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Pathological Aspects of Carcinoma of the Stomach

MALCOLM B. DOCKERTY, M.D.

Division of Surgical Pathology
Mayo Clinic, Rochester, Minnesota

IN 1936 carcinoma of the stomach claimed the lives of 36,000 persons in the United States of America. It was, and still remains, the commonest cause of death from cancer. What are some of the reasons for this high incidence?

Many studies, past and present, have shown that carcinoma does not arise in perfectly healthy stomachs. What then constitutes the "unhealthy" stomach and what are the precancerous changes which therein occur? In order to answer these two questions certain anatomic and physiologic facts must first be considered.

The gastric mucosa is vascular in the extreme. This fact can be confirmed directly by observation of patients who have gastric fistulas, by visualization through the gastroscope and by injection of the vascular tree postmortem. Moreover the extent of filling of this vascular mucosal bed is subject to wide fluctuations. At one moment it may appear engorged or congested, at another pale and anemic. In the former phase small petechial hemorrhages may occur as a result of stimulation from such varied influences as hot or cold food, alcohol, fear, fright or any number of stimuli, mechanical, bacterial or toxic, chemical or nervous. These tiny hemorrhages occur perhaps more frequently in some individuals than in others. Taken in small numbers they are not significant in themselves. However, each one results in an infarct, a region, however minute, of tissue necrosis, and when a number of infarcts coalesce an erosion or an ulcer is the result. Healing occurs rapidly with lymphocytic infiltration and fibrosis. The lower portion of the stomach seems to suffer most from hemorrhages and erosions, possibly because this portion, being narrow, is more subject than other parts of the stomach to the effects of mucosal trauma during gastric digestion in the pyloric mill. But no matter where the damage, it is primarily sustained by the specialized chief and parietal cells lying near the surface. These cells, when destroyed, are not replaced in kind because regeneration is by way of the reparative mucous cell, which lies more deeply. These ever-repeated insults to the tissue, combined with repeated attempts at repair, produce focally or diffusely throughout the stomach the condition which may be termed the "unhealthy mucosa" or "the healed stage of chronic ulcerative or erosive gastritis." I believe that these terms are preferable to the terms "chronic hypertrophic gastritis" and "chronic atrophic gastritis," for in both conditions the underlying pathologic state is a *regenerative hyperplasia* of basal non-specialized mucous cells.

In 1821 Nepveu wrote a book on cancer of the stomach in which he set forth his belief that carcinoma is the end result of what he called "chronic gastritis." In 1938 Judd² came to the same conclusion when he studied the gastric mucosa of patients who had died of gastric carcinoma and compared mucosal changes with those observed in a control series wherein death was due to other causes. But did the carcinoma precede the gastritis? Probably not,

because we have observed too many patients who have suffered from the effects of hemorrhagic gastric lesions for years prior to the development of their carcinomas. However, the very best evidence at hand for a "carcinogenic relationship" lies in a study of patients having pernicious anemia who have been maintained through many years of good health as a result of treatment with liver extract. In this condition the gastric mucosa is grossly atrophic in 100 per cent of cases. Microscopically there is hyperplasia of mucous cells in 100 per cent. Theoretically, then, if our reasoning has been sound, patients who have pernicious anemia to-day should have an incidence of gastric carcinoma considerably higher than that exhibited by the general population and by patients having pernicious anemia who died before the benefits of liver therapy became available. Such actually is the case.

At a certain large clinic, prior to 1929, 3 per cent of sixty-two patients died of pernicious anemia terminally complicated by carcinoma of the stomach. From 1929 to 1941, 20 per cent of thirty patients died under a similar set of circumstances.³ This latter figure is just four times the expected incidence of gastric carcinoma as compiled from our necropsy statistics.

The series furnished confirmatory evidence in the matter of gastric polyps. It has long been known that gastric polyps represent localized regions of hyperplasia and that in 10 per cent of cases this hyperplasia is followed by malignant neoplasia. In keeping with the mucous-cell hyperplasia of pernicious anemia there was prior to 1929 a 4.8 per cent incidence of gastric polyps, and from 1929 to 1941 a 26 per cent incidence.

A third type of lesion which is known to undergo malignant transformation in the stomach is chronic peptic ulcer. This change begins in the margins of the ulcer where the cells are actively regenerating in an effort to bridge over the mucosal gap. But it may also commence in the tissues farther out, and these tissues invariably show, in marked degree, the changes outlined for the "unhealthy gastric mucosa." Prepyloric ulcers are associated with a higher incidence of malignant change than those located higher on the lesser curvature.

Summarizing these observations we may then say that in practically every stomach which is the seat of a carcinoma there is, additionally, microscopic evidence of prior injury in the form of healed mucosal infarcts (or so-called chronic gastritis). Sometimes this injury is in association with benign peptic ulceration, sometimes with polyps and sometimes on the basis of clinical pernicious anemia. In each instance the carcinogenic influence seems to be hyperplasia of the regenerative mucous cell—the cell whose function it is to replace more specialized mucosal elements which have succumbed to injury.

Gross Types

1. *Ulcerative adenocarcinoma*.—As seen in surgically resected stomachs perhaps 80 per cent of the lesions present excoriated mucosal surfaces. Within this group two varieties are recognized:

(a) The grossly malignant ulcer is present in 80 per cent of cases. Here the picture is one of an unmistakable malignant lesion with raised margins and elevated necrotic bases. Located mostly in the lower half of the stomach, these lesions vary from 1 to 10 cm. in surface diameter and they may actually be annular. Some free hydrochloric acid is present in more than half of the

stomachs in which this type of lesion occurs. Perforation is common and hemorrhage from the raw surface may give rise to clinical anemia which, however, is not often of the pernicious type.

(b) In 20 per cent of cases these ulcerative lesions have the gross configuration of chronic benign peptic ulcerations. They are small and punched out and the margins are not elevated. Their location is frequently along the lesser curvature. If the stomach is removed and grossly benign appearing lesions are present, there are certain rules that can be applied. Thirty per cent of the prepyloric lesions and 96 per cent of those on the greater curvature will be malignant. Ulcers on the lesser curvature less than 2.5 cm. in diameter are benign in 90 per cent of cases and malignant in 10 per cent. However, ulcers on the lesser curvature larger than this size are usually malignant. To this last rule there is one exception. If the ulcerative lesion has perforated onto the pancreas and appears benign, it will very frequently be truly benign microscopically in spite of a gross size which at times may be in excess of 6 cm. in diameter. Gastrojejunal ulcers are never malignant nor are ulcers which are located partly within the stomach and partly within the duodenum. These rules are only general but occasionally their application may be of assistance to the surgeon in deciding the type of operation best suited to a given case.

The benign appearance of these ulcers is the result of pepsin and free hydrochloric acid digesting away the superficial layers of carcinomatous tissue. By no means does it signify that they are all the result of carcinoma beginning in an ulcer which had been previously benign. But from the practical standpoint they are of immense importance as a group in that one cannot distinguish the benign from the malignant examples clinically, roentgenologically, gastroscopically, surgically or grossly in the laboratory. They should be regarded as being, one and all, malignant until proved otherwise. When they are malignant, the process is presumably an early one and yet it has been demonstrated that in 14 per cent of them the process has spread to the regional nodes at the time of gastric resection. This fact should be constantly borne in mind when one is considering protracted medical management for a supposedly benign peptic (gastric) ulcer located on the lesser curvature or elsewhere.

In both types of ulcerative adenocarcinoma a high degree of malignancy is demonstrated microscopically with relatively early involvement of the peritoneum, the nodes and the liver.

2. *Scirrhus adenocarcinoma*.—About 12 per cent of the gastric carcinomas that we see in surgical pathology are associated with reactive fibrosis of a degree commensurate with the term "scirrhus." This condition usually results in a thick-walled fibrous stomach with heavy, stiff mucosal folds and a lowered volumetric capacity. At necropsy and at operation in cases wherein the lesion is not resectable the process is diffuse with the production of the so-called linitis plastica or leather bottle stomach. In others it is segmental or localized, frequently involving the pyloric portion. Grossly the cut surface shows thickening and fibrosis with white cords of permeated lymphatics on the peritoneal surface. There is usually some shallow ulceration of the mucosa but this is secondary in importance to the widespread infiltration and thickening of the mucosal folds. Among females having this type of lesion there is

a relatively high incidence of Krukenberg tumors of the ovaries, the counterpart in males being the infiltrations of the rectal shelf. The presence of these pelvic implants is of very serious prognostic import even in cases wherein the regional nodes are grossly and microscopically uninvolved. As with ulcerative adenocarcinoma, the degree of microscopic anaplasia is pronounced. Prognosis for the surgical group is very poor with less than 10 per cent of patients surviving the five year mark.

3. *Polypoid or bulky adenocarcinoma*.—About 6 per cent of gastric carcinomas are pedunculated or sessile tumefactive lesions varying in size and location. Here again two subtypes may be recognized. Lesions of the first subtype, representing the minority, are small and frequently multiple, resembling benign polyps except for their grayish color and rather firm consistency. Ulceration is usually absent. Surrounding mucosa is frequently flattened, mammillated or otherwise similar to that observed in so-called chronic atrophic gastritis. Achlorhydria is almost always associated. The tumors represent the 10 per cent of gastric polyps which undergo malignant transformation. They are frequently of a low order of malignancy with late involvement of peritoneum and nodes.

The second type is frequently bulky and often sessile rather than pedunculated. Superficial ulceration is usually present, sometimes to the extent that the lesion approaches in gross appearance an ordinary ulcerative adenocarcinoma. Achlorhydria is present in almost 100 per cent of cases and pernicious anemia sometimes precedes the development of this type which, like the aforementioned, is often associated with gross atrophy of the uninvolved mucosa. The average grade of malignancy is lower than with ulcerative adenocarcinoma and extension generally occurs late. In spite of the relatively large size of these carcinomas the prognosis is better than that of the small but more malignant carcinomas of the ulcerative and scirrhous types.

4. *Carcinoma en nappe*.—This type is an example of superficial carcinomatosis involving large or small regions of the gastric mucosa without much infiltration of the gastric wall. The appearance suggests simultaneous origin from a number of different points. A somewhat similar appearance is seen around small ulcerative adenocarcinomatous growths, giving the impression that extension is occurring centrifugally in the mucosa. In both instances it is very difficult for the surgeon to palpate the actual upper limits of extension and here the surgical pathologist can render a real service to his surgical colleague at the time of resection.

5. *Mucous carcinoma*.—Finally in each of the foregoing categories mucus may be produced in such amounts that the term "mucous carcinoma" or "gelatinous carcinoma" has been used to designate such lesions as a type. Fifteen per cent of gastric carcinomas show this change on gross inspection and at least an additional 15 per cent will be included on the basis of microscopic examination. The term "colloid carcinoma" is a misnomer for this group, since the lesions do not contain colloid.

The lesions described are single in 97 per cent and multiple in 3 per cent. Supposed "recurrence" following gastrectomy accordingly could on occasion be an example of independent neoplasia in the residual segment of the stomach.

Spread of Gastric Carcinoma

Early and extensive spread of gastric carcinoma is so common that the resected specimens constituting the basis for this report comprise only about 30 per cent of the total cases of gastric carcinoma. The modes of extension are as follows:

1. *Direct extension.*—This mode is seen in perforative and non-perforative examples with involvement superiorly of the structures in the hilus of the liver, posteriorly into the body of the pancreas and hilus of the spleen and inferiorly into the gastrocolic omentum and colon. Hepatic or pancreatic invasion is serious and often signifies inoperability. On the other hand invasion of the spleen or transverse colon does not necessarily by itself bar removal of the lesion.

2. *Lymphatic spread.*—This is perhaps the commonest mode of spread in cases of early carcinoma. It gives rise to a number of complications. Permeation of the gastric mucosal plexus may result in expansion far beyond the apparent upper limits of grossly palpable tumor tissue and the surgeon removes the stomach only to find that his sacrifice of tissue has not been adequate.

Permeation of the intramural group of lymphatics is seen in 92 per cent of resected specimens and in 82 per cent there is actual breaching of the peritoneal plexus. This permeation normally occurs in the upward direction following the flow of the lymph stream. Retrograde extension does not occur until the proximal lymphatics are blocked. However in about 30 per cent of cases such blocking has occurred and under such circumstances, particularly when the growth is pyloric, extension occurs in the subperitoneal tissues of the duodenum even as far down as the ampulla of Vater. Here it is surgically impossible to eradicate the disease while still leaving a satisfactory duodenal "stump." Peritoneal carcinomatosis often occurs on this basis in cases of gastric carcinoma.

3. *Nodal involvement.*—Lymphatic permeation or embolization or both produce invasion of regional lymph nodes in 60 per cent of cases of resected gastric carcinomas. This represents a very serious item in prognosis. The nodes along the lesser curvature are most frequently invaded, the pyloric nodes, those of the greater curvature and the peripancreatic groups following in the order named. Inasmuch as peritoneal involvement accompanies (and presumably precedes) such nodal spread it can be taken to represent a late stage of the disease. I have previously mentioned that in 14 per cent of cases of small carcinomatous ulcers positive nodes are observed at the time of operation. Involvement of supraclavicular and of periaortic nodes is frequently observed in cases of inoperable carcinoma, or in cases in which the primary lesion can be removed easily.

4. *Intravascular spread.*—Metastasis via the blood stream is frequently observed at the time of operation. Intravascular spread is sometimes observed locally in the resected specimen when there is no gross evidence of such involvement. It represents in general a late and a very serious manifestation but is sometimes seen with very small lesions.

5. *Peritoneal sedimentation.*—Finally not to be forgotten is the process of peritoneal sedimentation which is seen as a sequel to local peritoneal in-

volvement over the site of the gastric lesion. Peritoneal carcinomatosis, malignant ascites, Krukenberg tumors and rectal shelf "implants" are sometimes examples of this process. A diagnosis of gastric carcinoma can sometimes be made from an examination of ascitic fluid or from a biopsy of an ovarian tumor. The long-range prospect for cure in such instances is practically hopeless.

Typing of Gastric Carcinoma

How can one apply these gross features in forming a basic classification with significance from the all-important standpoint of prognosis to the patient who has undergone partial or total gastrectomy? Dochat, working in our laboratory, devised such a scheme based on the Dukes' method of gross classification for rectal carcinomas.¹ The scheme divides the lesions into A, B-1, B-2 and C groups. Type A lesions were confined to the mucosa. The incidence of this type was 1.9 per cent of somewhat more than 1,000 cases. All patients who had this type survived the five year period postoperatively. Ten and eight tenths per cent of patients had B-2 lesions in which extension had progressed into but not through the muscularis propria. Sixty-one per cent of these patients survived for five year periods. Twenty-eight percent of the patients had lesions which involved the peritoneum but not the nodes and 44.2 per cent of these patients who had B-2 lesions lived five years or longer following resection. In the fourth or C group, wherein the nodes were metastatically involved, the incidence was 60 per cent, only 15.8 per cent of the patients being apparently cured. The usefulness of the method is apparent when it is considered that the actual size of the growths had little bearing on the end results (fig. 1).

Next to extension, in matters of prognosis, we have found that the microscopic grade of the lesion as determined by the Broders' method is of greatest importance. This method is a numerical evaluation of cellular differentiation on the basis of 1 to 4 with the grade 1 lesions approaching most closely normal cellular structure. Broders' method can be appreciated only by a careful study of his many articles on the subject but figures 2, 3, 4 and 5 illustrate how the method applies in studying gastric lesions. Thus classified, almost all gastric carcinomas are adenocarcinomas, or cancers showing various attempts at glandular or acinar formation. This attempt is successful in the low-grade lesions and only partially or not at all successful in the grade 3 and grade 4 lesions. Table 1 and figure 1 indicate that gastric carcinomas carry a bad prognosis because they are very frequently of high grade. Moreover the prognostic outlook in general varies inversely with the grade of the lesion. The most accurate prognosis that can be offered, however, is based on a combination of the Broders' and the Dukes' methods as shown in figure 6.

Finally in cases of seemingly inoperable carcinoma biopsy should always be made, for it must be remembered that perhaps 0.5 per cent of gastric malignant lesions are lymphosarcomas and therefore radiosensitive. I have seen one patient having lymphosarcoma who survived twenty-five years as a result of roentgen therapy given repeatedly over a long period. The cause of death was generalized lymphosarcoma.

Summary

Gastric carcinoma is the commonest form of malignant lesion. It occurs in "unhealthy stomachs" showing mucous cell hyperplasia. Pernicious anemia,

gastric polyps and peptic ulcers are known precursors. The first named should be watched carefully and the latter two regarded with great suspicion until carcinoma is ruled out, frequently only by means of microscopic sections made on the resected stomachs. The growths are so rapid in their extension that only about 30 per cent of them are resectable. Unfavorable features in the latter group are peritoneal involvement and invasion of lymph nodes. Rapidity of growth is a reflection of marked cellular anaplasia as seen microscopically and at present all that one can hope to do is to diagnose these lesions as early as possible and remove them by gastric resection, an operation employed in the hope of achieving "cures" in but 30 per cent of cases of this serious form of malignancy.

TABLE 1

Grade	Percentage Incidence	Percentage With Positive Nodes	Percentage of Five Year Survivals
1	0.3	30	100
2	22.7	50	45
3	38.6	60	29
4	38.4	65	20

*Based on 1,045 patients.

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LEGENDS

Fig. 1. Type and grade of gastric carcinoma independently correlated with prognosis.

Fig. 2. Grade 1 adenocarcinoma of stomach showing well-marked differentiation of glandular elements (hematoxylin and eosin x87).

Fig. 3. Grade 2 adenocarcinoma of stomach. The degree of glandular differentiation is not as pronounced as in figure 1 and the individual cells are not so uniform in size and staining (hematoxylin and eosin x83).

Fig. 4. Grade 3 adenocarcinoma of stomach. Poorly formed glands are evident but the cellular components are quite anaplastic (hematoxylin and eosin x166).

Fig. 5. Grade 4 adenocarcinoma of stomach. There is only an occasional unit to remind us that this carcinoma arose from glandular structures. Giant and other hyperchromatic cells share in the manifest anaplasia (hematoxylin and eosin x133).

Fig. 6. Type and grade of gastric carcinoma showing use of combination as a prognostic index.

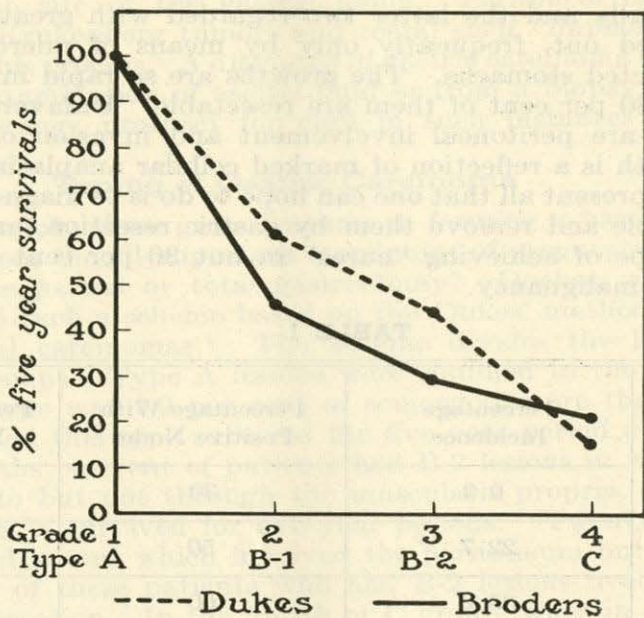


FIGURE 1

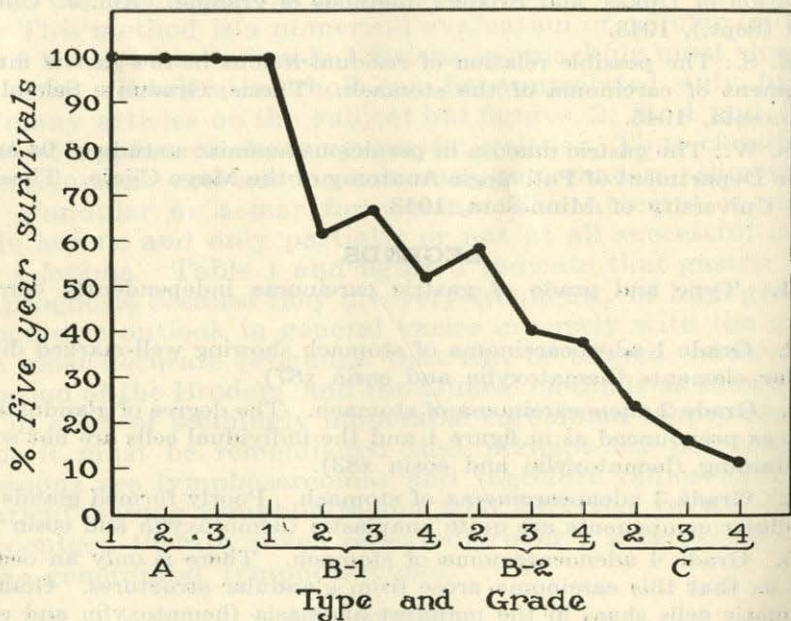


FIGURE 6

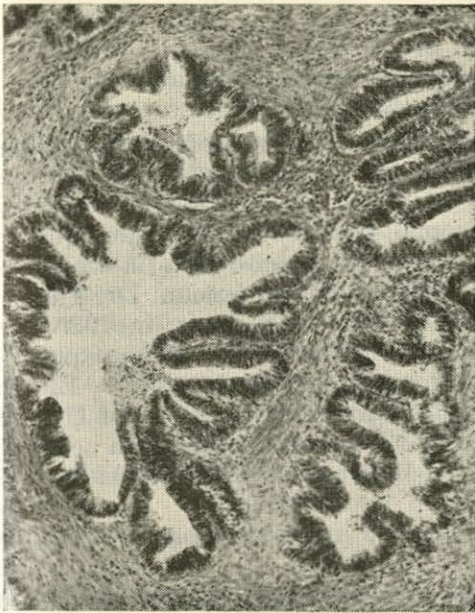


FIGURE 2



FIGURE 3



FIGURE 4

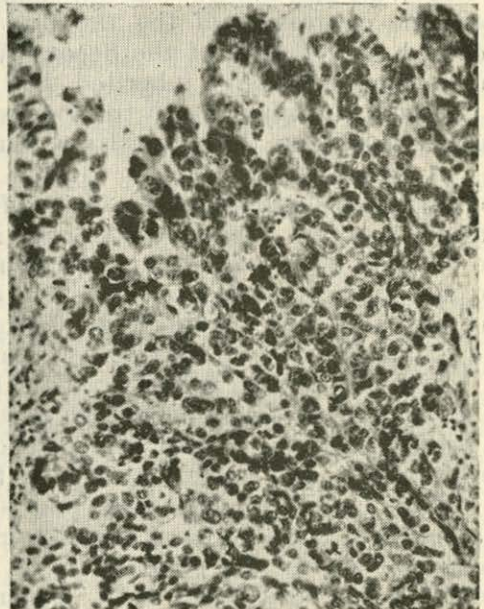


FIGURE 5

Medical Social Work as A Professional Service*

MRS. DOROTHY BISHOP, M. Sc.

Sackville N. B.

Formerly, Chief of Social Service, Massachusetts General Hospitals and
Instructor in Medical Social Work, Boston University.

WHATEVER claim medical social work may have to professional status is based on its unity with all social work. Thirty years ago Dr. Abraham Flexner caused a flutter in social work circles when he told the United States National Conference that social work could not then qualify for this much to be desired state. After giving six precise criteria which an activity must meet before it could be considered a true profession, Dr. Flexner concluded that we met only three of them.¹ Ten years later, in 1925, the question was again brought up at the National Conference in a paper by William Hodson. Mr. Hodson thought we were making progress.² Eleven years later, in 1936, the Director of the Yale University Institute of Human Relations wrote an article for *The Family* in which he stated: "It is an acknowledged fact that social work in general and social case work in particular lack at the present time an appropriate scientific underpinning."³ In terms of Dr. Flexner's criteria, an appropriate scientific underpinning is a highly important prerequisite to professionalism.

But the term "profession" has become less precise in its connotation as knowledge has become more highly specialized and its application to human needs more diverse. Not only have new professions such as teaching, engineering, dentistry, and nursing developed, but the age-old professions of the ministry, law, and medicine have been going through a period of uncertainty. Much has transpired during the thirty years since Dr. Flexner raised the question of our professional status. They have been sobering years—the first World War, the minor economic depression of the early twenties, the major economic depression of the thirties, broken, some of us fear, only by the tremendous demands of the Second World War. Any intellectual snobbery our century may have inherited, has suffered a severe set-back. The needs of the common man are to the fore with a demand that knowledge be made fruitful in raising the general standard of living throughout the world.

It seems to me, therefore, that we need not be much concerned with abstract consideration as to the professional status of medical social work. Rather, we must judge it on the practical basis of its service to human beings. Do we make a real and unique contribution in meeting the needs of sick people? Do the medical professions and the general public accept the fact that no one but a properly trained medical social worker can adequately carry on the particular type of service we give?

Like any human activity, medical social work consists of such a complex of ideas, attitudes and behaviour patterns that it does not readily lend itself to precise analysis. I shall, therefore, discuss rather simply the special aspects, development, and current trends in this field.

First I want to state what may seem too obvious to bear restatement—that medical social work is social work and that medical social case work is social case work. Its philosophy, its disciplines, its methods and techniques are those of generic social work. I want to state this clearly because one occasionally finds that there is still some confusion about it.

Social work was introduced into the medical setting about forty years ago by physicians who had become aware of the importance of understanding

*Paper delivered at the Biennial Conference of Canadian Social Workers, Halifax, N.S., June 27, 1946.

and treating the social and environmental aspects of illness. It is significant that both the physician and hospital administrator accepted the fact that they had responsibility for dealing with this area of medical care, that they turned to organized social work for personnel, and that they made social service an integral part of the medical institution rather than referring patients to the already existing social agencies in the community. Medical social work thus became one of the several professional services integrated under the leadership of the physician.

Just what does it mean to the social worker to function as one of several co-operating professional workers? One important aspect of such a setting is the need for a clear understanding of the particular contribution she is qualified to make. But too much rigidity may result in unimaginative performance which fails to achieve the real objectives of medical social work. There has to be a nice give and take, with an acceptance of some responsibility for strengthening the hands of other professional workers who also serve the patient. There has to be a recognition of a certain overlapping of function, yet a clear-cut understanding of the specific role each plays in the care of the sick.

Just what does it mean to the social worker to work under the leadership of the physician? It does mean an identification with the physician's goals and purposes—the cure and prevention of illness and disability. It certainly does not mean relinquishing responsibility for making her own professional judgments in the medical social area; nor does it mean that she works specifically under the physician's direction. Her relationship with the physician is more in the nature of a consultant rather than a medical assistant. Her area of interest is generally broader than that of the physician. As she works with the patient she reaches out from the hospital setting to understand him in terms of his social relationship and responsibilities. As she sees her goal, it reaches beyond recovery from the immediate illness to a resumption of normal social roles and responsibilities insofar as is possible. The medical social worker has to learn to adjust to the physician's leadership without renouncing her own professional function. This calls for a high degree of professional competence; but it also requires an ability to concentrate in a setting that is alive with dramatic and intellectually stimulating activities. Janet Thornton once said that she could declare from her own experience that it requires a high order of self-discipline not to become over-interested in fever charts, novel surgical procedures, and a hundred other concerns of medicine.

As medical social work developed, requests for service came from three directions: first, from physicians who wanted help in the care of particular patients; second, from hospital administrators who found the medical social worker helpful in bringing an individualized approach into some of the administrative procedures; and third, from other social workers in the community who wished to use the medical social worker as a link to correlate the work of the hospital with that of other social agencies. At various times and in particular places medical social workers have responded in slightly different ways to these requests. But always the core of their activity has been medical social case work, and their emphasis has always been on an individualized approach to problems of illness.

During these past forty years medical social case work has both influenced and been influenced by the general stream of social case work practice. Under

the leadership of the professional association—The American Association of Medical Social Workers—studies have been made to evaluate and improve practice. Among the most important of these were the studies of the Committee on Functions. The first was an extensive study involving a statistical analysis of one thousand cases, completed in 1928. A second study, completed in 1934 and consisting of a more intensive analysis of sixty-two cases, was reported by Harriett Bartlett under the title—Medical Social Case Work. The committee continued with an analysis of six hundred and fifty case summaries or interviews which had been contributed by thirty-eight hospitals in various parts of the United States and Canada. Miss Bartlett wrote the report of this study also and published it in 1940 under the title—Some Aspects of Social Case Work in a Medical Setting.

Another important study was made about ten years ago at the Presbyterian Hospital in New York City by Janet Thornton with the collaboration of one of the staff physicians. The study, published in 1937, was called—The Social Component in Medical Care. Miss Thornton did much to clarify the concept of the social component and to bring into clearer focus the medical social worker's concern with disability rather than with disease as such.

In each field of social work one expects to find a characteristic area of need, a specific body of technical knowledge, and somewhat unique pressures and limitations. In briefly mentioning some of the features which differentiate medical social case work from that of other fields, I am drawing freely on the material referred to above.

The characteristic area of need in medical social work centers around problems of illness and medical care. This means that the medical social worker is continuously concerned with persons who are ill. She may work with the ill person at any time during the course of his illness—the anxious time when he is awaiting the outcome of medical study, while he is acutely ill, before or immediately after serious surgery, or when he is convalescent and preparing for discharge from the hospital. She may know him over long periods of time as he tries to adjust to disability or as he slowly succumbs to a chronic disease. Narrowed down to the immediate goal, the need may be relief from anxiety regarding some step in treatment, adequate convalescent care, an orthopedic appliance, housekeeping service, or the best possible terminal care. But seen in the perspective of the total personal and social situation, it means a constructive kind of movement that leads to growth and development.

What special knowledge must the medical social worker have? First, she needs a body of knowledge regarding disease, its diagnosis, treatment, and prevention. All social workers need to understand something about disease and medical care; but since the medical social worker is herself an integral and dynamic part of medical practice, she must have a fuller knowledge than the generic base would require. Furthermore, she must continue to add to her fund of knowledge. Medical practice is changing so rapidly that the medical social worker has to assimilate the new and significant material which affects her particular area of work. As an example I might mention the radical change brought about in the treatment of syphilis with the discovery of penicillin.

She needs also to be well-informed about the psycho-social aspects of

disease. Illness tends to produce characteristic personality changes. Some of these, for instance, emotional regression, may have biological value for recovery and survival. The sick person is likely to be over-concerned with his own body, self-centered, and charged with anxiety. It is important that the medical social worker be able to differentiate between regressive or neurotic behaviour that stems from illness and that which is the usual personality pattern. She must also grasp the significance of disability in its psychosomatic and cultural aspects. A person may be disabled because of organic damage, because of his feelings about it, or because of narrowed opportunities for self-maintaining activities due to our economic organization.

Finally, she needs to have some understanding of the ways in which the broad cultural and social patterns are interrelated with illness. In a sense, illness is a social phenomenon. A person may have a disease without feeling the subjective disturbances we think of as illness. But when the disease interferes with his usual social activities, he is really ill. It is also true that when a person finds his social responsibilities too much for him, he may become ill. To a considerable extent, illness is a socially acceptable way of withdrawing from responsibility. All social workers need to understand how certain characteristics of our culture, for instance, the high degree of competitiveness and stimulation, affect the individual adversely; but the medical social worker needs to be particularly sensitive to the relationship between cultural pressures and illness.

In considering the pressures and limitations in any field of social work, it is somewhat difficult to distinguish between those within the worker herself and those actually in the setting. This much is certain, the more mature and competent the worker, the less she is handicapped by problems in the setting itself. Some of the limitations in the medical social field grow out of its identification with an institution whose broad objectives are more comprehensive than those of the agency with a purely social function. When the client goes to a child care agency, he has already thought enough about his need to place it in terms of the resources for help. In going to the medical institution, he is seeking medical care. He may not readily understand or accept his need for help from the medical social worker. While her identification with the institution may superficially give her an easy entry into the patient's situation, it may blur the significance of the special help she can give to him. Since medical social work is only a small part of the institution, the worker has less control of certain technical aspects of her work such as the time and place at which she will see patients. At their best the ward and clinic offer only partial privacy for interviewing. Even if a separate office is available, the unceasing pressure of patients makes for a less calm atmosphere than may be maintained in a separate social agency. The worker's relationship with the patient may be conditioned by the way in which she has been introduced into the situation. The physician may call on her for help because the patient is resisting treatment, or to help with a plan for discharge when the patient would rather stay in the hospital. In such a situation, the patient may have built up a negative attitude toward the medical social worker before she has even seen him.

The timing in medical social case work is necessarily related to the ongoing process of medical care. The fact that the medical social worker is dynamically related to this ongoing process impels her toward achieving

her goal as quickly as possible. Pressure comes not only from the physician of other medical personnel; but it would seem to be in the best interest of the community to make the costly services of the medical institution available to as many patients as possible. It requires special skill to establish and maintain a helpful relationship with the patient when the worker is conscious of this pressure to get things done.

The medical social worker may experience personal difficulty in relating herself to the medical setting. She is constantly in touch with physicians, nurses, dietitians and others who have a much more clearly defined body of knowledge, more precise methods, and more obvious goals than social work has yet been able to attain. In view of the difficulty these other professional workers sometimes have in understanding social work, the medical social worker may be unconsciously influenced to do things they will most easily understand and accept rather than keeping the patient's need central.

Some social workers believe that the so-called "authoritative" setting of medicine interferes with the self-determination of the patient, a concept which has been so thoroughly accepted by social case workers. But it seems to me that we should distinguish between the authority which stems from sheer power and that which stems from special knowledge and expertness. It is characteristic of our culture to set high value on this second kind of authority. There may always be danger of using the authority of expertness in an undesirable manner; but it is in the best tradition of medicine that the patient shall not be coerced. This tradition is so thoroughly accepted that it has sometimes been difficult to get the physician's co-operation in problems of public health which involve coercion. And certain trends in medicine itself are resulting in a different relationship between the patient and his physician. In discussing the doctor-patient relationship, Dr. Michael Davis distinguished between certain kinds of care, such as surgery, in which the relation of authority might be effective and other kinds of care in which a different relationship is needed. As medical service lessens the relative frequency of immediately dangerous illness, the proportion of chronic illness and preventive service increases. The relationship of authority tends to be replaced by one of co-operation in situations where the patient's participation is a necessary element in treatment.⁴

During the early years medical social work was practised almost exclusively in hospitals. Until 1934 the name of the association was The American Association of Hospital Social Workers. The spread into extra-hospital activities was accelerated during the last economic depression because of the need for public medical care programs. Medical social workers were quickly drawn into these programs. As public medical services have developed, there has been increasing demand for medical social personnel. While they have been used to some extent for services to patients, their major contribution has been in program-making, consultative service, and administration. With the present trends in the field of medical care, the importance of medical social work in public medical programs will no doubt increase rather than diminish.

The help of the medical social worker is increasingly sought in one other field—that of education. The medical professions have within recent years become more keenly aware of the emotional and environmental aspects of illness. This is reflected in schools of medicine and nursing. For many years medical social workers have been used in a rather perfunctory fashion to give

a few lectures or to present social material at student conferences. But the National League of Nursing Education and the Association of American Medical Colleges are now giving serious consideration to this aspect of education. At the present time the American Association of Medical Social Workers has a committee working jointly with the Association of American Medical Colleges on Teaching of the Social and Environmental Factors in Medicine.

In closing I will mention some of the current trends in the medical social field. There is a definite trend toward closer identification with all social work in relation to those broad objectives and responsibilities which we all share. Early in the war, the five professional social work organizations in the United States set up a joint committee to deal with matters of common interest, particularly in relation to personnel. As the committee moved along with its work, it was agreed that it should become a committee of the American Association of Social Workers since that organization had the largest membership and the widest coverage. More important than the immediate projects undertaken was the realization of the strength that came from united action and the impetus toward co-operative planning in social work as a whole.

As medical social work expands into new fields, it becomes increasingly important to keep a clear focus in terms of appropriate goals and activities. This calls for precise formulations and for establishing criteria and standards. A recent bulletin of the American Association of Medical Social Workers reported on a request that had come from the American Hospital Association for a statement of the organizational requirements of a social service department in a hospital of one hundred beds or less. This was needed to help architects planning for the construction of new hospitals. Another request came from the United States Public Health Service for a statement of how medical social service could function in the Venereal Disease Section.

Medical social workers are keenly interested in the recent emphasis on psychosomatic medicine and its implications for social case work. The psychosomatic approach is not new to medical social work; but the worker must now find out how to relate herself to the physician who is consciously using this approach in his work. In some ways the situation is like that of the psychiatric social worker and the psychiatrist. There is widespread discussion by social workers in general and medical social workers in particular of psychosomatic concepts. It is important that we should move along soundly and not be over-concerned with abstractions that have little or no value in social case work practice. Since there is still lack of agreement among physicians and psychiatrists in regard to the theoretical basis and the form of practice of psychosomatic medicine, we cannot expect to fully understand its relative place in medical care nor the special implications it may have for the practice of social case work.

Very new, but very important, is the growing interest in medical social work for the private patient. Not infrequently staff physicians refer private patients to the hospital's medical social worker for help. It is usually considered a courtesy service to any member of the hospital's medical staff. Various experiments have been made. For instance, the Baker Memorial, a section of the Massachusetts General Hospital in Boston, was built to give private medical care to the moderate-income group. A flat charge is made for over-all service and medical social service is included. The Medical Social Practice Committee of the American Association of Medical Social Workers

is at present making a study of the number of private patients being served, with some evaluation of the special factors involved from the points of view of the patient, the physician, and the hospital.

Since all my experience in medical social work has been in the United States, I may have given a special slant to this material. However, I believe that medical social work in the United States and Canada is essentially the same in orientation, objectives and methods, and that this material would have validity for Canadian medical social work.

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Health Services for Canadian People^{*}

ALLAN R. MORTON, M.D., C.M., M.P.H.

Mr. Chairman, Ladies and Gentlemen:

When asked to discuss with you "The Health Services for Canadian People" I began to wonder how many of us as Canadians really are familiar with the public health services offered by our federal, provincial and municipal governments. I plan to discuss this from a preventive angle, and will only touch briefly on the items of treatment as they effect public health, because the fundamental place of any health program is to prevent illness amongst us. The old adage is true—an ounce of prevention is worth a pound of cure.

The Federal Government Department of Health has been responsible for seeing that those with infectious diseases are not allowed entry to our country, thus helping keep infectious diseases under control. In addition to this, they operate laboratory services which assist the provincial and municipal laboratories in the bacteriological field of diagnosis of infectious diseases. They also operate the food and drug laboratories which supervise the production and manufacture of those commodities in the Dominion. It is the duty of these laboratories to make certain that no food contains any harmful ingredients or substitutes, that proper standards are maintained, and through their supervision manufactures are thus controlled, especially those who prepare and package proprietary or patent medicines so that no harmful product is placed on the market and thus endangers your health.

They have a Department of Nutrition which has been very active during the last few years from the standpoint of education, and have produced much valuable literature, advising not only the Canadian housewife, but the family as a whole what constitutes a proper and efficient diet. Financial grants from the Federal Government for assistance to the different provinces have aided in the control and treatment of tuberculosis and venereal diseases, two conditions which are of prime importance to any person interested in Welfare Work. Then in its Department of Agriculture T.B. testing of cattle is carried out for your protection against this disease, and also inspection is provided in all abattoirs and meat packing plants so that these products are graded and a proper standard maintained.

The Federal Department also, through its Division of Vital Statistics, gives us figures which enable us to judge all health standards and our general well-being in comparison between towns, cities, and provinces of our own Dominion or with other districts and outside countries, and they also care for the health of our Indian population, and are concerned with health from a broad point of view, as it affects the whole Dominion.

The Provincial Health Departments are concerned with all of the above problems, but in addition we are now one link in the chain closer to the individual citizen, and therefore are basically interested in the health of a smaller unit. Many provincial departments to-day have Divisional Health Officers, who are full time specially trained medical men, whose duty it is to supervise part time county or town health officers, and to assist and advise them.

If I may be permitted to use the local provincial department as an example of the place this unit plays and as our Department here is set up under the recommendations from an international health organization (the Interna-

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tional Health Division of the Rockefeller Foundation, 1934) I believe that it is organized and functions in a manner which is a good standard for this Dominion. We find five Divisional Medical Health Officers operate in the province and have their offices situated in the area that they have jurisdiction over. The population of each of these divisions is roughly 100,000. The supervision of these men comes from the central offices in Halifax of our Chairman, the Hon. Dr. Davis, Minister of Public Health and Welfare of the Province of Nova Scotia.

The tuberculosis program has been one of the major problems dealt with on a provincial scale. The Sanatoria are operated for the care and treatment of those infected with this disease. From the preventative point of view the D.M.O.H. holds clinics to assist the local physicians in the early diagnosis of T.B., and more recently mass radiography to find the unsuspected case in the apparently healthy individual has been resorted to in an effort to control the spread of this disease. Few people realize that tuberculosis is definitely a communicable condition, and far fewer realize that it can be diagnosed by X-ray six months to a year before any symptoms are noticeable to the patients themselves, or can be detected by the usual physical examination carried out by a doctor. Thus, control methods for T.B. are advancing, and who can say that possibly within a year or two the use of B.C.G., the vaccine which is claimed to protect against this disease, may be as commonly used as the vaccine to protect us against small-pox is to-day.

The Venereal Disease Control program, with assistance from the Provincial Laboratory of Bacteriology for the proper diagnosis, free, of all suspected cases, and with the further development of this program during the war, now embraces the epidemiological hunt for the infected person by the employment of Social Hygiene Workers, and the setting up of Clinics for the free treatment and the providing of free drugs for the treatment to any physician who requests them for a patient unable to pay. Some of these expansions have been forthcoming even under the pressure of war-time, and I am certain with the return to peace, that this program will be further extended and another communicable disease can be controlled to a far greater extent. However, I wish to point out at this time that your health services are limited; if we do not know where this condition exists we cannot control it. Better reporting of these conditions by the family physician enables the Health Department to know those infected and to plan an attack of control. The "hush-hush" and the social repression previously associated with this condition has been broken down, and in order to protect us, as Canadian citizens, your Health Department should be advised of every case that exists. If your neighbour had Infantile Paralysis, it would be reported, precautions would be taken and the condition controlled, and even though the precautions taken on V.D. should be confidential, aren't they just as essential to protect your health? You as Welfare Workers must be aware of the many problems that you face due to ill health from the ravages of Venereal Disease. Thus Tuberculosis and Venereal Disease control are probably the two major problems to be dealt with in any provincial scheme of health. I must here mention mental illness, which is another large endeavour in the provincial scheme. Hospitals for care and treatment. Schools for special training of the poorly developed mental child and consultation and examination by trained psychiatrist, all have a place in the provincial health field.

Many control measures for infectious diseases, such as the supply of vaccine for the prevention of small-pox, whooping cough, typhoid, paratyphoid A and B, tetanus, and toxoids against diphtheria and scarlet fever, are supplied free by the Provincial Health Department to all health officers and to any physician who will be administering them to the school children or in clinics where no charge is to be made. This service, with the supply depots for these articles in each health division, is augmented by the handling for treatment purposes of such materials as diphtheria anti-toxin, scarlet fever and meningococcal serums used in the treatment of these serious conditions and available at cost to the physician.

The Provincial Laboratories of both pathology and bacteriology aid in the diagnosis of many diseases. The Pathological Laboratory examines specimens and aids in the diagnosis of that dreaded condition cancer, which we all hope to soon see controlled. Early diagnosis and treatment will assist this effort. The Bacteriological Laboratory examines thousands of throat swabs for the diagnosis of diphtheria and other infections of the upper respiratory tract, and examines thousands of samples of milk annually to see that this product is up to a proper standard for health conditions. Thousands of samples of drinking water are tested to see that it is safe for our use. From these reports your health officer has a means of knowing whether your milk is properly handled and your water supply is proper and safe for human health, and thus diseases spread by them can be kept to a minimum. Again the Provincial Department gathers the data of births, deaths and marriages, and forwards this to Ottawa for final compilation, as well as reports on the occurrences of all the reportable diseases, of which there are some 18 major ones summarized by them weekly. It is from these reports outbreaks of any epidemic form of disease can be detected early and efforts made to control the spread by quarantine, isolation and investigations organized to trace it to the original source, and thus eradicate it.

Some of these services mentioned so far are also carried out in local, rural or urban health departments, especially is this so in the larger cities of our country, where the Health Department is organized on a scale possibly even ahead of that of some of our smaller provinces.

This brings us to the last link of our chain, the municipal department, and to one of the services under both the provincial and local organization, that is, the section of public health which is the backbone of the whole program, the Public Health Nurse. She, whether provincial or municipal, forms the most important part in any health program, and brings Public Health to the individual citizen. I cannot speak too highly of the services rendered and the value obtained by any community having properly trained, efficient and experienced Public Health Nurses.

The Public Health Nurse, in either the provincial or municipal field, has many and varied duties. One might say that she assists in the protection of our health long before we are born and carries us along practically to old age. She is interested in the pre-natal care of the expectant mother, to see that diseases here are treated to guarantee a normal child, she assists the mother in preparing for the child, and follows him after birth through Well Baby Clinics, Immunization Clinics, into the school, where the School Health Service checks his or her normal development and corrects defects in an early stage before they become serious. T.B. contacts or contacts of any other

infectious disease all come to her notice. She educates the head of the household along lines of nutrition, even budgeting, and all of the other advice that she is capable and trained to give. It is such a wide field to endeavour to attempt to cover it in this short paper would be impossible and impracticable. However, she is one individual in the Health Department who should have the closest co-operation with the Welfare Worker, and the two should work on common levels with frequent consultations for the betterment of their associated problems.

In the municipal or local health department all of the aforementioned preventive measures take form. Complaints of numerous natures reach the Health Department and are investigated. This entails the employment of Sanitary Inspectors, and to-day the Canadian Public Health Association supplies correspondence courses and arrangements for examinations at the completion of this course, so that qualified personnel to carry out this type of work are available, and their work includes the investigation of many complaints, the regular inspection and licensing of restaurants and eating places, to see that the proper handling and storage of our food is undertaken at the wholesale and retail stores.

They check the production of milk to see that it is produced under proper conditions, that the cattle at the dairy farm are free from T.B. and other diseases, that the help are not suffering from any infectious condition, and that the milk is properly handled from the time of milking until it reaches the consumer. This includes proper pasteurization. Inspections and licensing of bakeries, bottling plants, barber shops, beauty parlours for our protection are other services rendered by these inspectors. In fact, there is little going on in any community in which the Sanitary Inspector does not play some part.

I purposely left the discussion of the medical services of any of these programs to the last. Possibly this may be putting the cart before the horse, but to properly handle the problems of any Department of Public Health, municipal, provincial or federal, the knowledge and experience in the practice of medicine, with post-graduate work in Public Health is almost essential in order to have a full knowledge of how and why disease spreads so that it may be prevented. To-day numerous other fields such as industrial hygiene, mental hygiene, special studies on rheumatism and heart conditions are all claiming the attention of Health Departments and a knowledge of many other illnesses which afflict mankind is a necessity, in fact even a specialty of Public Health. These diseases can only properly be dealt with and controlled, if not eradicated, by a fundamental knowledge of these various subjects. Another essential is an ample fund of good common-sense. Your Health Officer must work together with and collaborate with the medical profession as a whole, with the various branches of nursing, with sanitation, with business and with government, in order to succeed in his task. But most important of all he must keep the public themselves interested in and informed on all matters affecting their health and well being, if he is to be a success in his chosen field of preventing diseases.

Penicillin in the Treatment of Tetanus

A Review of the Literature and Report of a Case

R. G. RITCHIE, (Interne)

The Children's Hospital

Halifax, Nova Scotia

CASE reports in which penicillin has been used as an adjuvant to tetanus antitoxin are few. In fact only four cases have been reported in the literature to date.

Buxton and Kurman (1945) reported two cases in which recovery followed the employment of penicillin in addition to the antiserum. On one of these cases, sulfadiazine was also used.

Weinstein and Wesselhoeft (1945) reported two cases in which recovery followed treatment with large amounts of antitoxin, surgical excision of the wounds, and administration of large doses of penicillin.

The above writers conclude that while penicillin does in no way replace established therapy (antiserum and surgical excision, adequate sedation and general supportive treatment) it is of particular value as an adjuvant in cases in which surgery is impractical either because of a multiplicity of wounds or where the wound is in such location that excision would cause extreme mutilation.

Case Report

Case 26746

E. B., a 10 year old white male was admitted to the Children's Hospital on the 23rd October, 1945, with a diagnosis of tetanus.

History: The child came from a farming community about 30 miles from Halifax. Two weeks previously he had been playing in the barnyard and had lacerated his right foot on a broken bottle. He was taken to the local physician who cleansed and sutured the wound and injected a prophylactic dose of tetanus antitoxin. The wound was dressed twice within the following two weeks. Healing was slow but there was no obvious sepsis. The child was apparently well until the 22nd of October, when he began to complain of some abdominal pain and muscular aches, in the back and chest. At 8.00 p.m. the boy went into a spasm. Up until the time of admission he had had three typical tetanic spasms. At 8.00 a.m. October 23rd, he was given 25,000 units of tetanus antitoxin intramuscularly and brought to the hospital.

Physical Examination revealed a well-developed ten year old who was obviously ill and very apprehensive. Trismus was present and a marked risus sardonius was noted. Inspection of head, thorax, and abdomen revealed no abnormalities. A laceration about $2\frac{1}{2}$ inches long, partially healed, but oozing dark blood, was visible on the antero-medial aspect of the right foot. There was no oedema or discoloration present. The skin had normal turgor and no rash was present. No lymph nodes were palpable in cervical, axillary or inguinal regions. Liver and spleen were not palpable. Heart, lungs, and abdomen revealed no abnormalities. Tongue was coated and tonsils were slightly enlarged. The ears appeared normal.

Neurological signs were marked. Knee jerks were brisk—in fact all reflexes were accentuated. The pupils, however, were equal and reacted normally to light and accommodation. Both Kernig's and Brudzinski's signs were positive and there was marked rigidity of the neck muscles. The leg muscles were very spastic and the slightest noise or change in lighting of the room brought on a slight generalized spasm. It was apparent that the patient was continuously on the verge of generalized spasm.

Clinical Course: On admission the patient's temperature was 100° F., pulse 112, and respirations were 24. Throughout his stay in hospital the temperature ranged from 99.6° to 100.8°, with the exception of two days, October 31 and November 1, when it reached 102°. Co-incidental with the rise in temperature a fine punctate rash appeared on legs, arms and face. The rash was probably a serum reaction, but could conceivably be due to the large doses of phenobarbital which the patient was receiving for sedation. The rash, which was pruritic remained for two days and then faded abruptly.

On admission it was decided to carry out sedation with phenobarbital. Curative treatment consisted of massive doses of tetanus antitoxin and moderate-large doses of penicillin. Supportive treatment included large amounts of fluids, both orally and intravenously.

For the first three days the course was stormy, generalized spasms were frequent and from time to time chloroform had to be resorted to in order to terminate them. Trismus was marked on admission, remained for a period of about two weeks and then gradually disappeared. Jaw movements were restricted to about $\frac{1}{2}$ inch, due to masseter spasm, and during the active phase the child drooled saliva continuously. However, at no time was it necessary to resort to nasal tube feeding. Swallowing became difficult and sore throat was complained of on the third day, but this passed off. Dullness and crepitant rales appeared at the lung bases on the fifth day and from then until the patient was able to move by himself, he was turned on his side from time to time. The last spasm was noted on the fifth day, but this was succeeded by a period of continual restlessness prolonged over several days. Masseter spasm lessened gradually after ten hospital days and the child was again able to talk clearly. Abdominal pain and distress were complained of intermittently, and especially during the first four days, but eventually disappeared. The leg muscles, spastic during the active phase of the disease, regained normal tone. The wound on the patient's foot healed slowly and cicatrization was complete at time of discharge. The child rapidly regained his strength and was able to sit up, at first in bed and then in a chair. A few days later he was walking about the ward with normal facial expression, apparently recovered, with the exception of a slight limp in the right leg. He was discharged on the 19th of November, 27 days after admission.

In summary, it may be said that definite signs of improvement were in evidence by the sixth day and the patient was, without a doubt, on the mend by the eighth day.

Treatment: In treatment four ideas were kept in mind:

- (1) Neutralization of the uncombined toxin in the patient's system, along with that being formed at the infective focus.
- (2) The stamping out of the infective focus.

(3) The prevention of generalized and local spasm.

(4) Supportive treatment.

Neutralization of the toxin was accomplished by massive doses of anti-toxin both intramuscularly and intravenously. As already stated the patient had had 25,000 units of anti-toxin intramuscularly before admission. A further 50,000 units were given intramuscularly on admission. The remaining doses were given intravenously. In all, a total of 230,000 units was administered.

Elimination of the infective focus was accomplished by means of penicillin. At first given intramuscularly, this was later given intravenously. In all, 1,380,000 units of penicillin were administered. In addition, the partially healed wound was broken down and a continuous hydrogen peroxide dressing was applied. Swabs of the wound taken on the 1st and 3rd days proved negative when examined bacteriologically. At the outset, complete excision of the wound was contemplated, but after consultation with the surgical staff, this idea was abandoned, since such treatment would entail destruction of several of the tendons to the foot.

Prevention of Spasm: It is a well known fact that the muscular spasms which constitute part of the tetanic syndrome are, perhaps, the most dangerous aspect of the disease. It was this fact which soon modified our mode of treatment. At the outset the antitoxin and penicillin were given intramuscularly. With the patient ever on the verge of generalized convulsions, it was found that each injection precipitated a severe spasm which had to be terminated by means of anaesthetic (chloroform). As the patient came out of anaesthetic the vomiting reflex so activated would, in turn, precipitate other convulsions. It was obvious that other means had to be adopted.

The patient was taken to the dressing room and, under chloroform, a cut-down was made on a moderately large forearm vein. A gold cannula was tied into the vein and the wound sutured loosely and the arm firmly splinted. By means of the above, it was possible to administer practically all medications with a minimum of stimulation. This enabled reduction of sedation and avoidance of damaging spasms.

In a vacoliter of glucose-saline (isotonic) was placed 100,000 units of penicillin plus doses of antitoxin ranging from 10,000 to 100,000. This was connected to the cannula by rubber tubing and the contents allowed to run into the vein continuously at the rate of 8-10 drops per minute. As soon as one vacoliter was finished, another was prepared and administered. After two days the arm containing the cannula became swollen and painful. Pain was relieved by the application of hot fomentations to the arm. By the fifth day it was possible to discontinue the intravenous, since the patient's condition was somewhat improved.

Sedative in the form of phenobarbital-soluble was injected into the tube every two hours, 1 grain every four hours and $\frac{1}{2}$ grain at the two hour period, making a total dosage of nine grains in 24 hours. This sufficed to keep the patient below the convulsive level and was well tolerated with the possible exception of the rash before mentioned.

In addition to the above, the patient was placed in a darkened room, cotton plugs were inserted in the ears and a minimum of noise was enforced.

Supportive treatment consisted of copious fluids by mouth and intra-

venously (as described above), to prevent acidosis, to maintain urinary output and to prevent dehydration. D-calcium phosphate was administered to combat the serum reaction. Calcimine lotion was applied to lessen pruritis. With the advent of convalescence a bland diet was instituted. As mentioned before pulmonary hypostasis was guarded against by frequent changes of position.

Summary: The literature has been briefly reviewed and a severe case of tetanus has been presented in which, because of the situation of the wound, penicillin was found to be of great use in eliminating the focus of infection.

Note: I am deeply grateful to Dr. N. Barrie Coward, on whose service this case was admitted, for permission to publish this report, and also for his kind and constructive criticism.

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*Tuberculosis Record Systems

Recent acceleration in tuberculosis control activities in State and local health departments has been largely motivated by mass radiography in case finding. The widespread application of small-film techniques has discovered more active, subclinical, and suspicious pulmonary tuberculosis than has ever been detected before in the history of public health. Even a casual survey of the majority of local programs reveals that quality and quantity of case finding have far surpassed the basic follow-up and case holding of newly discovered tuberculosis.

Simple and efficient tuberculosis record systems that are planned to meet local needs are fundamental to good follow-up procedures. They facilitate a maximum utilization of limited clinical, laboratory and field nursing services. To correlate all phases of tuberculosis control, to bring about an equitable distribution of professional services, there exists an urgent need for extensive record systems based upon defined requirements. Even individual case management is hampered by the inadequacy of existing records.

With the rapid expansion of local, State, and Federal activities, local registers and record systems have assumed additional significance. In a local area with an established tuberculosis control program, a case register has repeatedly been recommended for case management, for current inventory of the case load, interval evaluation of the effectiveness of activities in relation to their cost, and for a realistic knowledge of the extent of the problem.

Now that State and local health departments are launching State, county, and city projects to find cases and to give medical supervision to ambulant persons, tuberculosis record systems and coordinated local registers become essential, if the full benefits of any new program are to be experienced. Inefficient record systems will encumber and defeat the most promising of tuberculosis control programs. However, smoothly functioning record systems, even though they precede necessary services, may well be the essential administrative tool needed for the development and eventual success of the program.

Local registers are especially useful in individual case management. State tuberculosis record systems that contain summarized information from local sources are essential in program supervision, planning, and evaluation. Semi-annual or annual compilation of uniform data from the State health departments makes possible a concise and current national summary of the extent and results of case finding, the ultimate disposition of cases discovered, and the trends in morbidity and mortality. In addition, such a summary presents an opportunity to base long-range planning on predictions derived from analyses of reliable data. Comparisons of State records can easily be made and, as areas of great need become apparent, additional funds and personnel can be concentrated in any given community before irreparable damage to public health is done.

The tuberculosis services of a health department cannot be described by statistics alone. However, a combination of meaningful statistical summary and professional description of nonquantitative tuberculosis activities can supply the best answers to the administrator who must justify his health

program in terms of protection of the community, extent of the problem, effectiveness of all activities, and funds expended.

Well-planned and effective record systems can make the practice of public health, as applied to tuberculosis control, really a science and not just empirical guesswork. Many questions in the epidemiology of tuberculosis remain unsolved. They require solution before eradication of the disease can be realized in a measurable time. Better records, and time for their analysis, could reduce the number of past mistakes and enable us to determine if what we have proposed and carried out has accomplished the desired end.

The combined meeting of The Medical Society of Nova Scotia and the Dalhousie Medical Faculty Refresher Course will be held in Halifax from October 7th through October 11th. The full programme was given in the last edition of the BULLETIN. Registration will begin in the Auditorium in Pavilion C (entrance facing Jubilee Road) of Camp Hill Hospital on Monday, October 7th, at nine o'clock. The programme for that day will begin at nine-thirty.

H. G. Grant

Abstracts from Current Literature

ACUTE PANCREATITIS. Morton J.: *Surgery*, 1945, 17: 475.

Morton stresses that pancreatitis must be considered as a possibility in patients complaining of sudden epigastric pain. The serum amylase test is of greatest assistance in deciding whether the pancreas is involved. The test is easily carried out, is accurate and gives more important information than any of the routine laboratory tests. The author thinks that as long as surgeons operate without using the amylase test to help in their diagnosis there will be a mortality from acute edematous pancreatitis. Before the amylase test was available and operation was necessary to decide the diagnosis, the author had 9 fatalities in 22 cases of pancreatitis. With the proper use of the amylase test he treated 29 cases of pancreatic edema without a death, not operating during the height of the reaction. There are two types of pancreatitis, acute edematous and pancreatic necrosis. Acute edematous pancreatitis can be diagnosed by the serum amylase test and the rapid improvement under conservative treatment. Pancreatic necrosis must be suspected when the patient fails to make improvement within a few days. In acute edematous pancreatitis operation should be deferred until the reaction has subsided. Acute edematous pancreatitis is followed frequently by chronic pancreatitis. Pancreatic necrosis is followed by abscess, diabetes and pseudocysts in some of these who survive. Conservative treatment of pancreatic necrosis or pancreatic abscess is disastrous. When either condition is suspected, operation is indicated. Biliary tract disease should be treated after an acute attack of pancreatitis if it has played a part in the onset. Any surgical manipulation about the lower end of the common duct or the head of the pancreas is likely to be followed by postoperative acute pancreatic edema. This can be demonstrated by the amylase test. There is a considerable danger of this in the resection of posterior ulcer perforating into the pancreas. It carries a mortality which should be taken into consideration in resections of duodenal ulcer.

PEPTIC ULCER AND NUTRITION. Cheney, G.: *Military Surgeon*, 1944, 95: 446.

Considerable evidence has accumulated that a dietary deficiency may play a part in the development of peptic ulcer. Cheney states that in many patients symptoms first appeared after being on canned rations, which included little or no fresh food for weeks or months. Meulengracht's dietary management makes use of the principle that a full diet will improve the patient more rapidly than a restricted one. In the production of experimental peptic ulcer in dogs it has been shown that the lesion is less readily produced if the dog is on a full diet than when the animal is on a restricted diet. In experiments with chicks it was found that dietary deficiency and cinchophen produced gastric ulcers which could be prevented or ameliorated by feeding a diet which contained an antigizzard erosion or antiulcer factor which has been designated as vitamin U. The effectiveness of a high caloric diet rich in this antiulcer factor was investigated in the management of a group of patients with peptic ulcer which had been recalcitrant to treatment. The dietary regimen was based

on the usual convalescent ulcer diet with the addition of certain food substances known to contain the antiulcer factor. The diet included six eggs daily, two soft boiled for breakfast and four uncooked in egg-nog between meals. Fifty Gm. of butter, 30 Gm. of peanut butter, 30 cc. of olive oil and certain fresh greens were also included. The patients also received one helping of tender meat and orange juice and tomato juice daily. The liberal diet made no patient worse, and the omission of the drugs did not aggravate the patients' symptoms. Two-thirds of the patients were completely relieved, and 27 of the 31 patients were clearly benefited. The patients represent a small number of cases of therapeutic failures encountered in a large series of ulcer patients treated by the usual medical management, and consequently the successful results must be considered exceptional. This group of 31 patients represents but 7.4 per cent of the 418 ulcer cases observed, and it is just this group which has so frequently been operated on in the past. It is recognized that defective nutrition is but one factor of several which may lead to the precipitation of symptoms of peptic ulcer, but it would seem that it might be an important one.

SULFONAMIDE THERAPY IN GONOCOCCAL INFECTION IN WOMEN. Hesseltine, H. C., Hac, Lucile, R., Adair, F. L. and Hibbs, D. K.: *Amer. Jour. of Obs. and Gyn.*, 1945, 49: 746.

Hesseltine and his associates report a four year study of sulfonamide therapy in gonococcal infection in women. They have treated 1,126 women with sulfanilamide, sulfapyridine, sulfathiazole or sulfadiazine. Criteria of cure required that patients be observed at least two months following therapy before they could be discharged as cured. A follow-up study was made on 575 patients who were discharged as cured or who failed to respond to therapy. Of these, 430 (75 per cent) responded to one course of therapy and were discharged cured; 145 had repeated or recurrent positive cultures and received further therapy. The authors arrive at the following conclusions: Sulfadiazine is the drug of choice for treatment of gonococcal infection of women. Sulfathiazole is slightly less effective. Both drugs gave better results and were tolerated better than sulfanilamide or sulfapyridine. Diagnosis of gonorrhoea and criteria of cure, wherever possible, should be based on cultural studies. Patients should be observed through at least one negative menstrual period and preferably two. Negative smears and cultures taken just after the menstrual period should be required. Considerable information is obtained from cultures taken during therapy. The menstrual period is the best provocative test. Complications of salpingitis or Bartholinitis were not associated with more failures of therapy than acute uncomplicated cases. Drug fast stains were produced in the adult women in less than 1 per cent of the cases.

TREATMENT OF POSTARSPHENAMINE JAUNDICE. Peters, R. A., Thompson, R. H. S. and King, A. J., Williams, D. I. and Nicol, C. S.: *Quart. Jour. of Med.*, 1945, 14: 35.

Peters and his associates say that, although infection has long been regarded as a probable factor in the etiology of many cases of postarsphenamine jaundice, the arsenicals themselves have never been exonerated. It has been shown repeatedly that the administration of different arsenical compounds to experimental animals can produce damage and necrosis of the

liver cells in the absence of coincident spirochetal or other infection. Since a high protein diet can prevent bilirubinemia and liver damage in dogs after weekly intravenous injection of oxophenarsine hydrochloride, it was decided to study the effect of the oral administration of certain sulfur-containing amino acids on the course of postarsphenamine jaundice. The authors studied 468 cases of postarsphenamine jaundice. The conclusions are based on the treatment of 150 severe cases selected from the total of 468. Three groups of patients were treated respectively with cysteine, methionine and casein, control patients being observed simultaneously throughout. The rate of recovery of the patients was observed clinically and by serial estimation of the serum bilirubin levels. A slight but statistically significant increase in the rate of return to normal was noted in the patients receiving cysteine or methionine. Casein, in the dosage used, did not bring about any beneficial effect.

DIAGNOSIS OF BONE TUMORS BY ASPIRATION BIOPSY. Snyder, Ruth E. and Coley, B. L.: *Surg., Gyn. and Obs.*, 1945, 80: 517.

Snyder and Coley survey 567 bone aspirations done on 474 patients during the past twelve years. There have been no immediate complications of the procedure and no evidence to suggest more rapid development of metastasis. In primary bone tumors and metastatic carcinoma of the bone, aspiration has been done in 385 cases, of which 67.5 per cent were definitely and specifically diagnostic, while a total of 82 per cent showed material sufficient for the diagnosis of tumor, the exact type diagnosis not being called in 14.5 per cent. In only one instance was a diagnosis of malignant tumor made when the resected specimen showed a benign tumor and in this case the treatment was local resection. Thus in no case did a false aspiration diagnosis lead to amputation for a benign process. The clinician must realize the scope and limitations of the method and understand that failure to obtain cells means only that no tissue was obtained, further interpretation depending on the clinical and roentgenographic findings. Aspiration biopsy has proved itself to be a valuable and reliable diagnostic procedure.

DIABETES MELLITUS AS OBSERVED FOR TEN OR MORE YEARS. Richardson, R. and Bowie, M. A.: *Amer. Jour. of Med. Sci.*, 1945, 209: 1.

Four reports from the University of Pennsylvania present a study of 100 patients who had had diabetes for ten years or more. Observation on these patients showed that diabetes does not always progress to greater severity. Comparison of the diet of 45 per cent of the patients had not advanced. Ten patients required less insulin at the end than at the beginning of the period. Of the 55 who required more insulin, a number had also received increases in diet. Acidosis occurred in 3 of the group. Anemia of a mild degree was present in 26 patients. Chronic or repeated acute infections occurred in 39 patients. Hypertension (systolic blood pressure 160 mm.) was present in 38 per cent, all past 50 years of age; the incidence increased with each decade. The incidence of hypertension apparently was not dependent on duration, control or severity of the diabetes. Only 3 patients under 50 had abnormalities of the heart which could be attributed to their diabetic state. The 3

patients were 24, 30 and 47 years of age and had had diabetes for fifteen or sixteen years. The low incidence of cardiovascular abnormalities in this younger group receiving the high carbohydrate-low fat diet compared to reports in the literature on a high fat-low carbohydrate diet is suggestive of the value of the high carbohydrate-low fat diet in reducing the incidence of premature cardiovascular abnormalities. Complicated cataracts were fewer in diabetic patients treated for ten years than in the untreated. Subcapsular "snow flake" cataracts were still found in the diabetic patients treated for ten years. The diabetic patients treated for ten years show an incidence of sclerosis similar to that of the nondiabetic and to the diabetic of varying duration and therapy. Deep retinal hemorrhages and exudates increase with the duration of diabetes and may be slightly decreased by closely observed therapy. Of the 89 patients who were studied from the standpoint of arteriosclerotic occlusive disease in the legs, 3 patients of those under 50 years of age and 30 of those over 50 had evidence of peripheral arteriosclerosis. Premature arteriosclerosis (below 50) was therefore not common in this group. The severity of the diabetes did not affect the incidence of arteriosclerosis, but the adequately controlled patients had a low incidence of arterial disease. The females had a much higher incidence of arteriosclerotic occlusive disease than males. There were no amputations in the entire group. Neuritis in the extremities was present in 31 of the 89 patients, chiefly in those with arteriosclerosis.

NEUROSIS AND ALCOHOL. Masserman, J. H.: *Amer. Jour. of Psychiatry*, 1944, 101: 389.

In the experimental studies described by Masserman, 16 cats were trained to adapt themselves to situations of increasing complexity; first they opened a box of food, then they were taught to feed only after specific sensory stimuli, and finally they learned to manipulate a switch in various positions to actuate their own feeding signals. When alcohol was administered, these patterns disappeared in the order of decreasing complexity of integration until only the original, primitive feeding reactions remained. After recovery the animals were subjected to a severe motivational conflict and developed inhibitions, phobias, loss of dominance, somatic manifestations of anxiety and other behavioral abnormalities typical of an experimental neurosis. Alcohol partially disintegrated these complex responses, restored direct goal behaviour and thereby temporarily relieved the neurosis. Ten of the animals, after sufficient experience with this effect, continued to prefer alcohol to non-alcoholic liquids until their neuroses were relieved by various procedures. Discussing the significance of these observations with regard to the therapy of alcohol addiction in man, the author suggests that neurotic human beings sometimes resort to alcoholism as one means of escape from their pressing intrapsychic conflicts. In the treatment of alcoholic addiction, therefore, the psychiatrist must treat the emotional conflicts and maladjustments of his patients in order to mitigate their need for the drug. Human beings in their complex social milieu present relationship of much greater intricacy than do experimental cats, but the psychobiologic principles discussed here have a bearing on the problems of chronic alcoholism.

ACUTE ALCOHOLISM TREATED WITH INSULIN. Tillim, S. J.: Amer. Jour. of Psychiatry, 1944, 101: 396.

Tillim presents 4 cases of acute alcoholism treated with insulin. The initial dose of insulin is empirically determined as an amount which will produce in one to one and one-half hours somnolence, thirst and diaphoresis. The amounts chosen by the author vary from 40 to 80 units. When the initial dose is insufficient, as observed at the end of one hour, an additional amount is given. The secondary dose may be given intravenously. The intravenous route has a shorter reaction time and is of no extra risk to the patient after his tolerance to insulin is known. The time allowed for a treatment is usually two and one-half hours, occasionally three hours. The individual treatments are terminated by the oral administration of about 8 ounces of fruit juices which contain an additional ounce of sugar. The number of these treatments varies; one may be sufficient or two to four may be required. The author concludes that insulin therapy has proved superior to other available methods for the treatment of acute alcoholism. It shortens the period of disability and is highly acceptable to patients. In war-time a saving in man hours and avoidance of replacements were important considerations.

VITAMIN C IN HAY FEVER. Friedlaender, S. and Feinberg, S. M.: Jour. of Allergy, 1945, 16: 140.

Friedlaender and Feinberg investigated the vitamin C content of the blood in hay fever patients who were given vitamin C and in some who received no vitamin C. They found that patients with hay fever have a normal blood level of vitamin C. Large doses (500 mg. daily) of vitamin C produce the usual saturation blood levels but do not change the course of the hay fever or asthma. The inability to detect any deficiency of the vitamin C nutrition in seasonal hay fever and asthma patients is in keeping with the absence of therapeutic results when large amounts of vitamin C are administered in these conditions.

E. DAVID SHERMAN, M.D.

Abstract Editor



Find Venereal Disease Contacts

The entire range of activities dealing with the contacts of venereal disease patients may be visualized within the term "contact investigation."

Under this designation are four specific and relatively circumscribed procedures: the contact-education interview, contact reporting, contact location and contact disposition.

Two of these, the interview and reporting, are direct responsibilities of the physician, the former representing the keystone of contact investigation upon which rests, in large measure, the success of venereal disease control as a whole.

As the name implies, the contact-education interview serves the dual purpose of patient education and contact identification.

The interviewer, the physician, as the confidant of his patient, holds the key to the success of contact-education interviewing. His responsibilities are three-fold: first, to the infected individual as a patient, that he may be successfully treated; second, to venereal disease control, that all persons exposed may have the benefit of medical attention; and third, to the patient's future health and the health of the community, that further infection of the patient and others may be avoided.

It should be borne in mind that the attitude of the interviewer tends to be mirrored in the patient. If the interviewer is forthright and sincere, a similar attitude is likely to be reflected in the reactions of the patient. A pleasing approach, a warm human interest tempered by a quiet confidence and poise, tact in the use of words understandable to the patient, voice inflections, kindness, facial expressions, gestures, sympathetic understanding and a willingness to listen to make the conversation a joint affair—all will condition the interviewer's success.

In carrying out the interview, its principal objective should constantly be kept in mind—the disclosure of information by the patient which will lead to the location and identification of all contacts to the infection, not only those from whom the disease may have been contracted, but also any who may subsequently have been exposed.

From a material viewpoint there are two fundamentals in venereal disease control which have been recognized for many years. The first of these is this: so long as the organisms that cause syphilis and gonorrhoea infect their hosts, venereal disease will spread to new victims. The second fundamental is: the only way to eliminate venereal disease is to find and treat every individual in whom infection exists.

Each new case of venereal disease represents a failure in our control methods yet offers an outstanding opportunity to bring to light a hidden and probably an unsuspected case—the contact.

To ignore such an opportunity would indeed be negligent since we cannot escape the certainty that tomorrow's incidence of venereal disease is the price we will pay for the cases we do not find and treat to-day.