ensued on the 1st December, the day after I was called in the second time. The other two cases remain quite well.

I have given a slight sketch of these very interesting and curious cases. I have not thought it necessary to detail the treatment, as it appears to me to be useless to occupy the pages of the JOURNAL with the minute treatment of cases, unless some novel and unusual plan has been followed. To tell whether we administered diurnally, as an aperient, jalap, rhubarb, salts, senna, or a compound of them all, would only fill up the space that might be devoted to more valuable matter, and tend to weary the reader.

In rather an extensive practice, I had not seen any cases similar to these, neither do I recollect to have read of such, especially like the one in which the poison of scarlatina was overpowered and arrested as it were in mid career by that of the measles, the action of the former returning after the latter had exhausted itself. In these cases, there must have been the rudiments or germs of three altogether distinct species of disease existing at once in the system; but their progress proves that they could not be in action at the same time. They germinated, flourished, and decayed, one after the other.

As we are weekly reminded that long papers are not desirable, I will not dilate further upon this subject, but will only add that, if such cases have been met with by others of our members, I think it would be both useful and interesting to record them.

Contributions to Clinical Surgery:

BY

OLIVER PEMBERTON, Esq., Surgeon to the General Hospital, and Demonstrator of Anatomy in the Queen's College, Birmingham.

NO. II.

AMPUTATION AT THE ANKLE-JOINT.

[Continued from page 312.]

I PROCEED to relate the first case, in illustration of what I have previously advanced.

CASE I. E. L., aged 29 years, married, the mother of two children, a pale, delicate-looking woman, was admitted under my care in the hospital, August 8th, 1853. She had suffered from strumous disease of the left tarsus for two years, which latterly had affected her health in a material degree. The entire tarsus was involved, but the ankle-joint was not implicated. The integuments around the os calcis were not affected by sinuses, but those adjacent to the front of the joint were a good deal thickened.

Sketch of stump in the case of E. L.

I performed the ordinary operation on the 17th August. The posterior tibial artery was divided. Nine ligatures were applied.

At the end of a fortnight, only two apertures, as large as pin points, remained to break the line of union. The discharge through these was thin, and intermingled with synovia.

A month afterwards, a little redness on the outer side,

over the end of the fibula, required pricking with the point of a lancet, for the escape of a little thin pus.

Sept. 29th. She was discharged. The stump was quite sound, and the pad of the heel tolerant of pressure.

I am enabled to report this patient's condition at the present time, two years and seven months from the date of the operation. She tells me the stump has never given her any pain whatever. With an artificial foot, fitted to a socket, she has walked long distances without fatigue.

On examination, the stump is as thick and well padded as at first. The position of the cicatrix is unaltered. She is now pregnant, after an interval of four or five years.

The annexed sketches show the case and artificial foot which I am in the habit of having made for patients who

Fig. 1.

Fig. 2.

Fig. 1.—A is a case of strong leather moulded to size and shape of stump, fitted at spherical bottom, indicated by dotted line, to B, a piece of light wood. The case is made to lace up in front; and C is a leather sole renewable at pleasure.

Fig. 2.—1, spring joint for the action of the toes. Weight of entire apparatus, three-quarters of a pound.

have undergone the operation, and as constructed by Mr. Best of this town; they have answered admirably the purpose for which they are intended.

The following remarkable case will show that the operation may be undertaken at the tenderest years.

CASE II. Fanny W., an infant, six months old, pale and weakly, was brought to me at the hospital on November 20th, 1854, for the purpose of my opinion being obtained in reference to an abnormal condition of her left foot.

Upon examination, the following appearances were presented. The three inner toes are as large as an adult's. They arise out of, and are continuous with a soft cushiony mass, occupying the situation of the metatarsal bones corresponding. This mass extends backwards, and upon the under and inner side of the foot, as far as the astragalus. Beyond this bone, the ankle and dorsum of the foot are of the infantile size. The two outer toes are natural, and the outer side of the foot also. The state of these toes forms a marked contrast to the unnatural size of the inner. The great toe is placed quite at a right angle to the others—an interval large enough to admit two fingers being between it and the next; a smaller interval separates the second from the third. The nails on these toes have partaken in the general hypertrophy.

The integuments covering the swelling are usually of a natural colour: but on the child's crying, a blueish tint is plainly to be perceived. It is soft, elastic, and conveys the feeling of an erectile tumour. It is larger sometimes than at others, especially during crying. Its examination does not appear to give pain. No large arteries or veins can be felt or discerned running towards the growth; neither pulsation nor thrill are conveyed to the fingers.

The mother, aged 29 years, a healthy looking, intelligent person, tells me that this is her fourth child. Her delivery was natural. The abnormal condition was noticed at birth, but in a much smaller degree. During the last three

weeks she has noticed the influence of the child's crying upon the swelling, and also its change in colour.

In consultation with my colleagues, I recommended the mother to wean the child, and to await the advent of increased strength to warrant amputation at a safe distance from the disease.

In May 1855 the child was brought to me again, being just twelve months old, and looking well and fat. The same conditions of the part were present, but the size had increased to an unwieldy degree. After well weighing the propriety of performing Chopart's operation, I determined, looking to the doubtful nature of the case, and the fact of the growth extending close upon the joint, to remove the foot by Syme's method, at the ankle.

Accordingly, on May 9th, without chloroform, I performed the usual operation, cutting off the malleolar epiphyses with the knife. Ligatures were applied to the anterior tibial and plantar vessels, and for additional safety some half dozen others were tied upon bleeding points. Some trouble was occasioned by the restlessness of the child, owing to which the flap slipped a little: otherwise no bad symptom occurred, and the little patient was discharged well on June 29th.

From a cast of the foot, one-sixth the size of life.

Dissection of the foot. A minute injection of size and vermilion was thrown into the arteries. Upon cutting into the interior of the mass, it was found to consist of ordinary fat structure. The dorsal and plantar arteries were of large size, but their distribution was natural, and their enlargement, terminally, corresponded according as they supplied the inner or the outer toes. The veins were enlarged in an equal degree as they accompanied the arteries. The tendons were normal as to distribution; those passing to the three inner toes being hypertrophied, lengthened, and altered in direction. The metatarsal bones and phalanges of these toes were three or four times their natural dimensions; whilst those of the outer were perfectly normal. The tarsal bones were also normal.

By the courtesy of Mr. Alfred Cooper, of Leicester, where the child is now residing with her parents, I am enabled to give the following account of the stump, as examined by him March 23rd, 1856. Mr. Cooper writes:—

"I have great pleasure in telling you that Mrs. —'s child's case has turned out a very good one. Any medical man, casually looking at the limb, would say Chopart's operation had been performed and not Syme's—there is so much the appearance of the os calcis being yet in its proper place. The stump is sound, and well padded. The child can walk well, but would, in my opinion, have walked much better had some contrivance for the shortening been used. The position of the cicatrix is as good as the most sanguine operator could wish, being completely anterior, or rather higher than the bearing line, so the posterior flap takes the place of the integument of the heel."

It must be borne in mind that this child had to undertake her first lessons in walking of any kind with a stump, consequently, it must have suffered more shocks and bruises than could have happened under other circumstances, to say nothing of the inequality of length.

Mr. Syme* has recorded an instance in which he also performed amputation at the ankle-joint in an infant five months old, for an erectile tumour of the foot. The child did well, but we have no subsequent history of the condition of the stump. He did not deem it necessary to interfere with the malleolar epiphyses.

The next case which I shall relate will show that this operation may be undertaken in cases where great debility of system is present, and even where the scrofulous diathesis is located in more parts of the body than one at the same time.

CASE III. M. F., aged 18 years, a thin servant girl, with flushed cheeks, was admitted under my care in the hospital, March 23rd, 1855. There was great enlargement of the right tarsus. The cuboid bone was carious, and had a large ulcer communicating with it. The remaining bones of the tarsus were more or less involved in disease, and there was acute pain experienced in the least movement of the ankle-joint. On the dorsum of the left tarsus there was commencing pain and swelling similar, she informed me, in its characteristics to that which she had experienced at first in the right. Extensive disease of the metacarpo-phalangeal joint of the right index finger was also present, accompanied by severe pain and irritation. She had been ill twelve months, and six months previous to her admission had undergone partial excision of the cuboid bone.

April 25th. I removed the foot at the ankle-joint in the usual way. The posterior tibial artery was preserved in the dissection, but was divided in the clearing away of the soft parts, previous to applying the saw. The stump healed slowly, but surely. No abscess formed in the flap, no bone exfoliated, no sloughing took place. In six weeks the stump was quite sound.

May 7th. The patient complained of severe pain in the dorsum of the left foot. On examination, this was found much swollen, and very tender to the touch. I had hoped after the operation that the disease commencing in this foot would have subsided altogether, as she experienced a marked improvement in her health after the operation, and the finger, as well as the foot, had become quiet.

June 6th. By rest and a good diet the mischief in the remaining foot had subsided, though great thickening of the tarsus remains. Ordered to have the ordinary case made for the stump, and to begin and practise walking.

July 19th. By the aid of crutches and her socket, she has been enabled to get out of doors daily since the last note, resting entirely on the stump, as she can bear no weight on the left foot. She has been retained in the hospital thus long with the view of obtaining admission for her into the Rhyl Convalescent Institution, where she is to be received on the following day. Her stump is admirably padded, and serviceable.

This patient remained at the sea-side for two months. On her return she was enabled to walk about by the aid of a stick only, her left foot being capable of bearing weight.

I saw her last week. She at times still has pain in the foot. The stump is sound; the pad thick; the cicatrix unaltered. She tells me that she bears far more weight on the stump than she does on the foot.

There are certain features in this case of peculiar interest in their bearing on the value of this operation. Here we have a poor creature thoroughly scrofulous, in whose case, to preserve life, amputation of the part most irritating becomes necessary. No sooner is the stump well, than its powers of endurance are tested in order to nurse the remaining foot, threatened by a similar affection. Notwithstanding so early a demand on its strength, it remains sound, and ultimately enables the patient to get the mastery over her tendency. I believe it would be impossible

to adduce a greater proof of the healthy vigour of such a covering for the stump as the natural pad of the heel affords than is presented by the history of the preceding case.

Mr. Butcher reports a case in which he found it necessary to perform amputation of the leg some few months after Dr. Bellingham had performed amputation of the ankle-joint upon the same patient. This unfortunate man had, it seems, never been able to bear the least pressure on the stump, though, on his discharge, it had promised all that could be desired. The cicatrix was not only painful, but it ulcerated; and to complete his wretchedness, the cut extremity of the nerve, on the inner side, was a source of acute suffering on pressure.

The report of Mr. Butcher's dissection of the stump is peculiarly interesting, and is of great value in establishing a point of importance in regard to the permanency of the line of the cicatrix.

"The insertion of the tendo Achillis was so closely applied to the plantar fascia, that it presented the appearance of dividing into three dense fibrous bands passing from behind forwards to the cicatrix. On examining the cicatrix, the anterior extremities of these fibrous bands, or three divisions of the plantar fascia, were fused into the cut extremities of the flexor tendons, the union between them being short and decided, and hence the improbability that the cicatrix would have descended any more by the action of the extensor muscles." (*Dublin Quarterly Journal of Medical Science*, vol. xii, 1851, p. 209.)

This is decisive, as it proves beyond dispute the fact of the tendons in front fusing themselves with the antagonistic tendinous structures behind, so that, as it were, an equilibrium of tension in regard to the cicatrix is the result.

This result Mr. Syme early foretold.

Mr. Butcher's further dissection in the case revealed that inflammation, terminating in ulceration, had attacked the cartilage over the articulating surface of the tibia, and that the extremity of the nerve was in a bulbous condition, being expanded to the size of a large almond.

These were conditions not calculated, I must confess, to yield a favourable impression of the value of this operation, and, therefore, I am not surprised to find this distinguished surgeon recording his doubts as to the applicability of the measure to the labouring man. I am, however, inclined to believe, looking to the facts that have been placed before the profession from so many sources since this case was published, that such sequelæ are of most unfrequent and exceptionable occurrence.

The existence of inflammation and ulceration of the cartilaginous covering of the tibia, as recorded in this case under the observation of Mr. Butcher, and which was, no doubt, the source of all the subsequent suffering which necessitated a second operation, is strongly suggestive of the importance of always removing a thin slice of the entire articulating surface of the tibia, together with the malleolar projections. Very frequently mischief may be residing in the spongy extremities of the tibia and fibula, which has not manifested itself further than by an affection of these parts; the intervening cartilaginous covering of the tibia appearing healthy, has not been interfered with; it is evident, however, that this may become subsequently the seat of ulcerative disease, progressing from the bone beneath; and therefore, in order to guard against such a complication, it ought, in my judgment, to be invariably removed.

It does not appear to me that we have any fair ground to warrant the conclusion that this operation is at all more likely than other amputations to lead to a bulbous and painful condition of the nerve. At any rate, we are not justified in arriving at such a conclusion, from the fact of such a condition having been present in a single instance. In the many amputations that are performed, painful conditions of the divided nerves in the stumps are by no means frequent; and even supposing that the irritation of pressure is a cause for this occurrence, the character of the

stump obtained in Syme's amputations would seem calculated to remove the anticipation of its arising from this source at least. Rokitsansky remarks: "The ends of the nerves divided in amputations swell out, and, for the most part, unite together in one common hard knot, with which the cicatrix of the neighbouring soft parts also coalesces. If there be not soft parts enough to preserve the knot from pressure, or if the soft parts pull upon it, symptoms not unfrequently arise which may be so severe as to require that the nerves should be divided again." (*Pathol. Anat.* vol. iii, p. 461.)

As a primary operation, amputation at the ankle-joint can scarcely be said to be established. I believe, however, that were it more generally adopted, a far greater measure of success would be likely to attend its performance than can ever belong to amputation of the leg, notoriously fatal in civil hospitals as a primary operation. The great principle, in all accidents, of removing as small a part of the body as possible, ought alone, in cases where a selection can be made, to lead to a preference being given to it.

That it is successful, the cases I shall allude to, will, I think, satisfactorily establish.

In the London Hospital, Mr. Curling performed it in the case of a boy, aged 8 years (*Lancet*, p. 142, vol. ii, 1853), for a recent crush of the foot, the integuments of the heel having escaped injury. The stump healed by granulation, and was quite cicatrised in seven weeks.

In University College Hospital, Mr. Erichsen,* in the case of a woman, aged 35 years, who had met with a recent injury to the foot, in consequence of which it was found impossible to save it, amputated at the ankle-joint. Erysipelas and sloughing of the subcutaneous tissues ensued, and retarded recovery; but the flap held good, and the patient was well in ten weeks, with a sound stump.

Mr. Ure† also met with success in the case of a woman aged 36 years. The soft parts had been greatly injured, and in consequence he was obliged to modify his incisions. Notwithstanding erysipelas and sloughing, both of which ensued, the patient made a rapid recovery, and had plenty of integument to form a sound and serviceable stump.

CASE IV. In the General Hospital in this town, on the 24th March, 1855, E. I., aged 19 years, an engine-driver, was admitted under my care. The left foot was severely injured by a railway wheel passing over it. The metatarsal bones and soft parts were crushed in a mass together. The integument in front, as far forwards as the ankle-joint, was lacerated; but the parts adjacent to the heel in the sole had escaped injury.

The question was one of amputation in the lower third of the leg, or at the ankle-joint. I chose the latter, and performed it in the way I have described. The parts were far more easily dissected from the os calcis, being free from disease, than they would have been in the case of chronic disease of the part ordinarily met with. The posterior tibial artery was divided.

Sketch of stump in the case of E. I.

In the subsequent progress of the case, the thickened cuticle of the heel alone separated itself, unaccompanied by any vital portion of integument. The sloughing that took

* *Lancet*, 1853, vol. ii, p. 142.

† *Lancet*, 1851, vol. i, p. 110.

place within was most moderate. No counter opening was required. He left the hospital with a sound useful stump, tolerant of pressure and admirably padded, on the 25th May.

The preceding case affords a most satisfactory proof that the vitality of the flap, even in a primary case, is not to be despaired of, when the posterior tibial artery has been divided. The division was accidental, and occurred during the separation of the soft parts, previous to the application of the saw—a stage in the operation which especially exposes it to injury.

I have seen the patient within the past few weeks. He tells me that he has been following a laborious employment in an engine foundry for many months, and has found his loss no inconvenience to him whatever. He has suffered neither ulceration nor pain, and on examination his stump is seen to be as well padded as ever.

Professor Syme makes the following remarks bearing on this subject:† “I may mention, that often as amputation at the ankle-joint has been performed for disease, and well established as it now is for those cases, a question still remained as to how far it was applicable in military surgery as a primary operation. I therefore requested my friend staff-surgeon Dr. Gordon, who was surgeon of the 95th Regiment—which you may recollect suffered so severely at the battle of the Alma—to state in writing his experience on this point. Dr. Gordon writes as follows: ‘I have much pleasure in stating that several cases of amputation of the foot, as first proposed and practised by you, were performed after the battle of the Alma, and the results were most favourable. I am of opinion that your operation has many advantages, and, when adopted, will be the means of making a much more useful limb, independent of the less risk of life. I may likewise observe, that those cases which came under my observation healed more rapidly than when the operation was performed at the lower third of the leg, and at the same time a much more useful stump was the result.’ Thus it appears that the operation is as valuable for injury on the battle-field as it is for disease at home.”

With equal reason, also, it may be said that it is as valuable for injury in civil life at home as it would appear to be for military injury abroad.

I append a tabulated statement of the cases that have been performed in this hospital, both by my colleagues and myself, since 1851. It would, I think, be very desirable to obtain similar returns from various sources, in order that, on an extended scale, the results of amputation at the ankle-joint might be fairly compared with the results of amputation in the lower third of the leg, in the several respects of mortality, period of healing, constitutional disturbance, secondary hæmorrhage, and other liabilities, in primary as well as in secondary operations.

TABLE OF CASES.

Age and sex.	Primary.	Secondary.	Time.	Result.
24, F.		Secondary.	6 weeks.	Cured.
20, F.		Secondary.	6 weeks.	Cured.
12, M.		Secondary.	10 weeks.	Cured.
33, F.		Secondary.	9 weeks.	Cured.
26, M.		Secondary.	3 months.	Cured.
13, M.		Secondary.	5 weeks.	Cured.
27, M.	Primary.		17 days.	Died.*
10, M.	Primary.		8 weeks.	Cured.
18, F.		Secondary.	6 weeks.	Cured.
1, F.		Secondary.	7 weeks.	Cured.
18, M.		Secondary.	6 weeks.	Cured.
30, M.		Secondary.	3 months.	Cured.
14, M.		Secondary.	7 weeks.	Cured.
24, M.		Secondary.	8 weeks.	Nearly well.

* Clinical Lectures. (Lancet, 1855, vol. I, p. 308.)

† Died of cellular inflammation of leg and thigh—a drunkard.

Reviews and Notices.

JOURNAL OF PUBLIC HEALTH AND SANITARY REVIEW: including the Transactions of the Epidemiological Society of London. Edited by BENJAMIN W. RICHARDSON, M.D., Physician to the Royal Infirmary for Diseases of the Chest. No. V, pp. 104 and 24. London: Thomas Richards. April 1856.

THIS excellent periodical fully maintains its character as a sound instructor in sanitary matters. The number before us contains a large amount of valuable matter, among which may be mentioned articles on the Sphere and Duties of Municipal Government, and on Prevention and Cure; an Analysis of the Laws in force in France for the Regulation of Noxious Trades and Occupations; papers by Dr. John Davy, on Coke Poisoning in a Church; by Mr. W. I. Cox, on the Diseases of Colliery Operatives; by Mr. B. Daniel, on Sanitary Reform in Relation to Social and Moral Development; by Dr. Herbert Barker, on Nursery Government; and by Dr. F. J. Brown, on the First Food of Infancy. There is also part of a Dictionary of Foods and Drinks; and Reports on the Sanitary State of Dudley, Paddington, and Croydon. The Journal also contains a valuable series of Reports on the Progress of Epidemics in twenty-seven towns in England and Wales, furnished expressly for the work by local observers, who are supplied for that purpose by the Editor with a form on which to register their observations. An analysis of the Sanitary Legislation of the quarter, and several minor but not less interesting articles, complete the material of the Journal itself.

The Transactions of the Epidemiological Society are issued in the same cover with the *Journal of Public Health*, but are paged separately, so that they may be removed and bound in a distinct volume. The present fasciculus contains a paper by Dr. Sieveking, on Supplying the Labouring Classes with Nurses in the Time of Epidemics and other Sicknesses; and one by Mr. J. H. Tucker, on the Prophylaxis of Cholera by some of the Vegetable and Mineral Acids.

Where there is so much of what is good, it is almost unfair to select one portion more than another for special comment; but, feeling that the array of contributors, with the veteran John Davy at their head, can be safely left to fight for themselves, we would call special attention to a highly philosophical article on Prevention and Cure.

The writer, having shown how prominently the distinction between preventive and curative medicine has stood forth, goes on to argue in the following strain:—

“If any ground existed at all for disuniting the principles of preventive and curative medicine, it would be on the correct assumption that the body may be subjected to diseases from two sets of causes; i.e., from causes external to it, and acting upon it previously in health, by interfering with one or other of its leading functions; and, secondly, from causes originating in the organism itself—the effects of certain chemical or physical modifications in its own economy.

“If all diseases could be divided into two leading families based on these distinctions, it might be argued that the preventive and curative systems had each their special objects and duties. It might be said to pertain, for instance, to preventive medicine to deal with those disorders which spring out of external causes; and to curative medicine to deal simply with the second class, where the cause is in the organism itself. But, in the presence of the whole truth, this distinction or division of diseases, as arising from external and internal causes, does not hold good; since an interference with the functions of life by an external cause may not stop always at that point, but may give rise in the end to a series of systemic changes which are not removable on the removal of the cause, but persist independently, and call for curative skill of the purest order.

“The simplest example of this character is seen in the exposure of the body to intense cold. The first effects of such exposure are easily definable, and in most cases easily removable by the removal of the cause, which here is external in the fullest sense of the word. In the effects of cold, indeed, no