is that the fee recommended by the committee for making a preliminary examination in cases of suspected sexual offences has been omitted. Were this fee inserted in a table of fees to witnesses it would be payable only where the examination leads to a prosecution in which the medical man who made the examination is called as a witness. It appears to the Secretary of State to be wrong in principle that a medical man should be placed in the position of earning a fee if he recommends a prosecution and of receiving nothing if his report negatives the institution of proceedings. In such cases the medical man makes the examination as the adviser to the police or to the prosecutor, and he is entitled to receive an appropriate fee whether the examination is or is not followed by criminal proceedings." This refers to a recommendation made by the departmental committee advising a fee of one guinea. But what an admission of incapacity on the part of the State! What an insult to the profession which in all ages has done such an amount of voluntary work in the interest of humanity! Surely if the fee be merited, let it be paid, and let the Secretary use his powers to see that where there are no proceedings the payment be made. Reference is also made to the cases where the medical man recommends a prosecution. Does he so recommend? He merely gives his opinion on the conditions which he is requested to investigate. Other matters have to be considered. I have frequently examined such cases where my evidence would have supported a conviction, but in which no proceedings were taken on account of the difficulty of identifying the prisoner, or where the evidence of the complainant, especially when a child, was of such a flimsy nature as not to justify the police in proceeding. On the other hand, I have examined cases in which my evidence was by no means strong enough in itself to justify proceedings, but where the other evidence was sufficient to enable the police to prosecute.

If, then, the State does not give financial encouragement to medical men to act as witnesses, it is little wonder that, speaking generally, the profession gives so little attention to the subject. There is certainly no inducement held out to medical men to specialize on the subject and to devote their efforts to any investigation or research in this direction.

Suggestions for Improvement.

Criticism is easy I know, and the best of our systems or institutions is open to attack by the veriest tiro. I would now, therefore, offer a few suggestions of a constructive character. These are the natural outcome of the criticism just offered.

In the first place, the State should recognize what is its duty in the matter, and see that it does its share in educating and encouraging medico-legal experts. If the State will only do this, I believe that the other defects in our system will be readily adjusted almost automatically. The State, as I have already said, has in its possession the material for the investigation and collection of records. Let the Home Office, then, divide the country into areas, and let it appoint experts or medical officials to devote their whole time to medico-legal work in their areas. Let these gentlemen be called into all cases except trifling ones. Say that a murder has been committed at A—the local practitioner will at once examine the body on the instructions of the police. Now, if such an official as I suggest were appointed, he should be communicated with at once, and he should conduct the whole of the inquiries *in conjunction with the local practitioner*, be present at the necropsy, attend the inquest, police-court, and assizes, and he should report to the Home Office on the case, and advise counsel on the medical aspect at the trial. In addition he should keep a record of all criminal cases in his district, and make such inquiries as he thought fit from the local practitioners, and his records should be preserved and tabulated. The Home Office should also appoint a board of experts, who should advise them at head quarters. If such appointments were made by Government, there would at once be a stimulus for medical men to specialize and to pay greater attention to the study of the subject. Such experts, if appointed, would provide the material necessary for improving the teaching of the subject. And in some cases I have no doubt these same experts would make admirable lecturers. Once this was done the literature of the subject would increase and improve, and the examining bodies would

recognize the necessity of granting diplomas in legal medicine.

Thus the medico-legal expert would take his place with the specialists in the other branches of medicine, and the medical witness would earn greater respect and a higher status.

I have now placed before you in a cursory and perhaps disjointed manner some criticism upon the position which legal medicine occupies in this country, together with certain suggestions as to its possible improvement. I feel that I have hardly done justice to the subject, but I shall feel content if it may induce some one to take up the subject in a more thorough and able manner.

There is a great fascination in the study of the many problems presented in the course of medico-legal inquiries. The opportunities are not, it is true, offered equally to all, but as every member of the profession is liable to be called in as a witness in a criminal trial, it is of the greatest importance to all of us that everything should be done to encourage the study of legal medicine, and that the medical witness should be treated with a greater amount of respect.

CANCER, ITS ETIOLOGY AND TREATMENT BY TRYPSIN.

By JOHN ALCINDOR, M.B. EDIN.

THIS thesis, based upon clinical observations on two cases of cancer treated by injections of Fairchild's trypsin, as recommended by Beard, is an attempt to show that cancer is primarily a local disease caused by chronic irritation of tissues in a state of lowered vitality, it is also intended to indicate the value of trypsin in disease.

CASE I.

A. Y., aged 67, multipara, for several years suffered from asthenia and pain in the left iliac fossa, which was on June 4th, 1907, the seat of a hard, nodular tumour, measuring 9½ in. vertically, and reaching from the ilium to within 2 in. of the umbilicus. In the abdominal wall near the navel was an oval mass about the size of a duck's egg; the right breast was affected, with the axillary and both supraclavicular triangles infiltrated; the left triangle was occupied by a mass the size of an orange. The eighth, tenth, and twelfth ribs on the left side were attacked near their vertebral articulations, and the left infrascapular region was the seat of a round, flattened, freely movable mass, 2 in. in diameter. On the middle finger was a deposit of urates the size of a large pea. The family history was free from malignancy; her father suffered from "rheumatic gout," and for upwards of thirty years she suffered from gastro-intestinal disorders, obstinate constipation being a marked feature, also from rheumatism. The treatment was instituted on June 10th, discontinued on September 14th, and the patient died on October 10th. The condition just before death was as follows: Complete disappearance of the growths in the abdominal wall and in the infra-capular region, a considerable diminution in size of the iliac mass, which then measured 6 in. vertically, and whose inner border was 5½ in. distant from the middle line; the other growths showed no improvement. Progressive weakness, abscesses, bedsores supervened, and two growths made their appearance in the right gluteal region, where trypsin had been injected, the uratic deposit disappeared.

CASE II.

A. M., aged 37, multipara, had no family history of cancer. Her previous history was extremely bad; from childhood she suffered from gastro-intestinal troubles, constipation, and rheumatism; was admitted into University College Hospital, but was discharged as her case was considered inoperable. Her condition on June 17th, when the treatment was begun, was as follows: Carcinoma mammae, originating in the left, infiltrating the axillary and supraclavicular glands; the middle of the sternum was attacked, and the right mamma was the seat of a similar but smaller growth; the right axillary and supraclavicular glands were free. The right hip exhibited features of considerable interest; the skin was red, shiny, tense, and tender; the joint was held in a semi-flexed position, and the slightest attempt at movement caused intense pain; the lumbar spines were tender on pressure, and two finger-joints were red, swollen, and painful. I had on a previous occasion seen the patient suffering from a similar condition of the right temporo-maxillary joint; the general aspect of the patient was one of extreme debility, emaciation, and pain, though the disease had started only twelve months ago. The treatment lasted from June 17th to July 16th; three days later the patient died from symptoms indicating toxæmia. Her condition just before death: Complete disappearance of right mammary tumour, considerable diminution in size and well-marked softening of the others; the physical signs connected with the right hip disappeared,

leaving it movable but the leg 2 in. shorter than the left; the upper fourth of the femur felt thickened; this condition was obviously one of the forms of rheumatoid arthritis.

The salient features common to both cases were: (1) Neither had a family history of cancer; (2) both had a previous history with evidence of faulty metabolism and malnutrition; (3) both were multiparae, were subjected to the usual irritations incidental to parturition, and they suckled all their children; (4) both suffered from cancer of the breast. In the first case the injection of trypsin into the right gluteal region caused the appearance of two growths which were hard, nodular, tender, movable, free from fluctuation, and the skin was normal. Were these tumours the result of transplanted cancer cells, metastatic, or caused by the irritation of the slowly absorbed trypsin? I never at any time injected trypsin into a tumour, thus closely following Beard's directions. I sterilized in 1 in 20 carbolic the syringe and needles used before and after each injection; the gluteal region is a very unusual site for secondary growths. I am therefore forced to the conclusion that they were caused by the irritation of the debilitated tissues by the trypsin. It must be borne in mind that this phenomenon took place towards the close, when abscesses, bedsores and progressive weakness supervened. I must also state that I took elaborate antiseptic precautions against microbic infection. Dr. Eric Meinerth has shown that the alcoholic habit is a cause of the high mortality from cancer, diabetes and suicide in the German army and navy.¹ Dr. William Ogle in the Registrar-General's report for 1889 stated that one out of every twenty-one men and one out of twelve women reaching the age of 35 eventually died of cancer. Some authorities believe that the disease is more common among the poor than the well-to-do. The fact is, the poor live in unhealthy surroundings, eat improper and insufficient food, which results, as every body knows, in lowered vitality, the women beget large families, suckle their children, often for too long a period, they contract genito-urinary diseases with accompanying chronic discharges; such conditions enhance the incidence of cancer among women, as seen in the Registrar-General's report for 1901-1905, where the mortality for cancer is given as follows: Uterus, 19,645; breast, 14,308; stomach, 12,048; liver and gall bladder, 11,601; intestines, 5,870; rectum, 5,086; ovary, 1,626; abdomen, 1,526; peritoneum, 1,401. In gastric cancer there is always a previous history of dyspepsia or ulcer; the result of either condition is faulty metabolism which leads to malnutrition and lowered vitality, the ingestion of food gives rise to irritation of the debilitated organ, the pyloric orifice suffers more frequently because it has more work to do than the fundus; biliary concretions are the chief determining causes of malignant disease of the biliary passages (Mayo Robson), because gastro-intestinal and especially hepatic faulty metabolism are the *funis et origo* of gall stones. Dr. Bashford, in his July report on cancer research, stated that (a) melanotic sarcoma in the native races of Africa had frequently been reported and always as arising on the soles of the feet; (b) for India the returns referred mainly to the surface of the body and in the case of Kashmir epithelioma of the abdominal wall occurred with a constancy met with nowhere else. The native African walks barefooted on rough ground often baked by the burning rays of a tropical sun. Dr. Bashford has informed me that the natives of Kashmir are in the habit of wearing a "kangri"—that is, a small charcoal oven—next to the abdominal wall. In both cases the tissues in contact with the irritant alone suffer at first. I believe it is generally accepted that an excessive stimulation of tissues gives rise to increased growth at the expense of the vitality of those tissues, the irritant acting upon the debilitated tissues produces destruction of those tissues or induces retrogression to a lower type of cell. Mr. Lenthal Cheate has pointed out the connexion between skin cancer and disease of the eleventh dorsal posterior root ganglion.² It is probable that disease of the ganglion occurred in the first place with resulting lowered vitality of the area of skin supplied by it; in such a state the chafing of the underclothing or a belt might have proved sufficient as a determining factor. Lugaro has proved that peripheral irritation causes degenerative changes in the posterior root ganglion of the spinal nerves, and Dr. Purves Stewart has corroborated these observations in some of Mr. Cheate's cases.³ This theory may account for the melanotic sarcoma in Africans, and abdominal

epithelioma in Kashmir natives. Mr. Jonathan Hutchinson⁴ says: "We have of late years appreciated more and more clearly the fact that cancer often, or indeed, usually, is during its early stage a modification of tissue growth which is confined to the part in which it begins." Legrand says the neoplastic process is undoubtedly one of deranged cellular proliferation.⁵ I hold that the conditions necessary for the "modification of tissue growth" or "deranged cellular proliferation" are those of lowered vitality and chronic irritation. How do lowered vitality and chronic irritation give rise to cancer? Probably the tissues, deprived of their proper food supply or nerve impulses, or again, exhausted from over stimulation, do not respond normally to stimulation; they are thus either destroyed or they assume new characteristics.

TRYPSIN AS A THERAPEUTIC AGENT.

Trypsin does not seem to have any evil effect on healthy living tissues, but in the presence of an alkali it splits proteids into proteoses, peptones, and polypeptides; these are further split up into leucine, tyrosine, aspartic acid, hexone bases, and other ammonium compounds. It attacks all proteids alike, and exercises no selective action on cancer tissue. These facts would explain the reason why the two cases showed marked improvement up to a certain point; also why the first patient grew progressively weaker, while the second died rather unexpectedly from toxæmia. The trypsin not only digested the growths but attacked the elaborated proteids, which were circulating in the blood for the nourishment of the organism, and converted them into toxic products; hence trypsin cannot be injected into the body for an indefinite period without producing deleterious effects, so giving rise to the very condition suitable for the growth of cancer. I am, however, convinced of the power of trypsin to digest cancer, but it must be applied directly to the disease and not in its neighbourhood. Cancer of the internal organs cannot be successfully treated by this method, whereas rodent ulcer, epithelioma, and cancer of the cervix are eminently suitable for the treatment provided the cases are in the early stage. In view of the conflicting opinions of gynaecologists regarding operation, I think trypsin ought to be given a fair trial in cervical cancer. It should also be used in inoperable cases where the outlook is hopeless and palliative treatment the only course to adopt. Finally, it is in nutritional disorders in which there are circulating in the blood imperfectly metabolized substances like uric acid that injections of trypsin are of the utmost benefit. In the course of three weeks Case I got rid of a uratic deposit and rheumatic pains in the hands and knees. In the same time Case II was greatly relieved of a condition which could only be diagnosed as rheumatoid arthritis.

CONCLUSIONS.

Lowered vitality, whether due to faulty metabolism, alcoholism, over-stimulation, diseases of trophic nerves, the debilities, general or local, is, in my opinion, the predisposing factor in malignant disease. Chronic irritation, of no matter what character, is the determining factor; the cells of the tissue irritated, unable to respond normally to the irritant, assume characteristics suitable for their environment, thus conforming to a natural law.

Trypsin is of considerable value in cancer. Uteri carcinoma cervicis, rodent ulcer, and epithelioma are eminently suitable for the treatment. Gout, rheumatoid arthritis, and chronic rheumatism ought to be treated by injections of trypsin when other better-known methods have failed. Regarding amylopsin, I may state that after injecting it singly and in combination with trypsin I have found it of no value in the treatment of cancer.

REFERENCES.

¹ Drink-Proof, BRITISH MEDICAL JOURNAL, June 22nd, 1907. ² Inflammatory Changes in Posterior Spinal Root Ganglia in Cases of Cutaneous Cancer, *ibid.*, July 20th, 1907. ³ Note upon a Possible Relationship between Carcinoma and Nerve and Trophic Areas, *ibid.*, April 18th, 1903. ⁴ Hutchinson's *Archives of Surgery*, p. 122. ⁵ *Sem. Méd.*, No. 8, February 20th, 1907, and BRITISH MEDICAL JOURNAL, November 23rd, 1907.

THE twenty-fifth meeting of the German Congress of Internal Medicine will be held at Vienna from April 6th to the 9th, under the presidency of Professor Fr. von Müller of Munich. The programme of discussions includes the following questions: The relations of diseases of the female genital organs to internal diseases; recent methods of clinical examination of the functions of the intestine and their results.