, *b.s.*; *c.* (costive); *cl.* (clay-coloured), etc.—denote the character of the evacuations.

Menstruation.—In general practice and in hospitals for women, this is an useful heading. The function may be *r.* (regular); *ir.* (irregular); + or -; + + = menorrhagia or - - = very scanty; 0 = amenorrhœa. *M.* (multiparous); *N.* (nulliparous); *P.* (pregnant); and the Roman numerals I, II, etc., indicate whether for the first or second time, etc.; whilst the common numerals 1, 2, 3, etc., denote the month of the existing pregnancy.

Urine.—The quantity should be stated in ounces; the colour by the abbreviations *y.* (yellow), *r.* (red or high-coloured), *br.* (brown), etc.; and the reaction by the letters *ā.* (acid), *al.* (alkaline), or *nl.* (neutral). The quantity of albumen is best expressed by a decimal, as .5 (one-half). After Pigments, I am in the habit of noting the colour of the ring that is formed when the urine is floated over cold nitric acid in a test-tube.

Pulse.—This being the first heading for the circulatory system, it should here be noted whether the examination is made in the erect (*e.*), sitting (*s. e.*), or recumbent (*rec.*) position. The number of beats per minute and their character should likewise be stated. *H.* (hard or strong); *f.* (weak); *di.* (dicrotous); *j.* (jerking); *sm.* (small); *lg.* (large); etc. Under *Rhythm*, *r.* (regular); *ir.* (irregular); *int.* (intermittent).

Impulse.—Here should be recorded the exact site of the apex-beat. Thus: 5 indicates the fifth rib; 5-6 the fifth interspace; and 1", 2", or 3" the number of inches to the left of the sternum. *St.* means under the sternum; *st. l.*, the left margin; and *st. r.*, the right margin of that bone. Similarly, 1" *r.*, 2" *r.*, etc., would mean respectively one inch and two inches from the right margin of the sternum. Again, the impulse may be *vis.* (visible); *inv.* (invisible); *imp.* (imperceptible to the touch); *f.* (feeble); *h.* (hard or forcible); *diff.* (diffused); *r.* (regular); *ir.* (irregular); *int.* (intermittent); or *P.* (palpitating). *Ep.* would indicate that it was perceptible in the epigastrium. Thus, "Impulse,

5—6, 3rd, *vis. P. int. ep.*” would signify that the apex-beat could be seen in the fifth interspace, three inches from the left margin of the sternum; that there was palpitation; that the action of the heart was intermittent; and that the impulse was also visible at the epigastrium.

Dulness.—As a general rule, it is sufficient to note the extent of cardiac dulness in the two directions, vertical and transverse. The first is ascertained by percussing from above downwards at the distance of one inch from the left margin of the sternum—*i. e.*, along the parasternal line; and the rib or interspace at which the dulness commences is to be noted after the letter *V*. The transverse dulness is found by percussing on the line of the fourth rib, and it is requisite to note both the point at which it commences and how far it extends to the left of that point. The notation given for the impulse comes here again into play; but, for the sake of additional clearness and brevity, it may occasionally be advisable to use Roman numerals to indicate the extent of the dulness. Example: Dulness $\frac{V. 4}{T. 5. l. iii.}$. This would mean that the cardiac dulness in the parasternal line began at the fourth rib; and that on the line of the fourth rib, *i. e.*, transversely, it began at the left margin of the sternum, and extended three inches to the left from that point.

$\frac{V. 4-5}{T. \frac{1}{2} r. iii \frac{1}{2}}$ would indicate, in like manner, that the vertical dulness commenced at the fourth interspace; and the transverse at half an inch to the right of the sternum, whence it extended three inches and a half towards the left.

Sounds.—These may be *n.* (normal); *f.* (weak); *v. f.* (very weak); *r.* (rough); *red.* (reduplicate); *ac.* (accentuated), etc. Example: Sounds $\frac{1. v. f.}{2. ac.}$ would mean that the first sound was very weak, and the second accentuated.

Bruits.—After this heading, the most useful abbreviations are *S.* (systolic); *D.* (diastolic); *P.* (presystolic); *A.* (apex); *B.* (base). Consequently, the notation *Bruits S.* and *D. B.* would signify that a murmur was audible at the base both with the systole and the diastole; and the absence of any other notation would indicate that these were the only abnormal sounds.

Respirations.—After recording the number of respirations per minute, the abbreviations *th.* (thoracic) and *ab.* (abdominal) are useful to denote their characters.

Dyspnoea.—*Cough.*—Each of these may be indicated on a scale of intensity varying from 1 to 5.

Sputum.—The abbreviations most commonly required are *ac.* (aërated or frothy), *bl.* (blood), *br.* (brown), *b. s.* (blood-streaked), *g.* (gelatinous), *gn.* (green), *gr.* (grey), *m.* (mucous), *m.-p.* (muco-purulent), *p.-j.* (prune-juice-like), *rus.* (rusty), *y.* (yellow). The quantity should always be recorded by definite measures, such as one drachm, one ounce, twenty ounces, etc.

[N.B.—After each of the succeeding headings of the respiratory system, the part affected must be specified by the proper numeral.]

Expansion.—This may be *n.* = normal; *-*, = diminished; *o.* = none. Thus, *- 1 r.* signifies deficient expansion at the right apex. If it be necessary to record the results of measurement, these may also be noted. Thus, *r. 2", l. o.* would mean that the right chest expanded two inches, the left chest not at all. But, in a case of asthma or emphysema, I should use the abbreviation *con* = contraction in addition; in which case the heading $\frac{\text{Expansion} +}{\text{Contraction} -}$ or $\frac{++}{--}$ would indicate with sufficient clearness that the inspiratory act was carried to a high or to an extreme degree, and that the expiratory movement was defective or extremely defective.

Percussion-Note.—The abbreviations required are *n.* (normal); *d.* (dull); *am.* (amphoric); *ty.* (tympanitic); and *c.-p.* (cracked-pot).

Breathing.—Here the chief abbreviations are *n.* (normal); *f.* (weak); *o.* (absent or extinct); *pu.* (puerile); *h.* (harsh); *lg.* (coarse); *j.* (jerk-ing, interrupted); *am.* (amphoric).

Prolonged Expiration.—After this heading, it is only requisite to indicate the part by the appropriate numeral; and here I may remark that, when the common numerals are not required to indicate quantity in the respiratory system, they may be used to denote the regions or spaces with greater convenience than the Roman numerals.

Dry Râles.—The only abbreviations required are *S.* (sibilus); *Rh.* (rhonchus); *Cl.* (clicking); and *Fr.* (friction-sound).

Moist Râles.—These may be *sm.* or *cr.* (fine, small, or crepitating), denoting the fine crepitation of commencing pneumonia; *s.c.* (subcrepitan), *i. e.*, larger but still small râles, as in capillary bronchitis; *lg.* (large or coarse); and *g.* (gurgling or cavernous).

Vocal Resonance.—This may be *+* = increased; *-* = decreased; *n.* = normal; *o.* = absent; *br.* = bronchial (bronchophony); *p.* = pectoriloquy; *am.* = amphoric; *æ.* = ægophony. Thus, the notation “Vocal Resonance, 1, *r.* +; 9, *l. æ.*” would signify that it was increased

at the right apex, and that there was ægophony at the left base posteriorly.

Temperature.—After this heading, it is useful to record, not only the reading of the thermometer, but also the hour at which the temperature was taken.

Such is a brief outline of the system of case-taking by notation; but it must not be supposed that I advocate it to the entire exclusion of the ordinary method. Under any circumstances, the history of the case and many other details must be written in words at full length, as well as the course of treatment—whether medicinal, hygienic, or dietetic. For this purpose, every alternate couple of pages in the note-book should be left blank, or only ruled with transverse lines. Nor is it pretended that the system is yet perfect. I find it to answer my purpose; but this is no doubt partly owing to my having used it for many years, and to my being on that account perfectly familiar with it. Many of my friends have adopted it, and have been kind enough to express to me their approval of it; but I cannot expect that either they or others should find nothing in it to object to, or that they should be unable to suggest many improvements. Dexterity in the use of the abbreviations is readily acquired if one do not employ a multitude of terms to express the same fact. Simplicity and uniformity are essential to useful and intelligible notation, and I have endeavoured to combine these conditions in a small vocabulary or glossary of terms, which I hope soon to publish, but which would constitute too dull reading for the pages of this JOURNAL.

A CASE IN WHICH THERE WAS DESTRUCTION OF THE THIRD LEFT FRONTAL CONVOLUTION WITHOUT APHASIA.

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THE subject of this notice, a house-painter aged 64, was admitted into the Royal Infirmary, under the care of Dr. Scott Orr, on August 9th, 1878. He was under treatment for cardiac dropsy, which proved fatal on October 10th. Into the history of the clinical symptoms I need not enter in detail, as they in no way varied from those usual in such cases, and are not, therefore, of special interest. It may be stated here, however, that there was not the least symptom of any defect in the speech of the patient, who could talk with perfect fluency and correctness; and that nothing was noticed which in any way pointed to cerebral mischief, except a tendency when lying quiet in bed to carry on imaginary narratives in a casual sort of way, and to refer to events as presently occurring which had no existence save in his imagination. These imaginary events had usually some reference to the past life of the patient, such as trade-disputes, etc. Otherwise, he was intelligent and quiet, and, when spoken to, he would give correct and sensible replies. After he died, I examined the body, and the morbid appearances may be summarised as under.

Necropsy.—The body was badly nourished. The legs were dropsical. Twenty-two pints of slightly turbid yellow fluid, with flakes of lymph floating in it, were found in the abdominal cavity; a quantity of a similar fluid in the right pleural sac, along with a web-shaped layer of recent lymph; and a little clear serum in the left pleural sac. The heart was dilated and enlarged, weighing 20 oz. There were a few firm vegetations on the mitral valve; the other valves were healthy. The aorta was wide and slightly tortuous; its lining membrane was thickened and atheromatous. The right lung was much compressed; its pleural surface was like chamois-leather in appearance; its tissue was subcrepitan and still capable of floating in water. The left lung was rather oedematous. The lining of the air-tubes generally was reddened. The liver was commencing to become cirrhotic; in the gall-bladder were inspissated bile and several scores of calculi, some white and faceted, others black and mulberry-shaped. The gall-ducts and the portal vessels were patent. The kidneys were both in advanced cirrhosis. The splenic capsule was thickened and white. The urinary bladder was slightly hypertrophied. The gullet and intestines were normal. There were a few patches of red mottling in the mucous membrane of the stomach, as if from punctiform hæmorrhage; but no ulceration. The spine had a strongly marked dorsal kyphosis (not angular), and a lateral curve convex to the right side in the upper dorsal region. There were irregular exostoses over the bodies of the dorso-lumbar vertebræ. The skull and dura mater were healthy. The arteries at the base of the brain were atheromatous. The third left frontal convolution was almost entirely destroyed, along with two-thirds of the island of Reil; over this area, the pia mater was disorganised and converted into a non-vascular, transparent, shreddy membrane, adherent to the pulpy brown surface of the irregular excavation where the brain-substance was miss-