applications of the waters of Aix as I have had personal experience of; and it now only remains for me to record my obligations to Monsieur Le Dr. Vidal, Medecin Inspecteur des Eaux d'Aix, Savoie, and to Dr. Fr. Bertier, Medecin aux Eaux d'Aix et Marly, from whom I received the kindest attention.

I will not enact the part of a tourist's guide, but there is one drive of about two hours so beautiful that I cannot omit to notice it here for its lights and shades, its scenery of rock and vines, its chestnut woods, and its water. I have to thank Dr. Bertier for it; on a card he wrote the following directions:—"Aller à Tresserve en voiture, traverser le village et revenir par le lac en passant par Terenure."

We ascended the village by zigzag roads, bordered with acacias and vines. On our left was spread out, far below us, the valley with its cultivated fields, its vines, and its tall poplars; beyond lay the cliffs of tufa or chalk rock contrasting in their horizontal white abruptness with the verdure below, and when we rose to our high level, the beautiful lake below on our right, scarcely rippled on its surface, and on its opposite side the towering rocky border rising, not too abruptly, covered with shrubs and verdure to the top, varied by stripes of bare rock. Our road as we descended beyond the village lay in similar zigzag roads to those by which we had ascended, bordered by magnificent old chestnut trees in full verdure and full fruit. Arrived at the turn homewards, we reached the far end of the lake, and our route lay along a level causeway built in the water of the lake, but near its border; on each side of us, as we drove along, for some miles, shoals of small fish darted here and there among the stems of the typha and of water-lilies, yellow, blue, and white, with their floating leaves and lovely flowers, while above them fluttered myriads of beautiful painted butterflies, or skimmed along like hawks the gauze-winged dragon flies. And this ends my recollections of Aix-les-Bains.

ART. XII.—*Clinical Notes of a Remarkable Case of Obesity, treated with Liqueur Potassæ and Extract of Fucus Vesiculosus.** By A. W. FOOT, M.D., Senior Physician to the Meath Hospital.

I WISH to bring under the notice of the Society a short account of a remarkable and sudden development of obesity in a boy seventeen years of age. The treatment adopted was so far successful in

* Read before the Medical Society of the College of Physicians, November 10th, 1875. [For the discussion on this paper see p. 549].

that he was restored from a condition of absolute helplessness to the use of his limbs, was enabled to stand and walk without assistance, and to make himself useful about light work. The medical treatment adopted consisted chiefly in the administration of large doses of liquor potassæ—up to ʒij. three times a day—and of the liquid extract of the fucus vesiculosus; these remedies were used separately and in combination. The cause of the rather sudden development of adipose tissue about the time of puberty appeared to me to be connected with an arrest of development of the testes, and to be comparable to the obesity observed in animals deprived of the essential organs of reproduction. These six photographs* of the boy, taken in the Meath Hospital, will convey some idea of his condition.

He was admitted 15th April, 1875. At that time he had not left his bed—although apparently in robust health—except on three or four occasions, since the July previous. He was quite unable to stand, or even to sit up. He was conveyed to hospital in a cart, lying on his side on a truss of straw; the cart was backed up to the hospital steps, the tail-board removed, belly band loosened, shafts raised, and he was slid down along the inclined plane of the cart into the arms of two of the house porters, who carried him up to his bed. My first acquaintance with him was in January, 1874, when his mother brought him to the hospital for advice, because he had at that time been getting so fat that for the last three or four months he had been able to do no work. He was being brought up to his father's business of stone-cutting, and "though strong enough, when he stooped he got caught in the chest, and could not give a second blow to the chisel." On this occasion his remarkable appearance elicited such comment from a crowd of students loitering in the hall that no entreaties or commands on the part of his mother could induce him to remain. He was brought again to hospital a month afterwards. On this occasion I had to have him locked up in the resident's room, to protect him from the admiring crowd which followed him about. He had been twenty-four days in hospital when, having found an opportunity of getting at his clothes, he made his escape home. At this time he possessed fair powers of locomotion. When he presented himself for the third time—April, 1875—he had become alarmed at his condition, and told his mother he would remain, and that she might keep his clothes, so that he

* Exhibited to the Society.

CASE OF OBESITY.
D^R A. WYNNE FOOT.

Lith^d by John Falcome, Dublin

From a Photograph

could not run away again—an undertaking there was little chance of his achieving, inasmuch as he was quite unable to stand, even with assistance. His age at this time was seventeen, his height 4 ft. 5 ins., his weight 9 stones $2\frac{1}{2}$ lbs. His diminutive stature gave him the appearance of being as broad as he was long. He had coarse red hair; his red cheeks seemed bursting with fat; they encroached upon the bridge of his nose, and almost buried his blue eyes, which yet seemed to be protruded from their sockets, and to be contending against the encroachment of his florid and prominent cheeks. He appeared to have no neck, as his chin lay upon the front of his chest, and some thick, brawny, transverse folds occupied the space behind between the occiput and the shoulders. There was a marked accumulation of fat in the mammary regions, the situations of the nipples being indicated by deep depressions; the belly lay spread out on the bed beside him, and considerably in front of his knees, as he lay on one side; there was a deep transverse fissure across the hypogastric region. The legs and thighs seemed disproportioned to the rest of the body; the fat decidedly preponderated upon the head, neck, and trunk. The gluteal regions were comparatively small, principally from marked muscular atrophy, due to long disuse of the muscles in this neighbourhood from confinement to bed; the gluteal muscles scarcely responded to strong interrupted currents, as well from their diminished bulk as from the bad conducting power of the adipose tissue overlying them. To this condition of these muscles I was inclined to attribute much of his inability to stand, though he himself said it was the weight of his belly dragging on his spine prevented him from doing so. His skin was very vascular. The general colour of his flesh was reddish, except about the feet and legs, which were more or less purple, and marked with streaks of bluish shade, especially about the tendo-Achillis on either side, where the integuments were almost of an indigo colour; these livid parts, when firmly grasped, became quite white, and very slowly recovered their bluish colour on the removal of pressure. There were also linear streaks of a purplish shade along the fronts of the thighs. Some of the measurements made were as follows:—Circumference of the cranium, $22\frac{1}{8}$ ins.; submental circumference, 25 ins.; from one acromion to the other, across the back, $15\frac{3}{4}$ ins.; circumference of the right arm at the fold of axilla, 12 ins.; of the left arm at the same place, 13 ins.; of the right wrist, $6\frac{3}{4}$ ins.; the left wrist, $6\frac{1}{2}$ ins.; bi-mammary circumference, 39 ins.; of the waist, 39 ins.; of the right calf, 11 ins.; of the left calf,

10½ ins.; of the right hand, at the second phalanx of the fifth finger, 7 ins.; of the left hand at the same place, 6¾ ins.; of the neck, 16½ ins.; from the tip of the lobe of one ear to that of the other, measured along the convex outline of a semi-circle of red fat which reposed upon the front of his chest, 11½ ins. The circumference at the umbilicus could not be obtained, as this point, owing to the pendulous condition of the belly, was much below the iliac crests. The situation of the umbilicus was marked by a deeply concave depression the size of a shilling. Although he was able to do little more with his lower limbs than move them slowly in bed, his hands were pretty strong—the dynamometer registered a grasping power of 12 kilos. with the right, and of 13 with the left. His hands and feet were small and shapely, contrasting with his awkward and unwieldy body, corroborative of one of the deductions of Dr. Chambers, “that in corpulent persons the bony framework of the body is less massive than in the spare, as indicated by the smallness of their hands and feet.” Dr. Chambers’ conclusions were derived from the observation of 38 obese persons, ranging in weight from 16 to 36 stones.

When admitted to hospital on the last occasion he was quite unable to support himself on his legs, no matter how assisted; he was unable to raise himself on his elbow—I offered him a shilling if he would do so; he tried, and fell back exhausted with the attempt. When turned in bed he puffed and panted with the exertion. In order to have his photograph taken, an attempt was made to carry him, sitting in a chair, to the photographic room, but he could not be got to sit up, and he was carried down, slung in a sheet, by six students, and laid on a sofa, when the operation of photographing him was effected, though imperfectly, owing to the difficulty of getting him into the proper positions. His unwieldy helplessness created much difficulty in the process of defecation, and we were obliged to adopt the manœuvre which he had found to be most convenient prior to his admission. His legs were assisted out of bed, so as to rest on the floor; he worked himself round, so as to lie with his stomach on the edge of the bed, a suitable vessel was put on a chair behind him on a level with the anus, and the fæces projected backwards into it. This clumsy proceeding was found more practicable than the use of a bed-pan, and he was quite unable to sit upon a night-chair. He complained of pain and weakness in the back, referred to the lower dorsal region of the spine and to each infra-scapular region; he said it was the “weight

of his belly was breaking his back;" that he felt it most when he tried to "sit up straight on himself," and that this "grab in the back" and weakness were daily increasing; the lower dorsal spines were tender to strong percussion. His usual and most comfortable position in bed was lying three-quarters round on his face, the belly spread out before him, and his chin resting on his right forearm—in this position the drag of the abdomen upon the back was least felt.

His genital arrangements were rather peculiar—a fair amount of reddish-brown hair almost quite concealed a penis of the most infantile description; a bit of twisted skin covered a glans, which measured 15 mll. ($\frac{6}{10}$ in.) long by 12 mll. ($\frac{5}{16}$ in.) broad; there was some smegma preputii round its base. There seemed to be no body to the penis, nor was it buried in the fat of the part. The penis did not appear as large as that of a child a year old; from the penoscrotal angle to the tip of the prepuce, when drawn out, measured 20 mll. ($\frac{8}{10}$ in.) The scrotum was sufficiently capacious, but did not, any more than the penis or eyelids, participate in the general obesity; the testes were so soft and small as to be felt with great difficulty, and were certainly not larger, if so large as an ordinary garden pea; they could be pinched tightly between the fingers without causing any uneasiness—so firmly could they be squeezed that I was convinced that any pain caused was due to the pressure of the scrotum. He said they had never been any larger. It was ascertained that he had had erections, but none for the last three years. His voice was not puerile, and he had slight indications of sexual hair about the face. His circulation was feeble; the action of the heart weak and rapid, but not irregular, or attended with abnormal sounds. His average pulse, from many observations, was 128.5; it was never observed below 116, and reached 140 when lying quiet in bed; when he was disturbed or moved it became much more rapid. His temperature was normal in the axillæ, 98°·2 Fahr. He was very sensitive to cold, though so fat, and suffered much in frosty weather; the extremities became very livid in cold weather; his mother told me that for the last two years his feet, legs, and thighs would get "as cold as the snow, and turn blue." Cupping glasses or leeches produced persistent ecchymoses, owing to the languor of the capillary circulation. Leech bites were surrounded with persistent indigo discs as large as sixpenny pieces. It was very difficult to get leeches to fasten on his skin, from the highly disagreeable odour it exhaled of hircic and caproic acids; this

symptom was relieved by warm baths. His respiration was shallow and rapid, though there was no pulmonary obstruction; its average rate was 32·2. His vital capacity was frequently tested with Casella's spirometer, kindly lent me by Dr. Grimshaw. On one occasion (27th April) the mean result of ten trials of this instrument was 56·6 cub. ins., ranging between 60 and 54 cub. ins. On another occasion (18th May) mean of ten observations was 62·25 cub. ins., the extremes 65 and 45. On 29th May, mean of ten observations was 58·15 cub. ins., extremes 42 and 66 cub. ins. 14th August, his mean vital capacity was 59 cub. ins. How far this persistently small respiratory capacity was concerned as a *cause* of the fat by impeding oxidation, or was the *result* of an impediment to respiration owing to the embarrassed condition of the abdominal muscles, is a question not easily answered, but it is a fact that the lungs have been found very small in those who have died of fat. I found that the mean of five observations on the vital capacity of a boy who was less tall by $\frac{1}{4}$ in. was 119·6 cub. ins.

His mental capacity was quite proportioned to the amount of education he had received, which was limited, but not defective. His countenance indicated a combination of pugnacity and shrewdness; he certainly did not exhibit the marked amiability of disposition so characteristic of fat people, but this trait appears to accompany physiological, rather than pathological, fatty development. He was very irascible, and subject to violent fits of temper. His right pupil was vertically oval, and there was a small opacity of the right cornea from an injury; the right pupil dilated freely, but gave him a peculiar expression. He had not been a great eater or drinker, nor had he had the means of indulging his appetite, had he been so disposed. His food at home had consisted chiefly of potatoes for dinner, and cake bread and tea for his other meals; he did not eat sugar, nor did he care for it; he was not of a lazy or indolent disposition, although since he had become embarrassed with the fat he passed a good deal of his time in sleep; nor was his fatness inherited as a family feature; his father was short and stout, but not all over fat; neither was his mother—the heaviest she had ever been was 11 stone. He was one of a family of 13, no other member of which exhibited this peculiarity. These matters were inquired into, because Dr. Chambers has remarked that hereditary predisposition is more decidedly marked in obesity than in any other disease, the proportion being—in insanity,

13 per cent.; in consumption, $24\frac{1}{2}$ per cent.; and in obesity, $84\frac{1}{4}$ per cent.

The explanation of this case which I would venture to suggest is, that when he arrived at the period of puberty, the developmental activity which would have been expended on the sexual system, having no outlet in this direction, owing to the arrested development of the testicles, was devoted to the formation of adipose tissue. He was, in fact, in the condition artificially produced in animals by the removal of the essential sexual organs. With this view of the case the prognosis could not be very favourable, but two indications appeared to suggest themselves as the only means of arresting a fatal issue—to lessen, if possible, the present accumulation of fat, and to restore the muscular activity. When this boy was in hospital, in February, 1874, I began to give him the liquid extract of the *fucus vesiculosus*, as recommended in cases of obesity by M. Duchesne-Duparc* in 1862. On that occasion he took it in drachm doses, given three times a day in mint water. While in the third week of this treatment he made his escape from the house, before sufficient time had elapsed for him to have derived any obvious benefit from the medicine. M. Duchesne-Duparc was led to adopt this remedy from observing its effects in obstinate psoriasis, for which its value had been much extolled. The psoriasis did not improve, but it was noticed that the patients who took this medicine became much emaciated, although they suffered neither from indisposition nor disturbed digestion; their flow of urine was much increased, and if the urine was allowed to stand a blackish layer formed on its surface. Although the structure and chemical composition of the different kinds of *fucus* (there are fourteen British species) are almost identical, M. Duchesne-Duparc insists that it is only the *fucus vesiculosus* which produces the effects mentioned. On the present occasion (April, 1875) his treatment was commenced by ordering twelve leeches to be applied under the left scapula for pain complained of in that region; only five of these could be persuaded to bite, owing, I believe, to the abundance of the volatile fatty acids given off by the skin. To remove these acids, and make his vicinity tolerable, he was next day got with great difficulty into a warm bath placed beside his bed. The buoyancy of fat persons was well illustrated by him while in the bath. Six leeches applied next day under the right scapula—all took well. He was ordered half-drachm doses of liquor potassæ in lime-water and milk three times

* Medical Times and Gazette, 19th April, 1862. P. 411.

a day. The first effect of the potash was to produce diarrhœa, and the medicine had to be omitted, as diarrhœa, for the reasons before mentioned, was a complication most fatiguing to the patient and irksome to his attendants. Prior to admission he had not been subject to the usual fluid stools of fat persons. The liquor potassæ was soon resumed, and shortly afterwards the dose was increased to one drachm three times a day. 26th April.—One drachm of the liquid extract of the fucus vesiculosus was added to each dose of the potash, viz. :—

R. Potas. liquoris	.	3j.
Liq. ext. fuc. ves.	.	3j.
Aq. calcis.	.	3vi.

Two tablespoonfuls in a cup of milk three times a day.

On 30th April the seaweed was omitted, as I wished to try the comparative value of the remedies, and during the whole month of May he continued on the liquor potassæ alone, which on the 6th was increased to a drachm and a half, and on the 15th to two drachms, taken regularly in milk three times a day. At the end of the month he began to dislike the taste of the potash, and, 30th May, he was ordered the extract of the fucus in drachm doses thrice daily, viz. :—

R. Ext. fuc. vesic.	.	.	3j.
Spt. chlorof.	.	.	3ij.
Tinct. aurant.	.	.	3ij.
Aq. menth. pip.	.	.	ad. 3viiij. 3j. t. d.

He liked the taste of this much better. On 16th May he had an attack of iodism, which soon passed off, and he resumed the medicine, which was continued steadily till 4th August, with short intermissions when symptoms of iodism appeared; he never took more of it than three drachms in the twenty-four hours. While taking the liquor potassæ his bowels remained free, but they were usually confined while on the fucus vesiculosus, which is decidedly astringent from the large quantity of tannin it contains. He always felt the better of free action of the bowels; he used occasionally take a powder composed of pulv. jal. co. 3ss., pulv. elat. co. gr. iij. This latter, he said, was the best medicine he ever took, because it "took the weight out of his stomach." The liquor potassæ was given in milk, as the vehicle best suited to mask its taste; he did not complain of it. I tasted his dose of two drachms in a cup of milk, and it was not very disagreeable.

While taking three drachms a day the urine was found *acid*; total quantity in twenty-four hours, 37 oz.; spec. grav. 1.021, free from albumen.

His progressive improvement will be best indicated by noting briefly the increase in his movability. When admitted, 15th April, he could barely put his hands to his mouth; 17th, was able to turn on his back; 20th, could partly raise himself on one elbow, but panted much from the exertion; 26th, managed to work himself slowly out of bed without assistance; 27th, was able for first time to sit, with assistance, on a night chair. 2nd May, sat up in bed for the first time; 4th, able to creep round his bed holding on to it—not yet able to stand, even with help; 13th, had on his clothes for the first time; 15th, stood erect for a moment without support; 26th, able to walk across the ward, leaning with both hands on a stick; 30th, able to smoke, which he had not been for a year before admission. 12th June, able to walk the length of the corridor with a stick; 14th, got down stairs to the landing underneath, but had great difficulty in getting up again; 27th, got as far as the hall-door, from the top of the house; 29th, got out into the grounds. From this time on he was able to take daily exercise in the hospital garden; he was made do any light manual work which was suitable for him, but his breath failed him on any slight exertion. Before he left hospital he and a man with locomotor ataxy set out for a walk, and managed to get to the General Post Office and back safely—a distance of about three quarters of a mile each way.

The most remarkable part of the case, perhaps, is that he went out of hospital $1\frac{1}{2}$ lbs. heavier than he came in; he was 9 st. $2\frac{1}{2}$ lbs. on admission, and 9 st. 4 lbs. when he left. This is explained by his loss in fat being replaced by gain in muscle. The increase of muscle on the lower extremities was quite obvious in the change of shape of the gluteal regions and of the calves of his legs, and in his increased powers of standing, walking, and kicking; the grasping power of his hand, measured with the dynamometer, had almost doubled in the four months he was under treatment; the right hand had increased from 12 kilos. to 19 kilos. (from over 26 lbs. to nearly 42 lbs.), and the left from 13 kilos. to 22 kilos. (from over 28 lbs. to over 48 lbs.). He was weighed twice a week, every Sunday and Thursday, in one of Avery's machines, which, being on wheels, could be rolled over beside his bed, and in which he was seated on a chair when unable to stand. I always

considered that his difficulty in locomotion was due more to his muscular condition than to the weight of fat, and that this muscular atrophy had been induced principally by his long confinement to bed before admission. His absolute weight at any time may be considered small, but then his almost dwarfish stature—4 ft. 5 in.—is to be taken into consideration. In the fourteen months since he had been in hospital before, he had grown half an inch, and increased in weight $16\frac{1}{2}$ lbs. Enforced muscular exercise was an important part of his treatment as soon as he was able to move about, but the great excitement and distress of the respiration and circulation this always induced made me apprehensive of a rupture of one of the ventricles of the heart should this exercise be in any way pushed to an extreme. His very feeble pulse and occasional slight cedema of the feet suggested the possibility of a local sub-epicardial deposit of fat by its mere weight producing absorption and atrophy of the muscular structure, independent of fatty infiltration.*

When this boy was in hospital, in 1874, he was seen by Staff-Surgeon Boileau, who wrote to me, saying:—"I met with a similar case to that you have now in hospital in Canada, in all respects *ridiculously* similar—the whole aspect, manner, habit, and appearance of the two boys being identical, if such were possible. It was *manifest* in my Canadian case that the abnormal obesity started from a flogging administered to the boy when at school. I was assured by his parents that up to the time of that particular flogging he was 'like every other boy,' and I made particular inquiry into the case. The boy appeared to have been very severely and unusually beaten over the head and neck. He was known as 'the Staley-bridge Chicken.'"

Dr. Chambers, in the Gulstonian Lectures for 1850, observes that in the corpulent—speaking of those excessively so—the reproductive powers are by no means defective, some being very fertile and few barren. This remark can only apply to cases in which the corpulence is unconnected with atrophy of the testicles, and has not attained to such a degree as to render the subject incapable of the slightest exertion. In the case of a man^b aged forty-one, who died of fat, whose height was $5\frac{1}{2}$ feet, circumference 4 feet 10 inches, and weight 350 lbs. (25 stones), the penis and testicles were not larger than they are usually found in boys of seven or eight years

* Hayden. Dis. of Heart and Aorta. P. 608.

^b Brit. Med. Jour., 8th Feb., 1862. P. 144.

of age. Dr. Down* has reported a case of great obesity in a woman who had never menstruated up to the age of twenty-seven, and did not exhibit the slightest sexual instinct. She was 4 feet 4 inches in height, and weighed 210 lbs. (15 stones); he considered that the ovaries were undeveloped, and that she was in the condition of a sow that had been spayed for the purpose of fattening. Among other remedies Dr. Down used the extract of the *fucus vesiculosus* in doses of half-a-drachm three times a-day; he found it promote diuresis and a diminution of weight at the rate of four ounces and one-third a week. He considers that the results obtained from the *fucus vesiculosus* were such as to justify its being regarded as a safe, and to a certain extent effectual plan for diminishing obesity; but that it falls far behind what it is possible to effect by a purely animal diet, or as near an approach to such a typical diet as is possible in the treatment of these cases. The extract which I employed in this case was procured from Squire, of Oxford-street; it is a thick liquid of a dark-brown colour, with a harsh taste of iodine and leather. The price of this drug seems to vary in a remarkable manner, that offered by Squire being 5s. per lb., that by Rew, of Regent-street, 28s., and that by Ferris, of Bristol, 40s. per lb. It was given, as directed by Duchesne-Duparc, before meals or on an empty stomach; the boy was meanwhile kept as far as possible upon a meat diet. He was on the potash treatment for six weeks, and subsequently for more than nine on the *fucus vesiculosus*. He had made great improvement long before he was put on the *fucus*, but he did not at all recede when the potash was stopped and the seaweed substituted. I was unwilling to continue the potash treatment all through, for fear of deranging his digestion, and gladly availed myself of the opportunity of employing in the *fucus* a remedy which, though it may not possess all the power attributed to it, may be a most useful auxiliary to remedial agencies of a different kind.

It has been aptly observed that the subject of obesity has been treated more as a matter of curiosity than of true practical importance, and that cases have been collected rather to furnish amusement than to increase knowledge. A desire to escape the condemnation implied in this remark must be my excuse for having laid this case before the Society with more detail than it might appear at first to be deserving of.

* London Hosp. Reports. Vol. I., p. 97.