the ilio-femoral, close to Poupart's ligament; the other, the "superior external iliac," situated at any point between the ilio-femoral valve and the entrance of the internal iliac vein, the saphenal valves being double, as in α and β , but with entire absence of the inferior common femoral, profunda, and superficial femoral valves.

2. *Deviations from the perfect types, with suggestions as to their possible effects.*

(a) *Absence of ilio-femoral valve.*—In this condition any increase of blood-pressure from above will result in abnormal strain on the inferior common femoral and the proximal saphenal valves. As the former is much the stronger and very rarely inadequate, there will be a tendency to inadequacy on the part of the proximal saphenal valve or to dilatation of the saphena and immediate part of the common femoral vein, resulting in a varix at the saphenous opening of the subfascial kind. Should the proximal saphenal valve be absent, or, as is rather common, inadequate, the distal one existing and being at the same time adequate, the tendency will be to the development of a prominent globular dilatation of the saphena between its distal valve and the femoral vein, which will also be involved to some extent if the dilatation becomes excessive. The varix thus formed at the saphenous opening is of the subcutaneous variety, the main part of the tumour being superficial to the cribriform fascia both in its origin and relations. If, under similar conditions, both of these upper saphenal valves be absent or insufficient, the tendency then is to more or less general varicosity of the saphena vein. As having some bearing upon the variety of saphenous varix developed in this class of deviation, it is worth mentioning that absence of the ilio-femoral valve is very commonly associated with absence or inadequacy of the proximal saphenal valve.

(b) *Absence of the ilio-femoral and inferior common femoral valves; one or both saphenal valves being present, and a strong pair of valves (superior superficial femoral) existing at the termination of the superficial femoral vein, the orifice of the profunda being without valves.*—In this case it seems reasonable to assume that the tendency would be to varicosity of the branches of the profunda vein, which may, if the proximal saphenal valve be wanting or inadequate, be associated with globular varix at the saphenous opening, possibly accounting for the occurrence of this kind of saphenal varix with a varicose mass at the inner side of the thigh above the knee, which may be unconnected with the long saphena vein itself, the efferent vessels passing into the deep parts, and being in reality connected with the lowest branches of the profunda. Should both upper saphenal valves be wanting or inadequate, some general varicosity of the saphena may replace the local varix at the saphenous opening. The existence of this arrangement may also possibly explain certain cases of varicosity in which the disease appears to affect the lower parts of the thigh more than the leg. The only case of this kind that I have been able to dissect I found by chance in the post-mortem room. The superior superficial femoral valve was very strong, and appeared unusually large; the profunda was valveless, its branches being very large, and in some instances pouched; from the lower branches there could be traced through the fascia several vessels which passed into a collection of varicose veins above the knee, which also communicated by two very small vessels with the saphena, which was but slightly dilated. It was, however, plain that the varicosity was mainly connected with the profunda.

(c) As a natural corollary of the arrangement just described, it would seem probable that a deviation would be found in which a strong valve existed at the termination of the profunda, the superior superficial femoral valve being absent. I have, however, never seen such a profunda valve, excepting in one case, where the superficial femoral valve was also present (perfect type, β).

(d) *Entire absence of all valves in common femoral, superficial femoral, and profunda veins, with absence or inadequacy of external iliac valves; the saphenal valves being present and perhaps numerous.*—In one case there were no less than seven pairs of valves in the saphena above the knee. Here, in the development of varicosity the tendency would be to its early occurrence throughout the limb, either simultaneously in the thigh and leg, or more probably first in the leg, and subsequently in the thigh and saphena, the latter becoming involved throughout, as the disease in this case would be of the ascending kind.

I need hardly say that the deviations which have been now described are not intended to include all the various and complicated abnormalities sometimes met with in the arrangement, number, or adequacy of the vein valves, but are merely selected, as they afford examples of departures from the perfect types which seem to be capable of influencing to some degree the development of certain varieties of varicosity. Although I have no doubt that, under certain circumstances, the arrangement and adequacy of these valves have an important relation to the production of varicose veins in a fair proportion of cases, it is perfectly certain that a large number of instances of varicosity, so called, are seen in which the valves have nothing whatever to do with the occurrence of the disease. This remark especially applies to those cases of general varicosity limited to one limb, in which the whole of the veins are extensively affected, the limb itself being greatly enlarged, but in which there is neither œdema nor inconvenience, unless some accidental cause gives rise to complication. In these instances it seems to me that the affection is a purely congenital one, the patients having, in fact, been born with veins abnormally large, and perhaps tortuous, but otherwise natural, the valves being strong and not inadequate. In some cases, again, the disease may approach a condition which is almost nævoid. In either case the direct congenital origin of the affection is rather indicated by the occurrence of evidence of other vascular abnormalities—e.g., the scars of old nævi—in a considerable number of patients who are the subjects of this class of varicosity. Further corroborative evidence of this view is afforded by the following case, which Dr. Penrose kindly dissected for me. A man, forty years of age, who died in the hospital of bronchitis, was seen, after death, to have great general enlargement of the right lower extremity, the opposite limb being natural. The skin of the affected side was perfectly healthy and natural, showing none of the thinning which is common in cases of acquired varicosity. On examination, the whole limb was full of large and tortuous veins, the common femoral being nearly double the size of that in the left limb, the veins of which were perfectly normal in every respect throughout. The saphena was as large as the femoral vein in the opposite thigh. *The external and common iliac veins were much larger than normal*, greatly exceeding in size those on the opposite side. The valves present on the affected side were the ilio-femoral, inferior common femoral, and two upper saphenals. All of these were natural in appearance, but were very large, being of just such a size as the magnitude of the veins required. Moreover, they were so strong that distension of the veins by the injection of water almost to the point of bursting failed to make them inadequate. On the left side the ilio-femoral valve was absent, the inferior common femoral and upper saphenals being present and competent. The case was typical of its kind, being finally rendered complete by the discovery of *the scar of an old nævus on the left hip, and four congenital vascular tumours (nævi) in the liver*. I cannot imagine any condition, other than congenital asymmetry, which could produce such an increase in the size of the veins, particularly the common and external iliac, on one side of the body only, the valves being at the same time so perfect in relative size, strength, and adequacy.

THE PREMONITORY SYMPTOMS OF ALCOHOLIC PARALYSIS.

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NOTHING helps us so much in the treatment of a disease, if it be of such a nature as to be capable of cure or amelioration, as an early recognition of the symptoms of its inception. This statement, true with regard to most affections, assumes additional significance when we have to treat a disease like alcoholic neuritis, which can be readily cured in its early stages by the simple withdrawal of the poison, without any special treatment, but which, when fully established, may resist all treatment or prove rapidly fatal.

Alcoholic paralysis, on attaining to the stage of double

wrist and ankle drop, loss of the patellar-tendon reactions, and high-stepping gait, is now readily recognised by every moderately well-informed practitioner, and accurate descriptions of it have found their way into ordinary text-books of medicine. It is, therefore, quite unnecessary for me to give in this place a detailed description of the condition. I will also pass over such well-known signs of alcoholic poisoning as a bloated face, lightning-like and neuralgic pains in the extremities, morning retching, and muscular hyperæsthesia, in order to direct special attention to three symptoms which I believe to be hardly ever, if ever, absent as forerunners of this form of paralysis, although they are by no means peculiar to poisoning by this agent, being met with in other forms of peripheral neuritis. These symptoms are: (1) Disorders of the tactile sensibility of the extremities, which patients usually describe as numbness of the fingers and toes; (2) vasomotor spasm of the extremities, named by Raynaud "local asphyxia," and which the patients refer to as "deadness" and "coldness" of the fingers and toes; (3) severe cramps, which are most frequent and severe in the muscles of the calf, although these muscles are by no means the exclusive seat of them.

In order to give greater vividness to my description of these symptoms, I have instructed my clinical clerk to note down in my presence the statements of five patients, the subjects of chronic alcoholism, now under treatment in the wards of the Manchester Royal Infirmary. In order to avoid details, I shall only give such a rough sketch of the present condition of these patients as I think will enable the instructed reader to fill in the clinical picture presented by each from his own knowledge and experience.

CASE 1.—G. C—, aged fifty-one years, a lawyer's clerk, states that he has drunk freely of beer, but only occasionally indulged in whisky or brandy. His lower extremities, his body (especially over the loins and buttocks), and his left upper extremity are œdematous, but there is little or no swelling of his face or eyelids, even in the morning. The area of cardiac dulness is enlarged; the apex is displaced slightly downwards and outwards; the first sound at the apex is impure, the sound at the base is highly accentuated; and the action is very irregular; while the pulse beats 110, and is feeble and intermittent. Scattered sonorous rhonchi are heard over both lungs, and the patient expectorates a moderate quantity of frothy mucus. The urine contains a small quantity of albumen, but its specific gravity is 1020, and it deposits a considerable quantity of urates on cooling. The patient's grasp is feeble, and he experiences some difficulty in performing special movements with the fingers and thumb, but there is no distinct wrist drop. The patient is very feeble on his legs, but there is no ankle drop, and no distortion of the toes. The patellar-tendon reactions are, however, absent, and the muscular masses of the extremities are very tender to pressure. The diagnosis of this case is that, although the urine contains a little albumen, the anasarca is due, not to renal disease, but to dilatation of the heart caused by the abuse of alcohol, the condition being aggravated by the presence of a little bronchitis.

CASE 2.—A. G—, aged forty-nine years, market porter, states that he drank freely of beer, but had whisky or spirits of any kind only on rare occasions. The patient is suffering from ascites; he has been tapped once since his admission, and now he is filling up again. The liver dulness is only about an inch in vertical extent, and the veins on the surface of the abdomen and chest are distended and fill from below. The patient is feeble and emaciated, but there is no special paralysis, and the patellar tendon reactions can still be elicited, although they are very sluggish. The diagnosis is alcoholic cirrhosis of the liver. There is no tenderness on pressure of the muscles.

CASE 3.—G. C—, aged forty-nine years, coachman, admits that he indulged freely in alcohol, although he never got drunk. His regular habit was to have a glass of rum in milk when he got up in the morning; he had a glass of beer in the forenoon, another to dinner, and a third when he got home at night, to be followed by whisky when he could get it. He is suffering from anasarca of the lower extremities and trunk, but the upper extremities and face are free from any swelling. The cardiac dulness is enlarged and the apex is displaced slightly downwards and outwards. A soft systolic murmur is heard at the apex, and the second sound at the base is highly accentuated. The urine is pale, specific gravity 1010, and contains a considerable quantity

of albumen, while a few fatty casts have been found in it. The grasp is feeble, and the patellar-tendon reactions are absent, but there is no wrist or ankle drop, and no evidence of particular paralysis beyond general weakness. The muscles of the calf were tender on pressure when the patient was admitted to the infirmary about six weeks ago, but this has now disappeared. It is possible that in this case there is a renal complication, but the absence of œdema from the upper extremities and face seems to indicate that the anasarca is due to cardiac dilatation, of alcoholic origin.

CASE 4.—J. S—, aged forty-six years, tramcar conductor, says that he drank freely of beer and whisky. He is suffering from double wrist and ankle drop, high-stepping gait, loss of patellar-tendon reactions, muscular hyperæsthesia, and other sensory symptoms which are usually met with in a moderately advanced case of alcoholic paralysis.

CASE 5.—A. A—, female, aged sixty-three years, entered the infirmary under the care of Dr. Lloyd Roberts. She denies having indulged to excess in alcohol. She is the subject of an ovarian cyst, but the abdomen is not much distended. Her lower extremities are partially paralysed, so that she cannot stand without support, and some months ago she was hardly able to move her feet in bed. There is double ankle drop, and the toes are flexed into the soles of the feet. The grasp is feeble, but there is no distinct wrist drop. The patellar tendon reactions are absent. There is, however, no muscular hyperæsthesia or other sensory disorders. The diagnosis is that the patient is suffering from alcoholic paralysis, but that she has not had access to alcohol for some months, and that she is now slowly recovering motor power, while the sensory symptoms have disappeared.

The following is the account these patients gave of themselves on being questioned with regard to the three symptoms already mentioned—viz., numbness of the fingers and toes, local asphyxia, and cramps.

G. C— (Case 1) states that, for the last three years, when he got to the office in the morning his fingers were so numb that on closing his eyes he could not tell whether he held the pen or not, and he experienced considerable difficulty in buttoning his clothes. He had to rub his hands together for about ten or fifteen minutes before he could write. His feet were also so numb that he could not feel the floor; they felt as if "sensation was out of them." He was afraid of closing his eyes whilst washing lest he should fall forward. On getting up in the morning, the tips of his fingers up to the first joints became of a dark livid colour, and he had to dip them in warm water in order to get the colour back and to warm them. He had a great dread of touching cold water in the morning. His feet were also so cold that he had to stamp them frequently on the floor to warm them. When he began to write in the morning, his forefinger and thumb often became strongly cramped, and the pen was held so fast that he had sometimes to remove it with the other hand. His toes also felt as if they were forcibly drawn down into the sole. About half an hour after going to bed, and just as he was about to fall asleep, he was frequently seized with cramp in the calf of one or other of his legs, but seldom in both together. During the attack his heel was drawn up, and the muscles of the calf formed a round hard mass larger than his closed fist. When the attack was severe he had to jump out of bed and put the soles of his feet on the floor, and not unfrequently he had to walk downstairs and sit for an hour rubbing his legs and warming them before the fire. On these occasions he often warmed a pint of beer, and on getting thoroughly warmed himself after drinking it, he could go to bed and fall asleep.

A. G— (Case 2), suffered for the last two years from so much numbness of the fingers that he experienced difficulty in buttoning his clothes in the morning, and whilst driving he often could not tell without looking whether he held the reins in his hand or not. His feet also felt numb, and he suffered very much from a sensation of "pins and needles" in them. On getting up in the morning, his fingers up to the first joint became of a dark livid colour, and "felt as if they were dead." He generally washed his hands in cold water, although he much preferred warm water, but seldom could get it, as he had to leave home very early in the morning. He had to rub his hands for some time in order to "get the blood to circulate." At other times he warmed them by a fire, whilst not unfrequently he had recourse to drinking a glass of beer. About half an hour after going to bed, and just as he was about to fall asleep, he was

frequently seized with cramp in the calf of one or other of his legs, but never in both at once. The cramp was not often severe enough to compel him to get out of bed; he generally rubbed the affected calf for about fifteen or twenty minutes, when the spasm usually subsided and he was able to sleep.

G. C.—(Case 3) states that he suffered for many years from numbness of his fingers, and it was quite usual with him to feel uncertain whether or not he held the reins in his hands without looking at them. He had considerable difficulty in buttoning his clothes, as he was unable to feel any article he touched. He did not suffer much from numbness of the feet or toes. In the morning his fingers felt quite cold and dead up to the second joints, and he had to rub them for some time to warm them. He never suffered, however, from cold feet; on the contrary, he was troubled with burning of the soles, and he often slept, even in cold weather, with uncovered feet. The plantar nerves are somewhat tender to pressure, and great pain is caused by pressure over the point of bifurcation of the nerves between the ends of the metatarsal bones. The anterior parts of both soles become of a red colour when the feet are hanging down. The patient states that he has suffered greatly from cramps. His fingers were often “drawn in all ways,” and he had “to straighten them with the other hand.” Soon after going to bed he was often seized with cramp in the legs and thighs, when he had to “fly” out of bed and jump about the room for from five to twenty minutes. In severe seizures he had to go downstairs, so as to get his feet on the flagstones, as he found that exposure to the cold arrested the cramp sooner than any other proceeding.

J. S.—(Case 4) felt his fingers so numb that he could not hold any object in either hand in the dark or with closed eyes. In his occupation as tramcar conductor he was even unable to give change to the passengers. When he put his hand into his bag he could not feel the coins, and some of them got between his fingers, so that on withdrawing his hand these fell on to the floor of the car. At last he was obliged to ask the passengers to help themselves to change. On getting up in the morning his fingers became quite dead up to the second joints, and although he was the first in the house to get up, he waited until a pan of water got warmed on the fire rather than wash in cold water. If ever he was compelled to use cold water, his hands felt quite dead for an hour subsequently, and he had to rub them for a long time before “the blood began to circulate.” He also suffered very much from numbness of the toes, and his feet were so cold in the morning that, for the first journey, he was in the habit of running about half a mile by the side of his car in order to get them warm. The patient also suffered very much from cramps. His fingers were sometimes drawn, and, in sitting by the fire after his day's work, the calf of one or other leg was often seized with severe cramp. He had also frequent attacks of cramp of the calf about half an hour after going to bed. When the attack began, the affected calf was drawn up into a “lump” bigger than his clenched fist; he then had to jump out of bed and press his toes on the floor, while he had to rub the muscles sometimes for over half an hour before the spasm finally yielded so that he could return to bed. He preferred to stand on a carpet rather than on the bare floor, and never placed his bare feet on a stone flag.

A. A.—(Case 5) states that, for upwards of two years, her hands were often so numb that she could not feel anything she touched, and could not tell from touch alone the texture of the cloth she held in her hand whilst sewing, and did not know, except by looking, whether or not she held the needle between her finger and thumb. At first her hands used to ache and burn; but after a time her fingers, especially on getting up in the morning, became quite dead and cold up to the first joints. She always washed in cold water, but immediately afterwards she rubbed her hands before the fire in order to warm them. She also suffered from numbness and great tenderness of the feet. The patient suffered considerably from cramps of the fingers when she was sewing or knitting; but her greatest distress was caused by cramp of the calf, which came on soon after she went to bed, and was generally ushered in by drawing down of the toes. In the early stage of her disease, when seized with cramp of the calf, she jumped out of bed and stamped her feet on the floor; but by-and-by she was unable to stand, and was obliged to content herself with

sitting in bed and rubbing her leg until the spasm subsided. At a still later period she became too weak to sit up in bed, and her husband rubbed her legs for her, but after a time her “flesh became so sore” that she preferred to endure the cramp rather than suffer the pain caused by the rubbing.

Now, although the three symptoms which I have just described are probably always present at a moderately early stage of chronic alcoholic poisoning, yet it must be remembered that they are also met with in other forms of peripheral neuritis. I have myself observed them in the neuritis which supervenes in the course of rheumatism, gout, and diabetes, in that caused by chronic poisoning with the fumes of bisulphide of carbon and with the new explosive agent named “roburite,” and in that form of multiple neuritis named by Dr. Weir Mitchell “erythromelalgia.” Numbness of the fingers forms a prominent feature of diphtheritic and post-febrile paralyses, but I have not met with local asphyxia or cramp in these affections. A few cases of lead paralysis have come under my observation in which the patients complained of all three symptoms; but in these cases there was a suspicion of a complication of alcoholism as well.¹ Numbness and local asphyxia of the fingers and toes often accompany hæmoglobinuria, extreme anæmia, and cancerous and other forms of cachexia; and many persons suffer from them habitually in the absence of any discoverable cause. It must also be remembered that in females pregnancy or uterine displacements may give rise to cramp of the calf and cold extremities, and that in both sexes the same symptoms may be caused by a loaded rectum or irritation of the bladder, and reflexly by irritation of still more remote organs. But although these symptoms, either separately or in various combinations, are met with in many affections besides chronic alcoholism, yet I do not think they are ever present in the aggravated form in which they appeared in these patients except as the result of excessive drinking or the prolonged exposure to the action of some other poison like the fumes of bisulphide of carbon. These symptoms are all the more valuable as affording an indication of secret drinking, because they appear long before there are any signs of paralysis, and at a time when the patellar-tendon reactions, instead of being absent, are either normal or exaggerated. But it is not necessary that all those who are suffering from the minor degrees of alcoholic neuritis should be heavy drinkers. It is, indeed, surprising what a small quantity of alcohol suffices to induce the premonitory symptoms of the disease in some subject, the females of neurotic families being particularly sensitive to its action. Nothing perhaps better illustrates the great sensitiveness of the nerves of some people to alcohol than the fact that a few glasses of one kind of alcoholic beverage will suffice to induce the early symptoms of neuritis, while other kinds may be taken daily with comparative immunity. It is a matter of common remark that gouty subjects are very sensitive to beer or port wine, while they can consume a fair quantity of sherry or whisky without experiencing any ill effects. I met a gouty friend one day at a public dinner, and knowing that he was of abstemious habits, I made a remark upon the fact that he was having a glass of wine. “Yes” said he, “I take a glass of dry sherry to dinner, and I sometimes take a little whisky. I am also very fond of beer; but,” he continued, “I am very gouty, and were I to take a glass of beer just now, my hands before night would burn, my fingers would tingle, and the tips would get quite numb, and were I to persist for a few days in taking a single glass of beer to dinner, my finger-nails would crack longitudinally, and break off so that the edges would become jagged.” The above description corresponds much too accurately to the symptoms of a slight degree of neuritis of the sensory nerves of the hands to require further comment.

It will be noticed that every one of the five patients whose cases are here narrated had to rub their hands together for ten or fifteen minutes in the morning in order to warm them, or for the purpose of getting “the blood to circulate.” This habit seems not to have escaped the observant eye of our great dramatist, for Lady Macbeth is represented as being

¹ Since the above was written, a young girl, who works in a “red-lead factory,” has come under my care in the infirmary. She has a well-marked blue line on the gums, double wrist drop, loss of the patellar-tendon reactions, and double optic neuritis. This patient has suffered from numb and dead fingers, and from cramps of the calf of special severity. She states that beyond an occasional glass of beer she never indulged in alcoholic stimulants, and nothing we can gather about her character and habits tends to cast suspicion upon her assertion.

addicted to it. In the sleep-walking scene, the doctor, who with a waiting gentlewoman is a spectator, asks, "What is it she does now? Look how she rubs her hands." The gentlewoman replies: "It is an accustomed action with her to seem thus washing her hands; I have known her continue in this a quarter of an hour." That Shakspeare represents Lady Macbeth as drinking wine to nerve her for her fiendish purpose is proved when, after having drugged the two chamberlains into "swinish sleep" by "wine and wassail," she says:—

"That which hath made them drunk hath made me bold;
What hath quenched them hath given me fire."

It is not pretended that Shakspeare knew there was any connexion between the abuse of wine and this rubbing of the hands; all that can with probability be asserted is that the original of the character of Lady Macbeth was one who indulged to excess, and was observed to have this habit of rubbing her hands.

With regard to the cramps, it is important to notice that the patient seldom complains of them, and the fact of their presence has almost always to be elicited by cross-examination. This explains how it is that the presence of cramps in peripheral neuritis has hitherto almost entirely escaped notice. In opening the discussion on Peripheral Neuritis in the Pathological Section at the meeting of the British Medical Association at Brighton (1886), I stated that "I never could assure myself that the paralysis was in any case preceded by active spasm of the affected muscles."² I was quite familiar with the fact that in alcoholic neuritis the patients complained bitterly of pains in the lower extremities, which they called "cramps," but I persuaded myself at the time that these so-called "cramps" were identical with the shooting and neuralgiform pains which form such a prominent characteristic of neuritis. The same difficulty appears to have presented itself to the mind of Dr. Frederick Taylor,³ for, in a recent paper on Multiple Neuritis, he says: "In Case 3 there was much complaint of 'cramps,' 'spasms' in the limbs, the nature of which was difficult to make out." Having now for the last two years questioned minutely a large number of patients, suffering from alcoholic and other forms of multiple neuritis, I have no doubt whatever that the pains described as "cramps" are really due to tonic spasm of the calf and other muscles, the torture caused by them being aggravated by the hyperæsthetic condition of the affected muscles.

Manchester.

EXCISION OF THE ENTIRE CLAVICLE ON THE RIGHT SIDE FOR LARGE SUB-PERIOSTEAL SARCOMA.

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(Concluded from page 1079.)

ON looking up the literature of the subject, I can find only nine cases of entire excision of the clavicle for malignant disease recorded. I have, however, by writing to the medical papers and to the surgical registrars of all the large hospitals in the United Kingdom, succeeded in obtaining particulars of six other cases in which the operation has been performed. And I would take this opportunity of thanking all those gentlemen who have so courteously answered my letter, and also Dr. O. Wanscher and Dr. A. Cora (Geneva), for so kindly sending particulars of two cases which have come under their observation. An interesting point in these cases is the small amount of loss of power of motion of the arm which arises. In the case of Mr. Travers, the boy had complete power over his arm in all directions, and only a few months after the operation was amusing himself by rowing on the Thames. The subject of the present operation had on April 8th, only eleven weeks after it was performed, had perfect motion of the arm in every direction, being able to play the piano, dress her hair, &c. Dr. Britton's patient, a coal-heaver, was able to use his pick as well as ever; and in this case, curiously, the man could carry heavy weights on the shoulder from which the clavicle had been excised, whereas

on the sound side he had no such power. In Dr. Wanscher's case, he remarks: "The injury to this boy's arm is so trifling that one would not notice it unless one felt or saw it. Just look at his free movements, and compare these with Malgaigne's words, to which Tilleaux refers without contradiction in his excellent handbook on the importance of the collar-bone for the movement of the arms. Malgaigne says: 'Take the collar-bone away, and the cavitus glenoidea will then move or turn forward, and the outward and backward movements will be made impossible. A dog in swimming strikes out its fore-legs straight forward; it cannot perform the circular movements which man can make with his hand; it can neither move the fore-legs forward to its throat, lay them one across the other, lift them backwards or sideways, put them round its neck, or place them across its back: all these movements a man can make because he possesses a collar-bone.'" Compare these remarks with the result of Mr. Travers' case and my own. There are of course several cases of excision of the clavicle for necrosis recorded, but that is a totally different matter, as in this case the periosteum is left and new bone forms. There are also many cases in which the outer third or half the bone has been removed in conjunction with the arm for large enchondroma of the head of the humerus, or together with the arm and scapula for malignant disease.

The following is a short abstract of the cases of which I can find any record:—

The first case is that described by Dr. Mott of New York, in which he removed the bone for tumour of the left clavicle from a lad aged nineteen years, in the year 1828. In this case the bone was removed in two portions. The tumour was about the size of a man's double fist. The patient made an excellent recovery, and was about and well ten years after the operation. Dr. Mott describes the operation as far surpassing in tediousness, difficulty, and danger anything which he had ever witnessed or performed. The hæmorrhage was profuse, and a large number of vessels had to be ligatured.

The second case is described by Dr. Warren in his work on Tumours, in which a man aged twenty-four years suffered from a tumour of his right clavicle. The swelling had increased very rapidly, and he thought it varied in size, sometimes being larger than at others. A pulsation was slightly perceived by the stethoscope. No sensible difference was observed in the pulsation of the wrist. The general health was good. The bone and tumour were removed by long crucial incisions, one extending the whole length of the clavicle and the other cutting this at right angles. The bone was divided by a chain saw about midway between the outer edge of the growth and the acromion process, and the bone removed. The wound healed to a considerable extent by the first intention. On the thirteenth day he was affected with chills and pain in the epigastrium, and died in the fourth week after the operation.

In 1837, Mr. Travers reported a case at the Royal Medical and Chirurgical Society of a lad aged ten years. A swelling was discovered, the size of a nut, on the centre of the left collar-bone. It was firm, but not painful. The swelling was supposed to have been caused by a blow from the boy falling over a wheelbarrow ten days previously. The growth increased slowly, but sensibly, and retained the character of a dense cyst. In May, 1837, the tumour was reported to occupy fully three-fourths of the length of the bone from its acromial articulation, and about two-thirds of its circumference. There was no sign of pressure on the bloodvessels or nerves of the arm. The clavicle, with the exception of a small portion at the sternal end, and tumour were removed by Mr. Travers in June, 1837, about twelve months after the date it was first noticed. There was very little loss of blood, and the wound healed readily, the patient being removed home a month after the operation. In November of the same year the boy was in good health, and Mr. Travers remarks that there is scarcely any perceptible falling forwards of the shoulder, or any restriction of the motion of the arm; he elevates it perpendicularly over his head, extends it horizontally, carries and rotates it behind his trunk, and performs the same extent and variety of circumduction, and with equal promptitude and power, as the parallel movements of the other arm. Indeed, one of his amusements is rowing a boat upon the Thames. The production of bone of a cylindrical figure from the truncated sternal extremity of the clavicle extends at least two inches, and terminates beneath the centre of the cicatrix in a firm ligamentous band adherent to the skin.

² Brit. Med. Jour., vol. i. 1887, p. 6.

³ Guy's Hospital Reports (Lond. 1888), p. 274.