

and undesirable, likely to cause friction in relation to the patients of family attendants and to foster a system of canvassing, without which in some form or another, clubs of this kind cannot exist, and it was agreed that no member of our Association should in future form or carry on a private medical club.

In response to an invitation from the Manchester Conference on Medical Organization a delegate was appointed to represent the Yarmouth Society. This conference sat for three days, and our delegate (Mr. Whitaker) took an active part in the discussions, proposed and carried several important motions and amendments, and was elected a member of the Provisional Committee. Mr. Whitaker's attendance at this conference was followed by his election to the Constitution Committee of the British Medical Association; we all know (especially those of us who attended the extraordinary meeting of the Association at Exeter Hall in June) how well he has done his part as a member of the Constitution Committee.

In February, 1900, the Society turned its attention to the Liverpool Victoria Legal Friendly Society, which in conjunction with the National Medical Aid Company had imported a medical man in the place of their late surgeon, who, as I previously mentioned, had resigned his medical aid appointments and joined our Association. We resolved to take immediate steps to gather such evidence as was possible in the matter of the medical officership of the Liverpool Victoria Society, and if evidence of canvassing could be established, that the conduct of the medical officer should be laid before the General Medical Council, as being the only course open to us to put a stop, once and for all, to the system of touting and advertising by which these and kindred societies maintained their existence.

I will not weary you by dwelling at any length on this case which is fresh in the memory of us all—suffice it to say that, having obtained the valuable assistance of the Medical Defence Union, we went to work, and with infinite pains and trouble were at length able to procure undoubted evidence of canvassing on the part of the touts in the employ of the Liverpool Victoria Friendly Society. Statutory declarations were obtained substantiating the charges made, and we anticipated that the case would come before the General Medical Council in May, 1901. However, from some unexplained cause and to our infinite disappointment the hearing was postponed till the following November. In that month the case came on for hearing. Two of our members attended to give evidence in support of their statutory declarations or to submit themselves to cross-examination in the box if called on to do so. The insurance societies had secured the services of eminent counsel, Mr. Lawson Walton, K.C., M.P., and Mr. Charles Mathews, while we were represented by Dr. Bateman, the Secretary of the Medical Defence Union. The case, which was most admirably conducted by Dr. Bateman, occupied the whole of one day and half of the next and, as you know, terminated entirely in our favour.

In delivering the verdict of the Council the President remarked that they had deliberated very carefully on the defendant's case, and had come to the conclusion that the facts alleged against him had been proved to the satisfaction of the Council. The Council felt it their duty to express their sense of the gravity of the facts which had been proved against him; but, in order to give defendant an opportunity of reconsidering his position, the further consideration of the charge was postponed till the following session, when he would have to appear and satisfy the Council of his conduct in the interval.

Accordingly, in May last, the defendant again appeared before the General Medical Council, when he informed them that his connexion with the Society had been entirely and completely severed since Lady Day last, and he expressed his regret, and promised that in future he would have no connexion in any way whatever with Medical Aid Societies. Under these circumstances the Council decided to proceed no further with the charge proved against him. The BRITISH MEDICAL JOURNAL of June 7th, commenting on this case, remarks:

The action taken in November has had the desired result, not only in this particular instance, but in many other parts of the country. The Council is to be very much congratulated upon the strong stand which it made in this test case; and it is to be hoped that the full significance of

the course it has taken will be appreciated by the members of the medical profession, and also by the Medical Aid Societies.

The full import of this award becomes the more apparent when it is remembered that the General Medical Council had (and has) no power to issue an edict that those holding medical aid appointments will be held guilty of unprofessional conduct; and it was only by adjudicating upon a case brought up for decision, and so establishing a precedent, that the penalizing powers of the Council could be brought into play.

As a result of the Yarmouth case a precedent has been established, and a fatal blow administered to those Medical Aid Societies which owe their existence to a system of touting and canvassing; for medical men will now know what to expect from the General Medical Council, and will carefully abstain in the future from associating themselves with these organizations, which as a consequence will die out.

On the other hand had the case broken down the precedent would have remained with our adversaries, and years might have passed ere a favourable decision could have been obtained. The action of the District Committee in bringing this case forward has, as might be supposed, been made the subject of much adverse criticism, especially by the lay press. We were not, however, in the least disconcerted by these fulminations, or deterred from steadily pursuing the work we had taken in hand, and it is therefore with considerable satisfaction that we have perused the leading article on the Yarmouth case in the *Lancet* of June 14th, in which the line of action of the Yarmouth District Committee has been described as:

from the outset an example of proper professional conduct..... There has been shown no animus, no malice against one who was acting contrary to the well-declared feelings of his fellows, and at the same time a firm determination has been plainly evinced that respect would be exacted for the rights and dignity of the profession..... If medical men in all districts would but see as clearly as their Yarmouth fellows have done the issues that are really raised in such cases as this, and would combine in the same way against them, many of the hardships which are complained of in private practice would soon melt away.

And why do not medical men combine? There is nothing derogatory, nothing sordid, nothing selfish in a professional combination. That which is good for the medical profession is good for the public also. Then what is the reason that nothing is done? It is because of the lack of interest in the higher walks of the profession, and the apathy and want of energy in the rank and file.

The consultant, secure in his position, thinks that these matters concern him not, forgetting that whatever lowers the status, dignity, and independence of the main body of the profession affects his own position in corresponding degree; while the general practitioner, though face to face with the many evils and abuses which assail him, is too apt to overrate the difficulty of effecting a union with his brother sufferers, and to underrate the power of such combination if achieved; and so he toils and grumbles on and nothing comes of it. Gentlemen, I have demonstrated to you the fact that all the practitioners in a given district can combine and organize a society for mutual assistance and protection. That such a combination can be effective for the purposes for which it has been formed, and can operate both in the interests of the profession and of the public, and that if we will but take the initiative and act and legislate for ourselves, we shall receive the support and assistance of our governing body, the General Medical Council. Gentlemen, the time has arrived when something decisive must be done if the hitherto honourable calling of medicine is to continue to sustain its dignity, influence, and independence, and to attract to its ranks men of culture and position, and I have no hesitation in saying that that something is organized combination and union.

EAST YORKS AND NORTH LINCOLN BRANCH.

THE ETIOLOGY OF CANCER.

By ALEX. THEODORE BRAND, V.D., M.D., C.M.,
President of the Branch; and Medical Officer, Driffield Cottage Hospital.

[ABSTRACT.]

DR. BRAND, after observing that so far the search for the cause of cancer had been unsuccessful, and that no reliable empiric remedy for it had been discovered, said that a mental attitude of the most profound pessimism had been engendered in the

medical profession amounting indeed to absolute fatalism, which existed, if possible, even more strongly among the laity. Defeat must not, however, he said, be permitted to paralyse our energies, but should rather be a stimulus to renewed efforts.

Dr. Brand then briefly reviewed some of the specific causes which had been suggested, such as over-indulgence in tea, in sugar, the consumption of tomatoes, excessive flesh eating, excessive consumption of common salt, all of which he dismissed as untenable. He then referred to the pathological theories as to the origin of cancer, and mentioned Cohnheim's theory of embryonic rudiments, Thiersch's theory that epithelioma is due to a war between columns of epithelial cells growing downwards and loops of blood vessels growing upwards, and Hanseemann's theory that karyokinesis was concerned in the causation of cancer, while some observers, noticing the rapid karyokinetic evolution going on in the nuclei of developing tumour cells, had been deceived into believing that such cells were actual microzoa, so suggesting another theory, the parasitic theory of cancer. He referred also to the theory which attributes cancer to the spermatic influence of cells, and to Creighton's theory of an unconscious evil memory or bad habit of the tissues. He thought that most of these theories had been built up by microscopists in histological laboratories, and that, though interesting, they were at most only descriptive of pathological processes or suggestive of probably contributory factors, but did not suggest the originating cause of a specific disease. One recent writer, who in common with others appeared to believe in the auto-genesis of cancer, had given it as his opinion that the cause of malignancy would only be explained when more was known of the cause of development of fetal organs, but this involved a knowledge of the cause and origin of life itself not likely soon to be obtained.

Dr. Brand said that his reading and observations had forced him to the belief that the cause of cancer came from without the organism, and that the infection theory was an excellent working hypothesis, and the only one which met the case fully. It would explain everything in connexion with cancer, its origin, its growth, its undoubted and ever-extending increase, and its behaviour generally.

Of course the acceptance of the infection theory involved the acceptance of the existence of a micro-organism, whether microzoon or microphyte, not yet discovered, but this need not stand in the way of its acceptance, since no one doubted that variola, pertussis, scarlatina, or morbilli were infectious and due to the influence of micro-organisms, although no germs had, so far, been isolated. Nor could help be expected from the microscopists, who had already run amok among imaginary coccidia, normal or pathological cells undergoing karyokinesis, or pseudopodiferous amoebiform leucocytes engaged in diapedesis or in patriotic phagocytosis. Help might be expected from the practical observer and the experimental pathologist. Was it too much to hope that, when the latter have established the infection hypothesis, the histologists might at length discover the special microbe or microbes of cancer? It was indeed true that Scheuerlen and Doyen had reported the presence, in cancerous tumours, of microbes which they believed to be the active agents in their origin; but a causal nexus had not yet been conclusively established.

HISTORICAL.

That cancer was infectious has long been a belief. In the middle of the seventeenth century Zacutus Lusitanus stated his belief that cancer was contagious, and cited cases. In 1672 Nicolaus Tulpus, the famous anatomist, whose portrait must be familiar to most from the picture painted by Rembrandt, was so sure of it that he stated that "an ulcerated cancer is just as contagious as an inflammation of the eyes." Juncker in 1731 said that successful engrafting necessitated that the infective material should fall on a suitable place where there was already a breach of the surface. In 1773 the Academy of Medicine at Lyons discussed the subject.

THE INFECTION THEORY.

In the absence of a demonstrated microbe the evidence for the exogenesis of cancer must be circumstantial, but the great central, fundamental, and most convincing argument in favour of this hypothesis was the incontrovertible fact that

cancer, once generated, spread locally by infecting its immediate environment, and that it was disseminated metastatically by the blood current and lymph streams, the latter infecting glands *en route*.

Another very suggestive fact was that, while cancer was at the outset a purely local disease, it became eventually constitutional, one of the indications being the gradual establishment of a so-called cachexia. This term cachexia, he imagined, simply meant that the victim of cancer had become saturated with the toxin of the bacterium causing the disease.

In other diseases where metastasis occurred, such as tubercle, actinomycosis, syphilis, and pyaemia, although the disease germs were transported by the blood and lymph, the cell elements themselves were not transported, as they were in cancer; but this difference from cancer did not militate in the slightest degree against the infection theory of cancer causation. It was only another example of the infinite variety to be found in germ-caused disease. Dr. Brand then continued as follows:

SELECTIVE SITES.

While primary cancer can be originated in practically any tissue it has an almost exclusive selective affinity for epithelial surfaces generally, and for the mucous membrane in particular. Its favourite sites are at places which are directly and easily accessible to infective germs. We find 55 per cent. of these sites in the alimentary canal which would suggest that the infective agent is ingested.

The remaining favourite sites are in the organs concerned in the reproduction of the species, and the nutrition of the young.

These sites are not only suggestive of infection from without, but also of the probability that the micro-organism is a microphyte and not a microzoon. Wherever cancer grows luxuriantly and rapidly, we find present the chief desiderata for the growth of bacteria, namely, moisture, an eminently suitable nutrient medium, a constant temperature most favourable to the growth of pathogenic bacteria, and exclusion of light and air. One could hardly imagine a better culture chamber for bacterial growth than the alimentary canal or uterus.

Conversely, we find that cancer has not been observed in the invertebrata, very rarely in the cold-blooded vertebrata. It is chiefly found in man and domesticated mammalia. It is very rare in wild mammals. Bland-Sutton states that he found a mammary adenoma in a phalanger, and that this single case represents the extent of his knowledge concerning adenomata and carcinomata in wild mammals. This statement is emphasized by the fact that he was in close attendance in the Prosector's room of the Zoological Society's Gardens for eight years, during which time he was particularly on the look-out for tumours of all kinds.

RÔLE OF IRRITATION.

The infectiousness of cancer, like that of leprosy and tubercle, does not, fortunately, seem to be very great, otherwise the increase would be much greater than it is, and it is evident that something else is necessary besides a culture chamber. The nutrient material is not an inert substance like gelatine or bouillon, but is living tissue, capable of repelling the attacks of invading bacteria, so long as there is no breach in its continuity. When, however, this occurs, either by accident or from long-continued irritation, vulnerability is induced, especially, if at the same time, the general health is impaired. In all probability cancer does not arise in sound and healthy tissues. We generally find that it has arisen in situations where this breach of continuity has occurred.

For example, we get the lip irritated by an unglazed pipe stem, the tongue by ragged teeth, or whatever induces chronic superficial glossitis, or injured accidentally as by the prick of a bone, etc., the oesophagus injured in a similar way, or by scalding liquids; the stomach by chronic dyspepsia or ulceration; the intestines injured by foreign bodies such as pins, tacks, bones, etc.; the rectum by the same or by scybala, etc.; the anus by fissures, fistula, eczema, etc.

Again, in the case of the breast we find the nipple terribly irritated, excoriated, and fissured by lactation, while the gland itself may be injured by the blows and rough handling of impatient infants or by accident. Paget's eczema of the

nipple, like leukoplakia of the tongue, has probably no direct relationship to cancer, but these affections prepare so excellent a nidus for the infective agent, and are so conveniently situated for its reception, that they have come to be termed "precancerous." The lactiferous ducts also are very large in calibre, and very easily accessible.

The uterine cervix is rendered vulnerable in the parous woman, where it is stellate with the fissures of parturition, and both in her case and in that of the nulliparous or unmarried woman the cervix is frequently eroded by acrid discharges. From the uterus to the ovary, scarred all over by the rupture of numberless follicles, the transition is easy and the way open. No doubt the loose and open arrangement of the nether garments of the majority of women would naturally favour access to the generative organs of the infective micro-organism, especially if its habitat is the soil.

Thus we find that cancer arises generally in sites rendered vulnerable by injury or irritation, and this vulnerability is greater, *a fortiori*, in the middle-aged and old, in whom the resisting power is still further reduced, from the fact that in them decay is in excess of the power to repair.

CANCERODERMS.

The majority of infectious diseases have cutaneous affections accompanying them, peculiar to each, which are commonly known as eruptions. Now, if a well-marked characteristic cutaneous manifestation accompanied cancer in most, if not all, cases, we should have another point in common between cancer and diseases well known to be directly caused by an infective germ.

Have we any such canceroderm (if I may coin a term analogous to syphiloderm)?

When a student, a quarter of a century ago, the first operation at which I assisted was the excision of a cancerous mamma, and it was performed by my old friend and teacher, that able and accomplished surgeon, Dr. Ogilvie Will, of the Aberdeen Royal Infirmary. While chloroform was being administered, my attention was particularly drawn to the skin over the woman's chest, which had scattered over it a number of bright scarlet, shining, punctate spots, unaltered by pressure, and varying in size from a pin's head to a split pea. I pointed them out to Dr. Will, and on asking what they were, he told me that he had observed such spots before in cases of mammary cancer.

These spots made a deep impression on my mind, and I have looked for them ever since in such cases, and have rarely or never failed to find them, sometimes few and small, at other times larger and more numerous, but almost invariably present.

Since then I have always considered them as naturally accompanying cancer of the breast, and I have occasionally pointed them out to other surgeons doing the same operation, but without succeeding in arousing any special interest in them. Until recently I had not looked for them in cases other than mammary. A few days ago, however, I found them in a case of pelvic cancer, and in another case of cancer of rectum and liver.

When the probability of cancer being due to direct infection from without was gradually but irresistibly forced upon me, the question arose in my mind whether these spots are characteristic of cancer to such an extent as to entitle them to be considered pathognomonic, or whether they are merely fortuitous concomitants.

I have not observed a sufficient number of cases to form a decisive opinion, but I feel that my views have been greatly strengthened by what I read the other day in a *précis* of a paper published in the *Munich Weekly Medical Journal* of December last by Leser, who says that he finds a small angiomatic growth frequently occurring in the skin of the patients suffering from cancer, and that he has not seen any literary notice of it in such a connexion. Freund and Hollander have recounted the existence of such growths in the skin, but they lay little stress on the occurrence. In many cases of cancer Leser found that a number of raised spots were present, chiefly on the skin of the trunk. The spots vary in size from that of the head of a pin to that of a lentil. They are bluish-red or bright-red in colour, and do not fade on pressure. They are angiomatic in structure.

To ascertain the clinical significance of these spots Leser and his assistant, Müller, investigated in 50 cases of cancer:

1. Whether these spots usually accompanied cancer.
2. Whether they occurred in either healthy subjects or in patients suffering from diseases other than cancerous.
3. Whether their appearance was of diagnostic value.

Of these 50 cases, in only 1 (cancer of the oesophagus) were these angiomatic absent. In 1 case the number of spots was 76 and the average number was 15. They decided that the first query must be answered in the affirmative. To settle the second point they examined 300 cases of surgical and medical diseases, and found the angiomatic only in subjects of advanced age in a few cases, and probably in these cases cancer could not definitely be excluded.

Leser therefore concludes that they do not appear in healthy subjects, or in persons suffering from other diseases in early or middle life, and never, even in old age, in large numbers. Further, when found in large numbers in young or middle-aged people there is every reason to suspect cancer. The detection of a number of small angiomatic of the skin of apparently healthy subjects may point to a commencing cancer. The abdomen seems to be the favourite site of the spots in internal cancer, and in other cases the skin superficial to, or in the vicinity of, the seat of the disease appears to be chiefly affected. These spots do not appear to have any direct relationship to the cancerous growth itself, nor are they influenced by changes in the vessels of the growth. Leser points out how important it would be, should this prove to be a reliable sign, in making an early diagnosis of cancer, and distinguishing between benign and malignant tumours in cases of doubt.

The only literary notice I have been able to find of angiomatic in connexion with cancer was furnished me by the kind courtesy of Mr. Malcolm Morris. In a tract published in 1872 by the late Mr. Campbell de Morgan, of Middlesex Hospital, entitled *The Origin of Cancer*, page 16, he says: "There is another circumstance in connexion with the recurrence of cancer after operation which, to my mind, is very significant. I have noticed, and it has been verified by the observations of many others, that concurrently with, or following on the development of cancer, small outgrowths of warty or vascular or dermoid structure are frequent. Now, one would imagine that, if there were a cancer poison in the blood, these, or one of them, would become the seat of the disease; but it is never the case."

Again, on page 23, referring to a case under his care he says: "From the large size of the breast the discharge, which was very profuse and sanious, lodged on its upper surface and trickled down the axillary fold. In these situations there sprang up a number of small pinkish excrescences which looked something like crops of minute vascular warts. They were attached to the superficial layers of the skin only. They were found, too, only in situations where the discharge could lie, and while in these they become more and more numerous so as to coalesce in the end and form elevated patches, not one appeared above the level of the ulcer. Even after many months these little growths had hardly extended to the deep layers of the skin. I have no doubt that the lodgement of the cancerous discharge on her irritable skin had allowed of the implantation and superficial growth of cancer germs." These angiomatic were called by the Middlesex Hospital staff "de Morgan's spots," or "plaques de Morgan."

Personally, I have not observed these canceroderms to follow operation, but found them already in evidence in cases of cancer coming under my care for advice and treatment.

Whether these angiomatic found in connexion with cancer are genuine canceroderms is a point of great interest, and I hope that these spots will be looked for now that attention has been directed to them. There is, unfortunately, only too abundant material for making observations; and if such are systematically made, it should not be a difficult matter to confirm or discredit this sign.

AUTO-INOCULATION.

Of authentic cases of auto-inoculation of cancer the number recorded is very considerable, and many must no doubt be familiar to you all.

Recently Ebert collected 23 cases of contact cancer, such as lip to lip, tongue to gum, one labium majus to another, etc.,

and mentions the case of a woman who inoculated the corner of her eye from a cancer on the back of her hand.

"CANCER À DEUX."

In the *Deutsche medicinische Wochenschrift* of June, 1901, Behla gives a number of instances of *cancer à deux*, quoting the names of the observers. Thus Boas mentions the case of a daughter who inoculated herself with rectal cancer by using the same enema syringe her mother had used during her fatal illness, which was of the same nature.

Tross reports a very interesting and most significant case. A man developed a carcinoma of the glans penis presenting a structure histologically identical with the cervical carcinoma from which his wife suffered. Other 30 cases of a similar nature were reported. Guelliot also has collected 28 such cases.

In my own practice a woman suffering from, and who died from, cancer of the breast was nursed assiduously during her illness by an apparently healthy woman of about 45 years of age. This woman developed cancer of the stomach, and died from it within twelve months of the death of the woman she had nursed. This nurse was practically in constant attendance upon the case of mammary cancer, and, not being a particularly cleanly person, it is more than probable that she had eaten her food with hands unwashed after dressing the ulcerated sore, or handling the dressings.

ACCIDENTAL INOCULATION IN CONNEXION WITH OPERATION.

Smith cites the case of a London hospital surgeon who developed cancer of the tongue after having accidentally got into his mouth some of the discharge from a cancerous breast. Budd mentions the case of a French hospital surgeon who died of cancer eight months after having injured himself during an operation on a cancerous patient. Guermonprez reports the case of a physician who developed cancer at a point where an acne pustule existed, infected during an operation for scraping a cancerous uterus.

Bland-Sutton says that it has been demonstrated beyond possibility of cavil that in women who have had their ovaries removed for adenomata it has been found that tumours have subsequently grown in the abdominal cicatrix, such tumours showing under the microscope the structure of ovarian adenoma. Since these tumours have been unassociated with any recurrence in the pelvis or secondary nodules in the peritoneum or viscera, the conclusion is irresistible that they were due to infection of the edges of the abdominal incision in the course of the operation of ovariectomy. Sippel has published a case of cancer inoculated along each one of the suture tracks made after extirpating a cancerous ovary.

No doubt the same local soiling of the edges of skin incisions in operations for cancer—for example, of the mamma—takes place, and this probably accounts for the presence of recurrence in the form of cancerous nodules so common in the cicatrices of breast cases.

Again, we find often that an extensive operation for cancer is followed by such rapid recurrence and such increased energy of growth that it is evident operation has hastened matters and caused a much worse state of things than non-interference would have done.

Bland-Sutton explains this by suggesting that in the operation the infected blood and lymph vessels, gorged with cancerous material, are divided and the cancer cells let loose over the damaged tissues, which they infect, and so lead to a still more extensive outbreak of local cancer.

EXPERIMENTAL INOCULATION.

Cancer has also been successfully inoculated experimentally, chiefly, however, in the lower animals.

Langenbeck made a watery emulsion of a soft cancer, mixed it with blood serum, and injected it into the femoral vein of a dog. Two months later, on section, nodules were found in the upper lobes of both lungs, and a vascular mass in the middle lobe of the right lung, which proved to be cancerous, and was found to be of the same structure as the original growth. Follin and Lebert used injections made from a cancerous axillary lymphatic gland, and within fifteen days found in the animal several cancerous nodules in the lungs and liver. Gonjon has produced melano-sarcoma in small animals within fifteen days after inoculation. Bose alludes to three

cases of inoculation from man to man done both intentionally and successfully, but is discreetly silent about details.

These are but a few examples of many I could quote.

I cannot but think that one is justified, even at the present time, in saying that, since auto-inoculation and accidental inoculation are so common, and experimental inoculation has been so successful, there should be no longer any doubt that cancer is in truth a contagious disease.

CANCER DISTRICTS.

With regard to locality, we find that cancer is more prevalent in some places than others, so much so that the former have been designated "cancer fields."

We find the highest death-rate from cancer in districts which lie low, and are liable to seasonal floodings, and characterized by alluvium and subsoils of the various clays. The favourite districts in the North and East Ridings of Yorkshire lie principally along the banks of the Ouse, the Derwent, and the Humber. I believe the Derwent region is locally called "The Cancer Valley." On the other hand, cancer is least prevalent in elevated districts where there is a good fall for drainage, freedom from floods, and characterized by porous subsoil, and the oldest palaeozoic rocks, especially the limestones.

Thus we find cancer most rampant where sewage is most difficult to be got rid of, and where it is most likely to be deposited and remain after floodings or high tides on a non-porous soil. This permits of and fosters the prolific growth of micro-organisms; and the frequent occurrence of shallow surface wells in such districts suggests an easy and extensive contamination of drinking water. It is not difficult, therefore, to realize how cancer may be spread in such localities, and the frequency of its occurrence in the alimentary system favours this view.

CANCER HOUSES AND ROOMS.

As might be expected, we also find in these districts certain houses, and even certain rooms in houses, which seem to be cancer-haunted.

The authentic cases recorded are numerous, but as too much time would be necessary for detailing them, I shall quote only one or two instances.

In a house near London a room was occupied by three women in succession, who all died of cancer at fairly short intervals. Each of these women appeared to be in perfect health when she in turn came to occupy this room, and had lived in other rooms in the same house, but within a year of occupying this room they developed cancer. There was no relationship between them. No further cases of cancer occurred in this house after the room was thoroughly disinfected and the bedding burnt.

There is in Driffeld a row of three notorious houses, or rather hovels, all under one roof, without drainage and with doubtful water supply, where I have attended cases of cancer in each and, in one of these houses, more than one case. At present I have a case of cancer of the breast in one of these houses. There is also a narrow street in Driffeld, undrained and also with doubtful water supply, where cancer is especially common. It was in one of these houses that the two cases occurred which I mentioned under the subject of *cancer à deux*.

Such circumstances as these appear to me to strongly suggest that cancer is infective, and also that locality is a factor in its transmission.

GEOGRAPHICAL DISTRIBUTION.

Cancer seems to be chiefly a disease of temperate regions, avoiding the extremes of temperature such as exist in Greenland or Iceland, and the tropics. Although the extremest cold has no destructive effect upon bacteria or their spores, it certainly keeps them dormant, and this would explain the paucity of cases of cancer in cold climates.

It is not so easy to account for the alleged infrequency of cancer in the tropics, but it is probably more apparent than real, and may be due to less accurate supervision of disease in these regions; besides, as a matter of fact, cancer is very common in many parts of India and China. One reason why so little disease and so few cases of old age are seen among savage peoples, for example in Central and South Africa, is the regular, unostentatious, and mysterious disappearance of

such useless individuals, about whose fate no one exhibits any inconvenient curiosity!

Again one need not be surprised to find in the distant islands of the Pacific a healthy native population. They live much in the open air, in an atmosphere practically free from pathogenic germs, so long as contamination from without does not reach them; but the very disastrous results of imported disease, such as small-pox, measles, syphilis, etc., are notorious, and one can easily believe that the advent of cancer-bearing individuals would be followed by the spread of this disease also.

ETHNOLOGICAL.

The freedom of certain peoples from cancer does not appear to be due to individual immunity, but to the accident of locality and environment, and the mode of life. Under favourable conditions any one may become a victim to cancer.

There is a popular belief that Jews as a race are remarkably exempt from cancer, but this belief is quite erroneous, as is shown by cancer statistics. One reason alleged for this is that Jews, generally speaking, have a great repugnance to become inmates of hospitals where Gentiles are in attendance, and thus few cases are found in these institutions. Private practitioners do not find that Jews exhibit any immunity from cancer in general. The male Jew may unquestionably claim perfect immunity from one form of cancer which his Gentile brother may suffer from, but apart of this he is equally vulnerable and liable.

MICROBES IN CANCER.

Dr. Brand then passed briefly in review the statements of Scheuren and Doyen as to the existence of microbes in cancer.

HEREDITY.

With regard to heredity, he observed that the children of cancerous parents might possibly acquire more or less vulnerability congenitally, as in the analogous case of tubercle, but that it was most improbable that the disease itself could be transmitted. The occurrence of cancer in several members of a family after the death of parents from that disease could not be accepted as evidence of heredity; but, on the contrary, could and ought to be accepted as evidence of infection from an obvious source.

TREATMENT.

He concluded his address by a brief reference to the question of treatment. With present knowledge he said this was limited to removal of the tumour, if accessible, at the earliest possible moment; but he pointed out that if an infectious origin, almost certainly bacterial, were established, the lines on which treatment should be carried out would become clearly defined. Syphilis was long treated empirically. The treatment was still the same, but it was no longer empiric, for the bacillus of Lustgarten was overcome by two of the most powerful bactericides known; and for cancer an equally efficacious bactericide might be found, or it might be that serumtherapy would prove effectual. Moreover, even now there was reason to hope for good results from the use of electrical currents of high potential or the Roentgen rays.

As regards prophylaxis, much might be hoped for from notification, improved sanitation, including disinfection of houses, cremation of bodies, destruction of dejecta, dressings, etc., by fire, the use of pure drinking water, scrupulous personal cleanliness, especially the avoidance of unwashed hands when food was taken; the use of the Turkish bath, exercise, moderation in diet, abstention from alcohol in excess, and general observance of the known laws of health.

STAFFORDSHIRE BRANCH.

SOME CLINICAL CASES.

By WHEELTON HIND, M.D., B.S.LOND., F.R.C.S.ENG.,
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DISEASES OF THE URACHUS AND UMBILICUS.

[AFTER some introductory remarks the President said:]

I do not know that I have anywhere seen any description of the diseases of the urachus, but at least 4 cases representing

different ailments of this more or less obliterated tube have come to me. The urachus is constantly seen and occasionally divided in the operation of median laparotomy without any untoward results, but I always avoid it if possible.

CASE I.—In a male child the umbilical cord did not separate very speedily, and at 5 weeks old the umbilicus began to weep, and in a few hours it exuded fluid copiously. As this fluid increased the amount of urine passed by the urethra diminished, and an examination of the fluid coming from the umbilicus showed it to be urine. Extravasation took place around the umbilicus, the skin became red, and the tissues swollen and boggy. The temperature ran up and the child became very ill; the extravasation spread rapidly all over the abdomen, and the case terminated fatally in a few days.

There was in this case no doubt a patent urachus connecting the bladder with the umbilicus. The urinary bladder of mammals is formed by a dilatation of the pedicle of the allantois. The urachus, which is the tubular extension of the walls of the bladder through the umbilicus, generally shrivels and becomes a solid cord, but at times retains its tubular form. It generally does not in the human subject pass beyond the umbilicus, but probably in this case a portion of the tube was ligatured in the cord. Unfortunately obliteration did not occur, and in time the cicatrix broke down. It occurred to me that as the tube was of greater calibre than the small male urethra, contraction of the bladder forced the urine rather along the urachus than the urethra. This case happened many years ago. If the same thing occurred again I should not hesitate to cut down and obliterate the urachus, though with extravasation, infection of the peritoneum would be very apt to occur; expectant treatment seems to give no hope whatever.

CASE II.—A girl, aged 6 years, complained of pain in the abdomen half way between the umbilicus and pubes. There was a muco-purulent discharge from the umbilicus, and an elongated fusiform lump, exquisitely tender, behind and between the recti muscles. A probe passed downwards behind the recti for about $\frac{1}{2}$ in. Next morning there was a discharge of creamy pus from the umbilicus, and diminution of the pain and swelling. Pressure over the swelling caused pus to well up at the umbilicus. The wound was suitably dressed and in a few days got well, and there have been no symptoms since.

This was evidently an abscess in the patent upper part of the urachus, infection probably having taken place through the umbilicus. Knowing the proximity of the urachus to the peritoneum, I had arranged to cut down on the abscess that there might be no danger of its bursting internally; but fortunately it discharged externally, and the inflammation evidently effected a cure by obliterating the tube.

CASE III.—A girl, aged 4, was brought for a chronic discharge from the navel and acute paroxysmal pain below the umbilicus. A careful examination revealed no tumour, but the parents said that the child's sufferings were such that her life was unbearable. A probe passed through the umbilicus passed downwards for some distance. Thinking that there was some occasional occlusion of the tube and retention of its contents, and that the pain might be due to this cause, I passed a probe and cut down on the urachus. It was patent up to the apex of the bladder, and there may have been a small communication with that organ. I ligatured the urachus, treating it as in removal of the appendix, and stitched up the wound in layers as after laparotomy. The peritoneum was accidentally opened, but no ill resulted. Convalescence was retarded by the irritation of a stitch in the muscular layer, which was subsequently removed. The child went out quite free from her old pain and discharge.

CASE IV.—A gentleman of middle age began to complain of irritability of the bladder and discomfort when jolted. The bladder was sounded and found to be free from stone, and the urine was acid and normal in quality. He was seen by an eminent London surgeon who makes the urinary organs his speciality, and was told he had gout, and was dieted and drugged without any result. A few days later he began to complain of a fixed pain above the pubes, and I was asked to see him. I found an area of dullness immediately above the pubes, evidently below the recti muscles, pressure on which caused pain and a desire to micturate. I suggested that this was a patch of cellulitis, and that probably an abscess would form, which had better be attacked surgically if there were any signs of extension. Within a few hours the patient complained of feeling something give way, and passed a quantity of pus in his urine. The bladder was washed out at intervals, and the pain and swelling soon disappeared. No cystitis resulted, the whole trouble rapidly cleared up, and the patient has had no return of symptoms for the last three years.

I believe this case must have been due to abscess formation in a patent portion of the urachus. It is difficult otherwise to account for the origin of the abscess, in the absence of any history of injury or previous bladder trouble. I think it may also be taken for granted, from the absence of odour, that the bacillus coli communis was absent, and that therefore the abscess was not connected with intestine.

Most practitioners have seen the little papillomatous growths that occasionally rise from the umbilicus. I am not aware whether it has been shown that these have any connexion with the urachus, but occasionally these growths have a small canal which secretes moisture. Treatment consists in removal by avulsion or ligature and gentle cauterization of