It is at any rate quite certain that the great majority of tube-casts which appear in the urine have been moulded within the convoluted tubes of the cortex. The casts which evidently have this origin are: 1. The oily casts, the fatty infiltration being as a rule confined to the glandular epithelium of the convoluted tubes; 2. The small white-cell casts, containing the leucocytes, which can have no other source than that of migration through the walls of the Malpighian capillaries; 3. Blood-casts, the result of hæmorrhage from the Malpighian capillaries into the commencement of the convoluted tubes; 4. Those large hyaline casts which after their escape with the urine, retain the convoluted form, clearly indicating their source in the tortuous tubes of the cortex. 5. The epithelial casts, which contain numerous cells, having all the characters of the glandular epithelium of the convoluted tubes. These unquestionable facts are clearly inconsistent with the theoretical assumption that no casts from the cortical portion of the kidney can escape, and appear in the urine.

I trust that I have succeeded in convincing you that the structure of the various forms of tube-cast which appear in the urine is both interesting and of high practical value. And now I must remind you that, in order to obtain trustworthy data from a microscopical examination of the urine, your observations of the phenomena must be exact, and your interpretation cautious and rational. You must accurately discriminate between one form of tube-cast and another, and you must avoid the not very unusual error of mistaking for tube-casts appearances somewhat resembling them, which are due to the presence of foreign bodies in the urine. I have here a specimen which was given to me by an enthusiastic but inexperienced microscopist, to illustrate his supposed discovery of brightly and variously coloured tube-casts, some being red, others yellow, and others again green. These supposed tube-casts, as you will see, are in reality coloured fibres of wool, no doubt having their source in floating dust from a carpet. An unpractised observer often mistakes a fibre of cotton or a hair for a tube-cast.

I was once invited to confirm the diagnosis of cancer of the kidney which had been very confidently inferred by two experienced practitioners from the microscopical appearances in the urine. On looking at the specimen which had been prepared for my inspection, I found that the supposed cancerous products from the kidney were obviously grains of starch, which, on inquiry, were traced to their source in the application of violet powder to the external genitals of a female patient. The patient's recovery afforded the crowning proof of the absence of cancer.

A very moderate amount of care and study will enable you to avoid such gross errors of observation and interpretation as those to which I have referred.

In conclusion, let me impress upon you the importance of avoiding the not uncommon error of basing your diagnosis, your prognosis, or your indications for treatment, too exclusively upon one kind of evidence. After all that I have said and written upon this subject, I shall not be suspected of attaching too little importance to the information to be derived from a careful microscopical and chemical examination of the urine. The importance of this inquiry, in all cases of renal disease, can scarcely be overestimated. On the other hand, information of the highest practical value, with regard to the form and the stage, and the gravity of the renal disease, is to be derived from various other sources—such as, for example, the presence or absence of dropsy; the colour and expression of the face; the state of the vision and the ophthalmoscopic appearances of the fundus of the eye; the odour of the breath; the presence of such nervous phenomena as headache, giddiness, twitching or painful cramp of certain muscles; the condition of the skin, which, in the advanced stages of the various forms of Bright's disease, is almost invariably dry and harsh, and with difficulty forced into a state of active secretion; and last, but not least, the condition of the circulation, as indicated by the degree of arterial tension, and the impulse and sounds of the heart.

The practice of medicine, like the art of war, is, in a greater or less degree, a succession of mistakes—the best generals and practitioners being those who make the fewest mistakes; and the surest way to avoid error, whether in war or in medicine, or in any other art, is by a diligent endeavour to base every scientific or theoretical opinion, and every practical doctrine, upon the widest and most exact observation of all the facts which have relation to the subject in hand.

The unscientific absurdity and the practical evils of a narrow and exclusive specialism, can scarcely be better shown than by the study of the various forms of renal degeneration, whose influence upon the general system is so wide and far reaching, that, during their progress, almost every tissue and organ and function of the body may suffer more or less perversion and derangement; and so typical and characteristic are some of these secondary results of renal disease, that, in one case,

the ophthalmoscope; in another, the finger on the full and tense radial artery; and in another, the hand or the stethoscope over the strongly heaving hypertrophied heart, has alone sufficed for the diagnosis of advanced degeneration of the kidney.

SELECTIONS FROM CLINICAL LECTURES,

Delivered at the London Hospital.

BY JONATHAN HUTCHINSON, F.R.C.S.,

Senior Surgeon to the Hospital; Consulting-Surgeon to Moorfields Ophthalmic Hospital; and Professor of Surgery and Pathology in the Royal College of Surgeons.

PAPILLARY GROWTHS IN THE LEG PRECEDING CANCER.

WE had, some time ago, through the kindness of Dr. Stephen Mackenzie, several opportunities of seeing a man who has some very peculiar growths on the lower part of one leg. There are several patches of a papillary growth close together, and almost confluent, a quarter of an inch or more in height. On their surface, the papillary outgrowths are covered by a dirty scab; but if we detach or break this, you can easily separate the wart-like growths from each other, and put them apart in long rows, like standing corn. They do not readily bleed, and the skin from which they grow is somewhat thickened. The main patch is over the shin, in front of the lower third of the leg, and is nearly as large as the palm of the hand; but near it are several much smaller ones. The first stage of the condition is a thickened and rough papule, not unlike a spot of psoriasis, but with more evidence of growth. Our patient is a man of near 50, and he has had the condition for two or three years. It gives him no trouble. He has no enlarged glands.

I do not think that there can be much hesitation in considering that the disease as a variety of papilloma which, if not actually cancerous at present, is in a fair way to become so. At any time we might find the glands enlarged, or that the patch had begun to ulcerate. It is mainly in the absence of any ulceration that the picture of epithelioma is as yet incomplete. There is no telling how long or how short may be the period during which its appearance will be delayed. I have urged the man to at once submit to radical treatment, that is, to have the growths freely destroyed by chloride of zinc paste.

Dr. Mackenzie's patient shows an extreme condition of what, in lesser forms, I have often seen before. An old man, aged 74, came to us at the Hospital for Skin-Diseases, last week, who had exactly the same thing, but in smaller areas and with less elevation. They had been present two years, and, excepting that they itched excessively, gave him no trouble. In him, one of the patches was at the back of the leg; most of them, however, being in the usual position—over the shin. I will ask you to note, in connection with this fact, that the patches are almost always multiple—a chief one and several smaller near to it. Although I ask you to believe that this disease is really a close ally of cancer, yet I do not know that I can quote any complete case in which I have watched patches which began as I have described, and progressed to an undoubtedly cancerous termination. But I have seen several which were cancerous, in which there was good reason to believe that the beginning had been like them. It is only in the legs of aged people that we see such growths; and the liability to them seems to begin at the cancerous time of life. Often some local irritation, eczema, etc., precedes their formation. Not unfrequently, during periods of some years, the patches remain without warty or papillary outgrowth, simply hard rough patches, well circumscribed, and showing on the surface the little points or buds from which future growth is to take place. In this stage they resemble condylomata, excepting in their hardness and roughness. Often, however, they are not round, but in long streaks and very irregular. Probably they are, for the skin of the leg, what the rodent cancer is for the upper part of the face—the form of malignant action which it is most prone to take on. I have not often seen them on other parts of the body.

ON THE PECULIAR CONDITIONS ASSUMED BY MALIGNANT DISEASE OF THE SKIN IN DIFFERENT REGIONS.

You are aware that it is a doctrine upon which I often insist, that certain differences in the clinical characters of malignant disease of the skin are to be observed in relation with the different surface regions of the body. The upper part of the face grows rodent cancer; the lips, ears,

prepuce, and vulva, a form of common epithelial cancer, which rapidly causes gland-disease; the scrotum, the soot-wart, which, after perhaps a long duration, becomes epithelial cancer of the common type; on the legs, as we have just seen, a hard dry papillary growth often precedes cancerous action, and the latter is usually slow and for long, without gland-mischief. I wish now to ask your attention to certain peculiarities of malignant ulceration of the skin of the abdomen. I have at present in my recollection four or five cases, in which cancer of the skin of the middle of the trunk showed conditions of which I have never seen the exact parallel elsewhere. In all, the ulceration progressed slowly during many years, caused but little pain, and produced no gland-disease. In these features, you will say that it resembles rodent ulcer of the face; but the sores produced did not look exactly like rodent ulcer. The amount of induration in the borders and base was far greater, the destruction as a rule deeper, and, above all, at no part nor in any case was the well known sinuous roll of superficial induration simulated. It would appear that the subcutaneous cellular tissue is involved much sooner and more extensively than in rodent ulcer. There is little or no tendency to healing, which in the superficial form of rodent ulcer we so often see; nor, I believe, is the earliest stage of the disease like that of rodent. Although, however, I insist on these minor differences, it is to be admitted that the disease is, after all, the same, modified only by difference of place. This, indeed, is my assertion. I do not recollect to have ever seen the common type of epithelial cancer (wart-growing, and causing gland-disease early) on the skin of the chest or abdomen. I exempt the umbilicus from this remark, for here the ordinary type may occur. Well marked rodent ulcer, as denoted by its curled, semi-transparent, hard edge, may now and then occur on the middle of the chest, but I have never seen it on other parts of the trunk. The disease of which I speak is most intractable, and, as far as I have observed, recurs immediately after removal. I treated, twenty years ago, a woman aged 50, with a sore of this kind in the middle of her back. I was sanguine, and she was patient, and I think it was freely cut out twice, and three or four times most liberally destroyed with chloride of zinc paste, but without the slightest benefit. As soon as the sore was nearly healed, it recurred. Almost at the same time, I had under care an elderly gentleman who had an enormous malignant ulcer on the side of his chest, which had been gradually spreading for ten years or more. He was cachectic from discharge and bleeding, but had no gland-disease; more recently, I saw a gentleman from Birmingham, a patient of Mr. Horatio Wood's, who had an ulcer a foot long, and so deep that a fist might have been put into it at any part, and which yet did not prevent him from attending to his professional duties. It had existed for many years, and was supposed to have begun in a mole or nevus near the navel. He was fifty-seven years of age, and in fair health, although the discharge was profuse, and there were frequent hæmorrhages.

At present, I have under observation an old gentleman, aged 70, in whom, a little above the cleft of the nates, there is on one side a patch of the size of a halfpenny, which might at first sight be mistaken for psoriasis. When you touch it, however, it is found to be exceedingly hard, much more so than psoriasis ever becomes. It is not ulcerated as yet, but it has attained its present size in less than six months, and already near to it are some smaller patches, which look as if they might develop in the same way. I much fear that the disease is malignant, and this suspicion had been entertained by high authorities before I saw the patient.

ON FRACTURE OF THE PATELLA: THE CAUSE OF DISPLACEMENT OF THE FRAGMENTS, AND THE MEANS OF REMEDYING IT.

Most of you are, I doubt not, aware that I hold definitely, respecting fracture of the patella, that the separation of the fragments is not caused by the muscles. Repeated observations have convinced me that it is always caused by, and in proportion with, the effusion into the joint. If there be no effusion, there is no separation. The muscle is not a piece of India-rubber to contract, and remain contracted, as soon as one end is loosened. It is as easily capable of relaxation as it is of contraction, and, when the limb is at rest, it is always relaxed. When relaxed, there is no reason why the upper fragment of the broken bone should not come easily down to the other; and, in point of fact, in cases where there is no effusion, it does so. I have demonstrated this repeatedly. You may then clear your minds of all misconceptions as to spasm of the muscle being the cause of persisting separation. Such spasm may, of course, cause separation at the moment of the accident; but, as soon as the limb is at rest in bed, its agency ends. I repeat, you will always find the difficulty of approximation in proportion to the amount of swelling. This fact kept in mind, the means of treatment will be evident. Get rid of the effusion as quickly as possible. The effusion may be of blood, or it may

be of synovia, or perhaps, most commonly, of a mixture of the two. If it occur immediately after the injury, then it is probably blood; and these cases are the most difficult to treat, for blood is more slow of absorption than synovia. The treatment is, however, the same for both, and consists in the vigorous use of cold. The ice-bag sedulously applied, or a spirit lotion so freely used, that evaporation is constantly going on, are the best measures. You must not be content, unless the skin over the whole part of the knee be kept quite cold. It is of great importance that absorption should be rapid and complete. If you can get rid of the swelling in a week or ten days, you will have a good chance of bony union, or of union so close that it is equivalent to bony. I believe that we get bony union in nearly half our cases. Our measures are, then, ice for a week or ten days; then oblique strips of plaster, which fix the fragments, and catch in notches in the splint. We avoid all complicated forms of apparatus; and hold, respecting Malgaigne's hooks and some similar contrivances, that they are barbarous and dangerous. The limb is, of course, always extended, from first to last, on a long and broad back splint, with a thick cushion and side notches. The limb is kept a little elevated—not with any design of relaxing muscle, but because the knee-joint permits slight overextension, which is attained by elevating the leg. By this means, the lower fragment passes a little higher up than it would otherwise do. When, at the end of ten days, you have brought the fragments together, cover the whole joint with bandages, and never touch the bone again until six weeks are accomplished. If you leave it uncovered, some zealous and inquiring dresser is almost sure to examine the bone to see if it be uniting, and, by such examination, he prevents the progress of union. You must leave it in faith, and even at the end of the six weeks must still be very careful, and on no account make lateral movements. The union is still weak, and will easily break down. Be content if you find the fragments close. At the end of six weeks or two months, we usually allow the patient to get up, but he is always provided with a patellar apparatus before doing so. Note that the object of this apparatus is not to hold the fragments together, which it could not do, but to prevent flexion of the knee, which would drag away the lower fragment. It also serves a secondary purpose, of giving lateral support to the joint. If an apparatus be not at hand, a gum-and-chalk or plaster-of-Paris case will serve the purpose quite as well. I usually advise our patients to wear the apparatus for six months; and then, if the knee feel strong, to throw it aside. Although we aim at bony union, and, I believe, often obtain it, yet I am by no means an enthusiast as to its advantages. It curiously happens that those who have fibrous, or even ligamentous union, not unfrequently walk better than those in whom it is close. This I have proved by examination of many patients, at long intervals after the accident; and it is a very strong reason for declining to resort to any mode of treatment involving risk. A curious and unexpected result, to which I often ask your attention, is, that the quadriceps muscle usually undergoes, during the six weeks' rest, very decided atrophy, sometimes attended by a certain degree of contraction. This, in cases in which the bone is closely united, much limits the movements of the joint. I well recollect one man, whom we treated with great care, and in whose bone ossific union occurred. Two years later, he fell and broke the same bone again. His surgeon, on the second occasion, was not so successful as I had been; and when, a year later, I had an opportunity of examining the joint, I found considerable separation, the union being only by ligament. To my chagrin, however, the man stated that the second accident had enabled him to walk much more easily, for, during the interval between the two accidents, his knee had always felt stiff and awkward.

ANKYLOSIS OF HIP IN FLEXED POSITION: EXTREME DEFORMITY: ADAMS'S OPERATION, WITH GOOD RESULT.

The patient whom we have to-day admitted (January 4th, 1882) is a man upon whom I did Adams's operation of division of the neck of the thigh-bone, six years ago. He carries with him a photograph of his former condition, and you see what it is at present. He now stands erect, although there is still some tilting of the pelvis, and the bone has again ankylosed, whereas, before the operation, he was obliged to walk in a crouching attitude, or, if he stood upright, to project the left knee straight before him without the slightest hope of touching the ground with his foot. Although the deformity was so great, it did not, however, disqualify him from labour. He was in good health, and gained his living as a ship's carpenter. The disease which had produced the ankylosis had occurred in early life, and had been attended by suppuration in the joint, of which large scars remained. The femur was fixed as firmly as possible to the pelvis, and at considerably less than a right angle. The man was very desirous that some operation should be performed—though being, as he said, the only support of his mother, he was anxious not to run much risk. His prospects in this respect having

been duly explained it was agreed that the operation should be done. I cut through the neck of the femur with Adams's saw, encountering some little delay on account of the hardness of the bone, and possibly from having got too close to the shaft, that is, not sufficiently across the neck. The operation was done under Lister's precautions. When the section of the bone was complete, I divided the tendon of the adductor longus, and those of the sartorius and tensor vaginae femoris. We were able at once to put the limb in much better position; and, subsequently, when the wound was healed, this was still further improved. No inflammation occurred about the wound, and he made an uninterrupted recovery. We did not succeed in preventing union of the bone at the site of section, and you now see the ultimate condition obtained. The man has since been able to walk erect; and he has now, for six years, been engaged in his former occupation with greatly increased comfort.

One drawback I must mention; and it is, indeed, on account of this

These woodcuts are copied from photographs to show the condition before and after operation.

that we now have him again under care. He had, two years ago, an acute abscess in his buttock. This was four years after the operation, and not apparently in any direct connection with it. The abscess did not lead to bare bone, and, after it was opened, sound healing occurred; but he now, two years later, comes to us again, complaining of pain in the same position, and fearing that another abscess is imminent. I may state that I have under observation, in private, a very similar case, in which one hip has been ankylosed for many years. The patient is in robust health, and yet occasionally—that is, once in three or four years—deep-seated abscesses occur, after the evacuation of which sound healing again takes place. I do not know of any cause for these abscesses, excepting that they occur in the proximity of bone which has formerly been diseased. In both cases, the abscesses develop with much pain and constitutional disturbance; but the rapidity and perfectness of the healing is remarkable. I do not think that, in the case before us, we ought to blame the operation for the liability to abscess.

It might have happened, as the other case shows, if nothing whatever had been done. On the whole, the man considers himself a great gainer by it.

CLINICAL LECTURE

ON A

CASE OF TUBERCLE OF THE IRIS AND CILIARY BODY.

By J. R. WOLFE, M.D., F.R.C.S. Ed.,

Lecturer on Ophthalmic Medicine and Surgery in Anderson's College, Senior Surgeon Glasgow Ophthalmic Institution.

GENTLEMEN,—I wish to direct your attention to the case of tubercle of the iris and ciliary body, on which we operated some time ago. The case is interesting, not only to ophthalmologists, on account of its rare occurrence—this being the only one on record in this country—but also in this respect, that it may throw some light on a much debated question in pathology and clinical medicine. You are aware that, whenever the subject of tubercle and tuberculosis comes to be discussed in medical societies, difference of opinion at once becomes manifest. Indeed, it seems that we have not yet arrived at a common definition of tubercle. What is considered as tubercle by one school of pathologists, is not admitted to be such by others. This was shown even so lately as at the last meeting of the International Congress in London, in a discussion in which Virchow had taken part (see *BRITISH MEDICAL JOURNAL*, October 1st, 1881). So long as the doctrine of Laënnec was generally adopted, we used to regard tubercle as either small, grey, semitransparent, hard bodies, deposited as a mere infiltration into the tissue. These bodies might then become yellow, opaque, and soft, and a caseous substance formed in their interior. When isolated, they were called miliary tubercles; and, when of caseous consistence, they were designated yellow or crude tubercles.

Virchow, the founder of modern pathology, defines tubercle as a neoplasm, which takes its origin from the connective tissue in the form of nodules, consisting of closely packed cells. The life of the neoplasm is of short duration, for very soon its elements begin to degenerate, the degeneration always commencing in the middle of the nodules, and in most cases giving rise to caseous consistence. Besides the local malignity, this neoplasm possesses a pronounced tendency to diffuse itself over the whole organism, and this brings it into the category of malignant growths. (*Die Krankhaften Geschwülste*, 1865.)

Langhans then demonstrated that the nodules invariably possess giant-cells of a peculiar organic formation. And Virchow, in the discussion already referred to, told us that these giant-cells are of a finely granular structure, to which they owed their peculiar appearance. They developed by a regular gradation from simple cells, and are thus shown to be organic formations. He regards them as a special form of cell-formation.

This precise histological determination of tubercle enabled Köster to point out its existence in the granulations of the fungous joints; and Schüppel discovered it in scrofulous lymphatic glands, and Friedländer has shown that it is also found in scrofulous abscesses and in caries. Our knowledge has thus become more precise as to the nature of tubercle, and its domain also greatly enlarged.

Villemin made the discovery that tubercles can be inoculated upon animals, especially upon rabbits (*Etude sur la Tuberculose*, 1868). This discovery has been confirmed by the experiments of Cohnheim, who inoculated tuberculous matter into the anterior chamber of rabbits. The inoculated matter gradually absorbed; but, in about four weeks after inoculation, grey nodules made their appearance upon the iris, and multiplied until thirty or forty could be counted. The iris became tumified, and then purulent infiltration set in. Baumgarten has more recently carried this experiment still further. He injected blood taken from a freshly killed tubercular-inoculated animal into the aqueous chamber of rabbits; and he invariably found that, in three or four weeks, there was an eruption of tubercle, first in the lower segment of the iris, where the blood had lodged.

Rokitansky, from personal observation of 14,000 cases, has given us a list of the tissues which are subject to tubercular eruptions, viz., the lungs, intestinal canal, lymphatic glands, larynx, brain, spleen, liver, etc. The ocular tissues find no place in the list, for the eye was con-