gave every indication of recent peritonitis. The liver was enlarged and congested. On cutting into the part of the rectum external to the anus, it seemed a solid mass of flesh; but, on looking closely into it, a small contracted canal could be traced irregularly through the tumour. Beyond this, there was nothing to indicate that it was intestine.

NOTES OF AN AUTUMN HOLIDAY IN AMERICA.

By T. SPENCER WELLS, F.R.C.S.,

Surgeon to Her Majesty's Household, and to the Samaritan Hospital.

II.—PHILADELPHIA.

WE arrived in Philadelphia on the evening of September 13th. Professor Gross called on me at the hotel, and we went together to Dr. Atlee's. Early on the morning of the 14th, we assisted Dr. Atlee to remove an ovarian tumour from a lady upwards of fifty years of age. It was a large adherent tumour, and was removed, after tapping and breaking up, through a short incision. Three bleeding vessels in the torn adhesions were stopped by acupressure, the needles being passed through the whole thickness of the abdominal wall. The pedicle was secured by a parallel clamp, such as I used in 1858, and which is still sold and known both here and in America as mine, but which I have long since abandoned; as, instead of pressing the pedicle into the smallest possible space, its effect is rather to squeeze it lengthways, and so tend to separate the opening in the abdominal wall. The wound was closed by iron-wire sutures, including the peritoneum. The acupressure-needles were removed on the following day, and the patient made an excellent recovery.

In this and the other cases in which I saw Dr. Atlee operate, I was struck by the accuracy of his diagnosis, and his coolness and determination as an operator. He differs from my own mode of operating—first, in placing the patient in the semi-recumbent instead of the recumbent position, standing in front of her between her knees instead of to one side, and not using an adhering water-proof sheet to keep her dry. He uses an ordinary trocar, and applies a loose flexible tube to the cannula after withdrawing the trocar. After trying various forms of ligature, and the *écraseur* in four cases, he has come to adopt the clamp as the best general mode of securing the pedicle. He is careful to stop all bleeding vessels in separated adhesions by applying solution of persulphate of iron, or by acupressure; but is not very careful in sponging the peritoneal cavity clean. I did not find any noteworthy difference between his plan of after-treatment and that followed by Dr. Keith and myself here. As an anæsthetic, he prefers, and always uses, one part of chloroform and two parts of sulphuric ether. He thinks the patients struggle less than when under chloroform alone, and are less sick afterwards. It certainly answered remarkably well in the four cases where I saw it used.

At twelve o'clock, we went to Professor Gross's surgical clinic at the Jefferson Medical College. The theatre is large, comfortably accommodating from three to four hundred students. It was well filled; for, although the session had scarcely commenced, Dr. Gross had invited many practitioners of the district to meet me, and he introduced me to them in a most kind manner. A revolving table is in an open space in the centre of the theatre, and the students' benches are arranged all round. There are only a few beds for operative cases connected with this clinic, a large majority of the patients being what we call out-patients. They are seen by the assistants, and the more important cases are kept for the examination of the professor in the presence of the students. One case of fibrous ankylosis of the shoulder-joint, another of ankylosis of the knee-joint, and a case of chronic disease of the bladder, served as texts for some interesting observations and important instruction to the students. The ankylosis was in each case forcibly broken up under chloroform. I have often regretted how very little use is made of the out-patient room by our own teachers and pupils, and was very strongly impressed by the practical character of Professor Gross's teaching. It is quite certain that students would eagerly seek for practical information of this kind, who can hardly be forced by any system of roll-calling, certificates, schedules, and registration, to attend the systematic courses for which they are compelled to pay, if not to attend, by the regulations of our own examining boards. A negro suffering from an abdominal tumour having been brought in, I gave a short clinical lecture on the diagnosis between uterine and ovarian tumours. A pretty full report of this lecture has been published in the *Philadelphia Medical and Surgical Reporter*, and, I have heard, in other American journals.

In the afternoon, I assisted Dr. Atlee in a very interesting case. A hard prominent tumour occupied the central and lower part of the ab-

domen. The history led to the belief that it was probably an extra-uterine foetus. Dr. Atlee made a short incision below the umbilicus, and some foetid pus escaped. On introducing the finger, bone was felt; and all the bones of a perfect foetus at about the seventh month were removed. The cavity or sac in which the bones were enclosed was not disturbed; it was sponged out with a solution of persulphate of iron, and lint was introduced to maintain a free opening for discharge. The patient suffered no ill effects, and, I heard afterwards, recovered completely.

In the evening, we met a large party both of ladies and gentlemen at Professor Gross's house—expressly and most kindly arranged that, in the short time of our visit, we might become personally acquainted with some of the most distinguished of our brethren in Philadelphia, and with ladies of their families; and, if this should chance to meet the eye of any of our friends there, I hope they will not think we can forget the city of Gross and Atlee, Wood, Meigs, Hodge, Dunglison, Dickson, Hayes, Weir Mitchell, Morton, Maury, and other "good men and true" who shared in the hearty hospitality of the professor of surgery.

Next day was Sunday; but, before church, I paid an early visit with Dr. Morton to the Pennsylvania Hospital. There is nothing remarkable in the building itself; but the wards are clean and airy, and I was much pleased with a portable ward-apparatus, devised by Dr. Morton, for cleansing and dressing wounds. In order to do away entirely with sponges, and remove other causes of impurity in the wards, and lessen the danger of contagion, all wounds are cleansed by fresh water flowing over the part, and never returning upon it. Oakum is used instead of sponge, and is thrown away after being used once. The apparatus is like a small garden-engine on three wheels, with noiseless tires. On the top is the reservoir, holding several gallons of water, and furnished with an elastic tube and stop-cock. Below and on the sides are spaces for plaster, bandages, lint, various instruments, dressings, etc. Below is a can of hot water for heating the plaster, a box of oakum, cotton-wool, old linen, and tin buckets for the soiled bandages, dirty oakum, and impure water. This is all easily and silently pushed on from bed to bed; and, when all the wounds have been irrigated and dressed, all the refuse is at once removed from the ward. I have not seen anything so convenient, and saving so much labour, in any of our own or the continental hospitals; but I am anxious to direct particular attention to this apparatus for the far more important purpose it serves in getting rid of sponges, basins, and a mode of dressing which must tend to render the air of surgical wards impure, and to convey the organic poisons of pyæmia, erysipelas, or other contagious diseases, from one patient to another. In this hospital I saw a great many fractures put up on the principle of simple extension by adhesive plaster, which is so popular in America. It struck me as a great improvement on the old-fashioned splints, pads, and rollers, which still astonish modern visitors in some of our own hospitals, and pretty generally in those of Paris; but as by no means equal to a well-applied gypsum bandage, either in simplicity, or in the immobility secured to the broken bone, without unnecessary restraint of other parts of the patient's body.

CANNES AND TORQUAY AS WINTER HEALTH-RESORTS.

By SPENCER THOMSON, M.D., Torquay.

THE Temperature Reading for December 1867 at Cannes, furnished by "R. J. L.," in the *JOURNAL* of January 11th, cannot, I imagine, fail to surprise many persons who have hitherto regarded that now fashionable health-resort as the abode of almost perpetual summer. In contradistinction to the table of the temperature at Cannes, I beg to append that of Torquay for the same month, and taken at the same period of the day. I do not think that Torquay will suffer by the contrast, even though last December was the coldest known here for many years; and I imagine, from what we hear of Cannes, and of Southern Europe generally, since the present year came in, that, so far, the contrast would be still more favourable to this locality. I may premise that the instruments which are used for the Torquay observations have been seen and approved by Mr. Glaisher, as calculated, from their situation and exposure, to yield perfectly reliable and fair results; that these results have been for years accepted by the Registrar-General; and that their accuracy is vouched for by the gentleman whose well known observations extend over a period of more than twenty years. Moreover, these observations are published weekly in the *Torquay Directory*; so that, both past and present, they can be referred to by those interested in the subject.

Temperature Readings for December 1867 at Cannes and Torquay.

DEC.	CANNES.	TORQUAY.	DEC.	CANNES.	TORQUAY.
2	51	31	17	48	52
3	38*	35	18	51	42
4	36	29	19	44	41
5	37	40	20	34†	42
6	39	37	21	34	52
7	37	34	22	34	51
8	35	35	23	39	49
9	†	35	24	38	51
10	38	41	25	48	49
11	34	50	26	41	41
12	38	50	27	44	40
13	42	43	28	44	37
14	39	43	29	33	32
15	44	54	30	28	39
16	50	53	31	38§	34

NOTE.—From the above table it will be seen that on ten days during the month of December, the temperature of Cannes was higher than that of Torquay; on eighteen days Torquay rose above Cannes in warmth; and on three, including the 9th when no temperature is entered, they were equal.

It is to be regretted that the Cannes correspondent of the JOURNAL has not given the maximum and minimum temperatures of each twenty-four hours; as I think that would probably have brought out, in contrast, one of the most striking advantages of Torquay—its extremely limited range of temperature, and the absence of those rapid ups and downs of the thermometer which characterise so many other places. In illustration, I append the

Extremes of Temperature registered at Torquay, and at the Horticultural Society's Gardens, Chiswick, near London, from December 5th to December 11th, 1867.||

TORQUAY.	CHISWICK.	TORQUAY.	CHISWICK.
5 38—31	47—29	9 39—29	33—13
6 38—30	39—28	10 48—39	42—27
7 36—32	38—29	11 51—46	50—35
8 41—33	35—13		

All places, of course, have not as wide a range as Chiswick; but, that apart, the advantage that Torquay offers to many invalids, in respect to assimilation between its night and day temperatures, is great. I may here be allowed the remark, that a low range of the thermometer is a very different thing, with abundance of English coal and of English comforts, from what it is with expensive wood fires or unwholesome stoves. In Nice, I observe that, according to the latest tariff of the Hotel des Anglais, "wood, per basket," stands at three francs. We often hear grumbling at Torquay at 3s. 6d. per week for coal-fires. Others may draw their conclusion.

I cannot close this paper without alluding to the persistent and malicious reports which were so industriously spread respecting the sanitary condition of Torquay at the commencement of the present season—reports so utterly false and absurd, that it is almost a wonder that they did not carry their own refutation. It cannot be denied that these reports, in some degree, did the work they were intended to do—divert the stream of visitors to other less favoured localities||—as numbers of families and individuals *en route* for Torquay were, unquestionably, deterred coming for health to a place which they heard was decimated by fever. That gastric fever did prevail in the town for some period of autumn was no secret; its extent and fatality may be judged by the fact, that there were but nineteen deaths from that disease registered during the period of three months, out of a population of more than twenty thousand persons.

Doubtless it is a serious matter for a health-resort like Torquay to have an epidemic in it at all, however trivial; but, as yet, can we point to any locality so favoured, or so hygienically perfect, as to be entirely free from the chance of such a visitation? The visitation, slight as it was, has in this case, however, borne its fruit, by rousing the authorities to a still stricter scrutiny of their drainage capabilities, and to efforts for the amendment of their defects, so as, for the future, to put it out of the power of those who are envious of the growing prosperity of this beautiful, and for so many years favoured, health-resort, to find even an excuse on which to found rumours so grossly exaggerated as those of last October, and to save them the trouble and expense of warning visitors. I am happy to state, on good authority, that Torquay is now, and has been for many weeks, free from epidemic disease.

* Snow. † Snow on the Esterelles Mountains (no temperature given).

‡ Snow at night. § Snow on the Esterelles Mountains.

|| This table was the first that came to hand, and was not selected.

¶ In various places in the south, placards were, it is said, posted on the walls, warning visitors against coming to Torquay; and the local papers, both north and south, conveyed similar philanthropic (?) advice.

RESEARCHES ON THE ACTION OF THE HEART.*

By GEORGE PATON, M.D., Bowmanville, Canada West.

THE opinion generally entertained by physiologists respecting the action of the heart, whilst the circulation is vigorously maintained, is, that the diastole of the ventricle is the result of this previous contraction, the fibres relaxing and assuming a state of rest, just as the fibres relax after contraction, when the heart is deprived of blood or placed *in vacuo*; and the act is described as an instantaneous expansive movement, by which the ventricle returns to the same state with regard to form, size, and position, as during the previous period of repose; the blood flowing from the auricles by a suction-power, to fill up a vacuum produced in the interior of the ventricle.

If we examine the action of the heart when it is slow, pulsating at the rate of twelve or fourteen times a minute—in a turtle, for instance—we perceive that, when the auricles contract and expel a portion of blood into the ventricle, it immediately contracts and projects a wave of blood along the aorta; or rather, the contraction of the auricles extends by a sort of vermicular or continuous movement to the ventricle, causing it also to contract. After contraction, the ventricle immediately dilates, its parietes becoming lax and flaccid; and blood passes rapidly from the dilated auricles, without contraction, into the cavity of the ventricle, filling it out to a partial extent.

Properly to understand the manner in which the diastole of the ventricle is effected during this action of the heart, we must remember that at this moment the veins in connexion with the auricles, and the auricles themselves, are filled and almost distended with blood; and a *vis a tergo*, or power by which the blood is impelled towards the heart, is exerted against the internal parietes of the auricles, which, the instant the fibres of the ventricle and of the auriculo-ventricular valve begin to relax, causes the blood to enter the foramen of the ventricle, and quickly dilate its cavity to the previous extent during the pause. But, when the action is more vigorous, the blood passes so quickly from the dilated auricles into the cavity of the ventricle, that the movements seem almost simultaneous; the blood appearing to open up, as it were, the relaxing parietes of the ventricle, or dilate them to their previous extent during the pause.

This constitutes the first stage of dilatation, the pause ensuing, during which the fibres of the auricles and of the ventricle remain relaxed; and, as the auriculo-ventricular foramen continues open, the *vis a tergo* exerted on the blood in the two cavities—the auricle and the ventricle—may be said to be nearly equalised. But, if the force exerted by the blood, as it passed from the auricle into the ventricle, had been greater, it would have dilated the parietes till they reached the point of distension, and contraction would have ensued. But this power, during the natural action of the heart, is only produced by contraction of the auricles; for, as the blood, on its return from the extremities, passes along the *venæ cavae* to the heart, it readily dilates and distends the parietes of the auricle, which, being thinner, are more easily dilated than those of the ventricle; and then the auricle contracts, and projects a portion of blood into the ventricle, completing the second stage of the diastole, and causing the ventricle, as we have stated, to contract.

We have distinctly seen, during this state of the circulation, the blood, as it reached the heart, fill out and distend the auricles, causing them to contract and produce contraction in the ventricle; while no contractions were observed in the *vena cava* or extremities of the venous trunks—showing that, when the action of the heart is slow, the impetus imparted by the blood, as it reaches the auricles, is sufficient to dilate the parietes and produce contraction, independently of any action in the *vena cava* or extremities of the veins; and that one reason why the auricles are destitute of valves is, that the blood may readily reach and distend their parietes, in maintaining the action of the heart.

With regard to the amount of blood that enters the ventricle during each stage of the diastole, we may remark that, when the action of the heart is slow, the ventricle is chiefly dilated during the first stage of the diastole, as the auricles do not contract with vigour, and, in warm-blooded animals, principally in the appendices; the act being apparently or chiefly designed to produce contraction in the ventricle, and consisting of a sort of vermicular movement extending to the ventricle. When the action becomes more rapid, we have, during the second stage of the diastole, seen the ventricle enlarged by one-third of its previous size, the parietes being distinctly stretched out, and the fibres elongated till distension was produced; from which it appears that, in this condition of

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