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Original Communications

THE ROLE OF RADIUM IN SURGERY IN THE TREAT- MENT OF CANCER (GRAVE)

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The studies which we have made during the last five years on cancerous tissues which have been subjected to the influence of radium have shown clearly, as was easy to foresee, that if the action of radium, well-handled, was often favorable, it could lay claim to local results only; further, in statistics regarding cancer of a more serious nature, for the treatment of which radium was used, we must not rest satisfied merely with watching the tumor diminish, but must consider more particularly the future of the patient, which is quite a different matter; for even in cases where tumors have entirely disappeared without any local return, we have seen very frequently, as a result, metastases produced which can neither be operated upon nor treated. Nevertheless, even thus limited in its rôle, radium offers to patients resources clearly appreciable and useful in varying degrees.

Now, the aim of this article is to establish the theory that these resources are real only on condition that radium therapy be aided and controlled by surgery.

This association is to be established as a principle. Not only will this result in guiding the movement of present-day radium therapy towards a wise practice, calculated to safeguard the patient from inopportune applications which deprive him of the benefit which might accrue from other methods of procedure, but it will also secure the best results from the use of radium.

This brings us to the consideration of the two following aspects of radium therapy. First, the power of penetration of the rays. Second, the ease with which it may be handled.

The power of penetration of certain rays is, as is known, very great; theoretically, there can be no obstruction. In fact, the depth to which a ray acts depends not only on the absolute power of its penetration, but at the same time: (a) on the number of rays which attack a given point (whence the importance of the quantitative value of radio-activity on which we have often insisted); (b) on the greater or less facility with which this or that tissue allows itself to be influenced.

If, then, we think, as MM. Delbet, Hennenschmidt and M. Tuffier have shown, that, given certain apparatus, this penetrative action is limited, and relatively weak (about 3 centimetres), we have determined on the other hand that this limit might be extended by the use of a greater number of rays and by suitable technique, notably against certain forms of neoplasm. Here is an example:

In the case of one of our patients, in the course of treatment we reduced at each new application and held in check for seven months a lympho-sarcoma of the mediastinum in the following manner. We set up action by crossing the rays, the apparatus being applied simultaneously in front and at the back of the thorax, with filters light in proportion to the intensity of radio-activity, and we multiplied the points of application by displacing the apparatus before the duration of the applications could change the cutaneous covering. The original cervical neoplasm, which had reappeared very markedly immediately after a first operation, had been treated by radium (cross-fire) a year before; under that influence it had disappeared entirely and had not since returned.

It is in order to obtain an action at the greatest possible depth that we advocate, in certain cases, especially when it is a question of getting into the vital part of a tumor, the use of filters or screens of less and less density and thickness, or even dispensing with them altogether, and consequently making use of the greatest number of rays possible.* that is to say, compatible with the sufficient integrity of the tissues which are for a given time in direct contact with the apparatus. That is, moreover, the method of procedure of Robert Abbé, when, by

*Quite recently the use of 19 centigrammes of pure radium (quite a large quantity), applied on a single point of an enormous tumor of the breast for forty-eight hours, produced in one of our patients on the sixteenth day an appreciable reduction, which we never observed to the same extent in as short a time with weaker doses. The tumor, cut out by Dr. Arroun on the 16th day of application, showed evident histological changes along the course of the rays (at a depth of 25 centimetres).

introducing tubes, he makes use in general only of combined filters of glass, aluminum and celluloid of thickness inferior, on the whole, to lead filters from 1-10 to 3-10 millimetres, the frequent use of which we recommend, and which themselves do not permit the use of very penetrating ray-action, such as is described by M. Dominici.

It is also the care in concentrating a greater number of rays acting at a depth, and the search for that quantitative value of ray-action which has led us to oppose apparatus, to increase the number of points of attack in order to end at the crossing of the rays—at the “cross-fire,” according to our own expression—and in this way to saturate the tumor with rays in a homogeneous way, with less risk of exciting cellular disturbances later on. But if radium therapy, through the progress of its technique and the increase of radio-active power possible of use, depends on the increase of the limits of its action as to depth, it lies with surgery to make the best use of this progress. Thanks to surgery, one can lessen the thickness of the tissues which the rays have to cross laterally by making in the tumor, in order to introduce the apparatus, perforations deep, simple, double, or even multiplied for the application of the cross-fire; by making large incisions, or by partially removing the tumor, and the results obtained will be satisfactory in proportion to the perfection with which these methods have been used.

On the other hand, if the neoplasm to be reached is difficult of access, since the apparatus is small and can take any shape desired, surgery can, after having made way for it either by making artificial openings in creating passages or by making use of natural openings, bring it, even at great depth, into actual contact with the neoplasm. And here again the results will depend on the accuracy of the application, combined with the most skilled operating. Here is an example of it:

A fellow-doctor was sent to us early in October, 1909, suffering from a malignant neoplasm at the neck of the bladder, which showed all the usual train of morbid characteristics. M. Pasteau confirmed the diagnosis and proceeded to apply the apparatus. After sounding the infected region by urethroscope, with the aid of a catheter the radium was placed in good position. Now, without the skill and perfect execution of Dr. Pasteau these proceedings would have been harmful. On the contrary, the past seven months have brought about an amelioration in proportion to the series of applications, and at present our fellow-physician is enjoying apparent good health, and micturates only a little more frequently than in a normal con-

dition. Similar action is necessary in cancer of the throat and rectum.

In the case of one of our patients a cancer of the rectum (high up), because of its projections, formed an obstacle to the passing of a sound. Now, it was important that the radium apparatus should be placed in the open part of the neoplastic canal, and it was only when this was done successfully that the hemorrhage and secretions dried up. At the end of eleven months (since treatment was begun) the patient is still reaping benefit and has resumed active work.

We have treated cancer of the intestines by introducing the apparatus through an artificial anus.

It is in this way, also, that MM. Gauthier and Labey, with our radium collaborations, have conceived and carried out the idea of treating cancer of the pylorus through an opening left in the anterior wall of the stomach after gastro-enterostomy, and through the application of the apparatus on the abdominal wall.

Similarly, again, for cancer of the larynx, we made use of an opening by tracheotomy in order to act on the passage throughout and secure applications of the longest possible duration. There is much that could be said in regard to the use of radium in cancers in other regions, notably in cancer of the uterus, in which perhaps radium has rendered us the greatest services; but our aim is to establish a principle and give some ideas in regard to technique, and not to enter into detail in connection with the results obtained. Let us add, however, that in some of these cases, whether through the stopping of hemorrhages and secretions, or by lessening the suffering, or by reducing protuberances and even tumors, radium has rendered highly important service to patients by giving comfort and prolonging life. In some cases, moreover, life has been prolonged and the patient in fairly good condition for more than two years.

Here are cases which show some of the services which radium can render surgery. Epithelial cancer of the parotid region. It was a case of an enormous epithelial tumor, which projected for 5 centimetres. It measured 11 centimetres across and 9 centimetres through, and covered the whole cheek and parotid region and was firmly fixed at its base. Treatment by radium dated from September, 1908; leveling of the tumor was obtained in five months after several series of treatments, consisting in the introduction of the tube and in the application of the apparatus (cross-fire) on the surface of the tumor. For-

nine months the tumor remained leveled to the surface; then there was a return (accompanied by a slight degree of facial paralysis), which was neglected for four months in spite of our warnings, and which we are treating at the present time. When nothing remained but small masses which had become moveable, we should have profited by this factor to have them uprooted, leaving the region to be treated by radium afterwards.

It should be noticed that, in the course of diminishing, one of the most interesting signs to be observed was the return to movability of the base in proportion to therapeutic action. We stated from the standpoint of histology, for example for the cheloides, that the modifications of the base are among the first signs of diminution.

Here is the case of a patient who was sent to us from Bristol, September 28, 1909, suffering from a neoplasm of an epithelial nature of the left sub-maxillary region—a case considered as inoperable. It was a case of a return after a ganglionic excision and destruction of the small original neoplasm, which was lying on the labio-gingivale mucous membrane. The English surgeon declared that the trouble had gone too deep to permit of a wholly advantageous operation. Such was also the opinion of M. Banzet. We then adopted the following method in the hope of diminishing the thickness to be treated: the greatest possible surgical excision of the tumor, then intense radium therapy action, internal and external, with a total of about 15 centigrams of pure radium, distributed by means of several sets of apparatus acting at the same time. M. Banzet ascertained when he had completed his surgical work that the bottom of the wound was largely covered with neoplastic tissue.

After several series of suitable treatments, followed by periods of rest, we obtained in the fourth month a healing-over of favorable appearance. This condition has remained for four months. We continue carefully to treat the region energetically. We will not allow ourselves certainly to predict an ultimate relief. The tissues are firm; we shall hope that it may be a matter to a great extent of fibrous change.

There was produced two months ago a metastasis under the chin, which was cut out and subjected to treatment by radium. Histology indicated that it was a matter of baso-cellular epithelial proliferation.

We mention two other cases which seem to us of sufficient interest to call to the attention of the reader. The one is a recurrence of a neoplasm of the breast. MM. Lenonand and Gaston handed this case over to us ten months ago, thinking that

a surgical operation would be performed under bad conditions for this tumor, which projected for three centimetres, and was five centimetres at the base, rested on cicatricial tissues, and was also adherent to the sternum. The surface showed no ulceration and was very much inflamed. At present the tumor has entirely disappeared. The surface where the neoplasm rested has contracted; that surface no longer has the five centimetres of extent, which we so carefully measured at the beginning of the treatment, for there has been produced, as usually happens, a certain contraction of the tissues which have undergone treatment. There was a return three months ago, which was immediately treated and reduced. At the upper end of the sternum two metastases, quite recent, have been determined.

The other is a well-known case of the Anatomical Society, well known at least in so far as its anatomical aspects are concerned. It was apparently a case of fibromata transformed into fibro-myxomata of the anterior region of the shoulder. He was a patient of M. Peraire, who operated on him several times very extensively. After each operation the tumors returned, and in larger numbers. Finally, the extent of the neoplastic tissues giving rise to uneasiness, M. Peraire asked us to take charge of the patient. In six weeks a great reduction was obtained, and there has been no return for ten months; but we will continue a series of applications from time to time. Here again the tissues have been reduced, and suggest to one an original lesion of much less extent than was really the case in the beginning. (Since sending out the manuscript for this article we have determined a metastasis in the anterior fold of the axilla. The histological diagnosis of the case has remained undecided; it will form a subject of special study.)

In a case of "epulis" or osteo-sarcoma of the lower jaw, we obtained a cure which has lasted for six months. It was a case of return after insufficient excision, because it was desired to preserve the teeth. The latter were loose, but after treatment by radium they became firm, and the tumor diminished satisfactorily. But in this case we acted without the aid of surgery, and the result was a very long course of treatment. It would have been better, it seems, to have taken away as much as possible of the tumor, and on the growing part to make a passage for applications in "cross-fire," external and internal. By means of this combination we would have gained much time. Although in such cases cured by the aid of surgery alone, the disfigurement would be slight, consisting in the loss of two teeth, and of a small bony portion, certainly there would be an advantage in

avoiding it by associating and combining the two processes named.

In conclusion, the result of our observations—about six hundred in number—is that it would be useful if radium should be considered as an auxiliary to surgery in the same way as are X-rays and fulguration. Acquainted with the expedients which radium therapy offers (whether it be a matter of injection of salts of radium or of application of radium apparatus), surgery can conceive of new operating technique adapted to these resources, and can thus reach parts which used to appear outside the region of therapeutics. It can seek to lessen the malignity of the operating field, whether before or after the operation. It can complete insufficient operations, and in some cases perhaps adopt with advantage conservative measures.

In the case of one of our patients, for example, it was possible to avoid amputation of the leg for an osteo-sarcoma of the tibia, for when the radium apparatus was surgically introduced, to great depth and with accuracy to the necessary parts, the neoplasm disappeared satisfactorily.

It is most certainly from the combination of surgery and radium, of the methods of radium-therapy surgery, as we term them, that, without exaggeration or scepticism, we may make best use of the new resources introduced by radium in the treatment of a certain number of cancerous neoplasms.—(Extract from *La Clinique*.)

W. H. B. AIKINS.

ON THE CAUSATION AND EARLY DIAGNOSIS OF UTERINE CANCER*

BY DR. A. C. HENDRICK, M.A.

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Although this paper is intended to deal primarily with the early diagnosis of uterine cancer, still it is very important to survey briefly the prevalent ideas in regard to the causation of cancer in general, since, if one has some idea of the probable causation, one may be led the more reasonably to an early diagnosis of the condition.

First of all, we must realize that cancer is universal, all races of mankind and all vertebrates being liable to it.

Bashford states that the vegetarian castes of India are no more exempt than are those living on a mixed diet, though it has been stated that the Jews of East London become more liable to it after some years of living in England. Hence, the mode of living would seem to have little to do with the causation of the disease.

Again, the disease seems to have a predilection for certain regions of the body in different species, mammary cancer being common in the mouse, but rare in cattle.

Experimentally, there can be produced:

1. Local infiltration.
2. Systemic dissemination.
3. Terminal cachexia.

The transference is a true transplantation of living cells, infection taking no part. Hence, Ribbert's view of cancer is that it is a continuance of growth of cells which primarily were confined to a circumscribed area.

Age incidence.—This has been shown to be the same for short-lived animals as for man.

Now, explanations of cancer must agree with:

1. That, statistically, cancer is a function of age.
2. That, biologically, cancer is a function of senescence, and, one may add, of immaturity.

The law of age incidence applies alike to individuals of a species and individual organs and tissues. For example, (2) cancer of the breast before puberty is practically unknown.

*Read at the meeting of the Canadian Medical Association, Toronto, June, 1910.

Senescence, constitutional or circumscribed, is an endogenous predisposing factor. It is closely associated with its origin, but it is not necessary to its continuance; that is, the origin and the growth of cancer are separate phenomena.

Cancer is more prevalent in domesticated animals because, on account of good care, etc., they reach the cancer age.

Exogenous causes:

1. Chronic irritations have nothing in common except causing prolonged attempts at repair. Hence, tissues subjected to such conditions are really primarily old, so to speak, or perhaps immature in some cases, and so are liable to cancer if they have reached the cancer age. Many examples of this are known; for example, radiant cancer, or actinic cancer of the lip, from smoking a short pipe or from X-rays.

Again, distinct innate relations seem to exist between cancer of the same organ in different species and the connective tissues. For example, in the human breast it is scirrhus; in a dog breast, cartilage; in the mouse, angioma.

It is important to bear in mind that cancer may:

1. Arise locally in a circumscribed area.
2. Any part of the normal covering of the body may acquire cancerous properties.
3. And that more than one focus of origin in a circumscribed area may exist, or have origin of different ages; that is, extension by apposition.

Hence, one may assume an acquired local or constitutional predisposition; that is, an indirect etiological significance to chronic irritation, causing anapylaxis.

Again, as to the morphology of cancer. It is to be borne in mind that there is an immense variety of carcinoma cells, all descended from normal cells, some of which pass into one another, whilst others do not, and are able to maintain their characteristics for a considerable period. Hence, apparently benign growths become malignant; for example, adenoma. Also, by transplanting cells from individual to individual, and so maintaining them in the continuous or intermittent state of regeneration, it seems possible to perpetuate varieties of cells more capable of growth; hence, the origin of sarcoma.

Again, there are normal types of cells which are the prototypes of malignant cells; for example:

1. Bladder epithelium and carcinoma.
2. Decidual cells and sarcoma.

3. The mucous membrane of the outer end of the Fallopian tube and malignant adenoma. Also, columnar epithelium may become squamous; for example, psoriasis of the endometrium, or squamous cells become columnar, due, perhaps, to metaplasia.

Growth of Cancer.—Growth of cancer cells is different from embryonic cells.

1. The cancer cell shows cyclic changes in the degree of differentiation of its histological characters.

2. It disobeys all the laws of growth of embryonic tissue. That is, it has the habit of growth minus the habit of function.

3. When transplanted, the blood vessels and supporting connective tissue scaffolding are supplied anew by a reaction elicited by the chemiotactic influences of the parenchymatous cells.

4. Cancer cells are specialized regrowth, and not undifferentiated cells.

5. The cancer cell has no analogy with any known form of infective disease.

Continued growth takes place after inoculation of living cells into animals of the same species.

The metabolism of the cancer is a property of itself, that is, a *vita propria*, the propagated tumor having much the same relation of the fetus to the mother. That is:

1. There would seem to be no toxic properties injurious to the host.

2. No disturbance in the cell metabolism.

Cyclical changes in cancer cells are shown by:

1. Rapid or slow growth.

2. Transitory cessation of growth.

3. Greater or less spontaneous immunization.

4. Variation in histological structure; for example, alveolar to acinous, and vice versa.

But we must remember the dosage and the soil are important factors.

Heredity:

Darwinism hardly applies here; that is, acquired cancer, etc., except, perhaps, in cases of metaplasia.

Weismann's theory that germ plasm is continuous from generation to generation, and that these germ cells have a potentiality of variation dependent upon environment. That is, oscillation in the nutrition of somatic cells may influence or cause variation in germ matter. Therefore, there is heredity in disease, or, as Garrod, in his Croonian Lectures, in 1908, states it:

“Inborn errors in metabolism”; and since metabolism depends upon cellular enzymes, so, in cancer, perhaps there is some innate error of metabolism, forming or altering the cellular enzymes, so causing increased tendency to cell proliferation, the actual growth activity being due to some accidental irritation.

It cannot be doubted but the processes of the body are largely influenced by heredity; for example, the endogenous toxins, diabetes, baldness, or the abiotrophy of Gowers.

The Mendelian Law would seem to be applicable to such a disease as cancer, which has not yet been shown to be due to infection, as is, for example, tuberculosis.

By the Mendelian Law one means the law of segregation, the germ cells being a single structure and the animal a double structure, having received a series of elements from its father and a series also from its mother.

The Mendelian Observation.—When dissimilars meet in one individual, there is, on formation of the germ cells, a separation between the two characters which come in; that is, the dominant and the recessive. The animal is a combination of many natures; for example, height, color, form, and so on, separately transmitted. For example, in eye color, the presence of the pigment is dominant. Color blindness and other deformities follow the law, so special resistance or special liability might follow the law; for example, resistance due to presence of something, as in color blindness, and liability to the absence, or recessive qualities, as, for example, in alkaptonuria.

So with sex-limited diseases, as hemophylia.

Hence, as to the causation, one may sum up:

1. No limitations as to species.
2. Diet and mode of living has little influence in causation.
3. Cancer is statistically a function of age of the individual.
4. Cancer is, biologically, a function of either immaturity or senescence, eit. r constitutional or acquired; for example, immaturity, when, owing to limitations of function, the growth habit alone is differentiated, the cell becoming purely vegetative, due perhaps also to some error of its metabolism. Then its faulty metabolism causes enzymes, which may cause adjacent cells to take on this vegetative habit, etc., due to chemiotactic influence; so one sees the different reactions of the surrounding tissues or stroma developed.

Or again, in repeated attempts at repair, the cells specialize the growth habit, and so become more strongly vegetative and unspecialized as to function. For example, metaplasia and

anaplasia takes place, and so one finds abnormal new growths; for example, squamous cell epithelium arising from columnar cells, as in the uterus, gall bladder, etc.

Again, the normal inter-cellular antagonism of the body seems not to hold for the anaplastic cells, that is, the vegetative or rapidly proliferating cells; hence, metastatic growths are possible; for example, the mother cells of the thyroid to bone, causing adenoma.

5. The origin and the growth are separate.
6. Exogenous causes; that is, chronic irritations are important predisposing agents.
7. Cancer may arise locally anywhere.
8. There may be more than one focus of origin in a circumscribed area.
9. The histology of cancer cells varies within wide limits.
10. Cancer cells are specialized cells.
11. Herédity certainly plays a part in the predisposition to cancer.

THE EARLY DIAGNOSIS OF UTERINE CANCER.

The early diagnosis of cancer of the uterus is one of the most important functions of the family physician, for it is to him the patient usually appeals for relief; hence, it is his bounden duty, by every means available, to make the diagnosis if possible. There are three sites for uterine cancer.

1. The vaginal portion, from the vaginal vault to the external os.
2. The cervical portion, from the external to the internal os.
3. The uterine body, from the internal os to the tubal orifices.

Now, cancer of the uterus develops in its mucous membrane, or immediately under the mucous membrane of its elements; that is, the glands of the cervix or the body. This classification is important, because, not only the clinical picture of the cancer, but the methods of diagnosis, are quite different, depending on the starting point and extension of the disease.

There are certain symptoms which one may designate by the name of prodromes of uterine cancer. These are:

1. Bleeding in coitus—due either to engorgement or friction. It is very common, and often the first symptom noted in cancer of the cervix, though it may occur in vascular erosion, endometritis or polyps. It is always a suspicious sign.
2. Metrorrhagia—after the menopause; that is, some months after the menopause. This symptom may occur in fibroids and polypoid disease, but it is most often due to cancer. Irregular

hemorrhages before the menopause are not so suspicious, but we must bear in mind the age incidence.

3. A sero-sanguinous discharge resembling greasy dish-water or beef brine, occurs in the very early stages of cancer of the cervix, and is rare in other conditions. This modified cervical discharge is characteristic.

Clinical Diagnosis:

The clinical diagnosis of uterine cancers depends upon two factors:

1. The presence of a neoplasm, either proliferation of infiltration.

2. Its degeneration. This leads to the characteristic friability of tissue, which is of great diagnostic value. This friability is recognized by the finger or the sound. This property of breaking up into small pieces under pressure of the finger is very characteristic, and the only other tissues, perhaps, showing it is a necrosing fibroid.

The great tendency to bleed is understood when one recalls the histological structure. Hence, bleeding is characteristic of all three varieties of uterine cancer. But one finds hemorrhages in erosions, endometritis, chronic metritis and polyps, although less, so that diagnosis cannot be based on bleeding alone. When both features of cancer are present, namely, neoplasm and degeneration, the diagnosis is easy, but if only one of these is present, difficulty arises. For example, there may be only proliferation; then inspection with speculum aids, while any infiltration is found on palpation, whilst degeneration is found by both methods.

Cancer of the vaginal portion may be seen and felt through the speculum in the Sims posture, whilst palpation of body cancer may require dilatation.

Vaginal portion:

Cancer here is the most easily diagnosed of all sites.

1. If of the polypoid variety, its surface is reddish in color and friable, that is, easily broken or crumbled down by finger or sound.

2. If of the flat kind, any bulging above the surface is suspicious.

3. If of the infiltrating kind, a nodule is felt, cartilaginous in consistence, and altering the shape of the vaginal portion. If, however, the mucous membrane over the lump is intact, then there is trouble, though the surface of the nodule may be purple in color and spotted by yellow pits due to the cancer nests.

4. Ulcerating cancers are easily spotted. The jagged fissures, with soapy secretion, or reddish in color, with moderate induration, are quite characteristic, but often the microscope has to decide.

DIFFERENTIAL DIAGNOSIS.

The polypoid variety from:

1. Papillary tuberculosis may be made by careful inspection, finding the millet seed nodules of tubercle in the neighborhood; for example, the tubes, peritoneum, or a focus in other organs.

2. From mucous polyps. Inspection shows the surface mucous membrane intact, and the sound, that they originate in the cervix.

3. Cervical fibroid, with the pedicle, is distinguished by its intact mucous membrane and non-friability, unless gangrenous.

4. Follicular hypertrophy of the vaginal surface. Here the surface is not rough, the tumor is not friable, and it is covered by intact mucous membrane, through which the follicles may be seen.

5. Condylomata acuminata. Here there is only a papillary surface, with thick epithelium, no ulceration or infiltration. The color is a whitish red. Further condylomata may be found also in the vagina or vulva.

INFILTRATING VARIETY.

The differential diagnosis from:

1. Inflammatory infections—metritis colli—but inflammation usually affects the whole vaginal portion uniformly. The consistency is not so hard, the mucous membrane is intact, and follicles are seen. For example, a case in hospital, the microscope decided.

FLAT CANCEROUS ULCERATIONS.

Flat cancerous ulcerations have to be distinguished from:

1. Erosions, if developed upon a hard inflammatory base or associated with ectropion, or the surface becomes rough on account of thick papillary erosions. Inspection decides. An erosion surrounds the external os evenly, and has a glistening, shiny appearance and bright red color, as it is covered by columnar epithelium, whilst a cancer is duller in color and rougher, even if ulceration is quite superficial. The erosion has no sharp border, but merges gradually into the squamous epi-

thelium of the vaginal portion—outline irregular—and pits or follicular ulcers are often seen on the surface. But if the erosion has lost its epithelium the microscope decides.

2. Simple ulcers, due to prolapse or a pessary, or cauterization, or croupous processes, lack induration, and at the borders healing is often seen.

3. A tubercular ulcer is similar to cancer, but is very rare. It surrounds the external os. Its edges are undermined; the floor is granular, but not indurated; yellow miliary tubercles may be seen; also, the disease is found elsewhere, or the microscope shows a tubercle structure.

4. Chaneroids (soft sore) are usually small sores, becoming larger by confluence; have elevated borders; the floor has a croupous membrane, but is not indurated. Ulcers are multiple, and contact ulcers are found; also ulcers on the vagina or vulva.

5. Syphilitic ulcers:

(a) Initial lesion.

(b) Degenerative papule.

(c) Gumma.

Degenerative papule is a solitary indurated and shallow ulcer, with indistinct border and dirty copper-red color, with greasy exudate on its floor. The anterior lip is the favorite side.

6. Condylomata lata, or papulous ulcers, are elevated slightly, and covered by a yellowish debris. They are multiple, and other papules may be found on the vulva.

7. Gummata are rare. The ulcers are elliptical, well-defined, shallow, and the floor covered by a pus-like exudate which, on separation, leaves bleeding granulations. It is situated usually to one side of the external os, and extends by serpiginous border. One may demonstrate the lesion elsewhere, also the Wasserman reaction, or the presence of spirochaete may be shown.

DIAGNOSIS OF CERVICAL CANCER.

This is more difficult, especially if the os is closed, but otherwise when the os is patulous. Then ulceration, the absence of epithelium, and especially friability on scraping with the curette is diagnostic.

INFILTRATING CANCER.

1. Here diagnosis depends on change in shape of the cervix and its consistency. The surface becomes distended on one side perhaps, and the canal displaced. Its consistency is cartilagin-

ous. If infiltration is high up in the cervix, a rectal examination may help, but the best plan is to remove a piece of tissue with the curette and examine histologically, or even to curette the body as well as the cervix, and vice versa.

DIFFERENTIAL DIAGNOSIS.

1. Metritis or endocervicitis; but here the condition is uniform, and the mucous membrane is intact.

2. Follicular hypertrophy; but here the mucous membrane is intact, and the follicles shining through may be punctured.

3. Interstitial myomata are more rounded, that is, better outlined, and surrounded by soft tissue, while cancer, owing to inflammatory reaction, is not. Ulceration favors cancer.

4. Chronic cervical catarrh in old females. Here the mucous membrane feels rough, uneven and nodular, owing to the granular depression and the surrounding fibrosis, but the mucous membrane is intact and the curette gets no tissue. The microscope decides.

CANCER OF THE UTERINE BODY.

Cancer occurs here about one-fifteenth as often as in the cervix, but is very important to diagnose, since most corporeal cancers arise after the menopause. Hence, there are two important signs.

1. Hemorrhages.

2. Simpson's pains, regular labor-like pains, lasting several hours and recurring at definite times of the day.

But there are no characteristic bi-manual palpatory findings in cancer of the body. The size of the uterus may be normal or even atrophic. Later, it may resemble a fibroid or metritic uterus. Diagnosis is made by exploring the cavity.

1. By the sound, which distinguishes from retained decidua or fungus endometritis, by presence of hard nodules or depressions when cancer is present. If the interior seems smooth, cancer may be excluded, but if there are irregularities of the surface the microscope is necessary. The microscope is the proper method of diagnosing early cancer of the body. Digital exploration may be employed if the os is open, plus curettage, but if the cervix is closed, curettage is employed, and if negative digital exploration is then used; but the latter is more dangerous, besides palpation is not so sure as the microscope.

DIFFERENTIAL DIAGNOSIS.

If the curette is used, the microscope decides; if a digital exploration, then one has to distinguish from:

1. Adenomyoma.
2. Sarcoma.
3. Degenerating fibroid.
4. Mucous polyps.
5. Remains of abortions.
6. Chronic metritis.

But cancer is distinguished by the two signs of neoplasm and degeneration.

Although corporeal cancer occurs only about one-fifteenth as often as the other varieties, still it is more insidious in its mode of onset. It is more frequent in spinsters and in barren wives than in multipara. This corresponds with the clinical experience that it is frequently associated with fibroids, and fibroids are a result of the barren or the celibate state. It is interesting to note that cancer of the body of the uterus has been found to follow double ovariectomy, and since this is practised occasionally for bleeding fibroids near the menopause it is worth remembering.

Again, sub-mucous fibroids are often associated with changes in the endometrium, which not only cause excessive bleeding but set up also inflammatory conditions, giving rise to salpingitis, leucorrhœa, etc., but also render the mucous membrane more susceptible to cancer.

Bland-Sutton (Burghard's System of Surgery, vol. 4, p. 52) states that in patients submitted to hysterectomy for fibroids, over the age of fifty years, about 10 per cent. will be found to have cancer of the corporeal endometrium.

Hence, one may sum up the early diagnosis of uterine cancer by stating that:

1. The family history is important in discovering a predisposition.
2. The personal history is important in deciding a predisposition. For example, cervical cancer is almost exclusively a disease of women who have borne children, or at least been pregnant. Hence, there seems good reason to suppose that injuries and their sequelæ are predisposing factors. Again, corporeal cancer is chiefly the disease of spinsters and barren wives, and these are the patients who suffer from endometritis and fibroids.
3. Chronic irritations are important etiological factors; for example, lacerations in multipara, fibroids and endometritis in nullipara.

4. The warnings or prodromes are:

(1) The red flag of metrorrhagia after the menopause, and the Simpson pains in corporeal cancer.

(2) The unusual discharge in cervical cancer.

(3) The bleeding after coitus in the vaginal variety.

Since being forewarned is forearmed, the way to get an early diagnosis is:

1. To educate women, as far as possible, to regard any unusual hemorrhage or discharge after the menopause, or even before it, as a danger signal.

2. To submit all patients consulting one for these symptoms to a most careful examination.

3. To never temporize or delay, but, if necessary, to have an expert in consultation; or, if impossible, at least to use every available means to arrive at a diagnosis; and among these is a careful histologic examination of the curettage, or a piece of the suspicious growth, for after all the microscope is the supreme test in many of these cases.

1. The *Lancet*, Vol. II., 1909, p. 691.

2. Bergmann, *Systems of Surgery*, Vol. II., p. 592.

PROPOSED STERILIZATION OF CERTAIN DEGENERATES*

ROBERT R. RENTOUL, M.D., ETC.

In 1903 I proposed—among other items—that it should be made illegal for any person to issue a permit to marry, or to join in marriage, or to marry, any idiot, imbecile, feeble-minded, epileptic lunatic, chronic inebriate, habitual vagrant, habitual criminal, drug habitue, sexual pervert, deaf mute, or markedly neurotic. I further proposed that all the above—these not being legally responsible for their actions—should be so surgically operated upon that they could neither beget nor conceive offspring. These proposals I would have brought forward some ten years antecedent to 1903, could I have induced some publisher to publish them! But it is a strange feature in the publisher's moral standard that he will bring out a novel reeking of the sensual, erotic and prurient, but will refuse to publish a work relating to the *mental* conditions of poor humanity.

The laws relating to the marriage of degenerates in the United States of America are of educational value, but to the sane only, as it is not just nor reasonable to punish lunatics and the feeble-minded for their marriage or other actions; it can be at once seen that such laws are to these of no use. Nor will any practical person suggest that the feeble-minded consider the question of marriage when begetting offspring. Were there a compulsory medical examination of every person before marriage, the above laws would be more useful. But here again the degenerate class would beget and conceive—marriage or no marriage; law or no law. Some years ago I called attention to the case where five weak-minded unmarried females had been delivered of fifteen idiot infants in a workhouse. Dr. Potts next told of where, in one workhouse, sixteen feeble-minded unmarried females had no less than 116 idiot children. Later Dr. Branthwaite has pointed out that 92 habitual inebriate women had had 850 infants. Will these poor demented demand marriage before maternity? I think, to sterilize them is the only real cure. It was for this reason I suggested that we should surgically sterilize the degenerate classes. I proposed that in the female we should divide and ligature the Fallopian tubes (fallectomy) and in the male either divide and ligature the vasa deferentia (vasectomy), or divide and ligature the spermatic

*Address to be read before the Psychological Section, British Medical Association, July, 1910.

cords (spermectomy). These are simple and harmless operations; they neither injure the mental nor physical condition; nor do the first two weaken the desire or power. They effectually, however, prevent procreation. They are fully described in the second edition of my work, "Race Culture; or Race Suicide."

In this country there is a steadily growing feeling in favor of my proposal. It is being now discussed in France, Germany and Switzerland—yet so far America is the only country which has legislated upon my proposed operation.

Thus on February 10th, 1907, the State of Indiana passed the following Act:

"An Act entitled 'An Act to prevent procreation of confirmed criminals, idiots, imbeciles and rapists—providing that superintendents or boards of managers of institutions where such persons are confined shall have the authority and are empowered to appoint a committee of experts, consisting of two physicians, to examine into the mental conditions of such inmates.'

"Whereas heredity plays an important part in the transmission of crime, idiocy and imbecility, therefore be it enacted by the General Assembly of the State of Indiana that on or after the passage of this Act it shall be compulsory for each and every institution in the State, entrusted with the care of confirmed criminals, idiots, rapists and imbeciles, to appoint upon its staff, in addition to the regular institution physician, two skilled surgeons of recognized ability, whose duty it shall be, in conjunction with the chief physician of the institution, to examine the mental and physical condition of such inmates as are recommended by the institutional physician and board of managers. If, in the judgment of this committee, procreation is inadvisable, and there is no probability of improvement of the mental condition of the inmate, it shall be lawful for the surgeons to perform such operation for the prevention of procreation as shall be decided safest and most effective. But this operation shall not be performed except in cases that have been 'pronounced unimprovable.' "

This Act does not specify the operation to be performed: it includes confirmed criminals and rapists; it relates only to those confined in institutions. It fails in not providing a heavy penalty against those who sterilize degenerates without official sanction.

On April 20th, 1909, the State of California legislated as follows:

“Chapter 720. An Act to permit asexualization of inmates of state hospitals and the California Home for the Care and Training of Feeble-minded Children and of convicts in the State prisons. The people of the State of California, represented in Senate and Assembly, do enact as follows:

“Section 1. Whenever, in the opinion of the medical superintendent of any State hospital, or the superintendent of the California Home for the Care and Training of Feeble-minded Children, or of the resident physician in any State prison, it would be beneficial and conducive to the benefit of the physical and mental or moral condition of any inmate of the said hospital, Home or State prison, to be asexualized, then such superintendent or resident physician shall call in consultation the General Superintendent of State Hospitals and the Secretary of the State Board of Health, and they shall jointly examine into all the particulars of the case with the said superintendent or resident physician, and if, in their opinion, or in the opinion of any two of them, asexualization will be beneficial to such inmate, patient or convict, they may perform the same; provided that in case of an inmate or convict confined in any of the State prisons of the State, such operation shall not be performed unless the said inmate or convict has been committed to a State prison in this or some other State or country at least two times for some sexual offence or at least three times for any other crime, and shall have given evidence while an inmate in a State prison in this State that he is a moral and sexual pervert, and provided further that in the case of convicts sentenced to State prison for life, who exhibit continued evidence of moral and sexual depravity, the right to asexualize them, as provided in this Act, shall apply whether they have been inmates of a State prison either in this or any other State or country more than one time.”

It will be seen that this Act differs considerably from that of Indiana. Thus, the Indiana Act places the carrying out of the Act upon two skilled surgeons and the institution physician, these forming a “committee of experts.” If this committee think sterilization advisable, then the operation takes place.

In the California Act, the superintendent or resident physician must call in consultation the General Superintendent of State Hospitals and the Secretary of the State Board of Health—two very important officials.

The Indiana Act refers to “confirmed criminals, idiots, imbeciles and rapists.” But the California Act follows my orig-

inal suggestion in so far as it includes those guilty of sexual offences, and moral and sexual perverts. It also applies to those who have committed such offences outside the United States.

Neither Act lays down what operations shall be performed—vasectomy, spermectomy, fallocotomy, ovariectomy, or orchotomy. The Californian Act uses the word “asexualized”—thus permitting ovariectomy and orchotomy. This is a very grave mistake, as my proposals would in no way rob the patient of his or her sex characteristics. To “asexualize” persons certainly means to rob them of their sex powers and sex characters. Both Acts include males and females. Neither of the Acts make it an offence if other surgeons operate on persons for the purpose of preventing impregnation or conception. This also is a very grave lapse, and should be remedied forthwith.

On August 12th, 1909, the State Legislature of Connecticut enacted as follows:

“An Act concerning operations for the prevention of procreation. Be it enacted by the Senate and the House of Representatives in general assembly convened:

Section 1. The directors of the State Prison and the Superintendent of State Hospitals for the Insane at Middletown and Norwich are hereby authorized and directed to appoint for each of the said institutions, respectively, two skilled surgeons who, in conjunction with the physician or surgeon in charge at each of the said institutions, shall examine such persons as are reported to them by the warden, superintendent, or the physician or surgeon in charge to be persons by whom procreation would be inadvisable.

“Such Board shall examine the physical and mental condition of such persons, and their record and family history, so far as the same can be ascertained, and if, in the judgment of the majority of the said Board, procreation by any such person would produce children with an inherited tendency to crime, insanity, feeble-mindedness, and idiocy or imbecility, and there is no probability that the condition of any such person so examined will improve to such an extent as to render procreation by such person advisable, or if the physical or mental condition of any such person will be substantially improved thereby, then the said Board shall appoint one of its members to perform the operation of vasectomy or oophorectomy, as the case may be, upon such person. Such to be performed in a safe and humane manner; and the Board making such examination, and the surgeon performing such operation shall receive from the State such

compensation for services rendered as the warden of the State Prison or the superintendents of either such hospitals shall deem reasonable.

“Section 2. Except as authorized by this Act, every person who shall perform, encourage, assist in or otherwise promote the performance of either of the operations described in Section 1 of this Act, for the purpose of destroying the power to procreate the human species; or any person who shall knowingly permit either of such operations to be performed upon such person—unless the same be a medical necessity—shall be fined not more than one thousand dollars, or imprisoned in the State Prison not more than five years, or both.”

The second section of this Act is of the utmost importance. It will be noted that the Act, unfortunately, provides for the removal of the ovaries. But why remove the ovaries when division and ligature of the Fallopian tubes will act as perfectly? My whole aim is not to remove either the testes or ovaries.

In 1905, the Legislature of the State of Pennsylvania passed a Sterilization Bill, but so far the State Governor has refused to sign it. This bill is as follows:

“Whereas heredity plays a most important part in the transmission of idiocy and imbecility.

“Therefore, be it enacted by the Senate and House of Representatives of the State of Pennsylvania that on the first day after the passage of this bill it shall be compulsory for each and every institution in the State entrusted with the care of idiots and imbecile children to appoint upon its staff at least one skilled neurologist and one skilled surgeon of recognized ability, whose duty it shall be, in conjunction with the chief physician of the institution, to examine the mental and physical condition of the inmates.

“If, in the judgment of this committee of experts and the Board of Trustees, procreation is inadvisable, and there is no probability of improvement of the mental condition of the inmate, it shall be lawful for the surgeon to perform such operation for the prevention of procreation as shall be decided safest and most effective, but this operation shall not be performed except in cases that have been pronounced non-improvable.”

This Act refers only to hospitals for idiot and imbecile children, and does not refer to habitual criminals, sexual perverts, lunatics, or other degenerates.

In 1906, the Legislature of the State of Wisconsin discussed

a sterilization bill, but postponed passing it until an investigation was made regarding the mental defectives of the State.

In 1908, the State of Oregon Legislature passed a sterilization bill, but as the State Governor did not sign it, it has not yet become law. It will, however, be again presented in January, 1911, when, if a majority of each House vote for its passing again, it will become law, no matter whether the Governor refuse to sign it.

This year (1910), a bill for sterilization was introduced into the Ontario (Canada) Legislature, but the Prime Minister spoke so strongly against it that the bill was withdrawn.

These references complete my knowledge regarding the bills passed and rejected by different parliamentary bodies. A reference to the last edition of my work shows that many influential persons are in favor of it. Later than its issue, Dr. J. Kerr, Medical Officer to the Education Committee of the London County Council, in his 1908 report, when writing on mentally defective children, and their proposed segregation, says: "A much more humane and scientific idea than mere segregation, and more economical to the state, would be to deprive such individuals of the objectionable powers and capacities, at the same time relieving them of the passions and desires before the time at which these develop." (P. 62.)

In 1906, Dr. Stansfield, Medical Superintendent, Banstead Asylum, reported to the Asylums Committee, Lond. C.C.: "The question of the sterilization of the insane becomes more and more pressing." He further pointed out that the birth rate among the degenerate class is not falling at the same rate as that of the sane. Statistics show that the average fertility of degenerate parents is 73, when compared with 4 of non-degenerate parents.

What are the alternatives to my proposals?

Forced Abortion.—Dr. Clouston, in the 6th edition of his "Mental Diseases," recommends abortion and premature labor in cases of marked insanity. This is of little use. The woman could become pregnant repeatedly, and every neurotic female would be demanding abortion.

Murder of Degenerates.—To me it is extremely painful to find so large a number of apparent Christians demanding the murder of a class of persons who are not legally accountable for their actions nor mental conditions. It would be a strange action for the community to appoint certain medical murderers to kill off degenerates! Fancy a poor struggling practitioner being offered £50 or £100 to kill an idiot child, or a senile rela-

tive! The mere idea of the lethal chamber is repulsive to any thoughtful man or woman.

Forbidding the Degenerates to Beget Children.—Such a proposal is as helpful as is that of abortion or murder. The degenerates may be said to fear neither God nor law. Certainly he or she will not consider the sad result of either actions; and practical men know that the mental and physical contamination of our race does not begin only after a marriage ceremony.

Suicide.—While one considers the large yearly number of insane and others who perform suicide, and who thus help to keep down the great total of weak-minded, weak-willed and degenerate classes, it is to be noted that, while suicide increases, so also does degeneracy; therefore suicide will not give much help.

Lifelong incarceration.—Were all degenerates likely to beget tainted offspring so dealt with, the expense to the taxpayer would be unbearable. It is more than heavy at present. In my work, "Race Culture or Race Suicide," p. 36, I show that in one year in the United Kingdom we expended £13,081,000 on the upkeep of the mentally and physically degenerate classes. This expenditure is absolutely unproductive. Not only so, but it renders the work of these asylum doctors and others therein engaged absolutely unproductive. The Lunacy Commissioners have lately pointed out that asylum expenditure has increased from £200,535 to £370,474, or 78%: that is, no decrease of insanity, but enormous increase of expenditure. I think that £50,000,000 yearly would not cover the cost; more than we expend upon our navy each year! One lunatic has been known to cost Poor Law guardians £1,300. But the question of expense is not the only objection to lifelong incarceration. The proposal is cruel. It is suggestive of punishment, and punishment of the irresponsible. There is surely a large degenerate class who could be allowed at large, if only they had been sterilized—the sexual degenerate, the sane epileptic, the harmless weak-minded, the confirmed drug habitue and inebriates, the confirmed vagrant and confirmed criminal, the prostitute and the markedly neurotic class. These are active begetters of markedly degenerate children, but they can work, or be made to work. Something less drastic and less expensive to the taxpayer than lifelong incarceration is wanted, and that is my simple, non-dangerous and non-expensive proposal—sterilization.

This much is certain: For years we have been content to build palatial asylums and overload the taxpayer, so that he is

so pressed that he can neither marry, or if married, have a large family. The Commissioners in Lunacy state that, in January, 1909, there were, in England alone, 128,787 insane officially reported. (We know there are some thousands more *not* reported.) In one year the increase of the insane—even with the help of those poor suicides—was 2,703. In 1859, there were only 36,742 officially-known insane. Since then the insane rate has increased by 250%, while the population has increased only 81%—a magnificent display for a nation supposed to be educated, even up to the seventh school standard! One in every 250 of the population is officially described as a lunatic! One in every five of criminals is a lunatic. Two of every three in inebriate houses is feeble-minded. These figures are but a fingerpost pointing thoughtful minds to a ghastly future. The medical inspection of school children is bringing a sad state of affairs to the point. The mentally defective children—about 150,000 in number in England—will beget an army of insane. We have about 34,015 “sane” (?) epileptics—all potential begetters of more insane. Sociologists know that a very large proportion—probably 75%—of vagrants, criminals, alcoholics, deaf-mutes, drug habitues, sexual perverts, rapists, the weak-willed, the markedly neurotic, and prostitutes, are mentally defective, and *must* bring forth degenerates if we curse them by allowing them to. Shortly before Dr. Barnardo died (1904), he wrote me, saying: “Some steps ~~will~~ have to be taken in the near future if we are to protect the nation from a large addition of the most enfeebled, vicious and degenerate type.” Do we propose to permit the degenerate class to go on begetting more and more degenerates until there are more insane than sane, and until we sink the already overtaxed taxpayer beyond recovery? To-day unthinking society says, “Yes.” I feel certain, however, that the to-morrow will say, “No,” and with no uncertain, cowardly, popularity-hunting or shuffling voice.

Hartington Road, Liverpool, July, 1910.

Progress of Medical Science.

MEDICINE.

IN CHARGE OF W. H. B. AIKINS, F. A. CLARKSON,
BREFNEY O'REILLY AND F. C. HARRISON.

Treatment of Typhoid Fever in Children

Marini observes that among the methods used for attacking typhoid fever in children, "frigotherapy" renders excellent service and constitutes the best plan of lessening the high temperature. It is simple and easy of application, causes no pain and involves no risk. The ice-bag is applied to the abdomen from the beginning of the illness. To avoid scars, a thick flannel is placed underneath, and only in serious cases is the ice applied directly to the abdomen. The application of the ice-bag is renewed every four hours, and it must be kept regularly in place until recovery. It must not be displaced by the child's movements, and to this end it should be fixed by a bandage (but not too tight). To this treatment there do not apply the same contra-indications as to the cold bath, which often gives rise to painful reactions. The ice-bag prevents the peritonitis which is wont to develop early in these cases, and it causes a manifest lessening of visceral congestion. It also has a real cardio-tonic effect, and wards off thus some of the frequent complications of the typhoid infection. The continuous application of the ice is stopped only when the temperature has definitely fallen and the pulse is normal. Intestinal antiseptics and alimentary hygiene must not be omitted.—Translated from *Giornale Internazionale delle Scienze Medicne*, by Harley Smith.

Classification of Constipation in Children

Gaujoux observes that chronic constipation, so frequent in babies, must be treated not symptomatically, but pathologically. The physiological conditions of a regular evacuation in children are the following:

(1) The digestive tube must not be obstructed or too greatly contracted. (2) The intestinal secretions, which excite and lubricate the intestinal mucosa, must not be diminished. (3) The

mucosa must be sensitive to the contact of the fecal material.

(4) The nerve centres, which regulate the peristalsis, must not be changed or inhibited. (5) The muscular fabric must possess normal contractility. Hence arises a very great etiological diversity of constipation in babies. There are the following three groups of constipation:

1. Constipation from some obstacle in the regular course of the fæces.

2. Constipation from modification of the intestinal contents.

3. Constipation from defect in the action of the expulsive muscular fibres.

In the first group are included those forms with complete occlusion (volvulus, intussusception, atresia, stenosis), those with incomplete occlusion (congenital or cicatricial contractions, spasms, torsions).

The second group includes constipation from diminution of ingesta, from increased absorption of the liquid parts, or from too perfect assimilation (Schmidt), from diminution of the intestinal secretions (fever), from modification of the intestinal contents as regards the quality of the foods (the most frequent form in the clinic).

The third group comprises constipation from mucous anesthesia and absence of the evaculatory reflex (too warm lavage); from paralysis of the nerve centres which regulate peristalsis (solar and mesenteric plexuses); from primary atony of the intestinal musculature (Herschsprung's disease), or atony secondary to a neighboring inflammatory process (peritonitis, enteritis).

Several pathogenic factors may be associated, but a clinical study of each case will enable the physician to dissociate these factors and to institute an efficacious treatment.—Translated from *Giorn. Internaz. delle Sci. Med.*, by Harley Smith.

OBSTETRICS AND GYNECOLOGY.

IN CHARGE OF ADAM H. WRIGHT, K. C. M'ILWRAITH, FRED. FENTON
AND HELEN MACMURCHY.

The Treatment of Placenta Praevia

E. Napier Burnett, M.D., F.R.C.S.E.

The interests of the mother are frequently opposed to those of the child, at least in some of the methods. These are as follows:

1. Rupturing of membranes.
2. Plugging of vagina.
3. Use of dilating elastic bags.
4. Caesarean section.

(a) Vaginal.

(b) Abdominal.

(c) Supra-symphysial.

5. Accouchement forcé.
6. Bi-polar version.
7. Palliative or expectant treatment.

1. *Rupturing of Membranes.*—Should the patient be in labor, with vigorous pains and the vertex presenting, this treatment is justifiable, for the head will be forced down on to the bleeding site and thus control the hemorrhage. But these conditions are rarely present, and the following objections to this method are potent: (1) Malpresentations are frequent, and no other part except the vertex would exercise the pressure efficient to stop the bleeding. (2) The cases are exceptional in which the patient is in labor at the commencement of the bleeding. (3) The pains may cease and permit of further bleeding.

2. *Plugging of Vagina.*—Plugging should be always done by antiseptic gauze rather than cotton wool. This treatment has the advantage that it tends to induce labor, but it is indicated only when there is a doubt as to the diagnosis, i.e., when one has been unable to feel the placenta—when there may be placenta praevia lateralis or accidental hemorrhage. The objections to plugging are: (1) The bleeding may continue behind the plug. (2) Plugging in haste is often followed by sepsis.

3. *The Insertion of Dilating Bags within the Internal Os.*—The membranes should first be ruptured, so that the dilating bag be inserted within the amniotic sac. Barnes' bags are now seldom

used; much better is De Ribes' bag, which is inserted in the collapsed state by a special forceps and thereafter filled with saline or some antiseptic fluid. The objections to the treatment are: (1) The bag may rupture. (2) It is often not at hand or ready for use when required. (3) It is difficult to apply in private practice. (4) It sometimes fails to induce labor. (5) When a weight has to be applied to the end of the tube, thus producing forcible dilatation of the cervix, rupture of the uterus, with fatal bleeding, has occurred. (6) Infection may be carried up from the vagina.

4. *Cæsarean Section*—Some 18 years ago the high mortality of placenta prævia induced Lawson Tate to condemn the ordinary treatment, and to suggest Cæsarean section. This suggestion lay dormant until recently, when it has been revived. It is now strongly advocated by a section of the German school, and especially by Kronig. But placenta prævia is an emergency of general practice demanding treatment on the spot, and Cæsarean section is suitable only for hospital cases, and even then is seldom justifiable, for its maternal mortality is no better than that of some of the older methods *when efficiently applied*. As regards the improved prospect of the child, one is rarely justified in risking the mother's life by such an operation, for the production of a sixth, seventh, or eighth month's fœtus, whose prospects of survival are meagre. The indications for Cæsarean section are few, but in certain selected cases it may become the operation of election, such as (1) placenta prævia in primiparæ with rigid cervix or tumor of cervix; (2) placenta prævia centralis in primiparæ; (3) cases complicated by pelvic deformity. In the great majority of cases of placenta prævia Cæsarean section is no advance.

5. *Accouchement Forcé*.—Rapid dilatation of cervix, with forcible extraction of child. Troube strongly condemns this treatment, and quotes a large maternal mortality from it (*Zentral. f. Gynak.*, No. 43, 1908).

6. *Bi-polar Version* of Braxton Hicks.—*This is the treatment of placenta prævia for general practice, and if it is applied immediately the diagnosis is made; and if the practitioner will rest content when he has brought down a foot, and not proceed to forcible extraction of the child, he will reduce the maternal mortality to something approaching that claimed for Cæsarean section.* But this treatment has not produced its best results, largely because it is not adopted the moment the diagnosis is made, but reserved until the patient is in an extreme condition.

Further, its good results are much impaired when the practitioner becomes impatient and proceeds forthwith to extract the child.

7. *Palliative or Expectant Treatment.*—It is to be regretted that this treatment is still advocated in some modern text-books, e.g.: "If the loss of blood be slight, and especially if the fœtus be yet viable, the expectant plan is indicated. The patient should lie down, be lightly covered, use cold drinks, and if much pain or restlessness be present, opium may be given. She ought to be directed not to take exercise, to avoid as much as possible the erect position and all straining at stool. It would be well if there was someone at hand who was properly instructed in the application of the vaginal tampon, so that this may be at once used, should grave hæmorrhage occur." So long as this teaching is followed the high mortality of placenta prævia will continue. It is bad, no matter what the period of gestation, or whether the child be viable or not.—*North. and Durham Med. Jour.*

Vaginal Douches of Lactic Acid

As the result of numerous investigations it has been shown that lactic acid is present in the normal vagina up to a strength of 0.3 to 0.5 per thousand. Dr. N. Cukor, in the *Klin. Therap. Woch.*, argues from this fact that lactic acid should be used in vaginal douches in place of lysol, bichloride, and the rest of the ordinary drugs used, which are all more or less irritating. He believes that healthy women should use these douches daily to replace the lactic acid lost after bathing, etc., and declares that they hasten the return to the normal condition after menstruation. In cases of much discharge from the uterus or cervix their employment is indicated. Erosions of the cervix and catarrhal conditions of the genital apparatus are rapidly cured by them, and they can effectually be made use of in the place of all other antiseptic solutions.—*The Hospital.*

Influence of a Salt-free Diet in Habitual Death of the Fœtus

Prouvost (*Bull. de la Soc. d'obstét. de Paris*) gives the history of a case in which the ingestion of too much salt by the mother apparently caused death of the fœtus by generalized œdema, caused by intoxication with chlorides. The mother had two living healthy children, and then seven pregnancies in which

the child was born dead with generalized œdema. As she was very anxious to have children, the mother was put on a salt-free diet, eating meals specially prepared without salt, except at dinner, which she ate with the family. This diet was kept up for some years, when pregnancy resulted in the birth of a living healthy child, followed two years later by a second living child, during whose period of gestation the salt-free diet was observed. The author believes that the results of treatment would indicate that the patient, who was exceedingly fond of salt, was unable to eliminate enough salt for two organisms, and that while her excessive salt eating did her no harm, the fœtus retained an abnormal amount of it, which caused œdema and death.—*Am. Jour. of Obst.*

Scopolamin and Morphine in Narcosis and in Childbirth

In a report to the Council on Pharmacy and Chemistry of the American Medical Association, R. A. Hatcher (*Jour. Amer. Med. Assn.*) states that the use of scopolamin and morphine alone, and unsupported by chloroform, ether, or other anesthetic, is wholly unsuited for general anesthesia. The use of scopolamin and morphine preliminary to that of chloroform or ether has certain advantages, but it renders the problem of anesthesia more complicated, requiring extreme care, judgment, and discretion. There are numerous contraindications to the use of scopolamin and morphine, both in surgery and in childbirth. It seems probable that scopolamin and morphine may have a sphere of usefulness in childbirth as well as in surgery, but there are many details which require perfecting before they can become generally useful even in institutions. Scopolamin and morphine are wholly unsuited, in the present state of our knowledge, for use in general obstetric practice. The pharmacology of scopolamin and morphine, and of the interactions of the two, are of prime importance in the study of their uses in surgery and obstetrics. There is no possible excuse for the employment of ready-made mixtures (pills or solutions) of scopolamin and morphine, since each substance must only be used with reference to its individual actions, bearing in mind that these actions may be greatly augmented or modified by the other alkaloid. The danger of the child must be kept constantly in mind, even when the utmost care has been exercised in the selection of cases suitable for the use of scopolamin and morphine in childbirth, and when small doses are ineffective in inducing the "twilight sleep," large doses should not be used.—*Am. Jour. of Obst.*

Treatment of Pyelitis of Pregnancy

P. M. Pilcher (in an article published in *Surg., Gyn., Obst.*) says that during the course of cystoscopic examinations he has often observed that when the patient was in the recumbent position the droppings from the ureteral catheter came very slowly, but as soon as the patient was raised up, and especially if she assumed the sitting posture, the droppings increased fifteen to twenty times the number that were previously noted. His conclusion was that there was more to be gained from favoring drainage of the renal pelvis by a position in which the kidney was on a higher level than the bladder than there was from any fancied relief of pressure on the ureters, such as some attempt to obtain by putting the patient in the knee-chest position. In a given case it is perfectly safe, should the symptoms not be too severe, to wait for eight or ten days without attempting to catheterize the ureters; if at the end of this time there be a persistent temperature with pain and pyuria, or even without pain, it is indicated to pass a catheter to the pelvis of the affected kidney to drain it thoroughly, and then instill one dram of 25 per cent. argyrol solution. If there is a large amount of retention in the pelvis of the kidney, with considerable pus present, it is indicated to leave the ureteral catheter in place, after washing the pelvis of the kidney, for four or five hours or even longer, repeatedly washing the pelvis of the kidney with some antiseptic lotion.—*Am. Jour. of Obst.*

Basedow's Disease and Pregnancy

Bonnaire has observed two cases of pregnancy complicated with exophthalmic goitre, one in a tertio para, the other in a primipara; the women were delivered at term; the one had no sequelæ, while in the other dilatation of the right heart, exophthalmus, and enlarged thyroid persisted. It is a rare occurrence, only three cases were found in 45,000 women.—*N. Y. Med. Jour.*

A foreign body lodged in a bronchus may present a symptom-complex identical with pulmonary tuberculosis in a child—the history of aspiration of the foreign body may be wanting.—*American Journal of Surgery.*

Editorials.

TYPHOID FEVER

It may be that we attach too much importance, relatively speaking, to tainted water as a cause of typhoid fever. It is, of course, true that we consider impure milk a frequent cause.

In a somewhat serious epidemic, which occurred in the spring and early summer of this year in Budapest, Hungary, on careful examination it was proved conclusively that the epidemic was not due to the condition of the water. In a certain proportion of cases the disease was caused by contaminated milk, imported into the city from certain outlying districts. In a certain proportion of cases the disease was caused by the consumption of contaminated fruit, butter and soft cheese. Investigation showed a somewhat remarkable, as well as very dangerous, condition in a part of the food supply. Out of 200 samples of food taken from as many retail dealers, 60 were found to be unfit for consumption. Perhaps it is hardly realized in our own country that a large portion of the beautiful fruit placed on our tables for ordinary consumption has passed through the hands of individuals who, to express the matter very mildly, are not scrupulously clean.

THE VAGARIES OF FIBROMYMATOUS TUMORS

In response to a special invitation, Dr. James F. W. Ross, of Toronto, read a paper on the "Vagaries of Fibromyomatous Tumors" before the Brant County Medical Association in March last.

Dr. J. A. Marquis wrote to one of our Editors, stating that "It would be gratifying to the members of our Society to have it printed in the CANADIAN PRACTITIONER AND REVIEW." He also sent the paper by the same mail.

This paper was published in our August number; but, through a very curious error, Dr. Marquis was named as the writer.

The paper is very interesting for many reasons. Dr. Ross has had rare opportunities for observing the evolution which has taken place during the last thirty years in connection with the treatment of uterine fibroids. We should perhaps go a little further, and state that no man in the world has done more in the way of improving the old methods of operation which were in vogue twenty-five years ago. The old division of such tumors into sub-peritoneal, intramural and sub-mucous tumors is accepted. In addition, however, special reference is made to other varieties, such, for instance, as those growing in the neighborhood of the cul de sac of Douglas, either in front or behind the rectum.

The author refers to the following changes which are apt to take place in such tumors: Congestion, oedema, cystic degeneration, necrosis, calcareous change and malignant disease, and discusses the results of such changes and the treatment advisable.

In speaking of the modern operation, he states that it is now performed with as low a mortality in skilled hands as the operation of ovariectomy. He fears, however, that, as a consequence of the great success of modern operations, the pendulum is swung rather too far to the other extreme, and that now young women are practically unsexed, and are denied the opportunities of motherhood, owing to the ruthless use of the knife on fibroid tumors as soon as they make their appearance. His remarks concerning this part of the subject are exceedingly interesting from the standpoint of both the gynecologist and the obstetrician.

FLORENCE NIGHTINGALE

In our issue for July it was our pleasure to make certain references to one of the noblest women in the British Empire, Florence Nightingale, who completed her 90th birthday in May

last. Among her fastest friends and admirers were three Sovereigns of her beloved country—Victoria, Edward VII. and George V. The whole civilized world knows and regrets that this great woman has passed away.

Although she had been an invalid for a long time, and was under the constant care of a physician, her death, which occurred August 13, was somewhat unexpected. We extract from a very interesting article which appeared in the *Montreal Gazette* the following items respecting the great work performed by Florence Nightingale:

Some years ago the surviving British officers of the Crimean war held a banquet in London. One of their number proposed they should take a vote on the question, "What name connected with that war will live longest in history?" When the ballots were counted, lo and behold! every vote was for a woman, and when the name of Florence Nightingale was announced as the unanimous selection of the grizzled veterans the banquet hall rang with approving cheers.

As the pioneer in the system of trained female nurses for war, and as the ministering angel who saved thousands of lives and eased untold sufferings, Florence Nightingale won immortality on the bloody fields of the Crimea. This is the more remarkable as she was reared in luxury, and came of a race of peculiar delicacy of taste. Her father was William Edward Shore, a banker of Sheffield. On inheriting the estate of a kinsman named Peter Nightingale, he was compelled by the terms of the will to assume the name of Nightingale.

BENEVOLENT AS A CHILD.

The family spent much time in Italy, and the second daughter was born in May, 1820, in the city of Florence, from which her name was borrowed. She was a precocious child, and early in life made great advancement in music, mathematics and languages. Happening to visit a hospital, the impressionable girl at once announced that nursing was to be her mission in life, and she dropped her other studies to learn the art of caring for the sick.

Her parents took her to Egypt, but she turned from a life of idleness and pleasure to nurse sick Arabs in an hospital. On returning to London she ignored society to work in hospitals, where she laid the foundation of a practical training that proved of inestimable benefit to mankind for all subsequent time. In 1849 she went to Pastor Fliedner's school, conducted by the Protestant Sisters of Mercy, at Kaiserworth-on-the-Rhine, not far from Dusseldorf, and took a course of instruction in their methods of relieving distress. From Germany she went to France to examine various institutions in her chosen line of work.

Soon after her return to London she had an opportunity to undertake important work. Learning that the sanitarium for governesses was languishing for want of proper support, she volunteered her services free of cost. She also raised money for its support, and put it on a good financial basis, but impaired her health.

LEAVES FOR CRIMEA.

On October 21, 1854, she sailed with a band of 38 nurses—of whom 10 were Roman Catholic Sisters of Mercy and 14 members of an Anglican sisterhood—for Scutari. "I am naturally a very shy person," she says; certainly she had a keen horror of parade, and she started with her gallant band without public notice or farewell. At Boulogne, however, it became known that this company of ladies, with their uniform dark dress, were nurses on their way to the Crimea, and the white-capped fisherwomen of the place thronged round them and carried their luggage to the railroad station, scornfully refusing to let a man so much as touch an article.

The band of heroines reached Scutari on November 5, the very day of Inkerman. The great barrack hospital there was a huge quadrangle, a quarter of a mile on each face; its corridors, rising storey above storey, had a linear extent of four miles. The hospital, when the nurses landed, held 2,300 patients; no less than two miles, that is, of sick-beds—beds foul with every kind of vileness. The mattresses were strewn two deep in the

corridors; the wards were rank with fever and cholera and the odor of undressed wounds. And to this great army of the sick and the dying the wounded from Inkerman in a few hours were added, bringing the number up to 5,000. Into what Russell calls "the hell" of this great temple of pain and foulness moved the slight and delicate form of this English lady, with her band of nurses.

A MIGHTY TRANSFORMATION.

Instantly a new intelligence, instinct with pity, aflame with energy, fertile with womanly invention, swept through the hospital. Clumsy-made devices were dismissed, almost with a gesture, into space. Dirt became a crime; fresh air and clean linen, sweet food and soft hands a piety. A great kitchen was organized which provided well-cooked food for 1,000 men. Washing was a lost art in the hospital, but this band of women created, as with a breath, a great laundry, and a strange cleanliness crept along the walls and beds of the hospital. In their warfare with disease and pain these women showed a resolution as high as the men of their race showed against the grey-coated battalions of Inkerman or in the frozen trenches before Sebastopol.

Muddle-headed male routine was swept ruthlessly aside. If the commissariat failed to supply requisites, Florence Nightingale, who had great funds at her disposal, instantly provided them herself, and the heavy-footed officials found the swift feet of these women outrunning them in every path of help and pity. Only one flash of anger is reported to have broken the serene calm which served as a mask for the steel-like and resolute will of Florence Nightingale. Some stores had arrived from England; sick men were languishing for them. But routine required that they should be "inspected" by a board before being issued, and the board, moving with heavy-footed slowness, had not completed its work when night fell. The stores were, therefore, with official phlegm, locked up, and their use denied to the sick. Between the needs of hundreds of sick men, that is, and the comforts they required was the locked door, the symbol of red tape. Florence Nightingale called a couple of orderlies,

walked to the door, and quietly ordered them to burst it open and the stores to be distributed!

It was, perhaps, in the operating-room that Florence Nightingale showed in its highest form the mastery she obtained over the spirits of her soldier patients. This fragile English lady was known to toil for twenty hours continuously amid her band of nurses and her miles of patients.

The miracle wrought by this band of nurses—this entrance of woman into the hell of British hospitals in the East—is capable of being expressed in cold statistics. They found the death-rate in the great hospital at Scrutari at 42 per cent.; they brought it down to 2 per cent.!

The Geneva Convention was held within ten years of Florence Nightingale's labors in the East, and now its red cross, gleaming on every modern battlefield since, is, in a sense, Florence Nightingale's monument.

All Europe rang with Miss Nightingale's praise at the close of the Crimean war, and all England was keenly excited to give her a triumphant reception on her return. With characteristic modesty, she evaded all demonstrations (though she could not but obey the summons to Windsor when the late Queen Victoria gave her the Cross of St. George), and, so long as health remained, she continued to devote herself to her self-imposed task of succoring the sick.

In December, 1907, it was announced that the King had been graciously pleased to confer on her the Order of Merit. She was the first woman to receive this eminent order, an order which includes only those who by signal achievement raise themselves to the very head of the class to which they belong.

LONGFELLOW'S TRIBUTE.

[It was the practice of Florence Nightingale to pay a last visit to the wards of the military hospital in the Crimea after the doctors and the other nurses had retired for the night. Bearing a light in her hand, she passed from bed to bed and from ward to ward, until she became known as "the Lady with the Lamp."] This led Longfellow to liken her to St. Filomena, whose emblems were a lamp, a palm, a lily and a spear. He wrote:

Whene'er a noble deed is wrought,
 Whene'er is spoken a noble thought,
 Our hearts, in glad surprise,
 To higher levels rise.

The tidal wave of deeper souls
 Into our inmost being rolls,
 And lifts us unawares
 Out of all meaner cares.

Honors to those whose words or deeds
 Thus help us in our daily needs,
 And by their overflow
 Raise us from what is low!

Thus thought I, as by night I read
 Of the great army of the dead,
 The trenches cold and damp—
 The starved and frozen camp—

The wounded from the battle-plain,
 In dreary hospitals of pain,
 The cheerless corridors,
 The cold and stony floors.

Lo! in that house of misery
 A lady with a lamp I see
 Pass through the glimmering gloom
 And flit from room to room.

And slow, as in a dream of bliss,
 The speechless sufferer turns to kiss
 Her shadow, as it falls
 Upon the darkening walls.

As if a door in heaven should be
 Opened and then closed suddenly,
 The vision came and went,
 The light shone and was spent.

On England's annals, through the long
 Hereafter of her speech and song,
 That light its rays shall cast
 From portals of the past.

A lady with a lamp shall stand
 In the great history of the land,
 A noble type of good,
 Heroic womanhood.

Nor even shall be wanting here
 The palm, the lily, and the spear,
 The symbols that of yore
 St. Filomena bore.

THE ONTARIO MEDICAL COUNCIL

The College of Physicians and Surgeons of Ontario is the Medical Parliament of the Province of Ontario. We think there can be no doubt that the Ontario Medical Council has accomplished much that is in the best interests of the profession and the public in the Province. As a direct consequence of the work of this very important body the standard of medical education in Ontario was for many years, and probably is now, the highest in North America. In the heat of the angry discussions that are going on now this fact should not be overlooked. It is difficult for the present generation of physicians to fully realize all that has been done in the interests of higher medical education.

Unfortunately it is now considered by many of the Council's warmest friends that its members during the past five or six years have lost sight of the high ideals and aims of its founders. If one carefully reviews the whole situation we think he may conclude that this is not, in the main, correct. There is now, however, a general consensus of opinion that serious mistakes have been made, and this fact is fully appreciated by the majority of its members. Some of the petty little money *mistakes* (to express it very mildly) cause in the minds of many friends of the Council a feeling of sadness and humiliation.

This journal has been probably the most steadfast and consistent supporter the Council has had in the Province during the last thirty-five years. Its early editors were close friends of the

organizers of the Council, and fully sympathized with them in all their efforts. Its various editors have always watched its proceedings very closely.

We think that the position of things medical in Ontario is at present very serious. The very existence of the Council is in peril. It seems strange that a large portion of its members are among the last to appreciate this fact. Perhaps, however, there is still greater danger that in the near future an amendment to the Medical Act will be passed, so radical in its nature as to deprive the Council of nearly all the powers it now possesses. In speaking thus we are not merely expressing editorial opinions; we are stating actual facts which have been known to many for two or three years.

Under existing circumstances it is surely better for the profession and the Council to face matters squarely, rather than *let things drift*. From all the information we have been able to gather during a period of some years we feel that we are in a position to state positively that the majority of the profession of Ontario urgently desire certain reforms, especially in the following directions: (1) Reduction of membership; (2) practise of economy in various ways; (3) modification of examinations.

Of course these suggestions are not new. The matters referred to have been discussed to some extent at recent meetings. May we hope that in the near future the Council will take some decided action in the direction indicated?

NOTES.

COLLEGE OF PHYSICIANS AND SURGEONS OF BRITISH COLUMBIA.

List of successful candidates in May examinations: Barrett, W. L.; Bavis, W. E.; Coghlin, W. A.; Davies, A. H.; Henderson, A.; Johnson, A. L.; Gray, E. J.; MacLean, C. G. G.; Paul, N. J.; McPherson, T.; Shaw, R. McL.; Stevenson, R. G.; Trousdale, F. H.; Scott, R. H.; Sutherland, J. A.; Robertson, Monica M. L.; Read, G. C.

Personals

Dr. E. E. King, of Toronto, has returned from his vacation at Hastings.

Professor Leathes, of the University of Toronto, has returned from England.

Dr. A. H. Rolph and Dr. F. C. Harrison, of Toronto, returned from England early in August.

Dr. G. W. Anderson, formerly of St. Michael's Hospital, Toronto, is pursuing post-graduate work in London.

Dr. G. Sterling Ryerson has returned from abroad. He spent some time at the Laboratoire Physiologique du Radium in Paris.

Dr. Edmund Boyd, of Toronto, was among those who obtained the license of the Royal College of Physicians of London in July.

Drs. Adam Wright, Allen Baines, H. A. Bruce, F. N. G. Starr, F. A. Clarkson, and A. McPhedran, Toronto, have returned from Europe.

Dr. H. J. James, a former resident physician of Muskoka Cottage Sanatorium, and late assistant superintendent Iowa State Sanatorium, has accepted the appointment as superintendent of the South Dakota State Sanatorium at Custer, S.D.

Dr. Louis Wickham, of Paris, a distinguished dermatologist, and director of the Research Laboratory of Radium, will visit Toronto this month and deliver a lecture at a special meeting of the Academy of Medicine, Toronto, on September 30th. While in the city he will be the guest of Dr. W. H. B. Aikins.

Among Toronto physicians attending the meeting of the British Medical Association in London were Drs. Adam Wright, H. A. Bruce, F. N. G. Starr, F. H. Cameron, G. S. Ryerson, F. M. Baldwin, E. Boyd, F. C. Harrison, A. H. Rolph, A. McPhedran, A. B. Macallum, H. T. Machell, Helen McMurchy and E. C. Burson.

Obituary.

JAMES K. JOHNSTONE

Dr. J. K. Johnstone, of Toronto, died August 10th, of pleuro-pneumonia, aged 61. He received M.D. from Victoria University in 1870, and practised for a time at Ingersoll. On account of ill-health he gave up practising 27 years ago, and was appointed General Government Inspector of Electric Meters, which position he held until the time of his death.

JOHN TURNER MULLIN

Dr. John Mullin, one of the oldest practitioners in Central Ontario, died at his late residence in Brampton, August 14th, aged 80. He graduated, M.D., from Victoria University in 1857. After graduating he commenced practice in the County of Peel. In addition to the practice of his profession, he took an interest in local politics, and was at one time Mayor of Brampton. He was Medical Health Officer of that town for many years, which position he held at the time of his death.

Dr. Charles Jewitt, Professor of Obstetrics and Gynecology in Long Island College Hospital, died at his home in Brooklyn, August 5th, of apoplexy, aged 76.

Book Reviews.

DISEASES OF THE SKIN. A Manual for Students and Practitioners. By Alfred Schalek, M.D., Professor of Dermatology, University of Nebraska; formerly Assistant Professor of Dermatology, Rush Medical College; Member of the American Dermatological Association; Consulting Dermatologist to the Child Saving Institute. Illustrated with 47 engravings. Lea & Febiger, Philadelphia and New York.

The second edition of this handbook has been thoroughly revised, and contains in a concise form the recent advances in the pathology and therapeutics of diseases of the skin. The X-ray and carbonic acid freezing methods of treatment are taken up as far as the scope of the work admits. It is to be regretted, however, that radium-therapy has been neglected. The matter is arranged in a readily accessible manner, and the book contains several excellent photographs from the author's own collection.

CONGENITAL DISLOCATION OF THE HIP. By J. Jackson Clarke, M.B., Lond., F.R.C.S.; Senior Surgeon to the Hampstead and Northwest London Hospital, and Surgeon to the Royal National Orthopedic Hospital. London: Balliere, Tindall & Cox. 1910.

In this small volume of less than one hundred pages, the author discusses the "bloodless," or as he prefers to call it, the "manipulative" method of Lorenz, in the treatment of congenital dislocations of the hip-joint. The technique and after-treatment are described in detail and leave nothing to be desired. There is also introduced an open operation devised by the author for cases which fail to respond to manipulative means. The book contains some good photographs and skiagraphs, and will well repay a careful study both by the general practitioner and the orthopedic surgeon.

DISEASES OF THE HEART AND AORTA. By Arthur Douglass Hirschfelder, M.D., Associate in Medicine, Johns Hopkins University. With an introductory note by Lewellys F. Barker, M.D., LL.D., Professor of Medicine, Johns Hopkins University. 329 illustrations by the author. Philadelphia and London: J. B. Lippincott Company.

In this work Dr. Hirschfelder has given to the profession on this continent a worthy successor to the books on cardiac diseases which have appeared in recent years in Germany and England. While not claiming to open up any new field as Mackenzie did, yet the author has been singularly successful in extracting the good out of all the vast amount of literature on the subject and arranging it in such a form that the reader, be he practitioner or student, can easily find the most recent work on the physiology, pathology, diagnosis and treatment of this important and interesting branch of internal medicine.

The section dealing with the treatment of failure of the heart is especially to be recommended. It is plain that the author is not a "therapeutic nihilist," but believes in the scientific use of his pharmacopœia. Histories of cases as studied by him in the wards of Johns Hopkins Hospital are freely introduced to emphasize his point. To each section is appended an extensive bibliography for those who wish to pursue their studies further afield. The plates are the author's own and not the stereotyped illustrations which one sees so commonly. The book is well bound, and altogether can be thoroughly recommended as a valuable addition to one's library.

DISEASES OF THE COLON AND THEIR SURGICAL TREATMENT.
(Founded on the Jacksonian Essay for 1909.) By P. Lockhart Mummery, F.R.C.S. (Eng.), B.A., M.B., B.C. (Cantab.); Jacksonian Prizeman and late Hunterian Professor, Royal College of Surgeons; Senior Assistant Surgeon, St. Mark's Hospital for Cancer, Fistula and other Diseases of the Rectum; and Senior Surgeon to Out-Patients, the Queen's Hospital for Children, London. Illustrated by colored and other plates and numerous figures in the text, many of which are reproduced from the author's sketches. Bristol: John Wright & Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd. 1910.

This book has its nucleus in the Jacksonian Essay of the Royal College of Surgeons, 1909, and contains abundant evidence of the thoroughness with which the author has investigated his subject. It is a fact, as Mr. Mummery says, that owing probably to modern methods of living, diseases of the colon are becoming more frequent, and therefore the modern practitioner would do well to become more familiar with this field. The chapter on "Methods of Diagnosis" is particularly good, as also is the one

on "Chronic Constipation." The closing chapters deal with the various surgical procedures directed to the colon. The book is well arranged and contains some good plates.

INTERNATIONAL CLINICS. A quarterly of illustrated clinical lectures and especially prepared original articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, Gynecology, Orthopadies, Pathology, Dermatology, Ophthalmology, Otology, Rhinology, Laryngology, Hygiene, and other topics of interest to students and practitioners. By leading members of the medical profession throughout the world. Edited by Henry W. Cattell, A.M., M.D., Philadelphia, U.S.A., with the collaboration of Wm. Osler, M.D., Oxford; John H. Musser, M.D., Philadelphia; A. McPhedran, Toronto; Frank Billings, Chicago; Chas. H. Mayo, Rochester; Thos. H. Rotch, Boston; John G. Clark, Philadelphia; James J. Walsh, New York; J. W. Ballantyne, Edinburgh; John Harold, London, and Richard Krtez, Vienna. With regular correspondents in Montreal, London, Paris, Berlin, Vienna, Leipsic, Brussels and Carlsbad. Volume II. Twentieth Series. 1910. Philadelphia and London: J. B. Lippincott Company, 1910.

The second volume of International Clinics for 1910 contains a well-arranged collection of papers, any one of which will be of profit and interest to the practitioner who wishes to while away a half-hour. To mention a few, Professor Tyson, of the University of Pennsylvania, has an interesting paper on "The Treatment of Cardiovascular Disease," while his colleague, Dr. Allgu, contributes one on "Dropsy and Its Treatment." Of a lighter vein is the article by Dr. Austin, of Philadelphia, "The Book-Plates of Physicians," which will be of great interest to all who take a delight in the intellectual side of their vocation. The article is well illustrated, and will no doubt stimulate many of its readers to follow Professor Osler's advice and ride a hobby.

NEW EDITION OF GRAY'S ANATOMY.

A man may be a great anatomist or a great teacher, but when one man combines these two faculties his single mind, by its complete co-operation, can produce a teaching book in which matter and method blend into a result obtainable in no other way. This double-sided genius was possessed by Henry Gray, and until nature grants to one individual like endowments, his work will stand. Owing to the incessant activity in all branches of medicine, books in any of its departments are almost invari-

ably short-lived. The single exception to this rule is Gray's Anatomy. In the fifty years since the author's early death it has grown beyond even the leadership in its own subject, and has become the foremost medical book in all English literature. As English is now the world-language, this is equivalent to primacy in the medical literature of the world.

Eighteen editions have been demanded in the course of its half century, and they have enlisted many of the ablest anatomists of this period. The principles on which Gray built his book have been followed, and it is not too much to say that during two generations it has guided the teaching of its subject in America as well as England. An army of students has conned its pages, and has carried it away into practice, for it is equally valuable to the physician and surgeon for reference on underlying points. In fact, the editor has made the applications of anatomy, in medicine as well as surgery, a special feature.

Of all the editions, this new one represents the most thorough revision. Every line has been scanned for possible improvement. Anything in the nature of a possible obscurity has been clarified, passages have been rewritten, and new developments have been incorporated. Rearrangement has eliminated many duplications, and this, together with condensation in style, has rendered it possible to present more information in one hundred pages less space, to the reader's obvious advantage. Professor Spitzka, the editor, is one of the foremost anatomists in the world, and he joins to this the apt qualification of being himself an artist as well, so that the drawings from his own hand present his knowledge directly to the mind of the reader. Another of Gray's fundamental improvements, in which his book has always been unique, was the engraving of the names of the parts directly on them, so that the student learned at once not only their nomenclature, but also their position, extent and relations, the four cardinal points. The advantage of this graphic method over the elsewhere customary lines and reference letters is obvious. Gray's book was also the first to contain illustrations in colors. In this new edition, besides all the improvements in the text, the splendid series of characteristic illustrations has been equally revised, many cuts being replaced and more added, and the use of colors is more lavish than ever. No student in any profession, or in any branch of medicine, has offered to him any instrument of instruction comparable to Gray's Anatomy. It suffices to say that the new edition will excel any of its predecessors.

Selections.

How and When Shall Drugs be Administered?

This is a question of vital importance, as even if the diagnosis is correct, the indication for a drug positive, and the selection of the drug needed accurate, all is of no avail if the drug is administered in an insoluble preparation, at a wrong time to accomplish the object aimed at, or in a frequency that is either useless on the one hand or dangerous on the other. To be more explicit, it lacks physiologic and therapeutic sense to administer a drug, that is quickly absorbed and quickly eliminated, when a continuous action is desired, so infrequently that there is only momentary, intermittent effect. On the other hand, it is futile to administer a drug for immediate need that requires hours to act. It is certainly physiologically wrong to administer a drug frequently that requires hours, or even a day or two to be excreted.

The greatest number of mistakes in medication are made in the treatment of inflammations and diseases of the stomach, and in disturbances of the digestion. If simple gastritis is diagnosed, and it is decided to treat it with bismuth, how futile to expect that a few grains given immediately before meals (or, we are sorry to say, often immediately after meals) could do any good in ameliorating the irritation of the stomach mucous membrane. For bismuth to aid in healing this membrane, it must be spread well over it when the stomach is empty. Also, it is well to wash off the mucus which must of necessity form on any inflamed mucous membrane. Bismuth for this purpose should be given an hour before a meal, in a dose of 2.0 or 3.0 grams (30 or 45 grains), taken with a not too large amount of water, and such administration should be preceded a half hour before by a large draught of hot water, with or without a little salt, and perhaps a small amount of bicarbonate of sodium to wash off the mucus and prepare the membrane for the bismuth treatment. Such treatment once a day, combined with a diet regulated to cause the least irritation and the proper treatment of coincident constipation, will readily heal simple gastritis. This same treatment is a valuable aid in healing an ulcer of the stomach.

If it is deemed advisable to administer nitrate of silver, how useless, in the first place, to order it in such a form that it will

be oxidized before it is taken by the patient, and how useless to give it after a meal. Also, what lack of good sense is displayed when a nitrate of silver treatment is given two or three times a day. How many would touch a canker sore, or other surface inflammation, with nitrate of silver three times a day, or twice a day, or even once a day? A nitrate of silver treatment for ulcer of the stomach or duodenum may be tried once a day, or once in two days, for a few days, but never for any length of time, and then it is best to have the dose of nitrate of silver combined with some inert earth, in capsule, and the capsule uncapped at the moment of swallowing and taken into the empty stomach with a suitable amount of hot water. This will insure, as near as it is possible, an application of the nitrate of silver to the ulcer.

The value of digestants as generally administered is open to much question. A small amount of pepsin, given after an ordinary meal, is probably of but little value. The value of dilute hydrochloric acid after meals, when the stomach needs it, is proved, and frequently when pepsin is administered it is combined with hydrochloric acid, and it is likely that the hydrochloric acid does the work. A combination of pepsin with bicarbonate of sodium, as often seen, is of course absurd. The coincident administration of pancreatin and pepsin seems unworthy of serious consideration. The pancreatin will not act in acid media, and its activity will doubtless be entirely destroyed before it reaches the intestine. Sometimes it may be advisable to administer bicarbonate of sodium before meals. At this time it may do two things. It may cause the contents of the stomach to be alkaline or neutral longer than without it, thus aiding the starch digestion due to the saliva. If, however, it is in the stomach many minutes before the meal, it would probably quickly stimulate an outpouring of hydrochloric acid to neutralize it. After meals it would doubtless prolong the starch digestion, and temporarily, at least, inhibit the protein digestion. For heartburn or pyrosis occurring several hours after a meal, the bicarbonate of sodium is certainly valuable symptomatic treatment to counteract the hyperacidity. Such acidity, however, is often due to lactic acid and not to hydrochloric acid. Such treatment is purely symptomatic, and the repeated administration of soda is inadvisable, and the cause of the condition should be removed, if possible.

A large number of drugs, especially alkaloids, even bitters, and alcoholic preparations in any amount, will inhibit the digestion more or less. In ordinary doses, however, the inhibition is

probably but slight, and any drug or preparation that is irritant to the stomach should certainly be administered either directly, or within an hour, after meals. Even bland, non-irritating tablets, pills, and capsules should generally be administered after a meal, or at least with a large draught of water, and the tablets should be crushed before swallowing. Potassium chlorate tablets should not be dissolved in the mouth, as the concentrated saliva containing this solution, when swallowed, is irritant to the stomach and may cause inflammation and even ulceration. Certainly such tablets should never be swallowed into the stomach, and there is no logical or rational reason for ever administering potassium chlorate internally. Bromid tablets, salicylic acid or its salts in tablets, tablets containing ammonium chlorid, and in fact most tablets may cause irritation of the part of the mucous membrane on which they dissolve, if swallowed into the empty stomach, and most of the above-named tablets should be pre-dissolved, or certainly crushed before taking into the stomach at any time. Quinine pills or tablets should never be taken on an empty stomach. If in any dose other than a small tonic one, quinine will slow peptic digestion. Consequently, if large doses are administered, it is well to give them between meals, swallowed with a few ounces, more or less, of milk or other simple, easily digestible food. If a patient does not sleep well, or does not get to sleep readily at night, the possibility of a tonic capsule or pill of quinine, or quinine and strychnine, or strychnine, given after the evening meal being the cause of it should be considered, and the evening dose omitted. Also, many a patient is given hypnotics for insomnia, when the omission of the evening tea or coffee will allow normal sleep. It is physiologically wrong to give hypnotic to a patient who is ill when he is being hyperstimulated by strychnine throughout the afternoon and evening.

For medication of the bowels with bismuth, large doses, or perhaps better, frequent doses, are always needed, as doses unless very large, given at long distances apart, are likely to pass along with the food and not mediate the bowel mucous membrane at all. It is useless to expect that bismuth administered by the mouth will heal or mediate the mucous membrane of the colon.

If morphine must be administered and the patient is taking nutriment, if possible, it should not be given within one or two hours after a meal, as the digestion will certainly be inhibited.

When cathartics are necessary, it is generally well understood which act rapidly and which slowly, which are to be given

at bedtime or, better even, often at suppertime for action the next morning, and which given before breakfast for immediate action. However, many combinations are made which combine quickly acting cathartics with slowly acting cathartics. Such combinations are certainly a mistake. Aloin, cascara, podophyllin, euonymus, sulphur, calomel and rhubarb all generally act slowly, taking anywhere from 6 to 12 hours. The salines and the drastic cathartics generally act in from 2 to 4 hours. Senna may act in from 4 to 6 hours. Of course the size of the dose has a great deal to do with the rapidity of action, but the above is approximate.

It has been supposed for some time that the experiments were conclusive that saline purgatives acted by the fact that they were very slowly absorbed and caused an exudate of water into the intestine so that the fluid in the intestines and the fluid in the blood vessels would become isotonic, and that this mechanical fact, *viz.*, the water with increased peristalsis, was the cause of the large watery stools from salines. Clinically, it has also been noted that salines act better when the patient is up and about than when he is in bed and at rest. This has again seemed to prove that gravity had a great deal to do with the rapidity of the saline catharsis. Lately, however, Dr. Arthur F. Hertz, Assistant Physician at Guy's Hospital, London (*Guy's Hospital Reports*, Vol. LXIII) has shown, by administering bismuth preparations at various periods of digestion and taking X-ray pictures of the abdomen at different periods of digestion, that salines are really absorbed from the stomach and upper bowel and probably re-excreted into the lower intestine. Hertz, in co-operation with F. Cook and E. G. Schlesinger, has shown that when food is taken into the stomach it reaches the cæcum in about four hours. A saline aperient, on the other hand, may cause an action of the bowels in some instances in even half an hour, and often within two hours. Insoluble bismuth being administered with a meal will show, by radiographs, the exact length of time in which food passes down through the different parts of the intestine. A seidlitz powder or its equivalent, taken at the time of the bismuth, or with the bismuth and food, and then radiographs taken, shows that the movement of the bowels comes long before the bismuth and food reach the cæcum and colon. The excess of water excreted, therefore, with such movements cannot come from the small intestine, as otherwise it would wash the meal and the bismuth down with it, but really must be excreted into the lower gut. Saline purgatives also seem to cause no increased acceleration of the passage of

the food from the stomach to the cæcum. These investigations seem to show clinically that when it is desired to empty the colon and not act on the small intestine, salines are indicated, but when it is desired to cause stimulation for excretion or for increased peristalsis or for drainage of the upper intestine, other cathartics than salines are indicated.

Dr. William Brady, of Elmira, N.Y., (*New York Medical Journal*, Jan. 29, 1910) writes a most instructive article on the administration of drugs. He emphasizes the necessity of knowing the length of time before a drug is absorbed and about the length of time in which it will be eliminated.

Probably in no branch of medicinal therapeutics are more mistakes made than in the treatment of cardiac and circulatory weakness. Brady shows how really futile it is to expect active aid from digitalis in any acute heart weakness, and yet digitalin is constantly used hypodermatically for this purpose. Much of the digitalin on the market is unreliable, and while it is less irritant when used hypodermatically than the liquid preparations of digitalis, it has not been proved that it is any more effectual as a cardiac tonic than a sufficient dose of a liquid preparation of the whole drug. If the cardiac drugs are separated into cardiac stimulants and cardiac tonics (the stimulants acting quickly, but such action not lasting any length of time; the tonics acting slowly, but projecting their activities for a considerable length of time) one will not make mistakes in their use. The cardiac stimulants are ammonia, camphor, strychnine, atropine, suprarenal and pituitary preparations properly used, and in some instances where only a quickly acting and not lasting stimulation is required, alcohol. The cardiac and circulatory tonics are digitalis, strophanthus, caffeine, and ergot used hypodermatically. Caffeine and strychnine are really stimulo-tonics, both acting rather quickly and having their effects last a considerable length of time. In certain conditions when the heart is failing and the blood-pressure high, nitroglycerine and nitrites will relieve the heart and improve the whole character of the circulation. While nitrites act quickly and such action is theoretically and laboratorily quickly over, if given three or four times a day they will positively project, in most instances, a lowering of the blood pressure over the whole twenty-four hours.

Brady repudiates the so-called Da Costa (nitroglycerine compound) tablet containing digitalis, strophanthus, belladonna, and nitroglycerin, as combining drugs which act quickly with

those which act slowly. His criticism is just. At the same time, the nitroglycerine of the second and third dose will doubtless prevent some of the vasomotor contraction of the first dose of digitalis. Consequently, the combined treatment, whether given in one tablet or in separate preparation, is often not bad therapy. Theoretically and practically a little more careful discrimination of the needs of each patient will develop a method of drug administration that will be satisfactory and yet will not require such combination, viz., if the patient needs nitroglycerine, he probably does not need digitalis. On the other hand, if he needs digitalis, and it is inadvisable to contract the blood vessels, a small dose of digitalis may give satisfactory action, and nitroglycerine will not be needed.

Brady emphasizes the well-known but often disregarded fact that oils inhibit digestion by diminishing the secretion of hydrochloric acid. Consequently, if it is advisable to give a patient olive oil or cod-liver oil (and, as urged by Brady, pure, clean cod-liver oil acts just as well as and often better than any emulsion), theoretically it should be given two hours after a meal, at about the time when the stomach will completely evacuate its contents into the duodenum. This is theory, and perhaps physiologically correct. Practically, it is very disagreeable for a patient to take oil two hours after meals, even if he were so daily situated as to be able to do so. Also, the contents of the stomach do not all pour, at one stated time, into the duodenum, but more or less frequently during the process of gastric digestion certain amounts are passed into the duodenum, and the oil might be passed into the intestine long before the gastric digestion was completed.

Brady states that hexamethylenamina is eliminated into the cerebrospinal fluid in one-half hour after its administration, and this, he states, in sufficient amounts to inhibit staphylococcus growth. So far as we know, hexamethylenamina is harmless when administered in any ordinary amounts for most any length of time; consequently, the drug seems indicated whenever meningitis is present or is likely to develop. This drug is also eliminated and acts satisfactorily in inflammations of the gall-bladder and in inflammations of the urinary tract, especially of the pelvis of the kidney. It would seem advisable to administer it in typhoid fever to prevent localizations of the typhoid bacillus in parts of the body other than the intestine.

As Brady emphasizes, it should not be forgotten that the iodids are absorbed rapidly and are eliminated rapidly, unless

they have been given for a long time, when it may take several days for the excess of iodid to be completely eliminated. Bromids, on the other hand, are absorbed rather slowly, and are eliminated very slowly, and if taken for a long time, may not be completely eliminated for weeks.

Phenolphthalein is very slowly absorbed and acts very slowly, and is best given as a tablet, which should be thoroughly masticated before swallowing. Sometimes this drug, even in small doses, causes a great deal of irritation of the bowels.—*Jour. A. M. Assn.*

Dietetic Restrictions in Cardiac Affections

Current views as to what constitute the most suitable diet for patients suffering from heart disease have undergone considerable modification of late. They are allowed much more latitude provided they conform to certain restrictions and modify their habits of life. While, on the one hand, they must avoid overloading the stomach, since this throws additional burden on the damaged organ, they may be allowed to eat according to their requirements.

Apart from the fact that laborious digestion is a frequent cause of palpitation and shortness of breath, an excess of food is to be deprecated, if only because, in persons whose physical activity is necessarily reduced, it tends to cause obesity, which further aggravates the strain on the heart and paves the way to fatty degeneration.

It follows that patients with any form of cardiopathy require a diet which, while nutritious, is of comparatively small bulk, and admits of easy digestion. They must consequently avoid bulky green vegetables, soups and much fluid with meals, since these distend the stomach and so mechanically impede the heart's action. For similar reasons, they should avoid preserved or twice-cooked meat, high game, pork, meat pies, sausages, and the like. Farinaceous articles, too, must only be taken in moderation on account of their fattening tendency. Their diet, in short, should consist mainly of red meats, either roast or grilled, poultry and fish, especially trout, young salmon, soles and turbot, and the tenderer kinds of fresh water fish. To these may be added cooked green vegetables, green peas, eggs, fresh cheese,

Surgery is meddling therapy in the vast majority of cases of acute hæmorrhage from gastric ulcer.—*Amer. Jour. of Surg.*

and fruit. All farinaceous articles should be taken in the form of *purées* duly passed through the colander.

In presence of threatening asystole, a strict milk diet may be necessary for a few days, and should there be excessive acidity, the milk may be diluted with Vichy or Vals water, or a tablespoonful of lime water may be added to each pint thereof.

In the absence of albuminuria, cardiac patients do best on a spare mixed diet. Potain has pointed out that milk diet is of no benefit in cardiac neuroses, in the palpitation of hysterical subjects in Graves' disease, and, speaking generally, in all states which come under the designation of pseudo-cardiopathy.

Constipation has to be carefully guarded against and remedied when present, since it entails flatulence, which is a potent source of cardiac distress.

Alcoholic beverages must only be taken in extreme moderation, and if wine be taken it must be freely diluted. Alcohol makes for fatty degeneration of the heart, and exerts a disturbing influence on cardiac innervation. Tobacco, again, is a powerful heart poison, and its action is more marked in cardiac subjects than in normal healthy persons. It follows that the former should relinquish the tobacco habit, and should avoid remaining in rooms the atmosphere of which is laden with tobacco smoke.

Flatulent dyspepsia and heart disease react on each other—in fact, they create a vicious circle. We must, therefore, devote attention to preventing gastro-intestinal fermentation, and this is best accomplished by getting the patient to take lactic ferment, preferably in the form of Lactobacilline tablets, with his meals, two or three twice a day along with sweetmeats of some kind—sugar, jam, dates, etc. This treatment is specially valuable in cases of functional heart trouble, since these are markedly exaggerated by concomitant digestive disturbances.—*Journal of Practical Dietetics*.

Dupuytren's Contraction

While we are dealing with the hand, I wish to show you this man as an example of the treatment of Dupuytren's contraction of the palmar fascia. As people advance in years, one of the sclerotic changes which appears is Dupuytren's contraction. I have lectured on this subject here previously, and I will now merely say it is a fibroid thickening of the palmar fascia, which gradually undergoes cicatrisation, and draws the fingers into

the palm. Here is an example of a man who had both hands affected. He is a painter, and was unable to do his work satisfactorily. I have made many attempts to cure Dupuytren's contraction, and at last I think I have found a method which is generally successful. The method formerly in use was multiple subcutaneous puncture and division of the bands. Experience showed that the condition often came back in a year or two, and the patients were then as badly off as before. So in all cases, except those who are broken down in health, I make an incision in the palm of the hand and dissect out all the affected fascia. You can easily tell which is affected and which is not, for the contracted part is always dead white in color, whereas the non-affected is of a pearly lustre. Having dissected out the diseased tissue, fibrolysin is rubbed in very freely, and a few drops are injected with a syringe around the margins of the wound. Then the wound is sutured, and healing follows in about eight days. This man was incapable of extending his fingers. The palm is now fairly supple, and his movements are free. So far I have not seen a relapse in any of the cases so treated, and I have been carrying out this method for a couple of years. In patients who are younger than this man, and not exposed to lead, the results are very satisfactory. A little thickening returned in this case after the operation, and so, four days ago, I injected 5 m. of fibrolysin into the palm of the hand just to the side of the scar, and the thickening is already beginning to disappear. So that a combination of the open operation and the judicious use of fibrolysin will enable us to render these hands useful, and effect a permanent cure.—A. H. TRUBY, in *Medical Press and Circular*.

Non-Specific Urethritis

Joseph Hume, New Orleans (*Journal A. M. A.*, May 21), says that there are two types at least of non-specific urethritis: 1, acute in character, following sexual congress after a regular incubation period, running a well-marked clinical course, and favorably influenced and easily cured by proper treatment; the other chronic from the beginning, sometimes following exposure like the other, but with an irregular incubation period, with urethral lesions which from their pathological picture must have taken months or years to develop, and showing no tendency toward self-limitation, being resistant to treatment and sometimes incurable. The former class he calls cohabitative, sexual or in-

fective urethritis; the latter autoinfective or autogenous, both forms being non-specific. The former class is comparatively infrequent, and has a tendency to a slightly longer incubation period than true gonorrhœa, the infection being milder in character. A case is reported. In 11 cases the infecting organism was studied. In five cases Gram-positive cocci alone were noted; in five cases bacilli alone were found, 4 Gram-positive, 1 Gram-negative, the latter being the colon bacillus. The other has not been recognized by name. In one case the staphylococcus was also present. The other form is probably not often observed until some suspicion arises, and then it is found to be not new at all. It is frequent in medical students, as has been observed by Waelsch. Hume seems to consider a long foreskin as an etiologic factor in these conditions, as rendering the urethra less resistant to infective organisms. The prognosis of this autoinfective type is not so favorable. There is often a well-developed localized fibrosis in the urethra and the prostate is often infected. It is best treated by circumcision, the prostatic massage followed by intravesical irrigation and hot rectal douches if the prostate is involved. In many of the cases the patients are made neurasthenic without recognizing the cause. The pre-existence of such conditions naturally influences the course of true gonorrhœal infections and may account for the perniciousness of some first cases. Cases of this kind are also reported, and tabulated statements showing the contrasted clinical pictures of the two forms are given. Many of them are not of a sexual origin and will explain the origin of many cases of obscure prostatic or vesicular infection. The practice of circumcision should be encouraged as a means of preventing autogenous urethral non-specific infection.

Intravenous Anesthesia with Ether or Chloroform

Although it has been demonstrated, apparently to the satisfaction of the profession, that the major dangers incident to the use of ether are dependent upon lack of skill in the giving of the agent rather than upon toxic properties inherent in it, the search for new methods is not likely to cease, since, even when conducted with the utmost care, inhalation anesthesia leaves much to be desired. Under some certain circumstances it is distinctly contraindicated, under others it is difficult to maintain. The *scopolamine-morphine* after a brief trial has been properly relegated for use in exceptional cases because of its greater mortality. The same may be said of the various.

methods of accomplishing anesthesia by spinal injections. One of the most radical procedures recently proposed is that of intravenous injections of ether and chloroform.

Burkhardt, after a series of experiments on animals, noted that a safe anesthesia was practicable. At least that must have been his conviction, since he did not hesitate to apply the method to the human, using first chloroform, and being deterred from further line of experimentation by hemoglobinuria. Ether was apparently much safer. He employed a 5 per cent. solution in physiological salt solution. The warm mixture was injected into the median basilic vein with some rapidity, the flow being stopped when the patient became unconscious and relaxed, and resumed as soon as there were signs of a return of consciousness and reflexes. Over thirty patients were thus treated without accident, in some instances the anesthesia being continued for over an hour. In nearly all instances the patient received a preliminary injection of scopolamine and morphine. The quantity of the solution required varied greatly, and was given at between one-third of a liter and two and a half liters. It is particularly noticed that there were no changes in the urine after this method of anesthesia, no headache, no irritation of the lungs or circulatory perturbations. It was noted that when the strength of the solution was increased to 7 per cent. hemoglobinuria resulted. The author modestly remarks that the time consumed in freeing the median basilic vein and securing therein a cannula is likely to bar this method from general use, but that it is likely to be highly serviceable under some circumstances, and it is the safest and pleasantest of all methods of anesthesia. He particularly commends it when there are respiratory or circulatory difficulties which would add to the danger of inhalation anesthesia.—*Therapeutic Gazette*.

The Treatment of Typhoid Carrier Cases

In the *Journal of the Royal Army Medical Corps*, Cummins writes on this topic and summarizes the results of treatment as follows:

1. Lactic acid bacilli have failed to diminish the excretion of bacilli in fecal cases.

2. Attempts to cure typhoid bacilluria by acidifying the urine have not been successful.

3. The administration of antiseptics invariably brought about a decided diminution in the number of bacilli excreted.

both by fecal and urinary carriers. This effect is much more marked when the maximum "contact" of antiseptic with bacilli is brought about by combining the treatment with low diet and aperients in the case of "fecal" and diuretics in the case of "urinary" carriers.

4. The use of X-rays, especially in cases with gall-bladder symptoms, seems to have a definite beneficial result. The author speaks with diffidence, as his experience is limited to one such case; and it must be remembered that its history shows a long intermission in the passage of typhoid bacilli, a few months before the X-ray treatment was tried.

But the disappearance of bacilli from the stools on two occasions following the use of X-rays, and freedom from recurrence for considerable periods after the cessation of the treatment suggest that the case was really benefited by the X-rays; while the charts of the other two cases also point to improvement under this treatment.

5. Lastly, it seems possible that treatment by a vaccine, though unsuccessful when tried alone in the cases now under discussion, would have a better chance if combined, in the case of urinary carriers with diuretics, and in gall-bladder cases with X-ray treatment.

As has often been pointed out by Sir Almroth Wright, a vaccine is more likely to be efficient when the local conditions are so altered as to permit of the fullest possible contact between the bacteriotropic substances in the blood and the bacteria involved.—*Therapeutic Gazette*.

Club-foot in Infancy, Treatment of

It has been recognized that the crux of the problem of dealing with congenital club-foot lies in securing a satisfactory forcible overcorrection of the deformity. The technic of retention in this overcorrected position by means of plaster of Paris has also been perfected. The author lays stress on the fact, however, that mere retention in this position will not bring about a permanent cure. The most potent factor at our command for the cure of club-foot is the influence of weight-bearing upon the foot held in an overcorrected position. Since this factor is not available until the tenth to the twelfth month, it is unnecessary, the author contends, to maintain overcorrection by means of plaster of Paris until a period shortly before this. On account of the greater size of the foot, both the overcorrection and the retention

dressings are more satisfactorily made at this time than in the first few months of life. Because of the greater age of the child, the correction as above suggested is much less objectionable to the parents. The period elapsing until the time for forcible correction has arrived is not to be spent inactively, however, but is to be utilized for increasing the flexibility of the foot by manipulations, accomplishing a partial correction of the varus by means of a splint. The daily removal of the splint gives opportunity both for massage of the limb and active muscular effort on the part of the child. It is believed that by this means the residual atrophy of the leg muscles is held to a minimum. The whole period of treatment under this plan is not longer than under the older plan. One anesthesia will, as a rule, suffice, whereas, under the older plan, several such administrations were usually required.

Tenotomy of the tendo Achillis for the correction of equinus should on no account be made until the other elements of the deformity have been disposed of. The equinus can be easily corrected at any time by tenotomy and proper after-treatment. The constant pull of the tendon upon the heel favors the development of the posterior process of the os calcis; early tenotomy does the reverse. It is also of great advantage as a counter-pull in making the overcorrection of the varus deformity. The equinus element may therefore be ignored in the infantile club-foot until the time for the final correction under anesthesia.—A. H. Freiberg, in *Ohio State Medical Journal*.

Auto-Serumtherapy in Pleural Effusion

Dodal (*Wien. med. Woch.*) has treated 17 cases in a Vienna military hospital by the method introduced in 1907 by Gilbert of Geneva and Fede of Naples. One c.cm. of a pleural effusion is withdrawn by a hypodermic syringe and immediately injected under the skin of the back. This procedure is repeated as often as required, though a single injection may suffice. It is usually followed by diuresis and rapid absorption of the fluid, whether serous or hæmorrhagic. The method has been tried extensively in Senator's wards in Berlin. The cases treated included examples of sero-fibrinous, hæmorrhagic, and incipient purulent pleural effusions, ascites, hydrothorax, ascites with hydrothorax, and hydrothorax with both ascites and pericarditis. The conclusions arrived at were that the treatment was usually useless in ascites and hydrothorax, only two cases of which improved. But

in all but one of 15 cases of serofibrinous and hæmorrhagic pleural effusion the results were excellent. Not only was absorption accelerated, but the tendency to the formation of adhesions was diminished. Pyrexia was found not to be a contraindication. Zimmermann, of Dorpat, likewise obtained satisfactory results. Dodal employed the following technique: After thorough disinfection of the patient's skin and the practitioner's hands, the boiled needle of an exploring syringe is inserted in an intercostal space. After 4 c.cm. or 5 c.cm. of fluid have been withdrawn the needle is moved until the point is in the subcutaneous cellular tissue. It is then pushed forwards under the skin, and 2 c.cm. of the pleural fluid are injected. The needle is then withdrawn and the puncture closed with gauze and strapping. The remaining fluid in the syringe is used for microscopical investigation. As the majority of the Vienna cases were tuberculous, a complete cure was obtained in only four, but the writer regards the results as entirely satisfactory and occasionally excellent. No unpleasant complications were observed, with the exception of an acute eruption in one case after a second injection was given. This was possibly due to anaphylaxis. Auto-serotherapy is more valuable in acute than in chronic pleurisy. In tuberculous cases a rise of temperature follows the injections. The mode of action is uncertain, but the injection of pleural fluid probably stimulates the formation of specific antibodies.—*British Medical Journal*.

Alcohol, Action of, Upon the Human System

In health alcohol in moderation may be useful, but its continuous use is to be avoided, and it must be borne in mind that a certain idiosyncrasy may exist; in diseased conditions alcohol is, in many cases, of great value as a therapeutic agent of a temporary nature, always provided that it is used with discretion and its effects watched. Taken in excess or in smaller quantities over long periods of time, alcohol is extremely deleterious to the human system, so much so in fact that in many instances it has induced physicians to discontinue its use as a drug on the grounds that its disadvantages outweigh its advantages.—H. A. Haig, in *Practitioner*.

Beck's Bismuth-Vaseline Paste Injections in Chronic Tuberculous Sinuses

Shober (*Ann. of Surg.*, May, 1910) reports five cases treated by him by this method, introduced by Beck, of Chicago, in 1908.

In order to diagnose the extent of chronic tuberculous sinuses Beck injected a number of cases with a paste composed of 1 part bismuth and 2 parts vaseline, and then had radiographs made. The first case so treated led to the important discovery that the bismuth paste injection has a marked curative effect, apart from its diagnostic value. In his paper read before the International Congress on Tuberculosis, Beck reported 192 cases treated by this method; of these, 64 per cent. were healed, 28.5 per cent. improved, 6 per cent. unchanged, while 1.5 per cent. died during the treatment or after. The method was employed in cases of osteomyelitis of long bones with sinuses, empyema, and tuberculous lung abscesses, suppurative sinuses of the head, sinuses following tuberculous glands, rectal fistulae, and tuberculosis of the kidney with sinuses. Shober employed this method in June, 1908, in the case of a woman of 35 suffering from a psoas abscess sinus, which had persisted since 1902. He had removed a tuberculous kidney from this patient in October, 1907, and the pelvic organs in December, 1907. Treatment commenced in June, 1908. Between June 25th and October 24th she had twelve injections. From the first injection the discharge changed from a characteristic irritating pus to a mild, thin, mucopurulent discharge, which rapidly grew less in quantity. At first he was able to inject about 3 drachms of the paste, finally only 30 to 40 minims; on September 24th the sinus closed completely, and has remained so to date. A similar case of psoas abscess sinus of three years' standing closed after the fifth injection. He has also treated two cases of tuberculous hip and a large sacral abscess with similarly good results. The technique is very simple. The paste consists of bismuth subnitrate 33 per cent., and vaseline 67 per cent. The bismuth should be slowly stirred into the vaseline while hot, but not boiling. When cool, this forms a thick, soft paste, which before using should be heated and thoroughly stirred until thin enough to be drawn into a suitable syringe. Care should be taken that no water enters the sinus, the orifice of which should be washed with 95 per cent. alcohol. The nozzle of the syringe should be placed firmly against the opening; the paste is forced in under moderate pressure until the patient begins to complain. A pledget of gauze is then placed against the opening, and an icebag applied for a short time. No anaesthetic is required, as the injections are usually painless. Beck believes that the action of bismuth subnitrate is bactericidal, chemotactic, and astringent. A systematic examination of the discharges from suppurating sinuses under treatment invariably shows a continuous decrease in the

number of organisms, and in many cases their final disappearance. He also believes that the mechanical action of the paste is a prominent factor in the healing process; the diseased walls are separated and brought into contact with a substance in itself bactericidal and stimulating. This method is obviously not applicable to biliary or pancreatic fistulae or sinuses communicating with the cranial cavity or hollow viscera. There are cases in which the bismuth plug may produce unpleasant symptoms by pressure on vital organs, and, in cases where the disease has affected large veins in the neighborhood of the sinus, the entry of the bismuth into the circulation might cause serious consequences. In a few instances toxic symptoms have been observed, but up to 100 grams of the 33 per cent. paste may be injected without fear. Beck states that the formation of sinuses and fistulae may be prevented by opening cold abscesses, evacuating the contents, and at once injecting not more than 300 grains of 10 per cent. bismuth paste. The opening should not be sealed. This method is applicable to suppurative accessory sinuses of the head, while of value in all suppurating sinuses and cavities the injections are particularly effective in tuberculous cases.—*British Medical Journal*.

Surgical Hints

As recommended by Sir William Bennett, no examination of a case of pain in the groin can be effective unless it is made in the erect as well as in the horizontal position of the patient.

Internal urethrotomy should not be undertaken in the presence of acute urethral inflammation because of the risk of infection and the probability that the operation will fail to produce permanent results.

To stimulate intestinal peristalsis in cases of paresis of the bowel following abdominal operations, the use of eserine salicylate, 1-60 grain or more, is often exceedingly effective, particularly where there is increasing distension and intractable vomiting.

After performing internal urethrotomy it is advisable to pass sounds of the normal caliber of the urethra every other day until assured that healing of the wound has occurred. This is shown by the fact that the insertion of the sound is unattended with bleeding.—*International Journal of Surgery*.

Miscellaneous.

How to Act in Case of Fire

Perhaps no single ejaculation is capable of producing so instantaneous and so widespread an alarm as the cry of "Fire!" Nor is this surprising when we remember that the fire fiend is each year responsible for an almost incalculable loss, both of life and of property.

Yet of all emergencies, none more than an outbreak of fire imperatively demands a preservation of one's power to act with coolness and decision. Often, by prompt and well-directed action, the threatened catastrophe may be averted; the loss of property, and what is still more important, the loss of human life, may be avoided.

Fire drill nowadays has its place in the routine of every well-conducted scholastic establishment; nor can it be doubted that the capacity for prompt and intelligent action thus inculcated in the minds of young people of both sexes has, in emergency, proved the means of preventing appalling disaster. But while this capacity for combined action is very desirable, there seems to be a danger of fostering it at the expense of what one may term "fire education." Every child should be taught, by means of precept and experiment, what to do when a fire breaks out in his own house. He should be instructed how to go to work coolly and methodically, either to extinguish the flames, or—if necessary—to escape from the building. Lessons of this kind, imparted by practical methods, would become a source of strength in after life, and would go far to check the recurrence of fire outbreaks, with their entailed loss of life and capital.

Take, for example, the case of an overturned oil lamp. There is a sudden and alarming blaze; but if action is taken at once, the damage may be confined to the carpet, cloth, or what-not upon which the lamp actually lies. To throw water on the conflagration is useless. The burning oil will only be forced over a larger area. The aim should be to absorb the oil and smother the flame as much as possible, and this may best be done by means of some non-inflammable powder—such as flour, sand, earth from the garden, or anything of the kind.

Another point worth remembering is the use of the soda-water syphon as an extinguisher. Suppose that a lamp or candle has ignited a curtain and that the flame has run up the fabric. A syphon of soda water, held as shown in the accompanying

photograph, and squirted over the flames, will work wonders. Not only does the force with which the liquid leaves the tube allow of its being directed well above the operator's head, but the carbonic-acid gas with which the water is charged helps to deaden the flames.

How to act for one's safety, or to assist another, in the case of burning clothing cannot be better told than in the words of Prof. John Marshall. He says: "If the dress of a woman catches fire, she should at once lie down on the floor, and should crawl in this position either to a bell-pull or a door, and call for assistance; or she should roll herself in a rug or blanket. In the event of a man rendering help, he should at once lay the patient down, take off his coat and roll her in it, unless he can obtain a blanket or rug, or roll her on the carpet. If a woman renders assistance, she must be careful not to allow her own clothing to touch the victim, but to hold a rug or blanket in front of herself while approaching the flames."

Prompt action without rashness or self-balking hurry, is the keynote of success in fighting the fire fiend. This applies especially to those who wake from sleep to find the house on fire. Not a moment should be lost, but there should be no wild rushing from a window to a door and back again. First, an attempt should be made to get down the stairs. To escape through passages filled with suffocating smoke, tie a wet handkerchief over the mouth and nose, then crawl on the hands and knees, for the smoke tends to rise with the hot air, and will be less dense close to the floor.

But if the whole of the lower part of the house is burning, and escape by means of the stairs is impossible, preparations must be made for leaving through the window. Tie all the sheets and blankets together by means of "reef-knots," which will not slip no matter how much strain is put upon them. Then drop the bedding or mattress from the window, in order that there may be some kind of break in the event of a possible fall. Finally, make one end of your improvised fire-escape fast to the bedpost, drop the other end from the window, and after making sure that it reaches to, or almost to, the ground, go down it boldly hand over hand. It should be added that in the case of inexperienced persons, there is always considerable risk of a dangerous fall resulting from this means of exit; therefore it should be undertaken only when all other means of escape have failed.

In conclusion, a few words may be added respecting the treatment of burns and scalds prior to the arrival of a doctor.

The main point to bear in mind is that the air is to be excluded from the affected part as quickly as possible. This may be done by dredging the part thickly with flour—if the skin is not broken—and not disturbing it for some time.

Any vegetable oil—such as salad, sweet, or linseed—may be used with advantage, a rag being soaked with it and used to cover the wound. A very good application is made by mixing equal parts of linseed oil and lime water, forming “carron oil.”

Finally, it cannot be too strongly impressed that all clothing covering a burn must be removed with the utmost care. Never try to withdraw the injured limb, but cut the clothing away—in small pieces, if necessary—so that the injured surface may not be more damaged. Never hold a burn in front of the fire, according to the popular practice; this only increases the injury. Have your oil or other application ready for immediate use as soon as the clothing has been removed.—*Scientific American*.

American Serums Abroad

The Rockefeller Institute, of New York, has been presented by the Pasteur Institute of France with a replica in bronze of the bust of Louis Pasteur, in recognition of aid rendered in the recent epidemic of cerebro-spinal meningitis in France. It is reported there that the mortality was reduced from 80 per cent. or more to about 15 per cent. by the use of the serum furnished by the Rockefeller Institute. Professor Calmette, on his return to Lille from the International Congress on Tuberculosis, took with him some of the serum, and later large supplies were sent to him, Professor Vetter and Professor Roux, so that the Rockefeller serum is the basis for most of the reports which have appeared in the French journals. Flexner himself, in a report of 712 cases (all ages), gives a mortality of 31.4 per cent. Of course, the earlier the serum is injected the better in the general results. It is obtained from horses immunized by injections derived from many strains of the meningococcus. It takes four or five months before the serum of a horse is strong enough for use. The only conditions made so far by the Rockefeller Institute in distributing the product are that full reports of cases treated should be returned, and that the diagnosis of cerebro-spinal meningitis should be confirmed by bacteriological examination. The serum was first employed here therapeutically about three years ago. Its use has since spread to Germany,

France and Great Britain, as well as all over this country and Canada. "Supplies," says Doctor Flexner, "have even been sent to India and Jerusalem, but they have as yet made no reports."—*The Post-Graduate*.

Evidence of Respiration

After carefully reviewing the literature relative to the Breslau test, Hobohm publishes the following conclusions in the *Vierteljahrsch f. Gericht. Med.* No matter whether the body be fresh or decomposing, distension of the stomach and first part of the duodenum may always be regarded as evidence of life. No medico-legal importance is to be attached to possible intra-uterine respiration, for in order that air may reach the intestine it is necessary that the child should not die immediately after birth. When intra-uterine respiration and artificial inflation can be definitely excluded, the presence of air in the stomach alone strongly suggests live birth. It must, however, be remembered that a few bubbles of air in the stomach, without distension and buoyancy of the organ when placed in water, do not by themselves constitute evidence of respiration. The gases formed by putrefactive processes never give rise to a uniform distension of the lumen. Lastly, in cases where a positive result has been obtained from the lung test, absence of air in the stomach is of no value as negative evidence of respiration.—*The Hospital*.

In order to show that spitting on the sidewalks is dangerous to health, an investigation has been made by Dr. John Robertson, medical health officer of Birmingham, England, which shows that seven per cent. of the "spits" collected in public places contained consumption germs. On the other hand, the dust collected from the floors of the cottages of the Adirondack Cottage Sanitarium has been found to be free of tuberculosis germs, showing that a careful consumptive is not dangerous.—*Western Medical Review*.

Warning Against Selecting the Medical Profession

The Leipsic League has lately again undertaken to dissuade the graduates of our secondary schools from undertaking the study of medicine. In the circular issued for this purpose it is

noted that in 1908 only 618 places could be placed at the disposal of 898 physicians who were seeking localities to practise through the intermediation of the League. In that year only 6,000 persons were studying medicine, but the number of students of medicine has risen continually since 1905 from 6,080 in 1906, to 8,568 in 1908-09, and in the summer semester of 1909 to 9,509. That the income of German physicians is quite small has been recently shown by a statement of the statistical bureau of Saxony. According to this, in the entire Kingdom of Saxony, 34.8 per cent. of the physicians had not yet an annual income of \$1,050 (4,300 marks), and only 44.8 per cent. of the physicians received more than \$1,500 (6,300 marks). In this calculation of the income, the professional expenses have been deducted, but on the other hand the income from private property of man and wife and all other outside sources are included. These economic conditions will become even worse after the introduction of the new imperial insurance law, for then all persons who have an income of \$500 (2,000 marks) and under will be entitled to sick insurance. This means that in Prussia, for instance, 92 per cent. of the population will belong to the Krankenkassen.—*Berlin Letter, J.A.M.A.*

Sleepiness should not be overcome as a rule, as it is Nature's signal to stop work. If efforts are continued in spite of fatigue, the quality of the work is poor and the exhaustion inordinate. Students constantly make this error, and do all sorts of things to keep awake to burn the midnight oil, when if they would go to bed and rest they could accomplish far more in half the time in the morning, with little or no fatigue. Yet there are times when sleepiness and fatigue must be overcome without resort to stimulants which injure the judgment. The tired physician with a critical obstetric case, for instance, must have his wits about him, and it will aid him vastly to go to an open window every fifteen or thirty minutes to take a dozen or two of deep inspirations of cold air. His exhaustion in the end will be great, but he can make it up later. As a matter of fact, surgeons and others whose work requires the keenest perceptions, instinctively choose the early morning for their best efforts, reserving the afternoon for "low-pressure" tasks or recreation. That is, it is far better to so live that we do not need the stimulus of these extraordinary methods of respiration.—*American Medicine.*

Justifiable Abortion

It is common for some physicians to try to make themselves believe that they are justified in producing an abortion because of some minor condition or some condition of environment or of circumstance with which the patient has to contend.

A German writer claims that only two or three conditions justify interruption of pregnancy. One is uncontrollable vomiting, the other is tuberculosis, and the last is a condition of deformity which would interfere with natural expulsion. But with many this last is no longer considered justifiable, because the Cæsarean operation has been so greatly simplified, and the mortality when skilfully performed, is so very low that it is counted as a justifiable and dependable procedure.—*Elling-*

The Wasserman Reaction

W. J. Heimann, New York (*Journal A. M. A.*, May 21), proposes a method of reporting the Wassermann reaction similar to the blotting-paper hæmoglobin test. We have determined what intensity of color in hæmoglobin represents 100 per cent., and have reconstructed our conceptions of weaker concentrations by numbers accordingly. He describes the Wassermann test and says that the gradations between the two extremes of total binding of the complement and total hæmolysis are infinite; every man has his own system of recording them. He uses graduated centrifuge tubes and, counting total hæmolysis as zero and 1-20 c.c. of erythrocytes in bulk or the maximum amount as one hundred, by comparing the volume of surviving erythrocytes according to the scale and recording the result in per cent., one immediately has a quantitative idea of the reaction. Thus, if 1-40 c.c. of erythrocytes are left the reaction is 50 per cent.; if 1-30 c.c., 66.6 per cent. He gives a table showing the advantages of this method in actual practice and describes the appearances in a test tube in which the reaction has been made after from 16 to 24 hours have elapsed. With a negative reaction we have a clear wine red fluid; in a strongly positive test the red cells lie heaped at the bottom and above them the fluid is pure white. If the test be positive but weaker, the cells are below and the supernatant fluid containing dissolved hæmoglobin is pink, salmon-colored, deep red, etc., according to the amount of hæmoglobin in the solution. The weaker the reaction the deeper the intensity of the fluid and the smaller the number of corpuscles. These differences, expressed mathematically, become definite and objective