this can apparently be taken with entire safety. Cow's milk contains 0.198 per cent. calcium monoxid. A pint of milk contains about 0.71 gm. calcium. Three gm. of calcium chlorid crystals contain about 0.55 gm. calcium, so that more lime is taken by the daily use of a pint of milk than in the dosage prescribed above.

The accompanying table gives the results of the treatment with calcium chlorid in the twenty-six cases under observation.

REPORT OF CASES

A few of the most favorable reports are given in greater detail:

CASE 23—Miss M. T., aged 21, had had hay-fever since childhood, beginning in May and lasting until frost. She was sensitive to flowers of all kinds, to dust and to wind. She could not sweep floors without marked discomfort. She had no asthma. Eye and nasal symptoms were most marked. She had been using epinephrin solutions until they now aggravated the trouble. July 2, there were laceration, coryza and sneezing of moderate severity more or less continuously. Ophthalmic and cutaneous reactions to ragweed were negative. Calcium chlorid, 1 gm., three times a day, was prescribed. July 9, eyes were "wonderfully better"; there were somewhat less sneezing and coryza; the patient was less sensitive to dust and wind. July 20, she was much less uncomfortable than usual. On the whole, there was a marked amelioration of symptoms. July 28, there was very great relief. The patient was practically free from all symptoms. "I never was so helped by anything before." August 13, the patient reported that she had had no hay-fever symptoms whatever since last visit. Relief was absolute. September 6, absolute freedom from symptoms continued. This relief continued throughout the season.

CASE 26—Miss M. R., aged 25, had had annual hay-fever seven or eight years; no asthma. Maternal aunt had had hay-fever since childhood. Ophthalmic and cutaneous reactions to ragweed were positive. June 11, calcium chlorid was prescribed, 1 gm. three times a day, but owing to some gastric distress which it seemed to cause, the dose was much reduced for several weeks. The full dose, however, was taken later and continued. No hay-fever symptoms were experienced until September 5, when there was slight sneezing, and itching in the throat. During the rest of the season symptoms were practically insignificant.

CASE 29—Dr. W. A. K., aged 40, had had annual hay-fever for fifteen years, and slight asthma recently. July 7, calcium chlorid was prescribed, 1 gm. three times a day. Patient reported in October that he had experienced only trifling symptoms at any time during the season.

CASE 35—Miss F. P., aged 43, had had vernal hay-fever, usually beginning about June 1 and lasting until the end of July. June 12, she was having about the usual amount of trouble. The ophthalmic reaction to ragweed was negative. Calcium chlorid, 1 gm., three times a day, was prescribed, with much relief, almost at once. She reported, August 25, "I have been practically free from symptoms about half the time. The rest of the time, partly free, and partly in trouble. About July 28 took a long railroad journey; weather dry and dusty, with no hay-fever symptoms at all."

CASE 42—F. W., aged 28, had had hay-fever beginning in August for several years. Father had hay-fever; no asthma. Ophthalmic and cutaneous reactions to ragweed were negative. Cutaneous and nasal reaction to peaches was positive. Calcium chlorid, 2 gm., three times a day, was prescribed. August 25, the patient was very comfortable, with scarcely any symptoms. Cutaneous reaction to peaches was negative. The patient had stopped eating peaches. During the rest of the season there were very few hay-fever symptoms.

CASE 44—Miss C. S., aged 25, had had hay-fever for nine years, beginning in early spring and lasting until the second week in October. She had asthma. Symptoms were marked. June 30, the hay-fever symptoms were distressing. Ophthalmic and cutaneous reaction to ragweed was negative. Calcium chlorid, 1 gm., three times a day, was prescribed. Patient reported September 25. The hay-fever symptoms, which were severe, disappeared after the second dose of the medicine, whereupon she promptly stopped taking it regularly. Afterward she took a long auto journey without symptoms. During the summer she had occasional slight symptoms, which disappeared immediately when she took the medicine. She has been practically free from all hay-fever symptoms ever since beginning to take the drug. She thinks the results are "wonderful." She would probably have taken the drug more regularly if it had not seemed to increase the secretion of urine. Table following.

CONCLUSIONS

1. Some hay-fever patients taking not less than 3 gm. of calcium chlorid daily, even for a short time, are practically relieved from all hay-fever symptoms.

2. Calcium chlorid may be taken in doses of 3 gm. daily for an indefinite time without any apparent injury.

3. It is not indispensable in all cases for a hay-fever patient to take calcium chlorid over a long period of time in order to secure relief.

4. Calcium salts may be given, even when the nature of the patient's sensitization is not known.

5. The clinical results from the administration of calcium chlorid in cases of hay-fever are such as to warrant its further trial. 1501 David Whitney Building.

THE SPLEEN

ITS ASSOCIATION WITH THE LIVER AND ITS RELATION TO CERTAIN CONDITIONS OF THE BLOOD*

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For many years when doing abdominal operations, if it could be done without risk to the patient, it has been my practice to make a careful manual examination of the contents of the abdomen. Thus I have been impressed with the fact that the spleen shows enlargements and other physical changes rather regularly in connection with diseases of the liver and of the blood. In papers on this subject written at various times, attention has been called to the fallacy of the physical examination of the spleen, and it may be said that unless the spleen is sufficiently enlarged to be felt beyond the free border of the costal margin, the enlargement would probably not be recognized. At times careful physical examination by percussion, for instance, has apparently revealed the area of splenic dulness, but on the opening of the abdomen the fact showed how fallacious percussion had been. Faith in these methods has been due to the fact that in certain diseases, like typhoid, which often end in death, the spleen is generally enlarged, and with this knowledge at hand a diagnosis by percussion has been made and proved correct at necropsy. By means of the Roentgen ray, the possibilities of accurately examining the spleen for such enlargements are developing. The roentgenologist has been able to outline the kidneys, the liver, etc., as well as the digestive and thoracic organs, with a marvelous degree of accuracy, and we may expect that he will accomplish the same for the spleen in the near future. The humiliating mistakes made by surgeons, of which we have made our share, of diagnos-
ing as splenic enlargement a cancer of the stomach or colon or tumor of the kidney, are now avoidable by careful roentgenographic exclusion of these organs.

**Spleen and Liver**

The spleen is closely associated with the liver in function, deriving its blood supply from the celiac axis, the same source as those derivatives of the foregut, the stomach, liver and pancreas, and, like these organs, its vein becomes part of the portal circulation. It is evident that, whatever the function of the spleen, it must send such material as may be culled from the blood to the liver for further elaboration. And, taking experimental and clinical knowledge into consideration, it may be surmised that many of the cirrhoses of the liver may be due to the fact that the liver, the great organ of defense against parasitic and chemical toxic agents, has become unable to care for these products by absorption and elimination, and attempts connective tissue encapsulation in order to render them harmless. In the case of diffuse poisons like alcohol, the liver may become cirrhotic in the attempt to render innocuous deleterious material. We see the close association between the spleen and liver well illustrated in hypertrophies of the spleen attendant on cirrhotic processes of the liver and in secondary cirrhosis of the liver in the Banti stage of the enlarged spleen of splenic anemia.

Investigation leads to the conclusion that the function of the spleen is not only to remove from the blood bacteria and other toxic agents, but also to conserve the food values of broken-down blood corpuscles, especially red cells, sending their remnants to the liver for elaboration into energy-producing substances. This is shown by the fact that there is increased hematin, and a relative increase of reticulocytes, in the splenic vein. These facts bear out the old theory that the spleen is a sieve selecting certain substances—parasitic, toxic and products of degeneration—and being unable to deal with them, passes them on to the liver for conservation. That the liver may adequately maintain this important function, it has been given the power of regeneration. If a large part of the liver of a dog be removed, it will be replaced by new hepatic tissue, while in the kidney and other organs of the body regeneration does not take place to so great an extent, but function is maintained by a hypertrophy of existing tissues.

The function of defense of the liver is shown by Adami, who points out that the leukocytes of the living body pass out on the free mucus surface of the duodenum and upper jejunum, and pick up bacteria which they usually destroy, but should they fail to destroy them, the liver becomes the agent of destruction, and the pigmented areas in the liver are derived from such slaughtered bacteria. Research has shown that the phagocytes of the body are developed in direct response to bacterial invasion. As Vaughan has pointed out, the period of incubation of a disease is the time which is necessary to develop or train leukocytes to bodily defense. He shows that the reaction we call typhoid fever is a defense manifestation, and that preventive serums, such as vaccination for smallpox, typhoid, etc., act to educate the cells of the body to resistance against certain organisms and to change the proteins of the body so that they no longer act as food for these bacteria. Vaughan advances the theory that bacteria are not vegetable organisms but parasitic growths in a distinct class by themselves. Eccles suggests that the phagocytes of the body live on bacteria, and that the food values of the bacteria are thus conserved. He looks on the tonsils and other lymphoid structures, such as the appendix, as what may be called chronic vaccinators, since through the tonsils are constantly permitted to pass a certain number of bacteria which stimulate the development of phagocytes. This shows that a moderate reaction in the tonsil may not always be the cause of an impending generalized infection, but rather an early defense manifestation.

Rosenow has shown that streptococci can be trained to attack special organs. By injecting into the circulation strains of streptococci derived from phlegmonous cholecystitis, he has been able to cause phlegmonous cholecystitis to appear in animals: if they are cultivated on artificial mediums for a time they are prone to produce ulcer of the stomach and appendicitis, whereas if they are passed through animals pancreatitis is usually produced, all of which is evidence of the selective affinity of bacteria and probably other substances for certain tissues or organs.

The spleen is the organ of the body in which the blood stream comes in contact with the pulp, that the process of sifting may be more readily carried out. Must it be understood that all the blood in the body passes through the spleen in a haphazard way to have this function properly performed? Is it not more probable that the spleen has the power of attracting to it certain substances circulating in the blood, as shown by splenic enlargements of typhoid, malaria, etc.?

It is interesting to note how the spleen is controlled in its function. Stimulation and control is exerted over the voluntary parts of the body by the cerebrospinal nervous system, over the involuntary or vegetative part of the body by the sympathetic ganglion, acted on the internal secretions. In addition, there is the essential rhythm of nonstriated muscle. The vegetative part of the body was well developed before the organism had reached the stage of a cerebrospinal nervous system, a comparatively late development. The sympathetic nervous system, probably

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mesoblastic in origin and now closely associated with the cerebrospinal nervous system, acts in association with the internal secretions, and all organs of important internal secretion, such as the suprarenals and the hypophysis, in which gland and sympathetic ganglia are present, are so closely associated as to form a single organ.

That the spleen does not have an important internal secretion is shown by the fact that its removal does not deprive the body of any important constituent; and that it is not under the complete control of the nervous system is shown by its extremely scanty supply from Auerbach's plexus. But the spleen does have a considerable amount of nonstriated muscle fiber, and it is altogether probable that this muscle has an important function and possibly is responsible for the digestive rhythmic change in the size of the spleen.

All the nonstriated muscle of the body, for example, the musculature of the alimentary tract, of the bladder, ureter, uterus, etc., has the power of rhythmic contraction the same as the heart. A small bit of intestine put in Locke's solution will beat for hours. The sinoauricular node of the heart gathers the impulses from the primary contractions of the muscle fibers of the auricle and is the pacemaker of the heart; the impulse passes from the sino-auricular node to the ventricle through the bundle of His, timing the atrial beat, and this curious association of the many branched nodal cell of Keith with the nonstriated muscle occurs in different areas over the entire digestive and genito-urinary tracts (Keith, Cannon and Alvarez).

According to Keith, nodal tissue occurs in definite amounts in at least seven gastro-intestinal situations. First, about the cardiac, controlling the rhythmic contractions of the stomach and the emptying of the esophagus: it is entirely probable that the so-called idiopathic dilatation of the esophagus, or cardioispasm, is the result of failure of nodal control. The same tissue found about the pylorus in disease causes pylorospasm. A sphincter exists just below the common duct in certain of the lower animals, and Ochsner has shown that remnants of this muscle are to be found in man. Along this portion of the duodenum nodal tissue is to be found, which may explain the occasional case of acute dilatation of the stomach and upper duodenum which has masqueraded as true mechanical gastro-mesenteric ileus.

Nodal tissue is found about the ileocecal orifice. Keith believes that this has to do with ileal stasis and lies behind those important phenomena which Lane has described. Nodal tissue is found in the ascending colon, a situation in which, in many of the lower animals, there exists a true colic sphincter, and this may have some relation to cecal stasis and the gastrocolic reflexes described by Hertz. Again, this tissue is found about the rectosigmoid, and a failure of control may be the cause of giant colon or Hirschsprung's disease.

According to Starling and Bayliss the intestinal tract has two rhythms, the first acting from ten to twenty times to the minute, which Mall suggests may be the heart of the portal circulation forcing the blood in the radicles of the portal veins to the liver, and the second, acting once or twice to the minute peristaltic wave.

To go further into the interesting phase of a subject to which Keith has called attention would lead us far afield. Suffice to say that the rhythmic waves are automatically checked by sphincters, and in failure of rhythmic intestinal movement and sphincter control may lie the secret of so-called intestinal intoxication and neurasthenias of intestinal origin. The presence of nonstriated muscle in the spleen gives important evidence of the primary relationship of the spleen to the digestive system.

**RELATION TO THE BLOOD**

The relation of the spleen to the blood has long been known. The spleen, the liver, and the adrenal and lymphoid structures of the body in the fetus are blood-producing organs. All red-blooded animals possess a spleen. The earliest blood cell is white, a lymphatic descendant of the mesenchymal cell. Leukemia is a reversion of all these structures to the primitive condition of the production of embryonic cells.
white cells, and bears the same relation that the uncalled-for production of embryonic epithelial and connective tissue cells bear to carcinoma and sarcoma. At birth the spleen loses its power to produce red cells, except on extraordinary occasions following hemorrhage (Osler\textsuperscript{13}), but continues to produce a certain number of white cells.

The blood pictures of the various anemias are often reproductions of the normal blood of lower animals in which a shorter heredity has given less fixed characteristics than in man. The spleen seems to become the graveyard of wornout corpuscles, especially of red cells. However, it probably does not act on its own initiative, but as though the red cells were sensitized some other place in the body and destroyed in the spleen. This is shown by the increased fragility of the red cells of Chauffard\textsuperscript{14} and Widal,\textsuperscript{15} which occurs in hemolytic jaundice. The enlarged spleen of splenic anemia, hemolytic jaundice, and possibly the primary anemias may be a work hypertrophy. In all but one patient with pernicious anemia operated on in our clinic, the spleen on removal has been found to be definitely enlarged. Taking the average weight of the spleen to be 195 gm. (Sappey\textsuperscript{16}), the spleens removed by us for pernicious anemia have weighed from 360 to 410 gm., except the one mentioned, which was underweight. It would appear that the excess of splenic tissue produces a hypersplenism, as suggested by Eppinger,\textsuperscript{17} and unnecessary destruction of red cells.

Just as there may be many exciting causes for exophthalmic goiter, so there may be many exciting causes of enlarged spleen. The splenomegaly sometimes found in patients with syphilis and usually associated with syphilis of the liver apparently has a definite causal relationship to the chronic anemia of the secondary type which is present. This anemia has promptly been relieved by removal of the spleen in a few cases on record and in three patients of our own. The spirochetal action on splenic tissue in these instances results almost always in a chronic fibrosis and only rarely in gummas. On the other hand, gummas of the liver are quite common (Fig. 1).

Wilson\textsuperscript{18} is now at work on our pathologic material, and is able to show that there are microscopic differences (Figs. 1 to 7) which it is hoped may prove of differential value in the various splenic enlargements, and which may give us a clue to the reason why the removal of the spleen cures or is of the greatest possible benefit in a number of different conditions of the liver and blood heretofore fatal. This suggests that the spleen, an organ not necessary to life, and not causing disease on its own initiative, is the one link in an otherwise fatal chain which can be easily and safely broken. With this assumption the idea that the spleen is an obsolete organ falls, just as has been the case with the tonsil and possibly with the appendix. The enormous blood supply shows the opposite of the vascular conditions of obsolete organs, in which there is always a reduced blood supply. As the removal of the tonsil may prevent generalized infections responsible for all sorts of acute and chronic conditions, the tonsil itself not being essential to life, so splenectomy may cure certain disease conditions of the nutritive system, especially those of the liver and of the blood.

I should apologize for this lengthy preamble which, however, all too briefly outlines certain facts and near facts in splenic physiology and pathology; yet there is a value in getting far enough back to secure a good perspective, to see the whole picture, rather than be lost in some particular detail.

**ENLARGEMENTS OF THE SPLEEN**

These may be divided into four groups: (1) new growths, (2) infections, (3) enlargements associated with hepatic disease, and (4) those associated with the blood.

1. **New Growths.**—The first will not be considered at this time. I shall very briefly take up the results of splenectomy in some of the diseases in the latter three groups.

2. **Infections.** — In so-called primary tuberculosis of the spleen the removal of the organ has cured a few patients. It is quite likely, however, that tuberculosis is practically primary in the spleen, and that this diagnosis is the result of insufficient clinical study. Our one patient of this type died from general miliary tuberculosis after a temporary improvement of several months. In three instances we

\textsuperscript{13} Osler, W.: Principles and Practice of Medicine, New York, D. Appleton & Co., 1912.


\textsuperscript{15} Widal, A., and Brule: Differenciation de plusieurs types d'ictères hémolytiques, Presse méd., 1907, p. 641, cited by Elliott and Kanavel (Footnote 14).


\textsuperscript{17} Eppinger, H.: Zur Pathologie der Milzfunktion, Berl. klin. Wehnschr., 1913, L, 1509, 1572, 2409.

have removed greatly hypertrophied spleens from patients suffering with chronic syphilis and marked anemia. In one of these, specific treatment had been carried out for two years, in another for six months, without satisfactory improvement in the general condition or the anemia. Following splenectomy, there was marvelous improvement of the anemia in all of them.

Marked enlargement of the spleen is quite frequently present in patients with a history of chronic recurring septic conditions. These spleens are usually smaller than those of splenic anemia, although occasionally we have seen a very large spleen filled with infarcts. We have removed the spleen from seven patients with histories of chronic recurring sepsis. Patients of this type usually have a lowered resistance, and cardiorenal insufficiency is most likely to influence the ultimate prognosis unfavorably.

3. Splenic Enlargements Associated with Hepatic Disease.—Primary cirrhosis of the liver accompanied by enlargement of the spleen is remarkably similar to primary enlargement of the spleen with secondary cirrhosis of the liver, and in the late stages of either disease it is very difficult to determine in a given case whether the process was primary in the liver or in the spleen. In the same way it is difficult to differentiate between hypertrophic biliary cirrhosis of the liver of the Hanot type in which there is jaundice, and hematogenous jaundice, which has its origin in the spleen. Primary biliary cirrhosis of the Hanot type is doubtless a rare disease. It may last for six to ten years, and the spleen as well as the liver is always enlarged. It is a disease of young adult life. As in hemolytic jaundice, there are crises marked by tenderness in the region of the liver and spleen with a temporary increase of jaundice. In a small number of instances in which Hanot's cirrhosis has been diagnosed, the spleen has been removed with undoubted benefit, and possible cure. We have seen one such case. Hemolytic jaundice can usually be differentiated by the fact that the fragility of the red cells in the peripheral circulation is decreased, whereas in cirrhosis of the liver the resistance of the red cells is usually increased. In hemolytic jaundice urobilin, but not bile, is present in the urine, and the jaundice is not associated with itching. Yet to what extent these cases of biliary cirrhosis have been confused with those of hematogenous jaundice of splenic origin, and to what extent the syndrome which has been called Hanot's cirrhosis of the liver actually exists, further investigation must decide.

In four instances we have removed a greatly enlarged spleen in patients suffering from portal cirrhosis of the liver. It is too early to know whether or not the end-results will justify the operation. Three of our patients, however, have markedly improved, and the ascites and anemia have disappeared.

It must be evident to all that the spleen is only one avenue by which noxious agents may reach the liver and cause a cirrhosis. It is probable that a large number of cirrhoses have their origin in the gastro-intestinal tract, but, no matter what the portal of entry may be, there is usually a concomitant enlargement of the spleen.

In general, the common forms of cirrhosis of the liver may be divided into three classes: first, portal cirrhosis, in which the toxic material obtains entrance through the portal system and the connective tissue proliferation advances from the portal spaces and in which the symptoms are those of portal obstruction; second, biliary cirrhosis, in which the infectious agent may be either ascending from the biliary tract or hematogenous, and in which the most pronounced clinical sign is chronic jaundice, while portal obstruction comes on late; third, mixed types, which are undoubtedly not rare and in which a preoperative diagnosis is often impossible19 (Fig. 2).

4. The Blood.—Splenic Anemia: Patients with anemias associated with enlargements of the spleen are cured or greatly benefited by splenectomy. The syndrome called splenic anemia, the terminal stage of which is known as Banti's disease, may be cured by removal of the spleen in a high percentage of cases (Fig. 3).

Clinically, splenic anemia is an entity. The spleen is large; there is a definite anemia showing a reduction of reds and a low hemoglobin, and the disease is progressive, ending in death. The process may be exceedingly slow and at times completely interrupted in its clinical symptoms for several years; but all enlargements of the spleen that cannot be shown to have some other definite cause must be looked on as incipient splenic anemia. The future history of such cases will finally prove the large majority of them to be of this character. Hemorrhage from the stomach at times is one of the early symptoms, even before the spleen is much enlarged. These cases of gastric hemorrhage in which no other origin can be found should be carefully examined for evidence of splenic anemia. In the later stages, after ascites has developed, and the liver has become cirrhosed, but little may be expected from the removal of the spleen, and yet several of our patients in this terminal condition have been cured by splenectomy (Fig. 4).

Splenic anemia with adult characteristics is not infrequently seen in childhood, and is promptly relieved by splenectomy. It is quite probable that the pseudo-leukemic anemia of von Jaksch is merely the infantile type of splenic anemia, the increased leukocytes (30,000 or more) being merely a difference in the reaction of the blood due to infancy (Giffin). It may be said in this connection that while leukopenia is usually present in splenic anemia, there are a number of instances in which patients having a moderate leuko-

19. Giffin has been very much interested in hepatic cirrhosis in connection with splenic enlargement. I am indebted to him for the clear statement of the present view of these conditions. (Giffin, H. E.: Splenectomy for Splenic Anemia in Childhood and the Splenic Anemia of Infancy, Ann. Surg., 1915, 11, 679; Splenectomy in the Treatment of Splenomegaly, Associated with Syphilis, Am. Jour. Med. Sc., to be published.)
cytosis (20,000 or more) have been operated on at various ages and remained well afterward. Several such patients operated on by us were previously diagnosed as having true leukemia, and were treated for it.

With the splenic anemias may be classified Gaucher’s disease, which is shown by Brill and Mandelbaum to appear before the thirteenth year and average twenty-five years of duration, and the patient usually dies from some complication. The spleen may become of enormous size. In the terminal stages of Gaucher’s disease or large cell splenomegaly, endothelial growths of the same character are found in the liver, lymphatics, etc. Our experience in the removal of the spleen in three cases of this kind has shown that in the earlier stages the condition is cured by splenectomy (Fig. 5).

One of the most interesting anemias of splenic origin is the so-called hemolytic jaundice, a disease of the young, accompanied by acholuric jaundice, that is, there is no evidence of biliary obstruction, bile is present in the stools and there is no itching. There are two types of this disease, one the familial type of Minkowski, which often affects several members of the same family and is less severe in its manifestations, many patients living out a life expectancy. The other is the acquired type of Hayem and Widal, which comes on during puberty or adolescence and usually ends in death. In hemolytic jaundice the patient suffers from crises accompanied by tenderness over the liver and spleen, an increase of temperature and quickness of pulse. We have done nine splenectomies for hemolytic jaundice. No other operation I know of gives more brilliant and striking results. Within twenty-four hours the jaundice begins to disappear, and in a few days the patient appears well, perhaps, for the first time, having clear complexions; the anemia is rapidly overcome and they remain well (Fig. 6).

Pernicious Anemia: Eppinger first called attention to the remarkable improvement of the patient after removal of the spleen in pernicious anemia. Although sufficient time has not elapsed to say that these patients are permanently cured, as Cabot has said, no other means of therapy has so promptly brought about an improvement in the condition of the patient and so definitely relieved the anemia. It is true that in the late stages when there are spinal cord changes these changes do not disappear, although the condition is marvelously improved, nor do all the characteristic cells of pernicious anemia disappear from the blood. But from our experience with nineteen patients, I feel justified in performing splenectomy in selected cases of pernicious anemia, and have at least the hope that if it is done sufficiently early in the course of the disease, it will permanently check if not cure the condition (Fig. 7).

Preliminary to splenectomy and, in some cases, following it, transfusion of blood may be necessary. The blood of the donor should always be tested in connection with the recipient for agglutination and hemolysis.

CAUTERIZATION AND FULGURATION OF BLADDER TUMORS

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AND

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The past ten years have witnessed a remarkable and beneficent change in the treatment of benign neoplasms of the bladder. Fulguration has become by common consent the method of choice for all cases in which it can be applied. The credit for this remarkable advance in vesical surgery lies at the door of Dr. Edwin Beer, who has made this new field peculiarly his own, both by discovery and by development.

Beer’s pioneer work has thus wrought a most welcome transformation in what was previously often a perplexing situation. He has reduced the complex to the category of the simple, always a notable surgical achievement, so that now instead of putting these patients to bed and exposing them to the risks and discomforts of an operation, we treat them as ambulatory office patients and destroy the growth often in from one to several sittings.

In cases of recurrence the greatest benefits of the new plan are realized, for here the patient continues the treatment at intervals and without discomfort, until the entire trouble is finally eradicated to return no more. Under former conditions a recurrence simply meant an outlook for another operation and a siege in the hospital.

Here are two illustrative cases from personal experiences:

Case 1 (Hosp. No. 5480).—Miss M. G., aged 41, had been operated on twice before for papilloma of the bladder, the first time by Dr. Harris of Battle Creek, Sept. 26, 1911, and again for a recurrence by another operator, Aug. 28, 1912, the suprapubic route being taken both times. Six months later she was examined by two surgeons in Brooklyn, and a return of the trouble was found. Both surgeons advised the use of the high frequency current. Treatment by Roentgen


