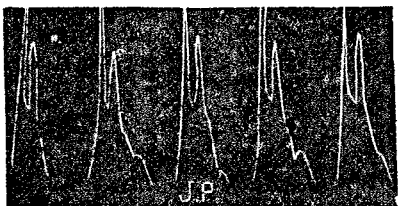


it was only occasionally and in very imperfect fashion that the opposite pulse assumed similar characters. In Case 6 again, while the special characters of the pulse were distinct in both radial arteries, they were always more pronounced on one side. In Case 5 the special characters of the pulse were developed on the left side; in Case 6, while developed on both sides, they were much more pronounced on the right side. The arteries were carefully examined in both cases—clinically and pathologically—with the object of discovering some explanation for this unequal development of the special characters in the two radial arteries, but no explanation was forthcoming. The objection that the *pulsus bisferiens* does not exist in nature, but is a product of the sphygmograph, cannot for a moment be entertained, seeing that the double beat was easily perceptible by the mere application of the finger. The cases related seem to show that neither the anacrotic nor the *bisferiens* pulse possesses pathognomonic value as a sign of aortic stenosis. It does not follow that both these pulses are devoid of value in the diagnosis of this lesion. Far from this being the case, both seem to possess distinct value, but especially the anacrotic pulse. The explana-

FIG 12.



Tracing taken from case of aortic incompetence without constriction of orifice, to show a common type of curve simulating to some extent the *bisferiens* tracing.

tion of the association of these pulses with the lesion is a different matter. It is difficult to admit that the relationship is one simply of cause and effect, for, if so, how does it happen that the same lesion should be capable of producing two pulses so unlike? Moreover, if the relationship be one of cause and effect, why should the lesion give peculiar characters in some cases to the pulse on one side only, or at least in much greater degree on one side? The existence or non-existence of incompetence of the aortic valves will not explain the production of the *bisferiens* pulse in one case and that of the anacrotic pulse in another case, because a certain amount of regurgitation is common with both pulses. We are unable to explain the mode of production of these pulses, and I do not think we are warranted in affirming that either of them is the direct result of the aortic stenosis. But these pulses are found so often in association with aortic stenosis that we cannot deny them diagnostic value while awaiting the full explanation of the mode of their production. Of the two, the anacrotic pulse probably possesses the greater diagnostic value.

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THE PHENOMENA CONCERNED IN THE PRODUCTION OF ABDOMINAL DROPSY.

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THE capillary system is the seat of the phenomena of nutrition, absorption, and secretion, and it is to this system one must look for an explanation of the occurrence of abdominal dropsy. Our knowledge, however, of the anatomy of the capillary vessels is unfortunately still imperfect. From the arteries the blood flows directly into the veins, and it is admitted that between these two sets of vessels there is no distinct demarcation. Regarding the lymphatics, it is doubtful what is the exact relationship of these vessels to the blood stream. Some authorities affirm that through the medium of the serous spaces of the body the liquor sanguinis flows directly from the minute arteries into the lymphatics, whilst others deny this continuity and assert that, although the venous and lymphatic vessels are intimately related to each other through the nervous system, there is nevertheless no structural continuity, and that any interchange

which goes on is accounted for merely by contiguity. According to Recklinghausen, the peritoneum, which is an enormous serous space, presents on its internal surface the open mouths of lymphatic capillaries; but it is highly improbable that the minute bloodvessels open directly into this cavity and that the fluid which finds its way thither flows from the orifices of these vessels. After careful study one is rather induced to believe that the fluid which lubricates the serous surfaces passes from the bloodvessels by a process of filtration. This physiological fluid, which presents the characters of lymph, coagulates spontaneously, and in this respect it differs somewhat from that which accumulates and produces abdominal dropsy; but it is probable that the difference in behaviour is merely due to the presence of a larger quantity of water in the pathological than in the physiological transudation. Diluted blood, it may be remarked, behaves in a similar manner, for that drawn from the vein of an animal into which a very large quantity of water has been introduced does not coagulate.

The fluid which filters normally from the bloodvessels into the peritoneum varies in amount according to circumstances. It is greatest after the ingestion of a good meal, and is reduced to a minimum during starvation. At no time, however, is it excessive, nor does it show any disposition to accumulate, as the process of absorption keeps pace with that of exudation, and in this manner a state bordering as closely as possible upon equilibrium is maintained. The blood is the source of this, as it is of all the other liquids of the body, but almost as rapidly as it filters from the bloodvessels it finds its way again into the general circulation.

In dealing with the phenomena concerned in the production of abdominal dropsy there must be taken into consideration: (1) the nature of the blood; (2) the physico-chemical state of the membrane or membranes participating in the process of osmose; and (3) the motion of the blood.

1. *The nature of the circulating fluid.*—The blood is an aqueous solution of organic and saline matters, and although it fulfils its functions largely through the agency of the water which it contains it must be observed that it does not circulate merely as an aqueous fluid. From time to time the quantity of water in the blood may, and does, vary to a marked extent without the physiological phenomena being thereby necessarily disturbed. If, however, a large quantity of water is suddenly either abstracted from or added to the blood, then changes of a very decided character may be induced, but the resulting disturbance will depend materially upon the power which the organism possesses of adapting itself to circumstances. When a certain amount of water is injected into the aorta those tissues which are least supported are more or less rapidly infiltrated by dilute liquor sanguinis, but it is noteworthy that this result is not so readily or so markedly produced when the same quantity of water is injected into a vein. This disclosure is accounted for by the fact that the dilute blood in the latter case undergoes considerable change before it reaches the systemic capillaries, where the process of filtration is effected. In cholera the water contained in the blood may be rapidly reduced, and the tissues may consequently become more or less desiccated; but it seldom, if ever, happens that the watery material of the blood is so inordinately increased that dropsy develops from this cause alone. During the progress of some wasting diseases and in association with a watery condition of the blood dropsy may occur, but it is evident that this phenomenon cannot be solely attributed to hydræmia, as the nutrition of the body generally is disturbed and other conditions which favour the occurrence of œdema are at the same time present. The mechanical conditions under which the efficiency of the circulation is maintained depend upon the presence in the blood of the two organic compounds, albumen and fibrin. The albumen hinders the watery material of the blood from filtering through the vessels, whilst the fibrin suspends the corpuscles, and, facilitating thus the transit of these bodies, lessens the possibility of the circulation being impeded or arrested by them. When a solution of the white of egg is poured upon an organic diaphragm the passage of the aqueous fluid through this membrane is retarded in consequence of the albumen present. The behaviour of the blood in so far as the process of filtration is concerned is to some extent, it would appear, dependent upon the amount of albumen which is held in solution. In many cases of Bright's disease dropsy is more or less rapidly induced, and this occurrence is attributable to an alteration in the physical state of the blood, but especially to the loss of albumen, as the transudation from the bloodvessels is thereby correlatively

increased. If in kidney disease there is not only a diminution of the albumen, but an increase of the water in the blood, then it is evident that, coöperating, these two conditions will greatly facilitate the production of dropsy. In health the composition of the blood is well maintained; when, however, that relationship which should exist between the water and the solids is unduly disturbed, then the chemical conditions under which the processes of life are carried on become disordered and dropsy may ensue. The red blood corpuscles display a great affinity for water, and in some cases of anæmia it is quite possible that the dropsy which occurs may be due to an alteration in the chemical state of these bodies, whereby the metabolic processes generally are deranged.

2. *The physico-chemical state of the membrane or membranes concerned in the phenomena of transudation and absorption.*—The composition of the blood may be practically normal, but an excessive transudation may nevertheless take place in consequence of some variation in the state of the organic filter. If in a healthy animal the principal vein of a limb is ligatured it does not follow that by thus interfering with the return of blood œdema of this extremity will be produced. If, however, the vaso-motor nerves are cut, the interstitial meshes of the area so disturbed are forthwith more or less markedly infiltrated by a serous exudation. In this case the tone of the vessels is destroyed, and thereby they are rendered more permeable in so far as the process of exosmosis is concerned, but less permeable as regards the in-going current. Under ordinary circumstances the fluid which exudes from the bloodvessels passes with almost equal rapidity into the blood stream again. Should, however, this harmonious relationship be disturbed, whether from increased transudation or defective absorption, dropsy may be produced. At one time it was supposed that the process of absorption was effected by the lymphatics alone, but it is now generally believed that the bloodvessels too are directly concerned in this phenomenon. To facilitate the process of absorption the fluid which is to be taken up should be placed in as immediate contact as possible with the interested vessels. On account of its thickness the skin absorbs feebly, but its activity may be greatly increased by removing the cuticle. Occasionally it happens that the peritoneum, which under ordinary circumstances is a delicate structure, becomes converted into a thick and skin-like membrane, and the process of absorption may in consequence of this change be hindered or abolished. In those cases in which the peritoneum is enormously thickened the lymphatic openings described by Recklinghausen may be constricted or occluded, and the utility of these structures in so far as the removal of the transudation is concerned may be more or less destroyed. I doubt, however, whether dropsy, general or local, can ever be solely attributed to defective absorption.

3. *The motion of the blood.*—The perpetual movement of the blood hinders transudation and favours absorption. The structure of the bloodvessels is such that the transudation of fluid from these tubes is rendered easy, but this process is undoubtedly moderated by the perpetual motion of the blood. It is evident, too, that the process of absorption must be facilitated by this same phenomenon. If the capillary circulation is impeded, then the blood remains longer in contact with the same portion of the vessel, and thereby the transudation is increased and the rate of absorption is correlatively diminished. Through the agency of the nervous system it is remarked that whatever accelerates the circulation increases the rate of absorption, but that whatever slackens it lessens the activity of this process. It is alleged that dropsy may be due to an altered relation between venous and arterial pressure. The dropsy which is observed in association with cirrhosis of the liver is said to be produced in this manner. If the arterial pressure is increased, then the circulation is accelerated and the transudation is thereby reduced; whereas, if the venous blood is impeded or arrested, then the stasis alone, apart from an alteration in the pressure relationship, would account not only for defective absorption but for increased exudation.

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LYMPHANGIOMA CUTIS.

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THE following account of a somewhat uncommon form of skin lesion may be of interest on account of the special opportunity obtained for the study of its anatomical characters by the method of treatment adopted.

A girl aged ten years of age presented herself at the out-patient department of the Great Northern Central Hospital on Aug. 16th, 1893.

Description of the lesion.—The patient suffered from a vesicular eruption situated in the skin over the upper portion of the left scapula. The true appearances of the lesion were masked by much dermatitis—the result of poultices and the friction of her garments. Under appropriate treatment the dermatitis rapidly disappeared. The characteristics of the lesion then became clear. The area of skin involved corresponded to the central and upper part of the left scapula, extending from the vertebral border of the scapula on one side to the margin of the axilla on the other. The lesion consisted of numerous vesicles, varying from the minutest visible up to the size of a small pea, and tending to be arranged in small groups. These vesicles were obviously somewhat deeply situated, the epidermis covering them being somewhat resistant to injury. They contained fluid and were translucent; most of them were colourless, but a few were of a pale-straw tint. The largest vesicles were most numerous towards the central portions of the growth. No dilatation of the skin bloodvessels was anywhere apparent, except towards the most prominent parts of the largest vesicles. In this position in some cases were observed a few minute, straggling, and dilated venous capillaries. Situated in the healthy skin at varying distances from the margin of the main lesion were several "satellite" areas, which were affected in a similar manner. These vesicles were also arranged in groups and were of small size.

History of the patient.—The history of her family has little obvious bearing on the condition described. The mother died from carcinoma of the gall-bladder and liver in the hospital, but in no other of the relatives was any information afforded of deformity or of tendency to the formation of new growths. The patient herself is said to have shown no trace of the lesion at birth. When three months old, however, she had a fall, striking the left shoulder on a fender; an abscess formed on the site of the injury; this had to be opened, and continued to discharge for some time. The lesion described was first observed in the same position as this injury, and had continued to increase in size. The patient continued under observation till Oct. 25th, when she was lost sight of for a time. She returned to the hospital on April 25th, 1894, and it was then ascertained that she had suffered in the interval from enteric fever. The skin lesion was now very much inflamed. On treatment the dermatitis subsided, and it was found that the lesion had increased in area, especially towards the axilla. This increase was readily verified on comparison with photographs taken before the attack of enteric fever. The patient was in perfect health, except for the lesion of the skin. On account of the increase of the lesion, especially towards the axilla, where attacks of dermatitis would necessarily occur, it became compulsory, at least, to check the advance of the lesion.

Treatment.—In consultation with my colleague, Mr. Peyton Beale, it was decided to remove the affected area rather than to use less radical measures. On May 22nd Mr. Beale removed the portion of the skin involved with some healthy skin all round—an area not less than fifteen square inches. Portions of the deep fascia and of the underlying muscle were also removed where the growth was adherent to the deeper structures. The edges of the large wound thus made were brought into apposition by the introduction of six thick silver wire sutures, some of them fully three inches from the margin of the wound. Considerable force had to be exerted to close the wound, but the edges came well together; a few interrupted silk sutures were then placed in position and the wound dressed. The arm was fixed in a position to relax the tension on the stitches by means of a poro-plastic splint. The wound healed by primary union throughout, the stitches being removed on the eighteenth day. The wire tension sutures had dragged through the skin, but had produced their

PUBLIC ABATTOIRS FOR LONDON.—The Church Society for the Promotion of Kindness to Animals has received from the London County Council an intimation of their readiness to receive a deputation on Thursday next, the 29th inst., at 3 P.M., for the presentation of a memorial praying for the institution of public abattoirs in place of the existing private slaughter-houses.