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NOVA SCOTIA DIVISION OF THE CANADIAN MEDICAL ASSOCIATION

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## Dusty Records and Clinical Gems

The current issue of the *Bulletin* contains three case reports of unusual clinical conditions. They are sufficiently uncommon that most readers will probably never come across their like in their own practices. Nevertheless, these cases have all been reported from different hospitals in Nova Scotia and the *Bulletin* welcomes their inclusion.

Commendably, these cases have been carefully studied, and the pertinent literature reviewed. This is not always easy to do in a busy practice, particularly if reference facilities are not readily available; however, the end result indicates that it is a worthwhile and important task.

The *Bulletin*, although having a relatively small circulation, is indexed in Index Medicus, and its content is noted and sometimes reported by medical journals of the digest type. Case reports, through these channels, therefore receive wider recognition than may be supposed, and for this reason the reports by Drs. Naqvi, Anand, and Yoon may well be caught in a communications net much greater in size than that of this province. The case of gangrene of the scrotum is an example; awareness of the existence of this condition and the need for early treatment should certainly have wide

recognition, and because of its rarity, it will be of potential interest to many physicians outside Nova Scotia. A likely end result is that patient care in areas far distant from Nova Scotia will benefit.

If these three interesting cases can be reported in one issue of the *Bulletin* many others in various parts of the province must be clearly suitable for reporting. Readers are therefore urged to let interesting cases escape from medical record files and see the light of day in the *Bulletin's* pages. The importance of communication today is such that any channels we possess should be used. The *Bulletin* does not have to pursue a strict policy of selection and rejection, unless articles obviously lack general interest, nor does it have to maintain obsessional standards which some journals require. The *Bulletin* primarily serves readership interest, and in general, clinical material is welcomed.

Your co-operation is requested, and case reports and general articles are solicited. Editorial assistance from the office of the *Bulletin* is always available and audiovisual aids offer additional appeals. Why not search your files today?

D.A.E.S.

## Commentary

*Bill 41, An Act Respecting Medical Services, which was passed in October 1970 by the National Assembly of Quebec, is reprinted in the Commentary column. However, a commentary seems superfluous, for readers will no doubt form their own opinions concerning the Quebec situation.*

### Quebec's Bill 41

Her Majesty with the advice and consent of the National Assembly of Quebec enacts as follows:

#### Division 1 — Resumption of Services

1. Every physician who has any time between July 17, 1970, the date of sanction of Bill 8 entitled Health Insurance Act and the date of the coming into force of this Act was regularly practicing his profession at any place in the Province of Quebec and was a member of the Federation of Medical Specialists of Quebec must practice his profession as usual at the same place there from October 16, 1970 to November 15, 1970.

The same shall apply to every medical specialist who was regularly practicing his profession in the Province of Quebec at any time during such period and was not a member of such federation but whose field of professional activity is the same as that of members of such federation.

2. Every professional syndicate grouping the medical specialists contemplated in Section 1, every union association of such specialist, whether incorporated or not, and every federation or group to which such a syndicate or association adhered or was affiliated, directly or indirectly, on October 14, 1970, or to which such a syndicate or association adheres or is affiliated thereafter, directly or indirectly, must take the appropriate steps to induce the members of such a syndicate or association to comply with Section 1.

Every person who on October 14, 1970 was an officer, director, employee, agent or advisor of such a syndicate, association, federation or group or thereafter becomes such, must also take the appropriate steps to induce the members of the syndicate to comply with Section 1.

#### Division 2 — Continuation of Services

3. An enquiry commission is constituted to determine whether from November 16, 1970 to July 1, 1972 the number of medical specialists contemplated in Section 1 who in fact are providing their professional services as usual is sufficient that the population continue to have access as usual to medical services.

4. The commission shall consist of one member who shall preside over it and shall be appointed by the Lieutenant Governor in Council; it may retain the services of any person whom it considers necessary to carry out its mandate. (The remuneration of the Chairman of the Commission and that of the persons whose services it retains shall be determined by the Lieutenant Governor in Council).
5. The Commission shall have the powers and immunities conferred under the Public Enquiries Commission Act (revised statutes 1964, chapter 11) by the first paragraph of Section 16, and Sections 9-13 and 16 and 17 of such Act; the same shall apply to any person whose services it retains and who is appointed in writing for such purpose by its Chairman.
6. Section 5 shall have effect and the powers provided for therein may be exercised notwithstanding any inconsistent provision of any general law or special act.
7. When the Commission ascertains that the number of medical specialists contemplated in Section 1 who have in fact ceased to provide their services as usual in any part of the Province of Quebec, or the number of those who, engaged in the same kind of professional activity throughout Quebec or in any part thereof, have in fact ceased to provide their services as usual, is such that the population no longer has access as usual to medical services, it shall forthwith advise the Minister of Health thereof, provide him with all information which it has in this respect and indicate to him the date from which the situation so began to deteriorate.
8. If the Lieutenant Governor in Council considers that the situation ascertained by the Commission constitutes a concerted cessation or slackening of usual activity by the medical specialists contemplated in the report of the Commission and that this situation is likely to endanger health, he may order that all medical specialists who are providing services, in any part of the Province of Quebec which he determines, on the date on which he considers that situation began to deteriorate, but

which shall not be earlier than the 30th day preceding the date of the order, must practice their profession as usual at the same place there from the day following the publication of the order in the Quebec official Gazette until such date as he indicates, which shall not be later than the 60th day following the date of the order. The order may contemplate only medical specialists engaged in the same kind of professional activity either throughout the Province of Quebec or in any part thereof and may be rescinded in whole or in part at any time before the date on which it ceases to have effect.

9. Every professional syndicate grouping medical specialists to whom an order promulgated under Section 8 applies, every union association of such specialists, whether incorporated or not, and every federation or group to which such a syndicate or association adhered or was affiliated directly or indirectly on the date on which the Lieutenant Governor-in-Council considered in the order that the situation had begun to deteriorate, or to which such a syndicate or association adheres or is affiliated directly or indirectly between such date and that on which the order ceased to have effect must, from the publication of the order, take the appropriate steps to induce the members of such a syndicate or association to comply therewith. Every person who on the same date is an officer, director, employee, agent or advisor of such a union, association, federation or group or becomes such between such date and that on which the order ceases to have effect must also take the appropriate steps to induce the members of the syndicate or association to comply with Section 8.

### Division 3 — Presumptions

10. Every medical specialist contemplated in Section 1 shall be presumed to have infringed such Section during the day as soon as it is proven prima facie before the judge who hears the case that such specialist has not practised his profession during such day. Every medical specialist to whom an order promulgated under Section 8 applies shall also be presumed to have infringed such order during the day as soon as it is proven prima facie before the judge who hears the case that such specialist has not practised his profession during such days, within the period during which the order has effect.
11. The presumptions enacted by Section 10 may be rebutted by a medical specialist only if he succeeds in proving: a) that he has in fact practised his profession as usual during such day; or b) that the fact of not having practised his profession on the day during which he is charged with the commission of the offense is normal for him in the usual practise of his profession and that such fact in no way forms part of a concerted action by medical specialists.

12. Every medical specialist contemplated in Section 1 shall be presumed to have infringed such section during the day as soon as it has been proven prima facie before the judge who hears the case that such specialist has not provided during such day the services which he usually provides to his patients during such a day.

Every medical specialist to whom an order promulgated under Section 8 applies also shall be presumed to have infringed such order during the day as soon as it is proven prima facie before the judge who hears the case that such specialist has not during such day provided his patient with services which he usually provides to them during such day.

The presumptions enacted by the preceding paragraph may be rebutted by a medical specialist only if he succeeds in proving: a) that he has in fact provided his patients during such day with the care with which he usually provides them during such day; or b) that, even if he has not in fact provided his patients during such day with the care with which he usually provides them during such day, he has nevertheless practised his profession as usual and the fact of not having provided the usual care to his patients during such day in no way forms part of concerted action by medical specialists.

13. The presence of a medical specialist outside the place where he usually practises his profession, at the time when this Act comes into force or at any time between October 15, 1970 and November 16, 1970 or between the date of an order contemplated in Section 8 and the date on which it ceases to have effect, shall not except the specialist from the application of this Act.

### Division 4 — Penalties and Miscellaneous Provisions

14. Every medical specialist contemplated in Section 1 who infringes the provisions of such Section is guilty of an offence and liable to a fine of \$200-\$500 a day for each day or part of a day during which their offense continues, with or without imprisonment for a period not exceeding one month. The same shall apply to every medical specialist to whom an order promulgated under Section 8 applies and who infringes such order.
15. Every syndicate, association, federation or group contemplated in Section 2 which authorizes, encourages or incites a medical specialist to infringe Section 1, or which infringes Section 2, is guilty of an offence and liable to a fine of \$5,000-\$50,000 for each day or part of a day during which such medical specialist infringes Section 1 or during which the infringement of Section 2 continues. Every syndicate, association, federation or group contemplated in Section 9 which authorizes, encourages or incites a medical specialist to infringe

an order promulgated under Section 8, or which infringes Section 9 is guilty of an offense and liable to a fine of \$5,000-\$50,000 for each day or part of a day during which such specialist infringes Section 8 or during which the infringement of Section 9 continues.

16. When the syndicate, association, federation or group contemplated in Section 2 or 9 has committed an offense contemplated in Section 15, each of its officers, directors, employees, agents or advisors who participated in the commission of the offense or who assented thereto or acquiesced therein shall be deemed a party to the offense and shall be liable to the fine provided for the offense, with or without imprisonment for a period not exceeding one year whether or not the syndicate, association, federation or group have been prosecuted or convicted.
17. Every officer, director, employee, agent or advisor of the syndicate, association, federation or group contemplated in Section 2 or 9 who authorizes, encourages or incites a medical specialist to infringe Section 1 or an order promulgated under Section 8, or who infringes Section 2 or 9, is guilty of an offense and liable to a fine of \$5,000-\$50,000 for each day or part of day during which

such medical specialist infringes Section 1 or the order, or during which the infringement of Section 2 or 9 continues, with or without imprisonment for not more than one year.

Every syndicate, association, federation or group contemplated in Section 2 or 9, an officer, director, employee, agent or advisor of which is guilty of an offense contemplated in the preceding paragraph, is a party to such offense and liable to the prescribed fine in the same manner as such person.

18. The penalties provided in Sections 14 to 17 shall be imposed upon summary proceeding and part 2 of the Summary Convictions Act shall apply. Such proceedings shall only be instituted by the Attorney General or person whom he generally or especially authorizes in writing for such purpose. Notwithstanding any inconsistent legislative provision, a complaint may relate to more than one offense.
19. The monies required for the purposes of Section 14 shall be taken out of the Consolidated Revenue Fund.
20. This Act shall cease to have effect on July 1, 1972 as regards the offences committed before such date. This Act shall come into force on the date of its sanction." □

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# Presidential Address, 1970

L. C. Steeves, M.D.

Halifax, N.S.

"Mr. Chairman, members and guests  
of The Medical Society of Nova Scotia:

Our Society was founded in the aftermath of the Crimean War, and in its initial years experienced the bitterness of the American Civil War; Canada's first political assassination; and the development of regional disparity, with alcoholism and poverty widespread through the Province. During the past year the medical profession in Nova Scotia has lived and worked in a world torn by war and civil war; in a nation shocked by terrorism, into a reassessment of the difference between licence and freedom, the difference between rights and responsibilities; and in a province in which drug abuse, pollution, poverty, and social unrest are not unknown.

Except for technological advances, the founders of The Medical Society of Nova Scotia would feel very much at home at this Annual Meeting, in today's troubled world.

Although the objects of the Society have been reworded, our founders would recognize four of them as their own. They are:

- i. The promotion of health and the prevention of disease,
- ii. The improvement of Medical Services however rendered,
- iii. The maintenance of the integrity and honor of the medical profession,
- iv. The performance of such other lawful things as are incidental or conducive to the welfare of the public and of the medical and allied professions.

But unfamiliar to them, —

- v. The promotion of harmony and unity of purpose between the medical profession and the various bodies assuming economic responsibility for the care of sick or injured persons.

They would view with awe the achievements of the past 117 years in "The promotion of health and the prevention of disease" and in "The improvement of medical services however rendered". They would be disappointed, but not surprised, that "The maintenance of the integrity and honor of the medical profession" remains a major problem for the Society, and one that requires, as Dr. F. A. Dunsworth stated in his address a year ago, "Constant reexamination of standards".

"In the performance of such other lawful things as are incidental or conducive to the welfare of the public and of the medical and allied professions" our founders would be impressed by our organized committee activity, but might be disturbed that with all the advantages

of modern civilization, so many of us as individuals are so little involved in our own local and provincial community affairs.

Our founders would find our fifth object as new and strange as many of our technological advances. The emergence of the third party and the impact of its economic responsibilities upon the health care scene, and public acceptance of Government in this role, is a social phenomenon of the greatest significance for the present and for the future of the medical profession. We must study it objectively and with the assistance of experts in sociology and economics—and do so promptly.

While the adherence of the Society to its objects over more than a century, and its achievements during that time are both most impressive, what about 1970?

Let me mention a few examples of our achievements and of our under-achievements.

Dr. Dunsworth one year ago stated "The first principle is that we must maintain and improve our standards of medical care". At that same meeting the Committee on Medical Education made it quite clear that the primary concern of all doctors, namely quality medical care, is not only a personal responsibility but a responsibility of organized medicine. This challenge to the branch societies and in particular to our members at the level of their participation in hospital medical staff activities, has stimulated a very small response. Throughout the year the Society has brought to the attention of its members by various channels, the implications for medicine in Nova Scotia of the Task Force Reports on the Cost of Health Services in Canada. In June I stated "before the profession dare complain that the quality of medical care must suffer, we must strip our hospitals and private practices of existing inefficiencies that in effect lower the quality of medical care provided in this province". I am sure that the presentations of our Ad Hoc Committee on the Task Force, at this Annual Meeting, has impressed on all of us the necessity of intensifying our efforts to improve the quality and efficiency of our practices. One of the most satisfying experiences of my year as President has been to learn that Government, despite staggering economic pressures, is concerned over quality medical care, and recognizes the responsibility of the Provincial Medical Board of Nova Scotia and the Medical Society of Nova Scotia in the maintenance and improvement of that quality care.

I would warn you, however, that this is not the time to defend the status quo, but rather *our last chance* to introduce significant advances in our methods of delivery of medical services. In other words, we have

been under-achievers in our second object "The improvement of medical services however rendered".

This year has seen much activity in the area of our fourth object, "The performance of such other lawful things as are incidental or conducive to the welfare of the public and of the medical and allied professions". The Voluntary Health Planning Council, Task Force on Drugs, our Committee on Poverty, the introduction of loans for medical students, and a wide variety of other Committee activities within the Society, dealing with matters such as pollution and perinatal mortality, are significant. On the other hand, studies dealing with transfers of functions between doctors and nurses, and of the trend toward establishment of many more categories of allied health professionals have turned up more problems than answers. I am sure that joint study of these problems, with other members of the Health Care Team, will provide answers that medicine alone cannot provide. Society is demanding these answers with justifiable impatience.

Perhaps the most significant achievement of this year, for the future of the Medical Society and for our role in society, was the renewed interest shown by the branches in their Nominating Committee responsibility. For the first time in several years the Nominating Committee faced the happy problem of having to choose

between several thoroughly suitable candidates for each of the Society offices under consideration. This is an indication of a growing sense of personal responsibility by the members of The Medical Society of Nova Scotia.

Every member of the Society, not only those who represent our branches and sections as members of Council, those who serve on our Committees, on our Executive, and as our Officers, but *every* member is responsible in part for those contributions toward the objects of the Society that have been made during this year. Where our efforts have been inadequate, we must recognize this, and redouble our efforts next year.

The proceedings of this Annual Meeting, summarizing as they do our activities in 1970, should be read *and acted on* by every member of the Society. Individual apathy can destroy the Society, individual action constructively channeled through our branches and sections, can make the Medical Society of Nova Scotia the responsible, respected, and socially significant body, not only in Nova Scotia, but in Canada, that our historic priority in this nation and the capabilities of our members requires of us.

May I acknowledge again my debt of gratitude to all those whom I thanked at the banquet last evening. Their support and that of all of you has sustained me as your President in 1970." □

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# Plasmacytoma of the Caecum

## Case Report and Review of the Literature

M. A. Naqvi, M.D., F.R.C.S.(C), J. A. Roach, M.D., and A. W. Gyorfi, M.D.

Sydney, N.S.

**Summary:** *A case of plasmacytoma of the caecum in an 86-year-old woman is reported. The tumour perforated the caecal wall and gave rise to peritonitis, and was associated with multiple myeloma. Previous reports of plasmacytoma of the gastro-intestinal tract are reviewed. Of the 40 cases, 4 were tumours involving the caecum but none perforated or led to peritonitis. Hypergamma-globulinaemia and Bence-Jones proteinuria are not features of the condition, although most of these tumours ultimately disseminate. Since few patients survive long after the diagnosis has been established, the course of gastro-intestinal plasmacytomata is not known, although the lengthy duration of symptoms in some cases indicates that the degree of malignancy may alter.*

Extramedullary plasma-cell tumours develop in various sites, most often in the walls of the upper air passages. Gastro-intestinal involvement is rare; since the first description in 1924<sup>1</sup> only 40 cases have been reported. More than one site in the tract was involved in some cases. The tumour was sited in the stomach in 14 cases, the colon in 9, jejunum in 7, caecum in 4, rectum in 3, and duodenum in 1. The earlier cases of caecal plasmacytoma<sup>2-5</sup> differ from the present case, in which the neoplasm perforated the wall of the caecum and gave rise to peritonitis.

### Case Report

C.M., an 86-year old woman, was admitted to the New Waterford Consolidated Hospital on 4th March, 1969, complaining chiefly of abdominal pain, weakness, and weight loss. She had been treated in hospital six times previously.

The first admission was in July, 1964, for obstructive jaundice; cholecystectomy and choledocholithotomy were performed. The second admission was in December, 1964, because of anaemia, dizziness, and hypertension. Haematological investigation, including bone-marrow studies, revealed hypochromic anaemia; this responded to iron therapy. The third admission, in January 1967, was also because of anaemia. Investigation, including roentgenography of the entire gastro-intestinal tract, haematology, and serum immunoelectrophoresis, again failed to reveal any organic cause of the anaemia. The patient was readmitted in April, 1967, because of vomiting, diarrhoea, and progressive weakness; haematological studies revealed macrocytic megaloblastic anaemia, which responded to the administration of vitamin B<sub>12</sub>. Her fifth admission was in May, 1967, following traumatic fracture of the neck of the left femur. The sixth admission was in April, 1968, for persistent anaemia and dizziness, when symptomatic treatment gave good results.

**Present admission.** The patient had been constipated and had experienced increasing weakness for six weeks, and the night before admission she had generalized, dull, persistent abdominal pain. She had lost 20 lb (9.1 kg.) in weight in the two months before admission. Upon her arrival in hospital she was in acute distress, being very weak, emaciated, dehydrated and poorly nourished.

Blood pressure was 116/64 mm. Hg, pulse 110/min., respirations 22/min., and temperature 100.2° F. (38° C.). There was a well-healed scar in the right upper quadrant of the abdomen. The abdomen was diffusely tender especially below the umbilicus. The bowel sounds were low-pitched. Liver, spleen and kidney were not palpable. The rectum was empty, and rectal examination was painful. Arthritic deformities of the hand were noted; and movement of the left hip was restricted by the pin in the femur. The heart was enlarged to the left; a loud systolic murmur was maximal in the mitral area, and the heart sounds were irregular. Fine crepitations were audible at both lung bases. No lymphadenopathy was apparent. The breasts and neurological system appeared normal.

Laboratory findings on admission gave the following results. **Haematology:** haematocrit, 30%; haemoglobin, 10 g./100 ml.; leukocytes, 6700 per c.mm., with 69% polymorphs, 26% lymphocytes, 3% monocytes, 1% eosinophils and 1% basophils. No plasma cells were seen in peripheral-blood smears. **Urine:** analysis revealed no sugar or protein; specific gravity, 1.019; microscopy showed 8-10 leukocytes/h.p.f. **Biochemistry:** blood sugar, 114 mg./100 ml.; blood urea nitrogen, 17.5 mg./100 ml. Serum electrolytes (mEq./L.): sodium, 127; potassium, 3.5; chloride, 86.

The EKG revealed atrial fibrillation.

X-Ray of the abdomen showed obliteration of both psoas shadows and multiple dilated loops of small



bowel; the distal colon was devoid of gas. Abdominal paracentesis in the right and left lower quadrants yielded pus from the peritoneal cavity. Peritonitis with perforation of the colon, possibly due to neoplasm, was diagnosed.

At laparotomy, the presence of free pus in the peritoneal cavity was confirmed. The entire caecum was replaced by a tumour mass which had perforated the wall at its antimesenteric border; the terminal portion of the ileum was dilated and the distal bowel was collapsed. There were enlarged nodes along the mesentery. Ileo-colic resection was performed, with tube gastrostomy.

Atelectasis and pneumonia developed soon after operation but this resolved when intermittent positive-pressure breathing was instituted. On the seventh post-operative day, the wound dehisced and required packing. On the 30th postoperative day, an embolism developed in the right femoral artery; femoral embolectomy was carried out. Two days later, the patient complained of severe chest pain; shock ensued, and she died suddenly soon afterwards.

Necropsy was performed. The caecum was part of a granulomatous, thickwalled mass which extended to part of the ascending colon (Fig. 1). The ileum, appendix and other parts of the gastro-intestinal tract appeared free of neoplasm. Microscopy of sections of the caecum revealed small amounts of stroma separating groups of plasma cells of various shapes and sizes (Fig. 2); bizarre forms and mitotic figures were present. Sections of the large bowel showed dense infiltration with plasma cells. Multiple myelomata were present in the bone marrow.

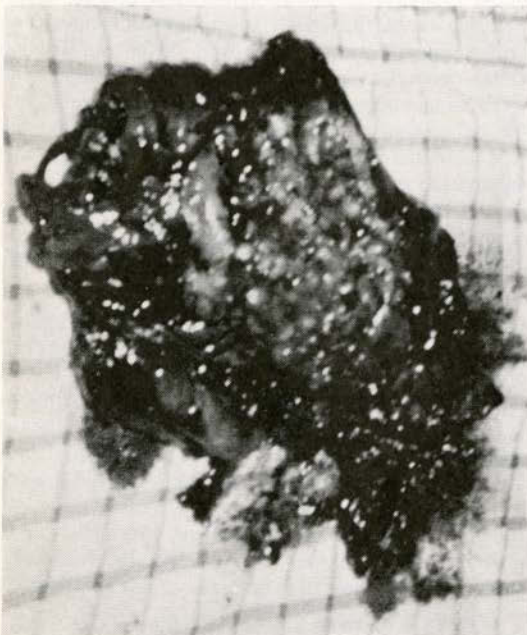
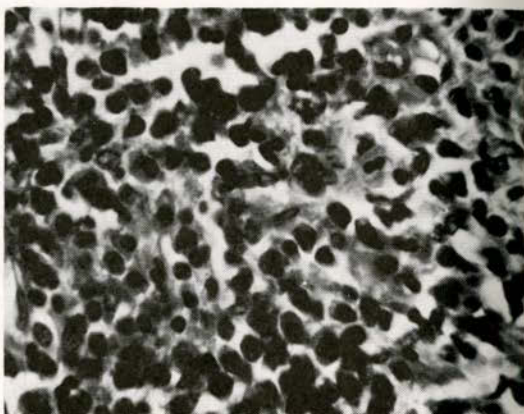


FIGURE 1

Gross appearance of the resected tissue.



A.



B.

FIGURE 2

Photomicrograph of section of the caecal plasmacytoma, showing large sheets of plasma cells. A: X Low Power; B: X High Power.

### Discussion

Plasma-cell tumours were first mentioned by Unna, in 1891<sup>6</sup>, and were described in some detail in 1905 by Schridde<sup>7</sup>. There are four types: (1) myelomatosis or multiple myelomata; (2) solitary myeloma of the bone; (3) plasma-cell leukaemia; and (4) extra-medullary plasmacytoma.

In order to establish a diagnosis of plasmacytoma, certain criteria must be fulfilled. This tumour consists of a solid growth of plasma cells in masses separated by connective-tissue septa, and it is infiltrative. The plasma cells are of various sizes. Some are multinucleated and some are atypical; the number of mitotic figures varies, and Russell bodies are absent. These neoplasms can be differentiated from inflammatory lesions such as granulomata and polyps by the lack of vascularity and the absence of inflammatory cells. Most

cases have been classified as solitary plasmacytomata; however, it is now recognized that the majority of these tumours ultimately disseminate and become evident in the bone marrow. For many years, attempts were made to judge the benign or malignant nature of the disease by histological appearance, but most recent reports emphasize the lack of correlation between microscopic appearance and clinical course.

Although the literature has been reviewed previously,<sup>9-11</sup> a further review is considered appropriate here (Table I, 1-5, 10-33)\*. The youngest patient was an 8-year-old boy with plasmacytoma of the ileum, and (until the present report) the oldest patient was a 67-year-old man, in whom the lesion was in the colon. The common clinical manifestations were abdominal pain, vomiting, weight loss, and gastro-intestinal bleeding. Approximately one-third of the cases in which the duration of symptoms was recorded had had them for longer than one year. Carcinoma and pyloric obstruction were diagnosed pre-operatively in cases of gastric plasmacytoma.

Our case illustrates several important features. The patient is the oldest reported. Colonic obstruction, intestinal perforation and peritonitis have not been reported previously. Anaemia was diagnosed repeatedly during the five years before she died, but no cause had been discovered and neither examination of the bone marrow nor serum electrophoresis had indicated myeloma. (In the majority of the reported cases, hypergammaglobulinaemia and Bence-Jones proteinuria were absent or were not mentioned.) In our case, had myeloma been diagnosed previously on the basis of bone-marrow findings, the signs and symptoms of peritonitis when she was last admitted would have indicated plasmacytoma of the intestine.

Metastases develop most commonly in the lymph nodes. In most cases the tumour had been resected, and irradiation has been used in some. However, therapy seems to be unsuccessful when there is invasion of local bone structures or spread to lymph nodes. Since few of these patients survive very long after diagnosis, there has been little opportunity to observe the course of malignant gastro-intestinal plasmacytoma, although the long duration of symptoms before diagnosis in some cases suggests that some of these tumours may be initially benign, or more likely, of relatively low-grade malignancy. □

\* For table, see pages following.

#### References

1. North, J. P.: A case of Plasmacytoma of the Small Intestine. *Bull. Buffalo Gen. Hosp.*, **2**: 81, 1924.
2. Arel, F.: Contribution to the study of extramedullary plasmacytoma. *J. Int. Coll. Surg.*, **9**: 225, 1946.
3. Sarasin, P.: Le Plasmocytoma: Études de 37 cas de Zurich. *Oncologia* (Basel), **3**: 90, 1950.
4. Razzaboni, Cited by Vallone 1930, in reference 29, q.v.
5. Gupta, D. N.: Extramedullary plasmacytoma: report of three cases. *Indian J. Med. Sci.*, **7**: 47, 1953.
6. Unna, P. G.: Über Plasmazellen, insbesondere beim Lupus. *Monatsh. für Prakt. Dermat.*, **12**: 296, 1891.
7. Schridde, H.: Weitere Untersuchungen über die Korneilingen der Plasmazellen. *Centr. d. für Allg. Path. u. Path. Anat.*, **16**: 433, 1905.
8. Stout, A. P., and Kenney, F. R.: Primary Plasma-cell tumors of the Upper Air Passages and oral cavity. *Cancer*, **2**: 261, 1949.
9. Hellwig, C. A.: Extramedullary plasma cell tumors as observed in various locations. *Arch. Path.*, **36**: 95, 1943.
10. Ingegno, A. P.: Plasmacytoma of the gastrointestinal tract: report of a case involving the jejunum, and review of the literature. *Gastroenterol.*, **26**: 89, 1954.
11. Sharma, K. D., and Shrivastav, J. D.: Extramedullary plasmacytoma of gastrointestinal tract, with a case report of plasmoma of the rectum, and a review of the literature. *Arch. Path.*, **71**: 229, 1961.
12. Jaeger, E.: Das Extramedulläre Plasmocytom. *Ztschr. für Krebsforsch.*, **52**: 349, 1942.
13. Couret, J. S.: Extramedullary plasma cell tumor of the stomach: a case report. *Amer. J. Clin. Path.*, **16**: 213, 1947.
14. Schwander, H., Estes, J., and Cooper, W. G.: Plasmacytoma of the stomach: report of a case. *Am. J. Path.*, **23**: 237, 1947.
15. Ende, N., Daron, P. B., Richardson, L. K., Raider, L., and Ziskind, J.: Plasma-cell tumor of the stomach, with report of a case. *Radiology*, **55**: 207, 1950.
16. Schumann, H. D.: Rezidivierendes Plasmocytom des Magens. *Arch. Klin. Chir.*, **275**: 89, 1953.
17. Ruland, L.: Zum Problem der extramedullären Plasmocytome. *Arch. Klin. Chir.*, **277**: 490, 1954.
18. Merritt, J. W.: Plasmacytoma of the gastrointestinal tract. *Ann. Surg.*, **142**: 881, 1955.
19. Annamunthodo, H., and Robertson, W. B.: Primary plasmacytoma of the stomach. *Brit. J. Surg.*, **46**: 449, 1959.
20. Robson, A. O., and Knudsen, A.: Plasmacytoma of lung and stomach. *Brit. J. Dis. Chest.*, **53**: 62, 1959.
21. Hampton, J. M., and Gandy, J. R.: Plasmacytoma of the gastrointestinal tract. *Ann. Surg.*, **145**: 415, 1957.
22. Vasilin, T., and Popa, R.: Forme gastrointestinale de tumeurs dites plasmocytomes. *C.R. Soc. Biol. (Paris)*, **98**: 738, 1928.
23. Goldstein, W. B., and Poker, N.: Multiple myeloma involving the gastrointestinal tract. *Gastroenterol.*, **51**: 87, 1966.
24. Hefferman, A.: Plasmacytoma of pancreas and duodenum causing acute intestinal obstruction. *Lancet*, **1**: 910, 1947.
25. Esposito, J. J., and Stout, A. P.: Multiple plasmacytoma of the jejunum: report of a case. *Amer. J. Roentgen*, **53**: 33, 1945.
26. Bastrup-Madsen, P.: Plasmacytoma of the small intestine. *Nord. Med.*, **35**: 1919, 1947.
27. Moreau and von Bogaert (1925): cited by Jaeger, 1942, reference 12, q.v.
28. Vedachalam, S. P., and Radhakrishnan, S.: Plasmacytoma of the gastrointestinal tract. *J. Indian Med. Ass.*, **39**: 423, 1962.
29. Vallone, D.: Plasmocitoma dell'intestino. *Ann. Hal. Chir.*, **9**: 20, 1930.
30. Moutte, G., Laffargue, P., and Eisenbeth, R.: Sarcome plasmocytair de l'iléon. *Algerie Med.*, **55**: 1009, 1951.
31. Hinkel, C. L. (1945): cited by Esposito and Stout, reference 25, q.v.
32. Brown, C. R., and Liber, A. F.: Multiple plasmoma of the ileum and colon. *Arch. Path.*, **28**: 112, 1939.
33. Elias, E. G., Gailani, S., Jones, R., and Mittelman, A.: Extraosseous multiple myeloma: a cause of intestinal obstruction. *Ann. Surg.*, **170**: 857, 1969.

TABLE I  
SUMMARY OF REPORTS OF PLASMACYTOMA OF GASTROINTESTINAL TRACT

Ref. No.	Author	Age	Patient Sex	Race	Site	Clinical features	Duration of Symptoms	Laboratory data	Diagnosis Preoperatively	Treatment	Invasion of Lymph nodes	Histological evidence of malignancy	Results
1	North (1929)	47	F	W	Ileum	Abdominal pain	3 months	—	Intestinal Obstruction	Resection	—	+	Died 36 hours after operation
2	Arel (1946)	8	M	Turk	Ileum	Abdominal pain; vomiting; weight loss; palpable mass	6 months	—	—	Resection	+	—	Died second post-operative day.
2	ditto	15	F	Turk	Caecum	Abdominal pain; weakness; palpable mass	—	—	—	Resection	+	+	Died 4 months later; recurrence of tumour
3	Sarasin (1950)	45	F	W	Caecum	Abdominal pain; weakness; weight loss	—	Hyperglobulinaemia	—	Resection	—	+	Died of stroke 12 years later
4	Razzaboni (cited by Vallone, 1930)	?	?	?	Ileum Caecum and Appendix	Not stated	—	—	—	—	—	—	"Terminal"
5	Gupta (1953)	35	M	Hindu	Caecum	Not stated	6 months	Bence-Jones Proteinuria	—	Resection	+	?	Well after six months
10	Ingegno (1954)	51	F	W	Jejunum	Upper GI haemorrhage; cirrhosis associated with oesophageal varices	"Sudden onset"	—	—	Resection	—	—	32 months follow-up: no recurrence
11	Sharma and Shrivastav (1961)	50	M	?	Rectum	Constipation	1 year	—	—	Abdominal Perineal Resection	—	—	Alive at time of report
12	Jaeger (1942)	45	F	W	Stomach	—	—	—	—	Resection and Radiation	+	—	Recurrence. 4½ yrs treated by Radiotherapy.
13	Couret (1946)	48	F	W	Stomach	Abdominal pain and vomiting Pyloric obstruction	8 years	—	Pyloric Carcinoma	Resection	+	+	Recurrence in 2 months. Died after reoperation.
14	Schwander et al (1947)	42	M	C	Stomach	Abdominal pain; vomiting; melena	7 years	—	Pyloric stenosis; duodenal ulcer	Resection	+	+	Died 14 days Post-operative from Pulmonary Embolism.
15	Ende et al (1950)	63	M	C	Stomach	Epigastric pain; weight loss	3 years	Globulin normal; Bence-Jones protein absent; normal bone marrow.	Carcinoma of stomach	Resection and X-Ray Therapy	++	+	Well after 7 months.

TABLE I (continued)

16	Schumann (1953)	55	M	W	Stomach	Abdominal pain	3 months	Achloro hydria; normal globulin and bone marrow	Carcinoma of stomach	Resection Re-operation following haemorrhage	—	+	Died a few hours after 2nd operation. Total survival 5 months.
17	Ruland (1954)	45	F	W	Stomach	Abdominal pain; weakness; weight loss	1½ years	—	Carcinoma of stomach	Resection and irradiation	++	+	Died 16 months later; generalized metastases.
18	Merritt (1955)	53	M	W	Stomach	Weight loss palpable Epigastric Mass	"many years"	Normal Albumin Globulin	—	Resection	+	+	Died 1 year later; recurrence.
	ditto	34	F	C	Stomach and jejunum	Vomiting weight loss	8 years	High Serum globulin	Pyloric stenosis	Resection	—	+	Well 8 years later.
19	Annamunthodo and Robertson (1959)	50	M	C	Stomach	Symptoms of pyloric obstruction	"many years"	—	Pyloric stenosis; duodenal ulcer	Resection	+	—	Died 6 days after operation.
20	Robson and Knudsen (1959)	48	F	W	Stomach and lung	Diagnosis made previously at exploratory thoracostomy; epigastric pain; vomiting	—	"Gastroscopy Positive"; hyper-globulinaemia	Plasmacytoma of stomach	Palliative Resection	—	+	Died shortly after operation.
21	Hampton and Gandy (1957)	41	F	W	Stomach and Rectum	Abdominal pain; weakness; weight loss.	3 months	—	—	Irradiation; nitrogen mustard; gastric resection after recurrence.	+	+	Well after 8 years.
22	Vasiliu and Popa (1928)	32	F	W	Stomach small intestine Colon	Anorexia Epigastric pain. Glandular Enlargement	5 years	—	—	?	+	+	Died.
23	Goldstein and Poker (1966)	52	M	W	'Diffuse gastro-intestinal involvement'	Weight loss Anemia Abdominal pain Diarrhea Palpable Liver	— protein	Plasma cell in peripheral Blood Electrophoresis showed abnormal	—	—	—	+	Died 43 days after admission.
24	Hefferman (1947)	53	M	W	Duodenum	Weakness abdominal Distension Palpable mass.	3 months	Positive Bence-Jones Protein	—	Gastro Jejunostomy	—	+	Died 24 hours Bony Lesion found in autopsy.
25	Esposito and Stout (1945)	35	M	W	Jejunum	Diagnosis by biopsy of mesentric lymph nodes.	—	—	—	Not stated	—	—	Not stated.

TABLE I (continued)

Ref. No.	Author	Age	Patient Sex	Race	Site	Clinical features	Duration of Symptoms	Laboratory data	Diagnosis Preoperatively	Treatment	Invasion of Lymph nodes	Histological evidence of malignancy	Results
26	Bastrup-Madsen (1947)	49	M	W	Jejunum	Abdominal mass; weakness; weight loss.	—	Bone Marrow and serum globulins normal; Bence-Jones Protein absent.	—	Resection	+	+	Died 1 year Recurrence.
27	Moreau and Von Bogaert (1925)	39	F	W	Jejunum	?	?	—	?	Resection	—	—	Died 4th day.
28	Vedachalam and Radhakirshnan (1962)	34	M	W	Jejunum	Pain and swelling of abdomen palpable Mass in left iliac region.	3 months	Bence-Jones Protein absent	—	Resection	—	—	Alive and well at the time of report.
29	Vallone (1930)	24	M	W	Ileum	Recurrent Intestinal Obstruction	4 months	—	—	Ileostomy then Resection	—	—	Well after three years.
30	Moutte et al (1951)	33	M	W	Ileum	Incidental Discovery at operation for stenosing Duodenal Ulcer.	—	—	—	Resection	+	+	No follow up.
31	Hinkel (1945)	?	?	?	Ileum	—	—	—	—	?	—	—	?
32	Brown and Liber (1939)	57	M	C	Ileum Colon Rectum	Alteration in Bowel Habits.	15 years	—	—	?	+	+	Died of Broncho-pneumonia one week after admission to hospital.
33	Elias et al (1969)	58	M	?	Rectum	Symptoms of large bowel obstruction circumferential	—	Biopsy Positive Bone marrow 'positive for multiple myeloma'	—	Diverting Transverse Colostomy Revision of Colostomy for Prolapse.	—	±	Died post-operatively. Cause of death Pulmonary Embolism
33	ditto	67	M	?	Colon	Symptoms of large bowel obstruction rectal bleeding	—	Elevated serum Iga and Igm; pancytopenia	—	Two Stage Resection	—	+	Died post-operatively. Autopsy disclosed diffuse myelomatosis.
	Present Case	86	F	W	Caecum	Weakness; Abdominal pain; weight loss; constipation	2 months	Anaemia, for 5 years of undetermined cause.	Intestinal perforation with peritonitis, probably due to carcinoma of caecum.	Resection	—	+	Stormy post-operative course Terminal pulmonary embolism. Died 32 days after resection. Autopsy revealed involvement of bone marrow. □

# Gastro-Colic Fistula

## Case Report and a Review of the Literature

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**Summary:** *The spleen, stomach, colon, and tail of the pancreas were resected en bloc in an elderly man in whom carcinoma had led to the creation of a gastro-colic fistula. The degree of palliation achieved indicates that the presence of such a fistula should not necessarily contra-indicate radical excision of the involved portions of colon and stomach.*

Direct communication between the stomach and colon may result from several underlying pathological processes, of which malignancy of the colon or stomach and recurrent ulceration after gastro-enterostomy are the commonest.

Haller (1755)<sup>1</sup> is credited with the first report of a case and Haudek<sup>2</sup> with the first roentgenological diagnosis of gastrocolic fistula due to carcinoma of the stomach. In a review of the literature, in 1925, Verbrugge<sup>3</sup> recorded 216 cases, 14 of them new, two of which were due to neoplasms. He stated that all the 70 cases reported before 1903, reviewed by Koch,<sup>4</sup> had originated from cancer of the stomach of colon, and that Czerny, in 1903,<sup>5</sup> was the first to report gastro-colic fistula following gastro-enterostomy for gastric ulcer. (This was four years after the first description of a jejunal ulcer, in 1899,<sup>6</sup> and 22 years after the introduction of gastro-enterostomy, by Wölfler, in 1881.) Fardelmann<sup>7</sup> in 1930 collected reports of a further 13 cases, and added one more (following gastro-enterostomy), and in 1939 Bailey and Knoll<sup>8</sup> stated that during the previous 10 years there had been 12 cases of gastrocolic fistula at the Los Angeles County General Hospital, relating to cancer in 5 (stomach, 2; colon, 3). In 1957, Marshall and Knud-Hansen<sup>9</sup> stated that a total of 139 cases of gastro-colic fistula due to cancer had been reported by 1940.

There have been many reports since of gastrocolic fistula, more relating to gastric ulceration than to demonstrated neoplasm. For example, Marshall and Knud-Hansen<sup>9</sup> added 60 cases (11 due to cancer) from the records of the Lahey Clinic during 1935-1952, and in 1964 Amlicke and Ponka<sup>10</sup> recorded 16 cases (6 due to malignancy) at the Henry Ford Hospital during 1944-1958.

The present paper reports a further case of gastro-colic fistula and comments on management.

### Case Report

J. G., a 71-year-old man, was admitted to the Blanchard Fraser Memorial Hospital, Kentville, in May, 1969, complaining of pain in the left upper quadrant of the abdomen and extreme loss of weight, of four months' duration. One month before admission he had

noticed offensive eructations and foul odour in his breath. His appetite was poor. He had not had diarrhoea. There were no significant features in his past or family history, or in his occupation as a mechanic. He drank one pint of beer and smoked 10-12 cigarettes daily. On admission he was pale and emaciated. The liver was enlarged two finger-breadths below the costal margin. There was tenderness in the left upper quadrant of the abdomen, but no definite mass was palpable, and he had a large reducible inguinal hernia. Clinically, the prostate was enlarged.

**Investigations.** Haemoglobin, 7.8 g./100 ml.; leukocytes, 13,900 per c.mm. Urine: specific gravity, 1.029; no other abnormalities. The EKG tracing indicated coronary insufficiency. Roentgenography: the upper gastrointestinal tract appeared normal; barium enema showed a filling defect in the upper part of the large bowel and a gastro-colic fistula; and barium was present in the small intestine, a finding which was thought to suggest a gastro-jejuno-colic fistula (Fig. 1).

**Management.** After the transfusion of four units of blood, the haemoglobin rose to 11.3 g.%. The bowel was sterilized by the administration of neomycin, 1 g. four-hourly for 48 hours. At subsequent laparotomy, free fluid was found in the peritoneal cavity. The liver was enlarged but no secondary deposits were seen. The gall bladder contained numerous stones. A large mass in the area of the splenic flexure involved the stomach, transverse colon, and the tail of the pancreas. Splenectomy was performed to permit clearance, and the entire mass was resected *en bloc*: this entailed high gastrectomy and transverse colectomy, together with removal of the tail of the pancreas and lymph nodes. Post-operative recovery, although prolonged by wound infection, proceeded well, and the patient was discharged from hospital 14 days after the operation. He has been followed-up regularly, and when last seen, in May 1970, his appetite was good and he enjoyed his regular drink of beer. A recent roentgenogram is shown in Figure 2.

### Pathology

**Gross:** The specimen included the greater part of the stomach. In the greater curvature there was a stoma

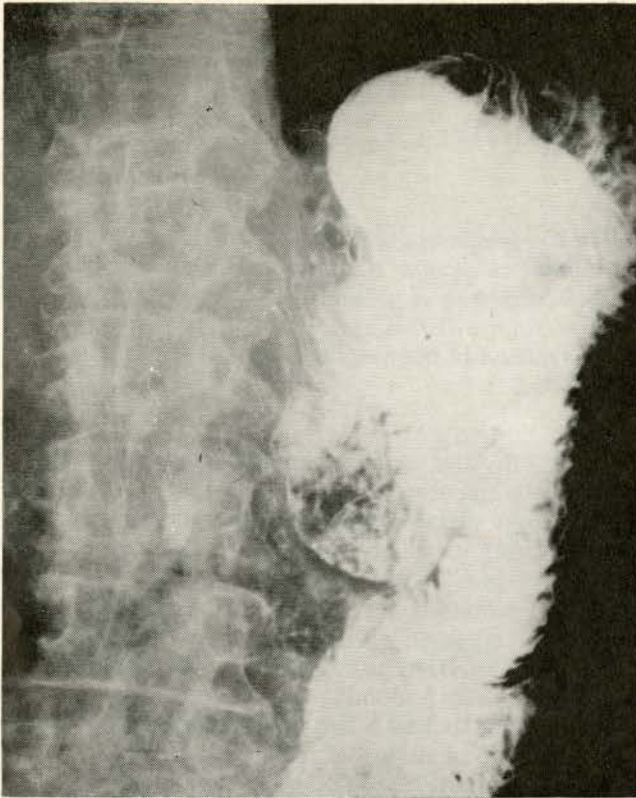


FIGURE I

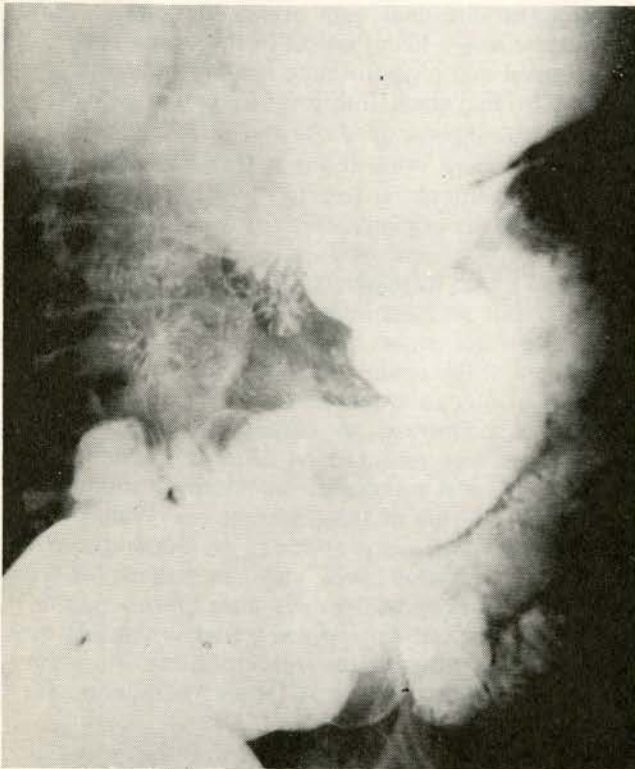


FIGURE II

measuring 4 x 7 cm, with rolled edges 2-3 cm. deep, connecting with the large bowel. No tumour was apparent in the stoma in the colonic mucosa, in the spleen, the portion of pancreas (5 cm. diam.), or the lymph nodes.

*Microscopy:* The oxyntic-cell mass in the gastric mucosa was estimated to be about 50% of normal. There were islets of intestinal metaplasia. The neoplasm was a large-acinar, mucin-secreting adenocarcinoma of gastric type, penetrating the muscle coats and ulcerating into the colon, where adjoining mucosa was normal. No tumour cells were seen in sections of spleen, pancreas, and lymph nodes.

*Pathologist's diagnosis:* Carcinoma of stomach  
Gastro-colic fistula  
No evidence of spread beyond the muscularis mucosae (no tumour found in lymph nodes).

### Discussion

Gastro-colic fistula is a relatively uncommon condition, as evidenced by the fact that Marshall and Knud-Hansen, for example, traced only 60 cases in the Lahey Clinic records during an 18-year period.<sup>9</sup> Some idea of the etiological factors can be gained from the series of Amlicke and Ponka,<sup>10</sup> in which there were 16 cases at the Henry Ford Hospital during 1944-58 and no further cases at the time of their report some five years later (Table 1).

TABLE 1\*

	Number of Cases
Gas*ro-jejuno-colic fistula:	
After posterior gastro-enterostomy for peptic ulcer	7
Gastro-duodeno-jejuno-colic fistula:	
After pyloroplasty for partial pyloric stenosis	1
Gastro-colic fistula:	
Carcinoma of colon	3
Carcinoma of stomach	2
Carcinoma of pancreas	1
Abdominal irradiation for malignancy	1
Ileitis	1
Total	16

\*From Amlicke and Ponka (10).

Some of the cases due to malignancy have been reported as mere surgical curiosities,<sup>8, 11</sup> while others, following surgical intervention, were considered unresectable.<sup>12</sup> Formerly, operations such as gastro-jejunosomy, colostomy, or colo-colostomy<sup>13</sup> had uniformly poor survival rates, patients failing to live for more than 30 days. Verbrugge performed partial resection of the colon and stomach,<sup>3</sup> but his first patient died a few hours after operation and faecal fistula developed in the second, one year after surgery. In 1938 Lahey instituted staged procedures for the treatment of gastro-colic fistula: ileosigmoidostomy with division of the terminal ileum was first performed, followed after 2-4 months by resection *en bloc* of the fistula, the distal

two-thirds of the stomach, and right and transverse colectomy.<sup>14</sup> Advances in antibiotic therapy, blood replacement, surgical and anaesthetic techniques, and in the understanding of electrolyte balance, have significantly lowered the mortality of such extensive procedures. By 1947, a single-stage operation had become a procedure of choice at the Lahey Clinic, and only one of the 11 patients with fistula due to cancer reported by Marshall and Knud-Hansen died.<sup>9</sup> Clay and Ravitch in 1957<sup>15</sup> reported two cases of gastro-colic fistula due to cancer of colon successfully treated by *en bloc* resection: the spleen was removed in one and a segment of liver in the other; palliation was lengthy in both, but ultimately exploration was necessary for recurrent inoperable cancer.

As far as preventive measures are concerned, the application of vagotomy to the surgical management of peptic ulcer has been an important factor in the reduction of the incidence of gastro-colic fistula.

The present case has passed the first-year milestone; he is free from symptoms and is enjoying reasonably good health. Thus it would seem that the earlier widespread attitude of hopelessness is not justifiable; indeed aggressive operative attack should be attempted. Some support for this view lies in the peculiar growth characteristics of these neoplasms. Invasion of the surrounding viscus, with the formation of a fistula into it, delays distant spread through lymphatics and veins; therefore, mere existence of a gastro-colic fistula should not of itself preclude resection. □

#### Acknowledgement

I would like to thank Dr. W. A. Taylor for his help and criticism.

#### References

1. **Haller, A.:** Opuscula pathologica. 1755. Quoted by Kiskaddon, R. M., Templeton, F. E., and Renshaw, R. J. F.: Gastrocolic fistula: a new concept of pathologic physiology; mechanism of production of the syndrome. *Cleveland Clin. Quart.* **14:** 94, 1947.
2. **Haudek, M.:** Über den radiologischen Nachweis der Magen-Colonfistel. *Wien Med. Wschr.* **62:** 3104, 1912.
3. **Verbrugge, J.:** Gastrojejunocolic fistulas. *Arch.Surg.* **11:** 790, 1925.
4. **Koch, P.:** Über Fistula Gastrocolica Carcinomatosa. *Arch. Verdauungskrankheiten* **9:** 1, 1903.
5. **Czerny, V.:** Zur Behandlung der Fissur und des Vorfalles des Mastdarms. *Beitr.Klin.Chir.* **37:** 765, 1903.
6. **Braun, H.:** Demonstration eines Präparates einer 11 Monate nach der Ausführung der Gastro-enterostomie entstandenen Perforation des Jejunum. *Verh. Deutsch. Ges. Chir.* **28:** 94, 1899.
7. **Fardelmann, A. von P.:** Gastrojejunocolic fistula. A brief review of the literature and report of a case. *Amer.J.Surg.* **36:** 527, 1937.
8. **Bailey, W., and Knoll, W. V.:** Gastrocolic fistula. *Radiology* **32:** 347, 1939.
9. **Marshall, S. F., and Knud-Hansen, J.:** Gastrojejunocolic and gastrocolic fistulas. *Ann.Surg.* **145:** 770, 1957.
10. **Amlicke, J. A., and Ponka, J. L.:** Gastrocolic and gastrojejunocolic fistulas. A report of sixteen cases. *Amer.J.Surg.,* **107:** 744, 1964.
11. **Williams, E. R.:** Gastro-colic and gastro-jejuno-colic fistula. Report of 5 cases. *Brit.J.Radiol.,* **14:** 36, 1941.
12. **Ritvo, M., and McDonald, E. J.:** Gastrocolic fistula: report of twelve cases. *Radiology,* **37:** 269, 1941.
13. **Hill, F. C.:** Gastrocolic fistula. With report of a case complicating carcinoma of the stomach. *Med.J.Record,* **125:** 258, 1927.
14. **Lahey, F. H.:** Diagnosis and management of gastrojejunal ulcer and gastrojejunocolic fistula. *Surg.Clin.N.Amer.,* **20:** 767, 1940.
15. **Clay, R. C., and Ravitch, M. M.:** Surgical treatment of gastrocolic fistula due to cancer of the colon. *Arch.Surg.,* **75:** 793, 1957.

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# Idiopathic Gangrene of the Scrotum

## A Case Report†

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**Summary:** *A case of idiopathic (Fournier's) gangrene of the scrotum is reported. The condition is reviewed briefly, with particular reference to the etiology and treatment.*

Gangrene of the scrotum is relatively uncommon. It may present in two ways, either as secondary gangrene, or as idiopathic or Fournier's gangrene.

Secondary gangrene is the commoner, and it is usually associated with urinary extravasation following trauma. It may be secondary to other lesions such as epididymitis, periurethritis, erosive and gangrenous balanitis, and prostatic seminal vesiculitis. It has also been reported as a complication of chemical and thermal injuries to the scrotum. Meleney recorded one case as complicating infection with *Entamoeba histolytica*.<sup>1</sup>

The term "idiopathic gangrene" designates a gangrenous condition of the scrotum in the absence of pre-existing disease of the genito-urinary or other system. First described by Fournier in 1883,<sup>2</sup> this condition has variously been called Fournier's gangrene, spontaneous fulminating gangrene, and streptococcal gangrene, as well as idiopathic<sup>3,4</sup> and essential<sup>5</sup> gangrene.

### Case Report

A 58-year-old white male was admitted to Halifax Infirmary on June 15, 1969, because of scrotal swelling of about two days' duration, and chills and fever. Examination revealed the following abnormalities: He was confused and disorientated; he was well-developed although somewhat obese (weight 80 kg.); the skin was warm and moist, the temperature on admission being 38.7 C.; the blood pressure was 150/90 mm.Hg, and the pulse rate 114/min.; and concerning the external genitalia, although the penis was normal in appearance, the scrotum was markedly enlarged, being 15 cm. in diameter, the skin red, shiny, warm, and edematous, pitting on pressure: there were also small discrete areas of green discoloration.

Catheterization was easy, and yielded 300 ml. urine. Urinalysis showed the presence of sugar (4+), protein (1+), and there were 2 white blood cells per high power field: no red blood cells were evident. Blood sugar was 380 mg.%, hemoglobin was 14.6 gm.%, the leukocyte count was 7150/cm. with a normal differential, the blood urea nitrogen (BUN) level was 28 mg.%, and the serum electrolyte figures were normal.

On the following day, the green necrotic areas of the scrotum had become blue-black (Fig. 1), and there

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was a marked fetid odour. By the third hospital day, the gangrene had become extensive, the area of gangrene being clearly demarcated at the junction with healthy skin. 3 days after admission, the entire necrotic scrotal wall was excised, only small portions of the scrotal wall and the exposed spermatic cords and the testicles enclosed in tunicae being left (Fig. 2).



FIGURE 1

Early stage of Fournier's gangrene of the scrotum.

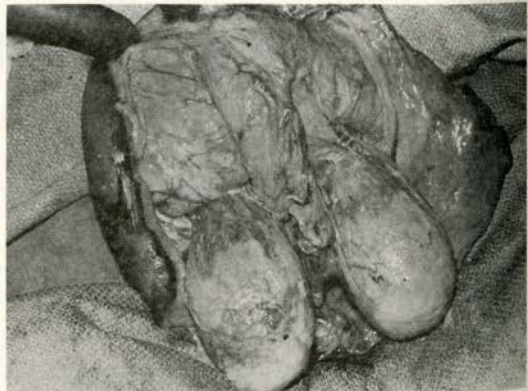
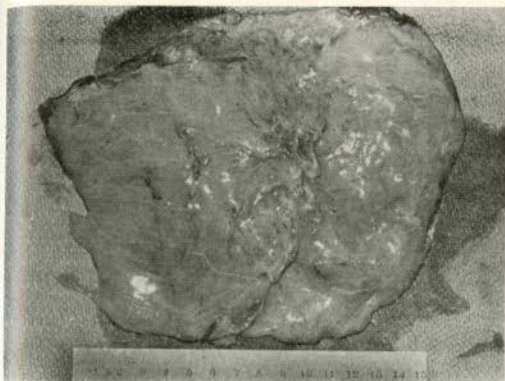


FIGURE 2

After removing necrotic scrotal wall.

The excised specimen weighed 275 gm. There was macroscopic evidence of thrombosis of many of the smaller vessels of the scrotal wall. Culture from the specimen yielded hemolytic streptococci.



**FIGURE 3**

Excised scrotal wall—weight 275 gm., measuring 18 x 17 cm. 3.0 to 4.5 cm. in thickness.



**FIGURE 4**

2 months after operation. Almost complete regeneration of the scrotal wall.

Supportive treatment included the administration of appropriate intravenous fluids, crystalline insulin sufficient to control the previously unrecognized diabetes mellitus, and antibiotics. Crystalline penicillin, 1 million units, was given intravenously every four hours at first, and chloramphenicol, 2 gm. daily in divided doses, was given intramuscularly for one week; after ten days Bicillin, 1.2 million units twice weekly, was administered in place of crystalline penicillin. Combined tetanus and gas gangrene antitoxin was also given. The wound was regularly irrigated with hydrogen peroxide solution. With this therapy, the patient's condition gradually improved. The BUN returned to normal, the wound healed by granulation, and he was discharged on September 5, 1969, at which time he was receiving Diabinese 250 mg. daily and being restricted to an 1800-calorie diet. Two months later, the scrotal wall had almost completely regenerated, enclosing the testicles normally (Fig. 4). Ten months postoperatively, his appearance was normal (Fig. 5).



**FIGURE 5**

10 months after operation.

The initial scrotal lesion certainly appears suddenly, and gangrene then develops rapidly and extensively: within 24 to 48 hours the edematous scrotum shows diffuse blue-black gangrenous necrosis. The condition is accompanied by chills, fever, nausea, vomiting, prostration, and delirium. Death from profound toxemia within 72 hours is not infrequently reported, so that the condition must be regarded seriously.

### Discussion

The etiology of Fournier's gangrene is obscure. Hemolytic streptococci were held to be responsible in six cases reported by Campbell.<sup>6</sup> Anaerobic streptococci, either alone or together with other organisms, were reported in one series, being found in 28 or 44 cases.<sup>7</sup> Some cases have been attributed to gas-forming organisms such as *B. welchii*, although in many cases the gas bacillus has not been demonstrated. Still other cases have been thought to be due to *B. proteus*. Randall classified this form of gangrene in two groups: *i.* Gangrene caused by gas-forming bacilli, and *ii.* Gangrene caused by streptococci, in the absence of gas formation.<sup>3</sup>

The characteristics of this infection, as Fournier indicated, are these:

- i.* Sudden appearance in a patient of apparently good health;
- ii.* Rapid progression to gangrene;
- iii.* Absence of usually accepted causes of gangrene.

Early recognition and immediate intensive treatment are essential. Penicillin, given intravenously in massive doses, should be combined with a broad-spectrum antibiotic, on the assumption that the infection is mixed. Tetanus and gas gangrene antitoxins should also be administered. Transfusions of blood or plasma, as well as appropriate electrolyte and nutrient infusion, may also be indicated. Surgical treatment consists of the removal of gangrenous tissue, and drainage; irrigations of the wound with solutions like hydrogen peroxide, zinc peroxide, potassium permanganate, and bacitracin, are also advocated.

The mortality of this disease was formerly as high as 20-30%. With early recognition and intensive therapy, patients today with this disease should survive. The response to therapy in the present case is an example of the improved outlook for those who develop idiopathic gangrene of the scrotum. □

## References

1. **Meleney**, cited by **Campbell, M. F.**: *Urology*. Philadelphia, W. B. Saunders Company, 1964.
2. **Fournier, A.**: Gangrene foudroyante de la verge. *Med. prat.*, (Paris), 4: 589, 1883.
3. **Randall, A.**: Idiopathic gangrene of the scrotum. *J.Urol.*, 4: 219, 1921.
4. **Gibson, T. E.**: Idiopathic gangrene of the scrotum. *J.Urol.*, 23: 125, 1930.
5. **Gorowitz, P.**: Acute essential gangrene of scrotum. *Urol.Cutan.Rev.*, 36: 813, 1932.
6. **Campbell, M. F.**: Streptococcus scrotal and penile gangrene. *Surg.Gynec.Obst.*, 34: 780, 1922.
7. **Mair, G. B.**: Idiopathic gangrene of scrotum. *Lancet*, 1: 464, 1945.

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**INDICATIONS:** Infections by the following gram-positive bacteria: *Staphylococcus aureus*, *Streptococcus pyogenes*, *Streptococcus viridans*, *C. diphtheriae* and *D. pneumococcus*. An in vitro concentration of 1 µg/ml. or less inhibits most strains. An in vitro concentration of 8 µg/ml. also inhibits most strains of *E. Coli*, *Proteus mirabilis*, *Klebsiella* spp., *H. influenzae*, *N. gonorrhoea*, *N. catarrhalis*. Infections where penicillin cannot be used, either because the organism is penicillin-resistant, the infection is likely to be mixed or the patient is penicillin sensitive.

**ADMINISTRATION:** Cephaloridine B.D.H. is administered parenterally either by injection or intravenous drip. Intramuscular or deep subcutaneous injection is the general route and is generally free from pain even with repeated injections. No phlebitis is reported from large doses by intravenous drip. The intravenous injection of a concentrated solution is not recommended. Peak serum levels after intramuscular injection are obtained in about 30 minutes and good levels maintained for 6 to 8 hours.

**DOSAGE:** A chart for the purpose of calculating dosage is included in the package. Cephaloridine dosage of 20 mg/Kg/day will kill gram-positive organisms and infections due to gram-negative organisms and mixed infections will usually respond to 40 mg/Kg/day. Higher dosages have been used and in severe infections of unknown aetiology, subacute bacterial endocarditis, septicaemia, post operative infections, osteomyelitis and peritonitis, as much as 100 mg/Kg/day have been given. As clinical experience with high dosage is limited, it is probably unwise to exceed 6 to 7 grams daily in adults, and the patient should be carefully watched for side effects.

**PRECAUTIONS AND CONTRAINDICATIONS:** Cephaloridine should not be used in pregnant women unless, in the judgment of the clinician, it is essential to the welfare of the patient. Renal function tests, coagulation studies, routine leucocyte and platelet counts should be made during therapy. Renal function and cephaloridine levels should be carefully watched when used in patients with renal impairment. Cephaloridine is inactive against protozoa, helminths, fungi including *Candida albicans*, *Proteus* species with the exception of *Proteus mirabilis*, *Brucella abortus* and *Ps. pyocyanea* are insensitive to cephaloridine and it has low activity against *M. tuberculosis*. Strains of *Streptococcus faecalis* and *Aerobacter aerogenes* vary in sensitivity. Generally, organisms which develop resistance to other antibiotics retain sensitivity to Cephaloridine B.D.H. so that penicillin-resistant staphylococci is usually sensitive to Cephaloridine B.D.H.

**SIDE EFFECTS AND TOXICITY:** Dosages of 6 Gm. of Cephaloridine B.D.H. daily may produce hyaline and granular casts in the urine less commonly accompanied by proteinuria without renal dysfunction. These are reversible with cessation of therapy. Rare reports have been received of a temporary neutropenia and agranulocytosis and of a transient rise in S.G.O.T. Skin rashes have occurred though patients hypersensitive to penicillin usually tolerate the drug well. Renal disturbances with high dosage or in patients with kidney dysfunction have occurred.

**HOW SUPPLIED:** Cephaloridine B.D.H. is issued in vials containing 250 mg., 500 mg., and 1 gram of Cephaloridine in boxes of 5.

# An Evaluation of Prosthetic Services available to Amputees in Nova Scotia<sup>†</sup>

John W. Keddy\*

**Summary:** *A study has been made of the availability of prosthetic services in Nova Scotia. Information made available by the Nova Scotia Hospital Insurance Commission and by the Department of Veterans' Affairs for a three-year period was analyzed. The author finds that while current prosthetic services in Nova Scotia are adequate, some improvement could be made in informing amputees of the services which are available to them.*

## Introduction

Prosthetic services in Canada were first established in 1916 by the federal government. They were then limited to war veterans. After the second world war, agreement was reached with the provinces to facilitate transition to include the general public on a second priority basis. Later, with the number of veterans requiring prostheses declining, and the number of non-veterans in these circumstances increasing, prosthetic services came under the aegis of the Department of National Health and Welfare rather than the Department of Veterans' Affairs, with the stipulation that the services for veterans would not be jeopardized by this new arrangement.

Today, the headquarters for prosthetic services is located in Toronto, and there are branches in all provinces except Newfoundland. Services are on a cost-recovery basis. An improved level of standardization across the country has been sought, one indication of which is the formal training in these services which was begun in 1967 at the Rehabilitation Centre in Montreal, Quebec, leading to a diploma in the fitting of prosthetic and orthotic devices. Certification examinations for professional prothetists and orthotists were inaugurated in 1969, to provide highly trained personnel for the fitting of artificial limbs and supporting devices respectively.

In Nova Scotia the major centre is located in Halifax, its responsibility extending to Prince Edward Island. Fitting and repair clinics are located in Sydney, N.S., and in Charlottetown, P.E.I. The Halifax centre has a full-time staff of twelve, which includes the Regional Superintendent, four appliance makers, one boot maker, and three professional prosthetist-orthotists. The average unit cost is \$400.00. Lower limb prostheses are supplied twenty times as frequently as those for the upper limb. Some idea of the time involved can be obtained from the fact that a patient being fitted by the centre for a lower-limb prosthesis will require

three visits: one for a cast and measurement, another for preliminary fitting, and a third for the final fitting. Two visits are usually necessary for the fitting of upper-limb prostheses.

The Nova Scotia centre will produce and fit all orthotic devices, orthopaedic footwear, and artificial limbs on the prescription of a physician, although better results are obtained when patients are referred from an amputee clinic. The Nova Scotia Rehabilitation Centre, the Department of Veterans' Affairs, and the Workmen's Compensation Board are all prescribing authorities, the latter two also being sponsoring agencies; other sponsoring agencies include the Nova Scotia Department of Welfare, the Canadian Red Cross Society, the War Amputee Association, the Crippled Children's Fund, and some service clubs.

In 1969 the Chief of the Prosthetic Services Division of the Department of National Health and Welfare, Dr. L. Kawula, expressed interest in obtaining information about the adequacy of prosthetic and orthotic services in Canada. The present paper is directed to an evaluation of the adequacy of such services in Nova Scotia. However, because of the limited time available within the terms of a Summer Research Project, only prosthetic services are considered here. Orthotic services will be left for a future study.

## Methods

This study was confined to the years 1967, 1968, and 1969. Most of the data concerning the numbers of amputations performed in Nova Scotia were obtained from computer tapes loaned by the Nova Scotia Hospital Insurance Commission. Utilizing the manuals "Classification of Operations and Treatments" and "International Classification of Diseases" (1955 and 1965 editions), the programmer wrote a simple program to extract information for certain surgical procedures, giving age, sex, primary diagnosis, and secondary diagnosis when available. Because patients were not individually identified, readmissions in the same or subsequent years were not detected, nor was it ascertained which patients may have died during an admission or later.

<sup>†</sup>Based on a Summer Research Project, aided by a Medical Research Council studentship, under the supervision of Dr. A. C. Irwin, Associate Professor, Department of Preventive Medicine, Dalhousie University, Halifax, N.S.

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Because information for some patients treated in Camp Hill Hospital (a veterans' hospital) was not included on these tapes, permission was obtained to search their records. In these cases, readmissions and deaths could be ascertained, so that these data are more complete than the data obtained from the tapes; however, this source represents only 2.7% of the data collected for the study. Information concerning all patients actually fitted with prostheses was obtained from the Prosthetic Services Centre in Halifax. With permission, every personal record was examined for residents of Nova Scotia fitted with their *first* prostheses, by type of prosthesis, age, sex and sponsor. A few files were incomplete or contained discrepancies as to date of fitting or the patient's age; another possible source of error is the fact that some files were in active use at the time and may have been unavailable or even in duplicate. The data were recorded by year of first fitting, but it is not certain that the patient actually received the artificial limb.

## Results

Table I summarizes the total number of amputations performed in Nova Scotia, in the years 1967, 1968 and 1969, grouped according to sex and surgical procedure. The totals show a decrease in the numbers of amputations over these three years for both sexes, but it is obvious in the major categories that there are more males than females involved.

Of the eleven different operations listed in Table I, "surgical revision of the amputation stump" is the only one which does not always specify the site of the procedure. However after examining Table II, it will be evident that surgical revisions of traumatically-amputated limbs are specifically identified. Another weakness is that one cannot determine whether this particular operation was performed immediately after the injury or some time later. The result is that an undetermined number of these patients may already have been wearing a prosthesis, when it became necessary to revise their amputation stump.

TABLE I  
Amputations in the Province of Nova Scotia  
By Surgical Procedure and Sex,  
For the Years 1967, 1968 and 1969.

Surgical Procedure	Male			Female		
	1967	1968	1969	1967	1968	1969
Revision of Amputation Stump	60	67	30	12	12	9
Amputation and Disarticulation of Finger(s) Excluding Thumb	66	76	80	8	17	8
Amputation and Disarticulation of Thumb	5	5	7	1	1	3
Amputation of Hand and Forearm	2	2	3	0	0	2
Disarticulation of Elbow and Amputation of Arm (above elbow)	4	0	3	2	1	1
Disarticulation of Shoulder and Inter-Thoracoscapular Amputation	1	0	0	1	1	1
Amputation and Disarticulation of Toe(s)	66	45	54	60	38	48
Amputation of Foot	5	10	10	4	6	4
Amputation of Leg (below knee)	39	30	29	12	23	17
Amputation of Thigh and Disarticulation of Knee	78	75	75	37	36	29
Disarticulation of Hip Joint and Abdominopelvic Amputation	0	1	3	0	0	1
Totals	326	311	294	137	135	123

TABLE II  
Surgical Procedures by Underlying Cause and Sex,  
For the Years 1967, 1968 and 1969.

TABLE II(a)  
Surgical Revision of Stump

Diagnosis	Male			Female		
	1967	1968	1969	1967	1968	1969
Trauma (Fingers, Toes and Thumbs)	43	46	16	7	6	3
(Hand and Forearm)	1	2	0	0	0	0
(Foot)	0	1	0	0	1	0
Later Complications of Amputation Stump	11	13	13	3	1	4
Tumor	2	2	0	0	0	1
Buerger's Disease	1	2	0	0	0	0
Diabetes	0	0	0	1	1	0
Gangrene	0	0	0	0	1	1
Peripheral Vascular Disease	2	0	0	0	0	0
Congenital Malformations	0	0	0	1	0	0
Miscellaneous	0	1	1	0	1	0
Unknown	0	0	0	0	1	0
Totals	60	67	30	12	12	9

**TABLE II(b)**  
Amputation and Disarticulation of Finger(s)  
Excluding Thumb

Diagnosis	Male			Female		
	1967	1968	1969	1967	1968	1969
Trauma	45	48	55	2	7	3
Congenital						
Malformations	4	13	6	3	5	3
Osteomyelitis	1	1	2	1	1	1
Buerger's Disease	0	2	4	0	0	0
Gangrene	0	1	3	0	0	0
Infection	1	1	0	1	0	0
Diabetes	0	0	0	0	2	0
Tumor	0	0	1	1	0	0
Peripheral Vascular Disease	0	0	0	0	1	0
Miscellaneous	14	9	9	0	1	1
Unknown	1	1	0	0	0	0
<b>Totals</b>	<b>66</b>	<b>76</b>	<b>80</b>	<b>8</b>	<b>17</b>	<b>8</b>

**TABLE II(c)**  
Amputation and Disarticulation of Thumb

Diagnosis	Male			Female		
	1967	1968	1969	1967	1968	1969
Trauma	4	1	5	1	0	0
Congenital	0	4	1	0	1	2
Tumor	1	0	0	0	0	0
Osteomyelitis	0	0	1	0	0	0
Miscellaneous	0	0	0	0	0	1
<b>Totals</b>	<b>5</b>	<b>5</b>	<b>7</b>	<b>1</b>	<b>1</b>	<b>3</b>

**TABLE II(d)**  
Amputation of Hand and Forearm

Diagnosis	Male			Female		
	1967	1968	1969	1967	1968	1969
Trauma	1	1	2	0	0	0
Tumor	0	1	0	0	0	1
Buerger's Disease	1	0	0	0	0	0
Congenital	0	0	0	0	0	1
Miscellaneous	0	0	1	0	0	0
<b>Totals</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>2</b>

**TABLE II(e)**  
Disarticulation of Elbow and Amputation of Arm  
(above elbow)

Diagnosis	Male			Female		
	1967	1968	1969	1967	1968	1969
Tumor	0	0	2	1	1	1
Trauma	1	0	1	1	0	0
Buerger's Disease	2	0	0	0	0	0
Peripheral Vascular Disease	1	0	0	0	0	0
<b>Totals</b>	<b>4</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>

**TABLE II(f)**  
Disarticulation of Shoulder  
and Interthoracoscapular Amputation

Diagnosis	Male			Female		
	1967	1968	1969	1967	1968	1969
Tumor	1	0	0	1	1	0
Miscellaneous	0	0	0	0	0	1
<b>Totals</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>

**TABLE II(g)**  
Amputation and Disarticulation of Toe(s)

Diagnosis	Male			Female		
	1967	1968	1969	1967	1968	1969
Congenital	18	13	15	32	27	21
Trauma	21	9	18	4	0	2
Gangrene	7	10	6	5	1	1
Diabetes Mellitus	3	2	3	7	2	6
Peripheral Vascular Disease	6	0	4	0	1	0
Osteomyelitis	4	2	0	0	2	0
Tumor	1	3	0	1	0	1
Infection	1	2	1	1	0	0
Miscellaneous	5	4	7	9	4	16
Unknown	0	0	0	1	1	1
<b>Totals</b>	<b>66</b>	<b>45</b>	<b>54</b>	<b>60</b>	<b>38</b>	<b>48</b>

**TABLE II(h)**  
Amputation of Foot

Diagnosis	Male			Female		
	1967	1968	1969	1967	1968	1969
Diabetes Mellitus	2	1	1	3	3	2
Gangrene	2	2	4	0	1	1
Trauma	0	4	1	0	1	0
Peripheral Vascular Disease	0	1	2	0	1	0
Congenital	0	0	1	0	0	1
Buerger's Disease	1	0	0	0	0	0
Raynaud's Disease	0	0	0	1	0	0
Miscellaneous	0	1	1	0	0	0
Unknown	0	1	0	0	0	0
<b>Totals</b>	<b>5</b>	<b>10</b>	<b>10</b>	<b>4</b>	<b>6</b>	<b>4</b>

**TABLE II(i)**  
Amputation of Leg (below knee)

Diagnosis	Male			Female		
	1967	1968	1969	1967	1968	1969
Gangrene	11	13	11	6	8	9
Diabetes Mellitus	8	5	8	5	10	3
Peripheral Vascular Disease	8	3	8	1	3	4
Trauma	5	4	1	0	0	0
Buerger's Disease	4	1	0	0	0	0
Tumor	3	0	0	0	1	1
Osteomyelitis	0	1	1	0	0	0
Miscellaneous	0	2	0	0	1	0
Unknown	0	1	0	0	0	0
<b>Totals</b>	<b>39</b>	<b>30</b>	<b>29</b>	<b>12</b>	<b>23</b>	<b>17</b>

**TABLE II(j)**  
Amputation of Thigh and Disarticulation of Knee

Diagnosis	Male			Female		
	1967	1968	1969	1967	1968	1969
Gangrene	34	36	24	19	14	12
Peripheral Vascular Disease	18	15	30	6	6	9
Diabetes Mellitus	11	4	9	9	15	5
Trauma	3	4	8	1	0	1
Tumor	2	8	0	2	1	2
Buerger's Disease	4	3	0	0	0	0
Osteomyelitis	3	2	0	0	0	0
Miscellaneous	3	3	3	0	0	0
Unknown	0	0	1	0	0	0
Totals	78	75	75	37	36	29

**TABLE II(k)**  
Disarticulation of Hip Joint and Abdominopelvic Amputation

Diagnosis	Male			Female		
	1967	1968	1969	1967	1968	1969
Tumor	0	1	3	0	0	1
Totals	0	1	3	0	0	1

Table II lists each surgical procedure with the sub-totals divided by sex and underlying cause. It is immediately apparent that the sex differences found in Table I are the result of the large preponderance of males with amputations due to trauma. In contrast most toe amputations are due to congenital malformations and that here females outnumber males. While trauma and deformities are responsible for most upper limb and toe amputations vascular disease becomes more prominent as a cause for lower limb amputations. The more radical operations such as interthoraco-scapular and abdominopelvic amputations are few in number and were performed only as an attempt to prevent the spread of malignant disease.

In Table III each surgical procedure is broken down into arbitrarily chosen age groups. Infants were separated out as a matter of interest while ages 1 to 19 were grouped together as the period of growth in which amputees will likely require one or more replacement prostheses. Ages 20-49 constitute the most active working years in which traumatic accidents are more likely to occur and this is supported by the findings that "revision of amputation stump" and amputation of fingers (most of which are due to trauma) are most frequent in this group. The 50-69 age group represents a period of transition from active employment to retirement and therefore a gradual shift from an abundance of traumatic accidents to an increasing incidence of vascular diseases. Amputation of toes and feet is highest in this age group as vascular diseases begin to play a greater rôle. Almost all the above and below knee amputations are due to diseased blood vessels and are therefore the most common amputation in the 70+ age group.

**TABLE III**  
Surgical Procedures by Age Group and Year

**TABLE III(a)**  
Revision of Amputation Stump

Age	1967	1968	1969
0-1	8	5	8
1-19	7	12	2
20-49	35	35	16
50-69	20	21	11
70+	2	6	2
Totals	72	79	39

**TABLE III(b)**  
Amputation and Disarticulation of Fingers (excluding thumb)

Age	1967	1968	1969
0-1	6	14	10
1-19	5	9	10
20-49	32	25	42
50-69	28	37	22
70+	3	8	4
Totals	74	93	88

**TABLE III(c)**  
Amputation and Disarticulation of Thumb

Age	1967	1968	1969
0-1	0	5	1
1-19	0	0	2
20-49	3	0	3
50-69	1	1	3
70+	2	0	1
Totals	6	6	10

**TABLE III(d)**  
Amputation of Hand and Forearm

Age	1967	1968	1969
0-1	0	0	1
1-19	1	0	0
20-49	0	1	2
50-69	1	1	1
70+	0	0	1
Totals	2	2	5

**TABLE III(e)**  
Disarticulation of Elbow and Amputation of Arm (above elbow)

Age	1967	1968	1969
0-1	0	0	0
1-19	0	0	1
20-49	2	0	1
50-69	3	1	0
70+	1	0	2
Totals	6	1	4

**TABLE III(f)**  
Disarticulation of Shoulder and Interthoracoscapular Amputation

Age	1967	1968	1969
0 — 1	0	0	0
1 — 19	0	0	0
20 — 49	1	0	0
50 — 69	0	0	1
70+	1	1	0
Totals	2	1	1

**TABLE III(g)**

**Amputation and Disarticulation of Toe(s)**

Age	1967	1968	1969
0 — 1	10	5	6
1 — 19	11	6	7
20 — 49	35	19	22
50 — 69	41	28	42
70+	29	25	25
Totals	126	83	102

**TABLE III(h)**

**Amputation of Foot**

Age	1967	1968	1969
0 — 1	0	1	0
1 — 19	0	0	1
20 — 49	1	1	5
50 — 69	4	8	7
70+	4	6	1
Totals	9	16	14

**TABLE III(i)**

**Amputation of Leg (below knee)**

Age	1967	1968	1969
0 — 1	1	1	0
1 — 19	3	0	0
20 — 49	7	8	2
50 — 69	14	17	19
70+	26	27	25
Totals	51	53	46

**TABLE III(j)**

**Amputation of Thigh and Disarticulation of Knee**

Age	1967	1968	1969
0 — 1	0	0	0
1 — 19	4	4	4
20 — 49	6	7	5
50 — 69	33	31	35
70+	72	69	60
Totals	115	111	104

**TABLE III(k)**

**Disarticulation of Hip Joint and Abdominopelvic Amputation**

Age	1967	1968	1969
0 — 1	0	1	0
1 — 19	0	0	0
20 — 49	0	0	1
50 — 69	0	0	3
70+	0	0	0
Totals	0	1	4

Table IV summarizes the total numbers of *first* prostheses supplied by the Prosthetic Services Centre to Nova Scotia residents according to type of prosthesis and sex. Again the overwhelming majority of males is obvious and in both sexes lower limb prostheses were supplied six times more often than upper limb prostheses. This table also shows an increasing proportion of artificial limbs being supplied to females over the three years under review. The prescribing agencies for the patients obtaining these prostheses are as follows:

Department of Veterans' Affairs	26%
Workmen's Compensation Board	22%
Nova Scotia Rehabilitation Centre	52%

**TABLE IV**

**Type of First Prosthesis Supplied by Sex and Year**

Type of Prosthesis	Male			Female		
	1967	1968	1969	1967	1968	1969
Above Knee	29	27	33	2	3	5
Below Knee	27	21	18	2	7	9
Above Elbow	0	2	4	1	1	1
Below Elbow	3	3	8	1	0	0
Totals	59	53	63	6	11	15

Table V shows the numbers of prostheses supplied by age group and year and compares these subtotals with the numbers of amputations (excluding fingers and toes) performed during the corresponding period. The majority of prostheses especially for lower limbs were fitted for patients in the 50-69 age group whereas most amputations occurred in the 70+ age group. If the total number of prostheses supplied to patients under 70 years of age is compared with the total number of amputations performed during the same period it will be found that about 70% of the amputees received an artificial limb from the Prosthetic Services Centre. However the same calculations for the 70+ age group shows that only 9.5% of these patients obtained a prosthesis.

## Discussion

In order to arrive at a valid conclusion as to whether current prosthetic services in Nova Scotia are adequately meeting the needs of amputees, we must employ some estimate of the potential problem that is more practical and realistic than that given by merely the gross number of amputations. For various reasons certain amputees are judged unsuitable for prostheses and their elimination reduces the size of the problem: these reasons include the site of amputation, the condition of the stump, the general health of the patient and even their unwillingness to wear an artificial limb. On the basis of site, those with amputations of fingers or toes can be immediately eliminated as these rarely require a prosthesis.



**TABLE V**  
**Numbers of Prosthesis Supplied and Amputations Performed\***  
**By Site, Age Group and Year**

Age	Above Knee					
	1967		1968		1969	
	Amp.	Pros.	Amp.	Pros.	Amp.	Pros.
0-1	0	0	1	0	0	0
1-19	4	1	4	4	4	6
20-49	6	5	7	4	6	4
50-69	33	21	31	16	38	24
70+	72	4	69	6	60	4
Totals	115	31	112	30	108	38
Below Knee						
0-1	1	0	2	0	0	0
1-19	3	1	0	1	1	1
20-49	10	5	9	5	7	3
50-69	18	18	25	20	26	16
70+	30	5	33	2	26	7
Totals	62	29	69	28	60	27
Above Elbow						
0-1	0	0	0	0	0	0
1-19	0	1	0	0	1	1
20-49	3	0	0	3	1	1
50-69	3	0	1	0	1	3
70+	2	0	1	0	2	0
Totals	8	1	2	3	5	5
Below Elbow						
0-1	0	0	0	0	1	0
1-19	1	1	0	1	0	1
20-49	1	0	3	2	2	3
50-69	1	3	1	0	1	4
70+	0	0	0	0	1	0
Totals	3	4	4	3	5	8

\* excluding amputation of fingers and toes.

On the basis of one diagnosis only, a relatively large proportion of potential recipients could be eliminated due to "gangrene" and the few patients with this diagnosis who do in fact receive service might be offset by the unknown number of patients with other diagnoses who are found unsuitable for a prosthesis. Then considering the 70+ age group only a small percentage of them will probably require prostheses and this conclusion is borne out in Table V, where in fact only 9.5% did receive an artificial limb. However further study of this group indicated that service for about one-third was financed by the Department of Veterans' Affairs and one-sixth by the Workmen's Compensation Board while the remainder was from their own resources or with some assistance from various other organizations. Although this may mean that many persons in the 70+ age group lack prostheses because of financial difficulties, it seems more likely that advancing illness and limited activity renders an artificial limb impractical.

On the basis of these two somewhat arbitrary decisions, it is felt that 20% of the amputees in the 70+

age group represents a realistic level of service, thereby eliminating 236 potential recipients. Then considering the group under age 70 with a diagnosis of "gangrene", the remaining total will be reduced by a further 45 patients.

Table VI therefore, compares the *estimated* number of prostheses required with the *actual* number of first prostheses supplied in the years 1967, 1968 and 1969. The figures show an average deficit of 23 prostheses per year and a total deficit of 68 over the three years.

It is important now to recall that readmissions to hospital (and therefore duplications in the data) could not be detected and these along with those amputees who died soon after their operations, will have inflated the estimated number of prostheses required. It is also known that a few amputees in Nova Scotia do obtain prosthesis from private firms outside the province and although it is impossible to determine the exact number, nevertheless they will contribute to the apparent deficit in services. Finally, as pointed out for Table II, some patients who underwent surgical revision of their amputation stumps, could have already been supplied with a prosthesis.

**TABLE VI**  
**Estimated Number\* of Prostheses Required Compared with Number of Prostheses Provided, By Site and Year**

Prostheses Required			Site	First Prostheses Supplied		
1967	1968	1969		1967	1968	1969
8	2	5	Above Elbow	1	3	5
3	4	5	Below Elbow	4	3	8
45	52	52	Above Knee	31	30	38
36	35	28	Below Knee	29	28	27
92	93	90	Totals	65	64	78

\* for criteria on which these numbers are based see narrative.

## Recommendations

We must therefore conclude that there is little if any problem with the adequacy of the prosthetic services currently being provided in Nova Scotia. However the employees at the Prosthetic Services Centre in Halifax have been working nearly to full capacity to meet the needs of amputees and if these were substantially increased for any reason, additional staff would then become necessary. No amputee in Nova Scotia should go without a prosthesis through financial difficulties as there are several organizations willing to assist them.

If a problem does exist, it is with those patients who, at considerable extra expense to themselves, travel out of the province to purchase artificial limbs from private firms. Probably through lack of knowledge, these individuals either believe that they are acquiring a superior quality limb from the private firm or that they do not realize that non-veterans are now eligible to purchase limbs from the Centre upon medical referral. It is recommended therefore that all surgeons and

hospital personnel be in a position to advise patients before or after surgery, and in addition, after discharge from hospital, that the Nova Scotia Hospital Insurance Commission might routinely send letters to all patients with certain diagnoses, advising them of the services available, the costs involved, and the availability of financial aid under certain circumstances. These measures would ensure that all amputees in Nova Scotia are made aware of the services available in this province. □

#### Acknowledgments

For their assistance which enabled us to carry out this survey, we wish to thank the following:

The Joint Committee on Research and Statistics of the Nova Scotia Hospital Insurance Commission and the Department of Preventive Medicine.

Mr. Alan Smith, Programmer-Analyst, Department of Preventive Medicine.

Dr. J. E. H. Miller, Assistant Director (Medicine), Camp Hill Hospital.

Mr. R. E. LeMoine, Regional Superintendent, Prosthetic Services Centre, Halifax.

## Significance of Intermediate Levels of Antitrypsin Deficiency in Pulmonary Disease

**Summary:** *Data presented do not indicate a causal association between intermediate levels of alpha antitrypsin deficiency and chronic obstructive lung disease, in contrast to the link observed between severe deficiency and emphysema.*



Several reported studies have linked a severe deficiency of alpha<sub>1</sub> antitrypsin factor with obstructive lung disease. The deficiency is an inherited autosomal recessive trait; severe deficiency indicates homozygous inheritance of an abnormal gene, and intermediate levels indicate the heterozygous state.

With severe deficiency, exertional dyspnea is the predominant symptom of disease. Destruction of lung parenchyma and pulmonary vessels with impaired diffusing capacity suggest emphysema. In patients with intermediate deficiency, lung disease is not as clearly defined.

To assess the relationship between the intermediate deficiency state and pulmonary disease, two investigations were made. In one, the frequency of intermediate antitrypsin deficiency in a chest clinic population was compared with a control group; in the other, the clinical features of lung disease occurring in subjects with severe deficiency were compared with those of people with intermediate levels.

In comparing the frequency of antitrypsin deficiency in normal and diseased groups, sera were obtained from 51 healthy adult blood donors and from 146 consecutive unselected patients attending a chest clinic. The patients had little in common except chronic cough or dyspnea due to pulmonary disease. The majority had chronic obstructive lung disease.

Of the 51 healthy individuals, three had intermediate values, as did 17 of the 146 clinic patients. The difference is not significant.

Martin H. Welch, M.D.; Mark E. Reinecke, M.D.; James F. Hammarsten, M.D.; and Clarence A. Guenter, M.D. *Annals of Internal Medicine*, September, 1969 (Vol. 71, No. 3).

Reprinted from the Abstracts of the National Tuberculosis Association, February, 1970. Printed through cooperation of the Nova Scotia Tuberculosis Association.

#### Clinical Comparison

In the second phase of the study, in patients with intermediate and severe antitrypsin deficiency, 13 chest patients with severely deficient levels and 18 with intermediate levels were compared as to clinical manifestation of lung disease.

Spirometric indexes of obstruction and restriction were roughly comparable, but there was a striking contrast between the two groups with respect of clinical manifestations. Patients with severe deficiency had a clinical picture of primary emphysema with minimal chronic bronchitis. Several reported loss of weight with onset of dyspnea on exertion, the beginning of symptomatic pulmonary disease.

Thirteen of the 18 patients with intermediate levels had significant chronic obstructive lung disease. The pulmonary disease in the other five was varied and included inactive pulmonary tuberculosis, polycythemia rubra vera with hypoxemia, and mild chronic bronchitis.

In the severely deficient group, diffuse loss of vascular markings over both lower lung fields with preservation of upper-lobe vessels was seen on X-ray and confirmed on lung scans.

One patient with intermediate deficiency had a daughter with severe deficiency. Her chest X-ray film revealed no hyperinflation or vascular attenuation, and lung scan showed minimal decrease over left apex and right base, with greater perfusion of lower than upper zones. The daughter had primary emphysema, with vascular decrease in the lower zone characteristic of severe deficiency.

#### Pathogenesis Unclear

Although it has been established that severe deficiency of serum alpha<sub>1</sub> antitrypsin is associated with frequent occurrence of pulmonary disease, the potential

knowledge to be gained from this disease state has not been realized. The goal of investigation in this area must be the elucidation of pathogenetic mechanisms. Such knowledge may be of great value in the study of other forms of chronic obstructive lung disease.

A hypothesis suggests that alpha<sub>1</sub> antitrypsin protects the normal lung against the destructive action of proteolytic enzymes. Since protease inhibitors are not generally specific in their action, trypsin need not be the enzyme of pathogenetic importance in such a hypothesis. Because little is known about concentrations of alpha<sub>1</sub> antitrypsin in various body tissues, it should not be assumed that the serum levels *per se* are the critical factor in producing disease in deficient persons.

An alternative hypothesis is that normal aging is associated with metabolic turnover of connective tissue fibers of the lung. Under tensile stress this turnover may lead to enlargement of the air sacs with age. Deficiency of serum alpha<sub>1</sub> antitrypsin might hasten turnover and thus hasten the changes of aging, resulting in clinical emphysema.

Both hypotheses are in some ways plausible, but strong supporting data are not yet available. It is not clear that the relationship between antitrypsin deficiency and pulmonary emphysema is a causal one. Definitive research in this area must probably await a clear demonstration of the site of primary injury in lung disease associated with severe antitrypsin deficiency, and also improved definition of specific factors producing that injury.

Meanwhile, some speculation based on simple clinical observations is possible. If antitrypsin deficiency

is a cause of lung damage, it would seem that an increased susceptibility to lung disease might be expected in the intermediate group, though not as great as that in severe deficiency. If this were so, a high prevalence of intermediate deficiency should be detected easily in a population of chest disease patients. However, in this study no significant difference was found between the normal and diseased population in the prevalence of intermediate values, suggesting that intermediate deficiency does not cause lung disease.

The hypothesis that severe deficiency causes disease by subjecting the lung to dissolution by proteases remains attractive, however. Possible sources of proteases which might damage lung tissue include macrophages and bacteria within the airways and alveoli, and leukocytes in the bloodstream. The site of injury would depend on the source of protease. Since pulmonary blood flow is normally greatest in the lower zones, a destructive action of proteolytic enzymes from intact or destroyed leukocytes within the pulmonary capillary bed could produce panacinar disease with a preference for the lower lobes. This hypothesis would be supported by demonstration of a primary vascular lesion by light or electron microscopy. Proteases released from bacteria or macrophages would be more likely to cause injury at the level of the respiratory bronchiole resulting in centrilobular emphysema.

It is possible that severe antitrypsin deficiency predisposes patients to such a destructive process, whereas intermediate levels provide adequate defense of the pulmonary parenchyma to prevent clinical manifestations of disease within the normal life span. □

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## Book Reviews

*British Medical Bulletin*, Volume 26, No. 2, May 1970: "Recent Research on the Retina". Ed. E. S. Perkins, \$6.50.

In the whole of biology there is perhaps no single field of study more observing or more fundamental than that of the highly complex mechanism of vision. From the first moment light strikes the photo-sensitive pigments in the retinal receptors, this mechanism offers so many intriguing subjects for inquiry: the chemical events that are then initiated, their translation in a nervous signals, the coding and transmission of these signals to the brain, the processing and final immersion into the conscious plane in perception, with all its inter-related qualities of form, space, movement, brightness and color. This branch of learning has since ancient times attracted the interest of many physicians, and it has been the subject of steadily and rapidly inventive discovery. Of all the senses vision is the most essential to the independent existence and survival of many animal organisms and it is of paramount significance in the physical, cultural, and intellectual life of man. Research into the nature of vision and the factors which may adversely effect its mechanism could hardly be of greater practical consequence. Only through the great technological advances of modern times has the knowledge of the retina begun to extend beyond the recognition of the biological principles involved, to a fuller and deeper appreciation of the intricacies of its structure, function and pathology. This *Bulletin* reviews some of the more interesting and clinically applicable studies that have been done in the past few years.

Ashton, regarding recently discovered aspects of retinal angiogenesis, gives credit to new methods of histological preparation and study of flat tissue preparation of retinal, such as the "Digest Method" which has considerable advantage over the old injection methods. Ashton has established that the development and growth of retinal vessels in man did not occur by a process of budding from the hyaloid artery at the disc, but by a preliminary invasion of mesenchymal cells which differentiate into endothelial cells. This has particular significance in our understanding of the pathogenesis of diabetic and other retinopathies.

A most interesting paper is that of pathology of diabetic retinopathy by Alex Garner. Diabetes mellitus is the most important single systemic cause of blindness in Canada at the present time. As a rule retinopathy in diabetes is a delayed manifestation of the disease, its prevalence increasing with the duration of the disease; as such its rising incidence is a reflection of both the improved life expectancy resulting from the introduction of anti-diabetic therapy and our failure to prevent the retinal complications. Diabetic retinopathy is seen as an outcome of widespread vascular disorder.

The retinal effect of laser irradiation has been studied since its clinical application in 1961 for the problems of retinal detachment. The microscopic and ultrastructural biological effects of this energy source are described in a paper by Marshall and Mellerio indicating that laser irradiation has great potential value as a tool of exceptional precision in retinal research.

The introduction of the technique of fluorescein angiography has caused something of a revolution in ophthalmology, for in addition to confirming in the living eye existing knowledge derived from flat mounts and injected specimens prepared post-mortem, it has provided a wealth of new information about retinal hemodynamics and the evolution of retinal vascular abnormalities. This has become one of the most valuable techniques in the study and diagnosis of diseases of the ocular fundus especially in diabetes. This safe technique has excited the interest of physicians throughout the world and is well documented in a paper by C. M. Kohner and C. T. Dorley.

These articles in particular, as well as others concerning recent developments in ophthalmic retinal research, are recommended both for the specialist and the general reader, despite their esoteric nature.

D. Brian O'Brien

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*Geriatrics and the General Practitioner Team*. By Dr. M. K. Thompson, Toronto, 1970. Macmillan Company, pp. 124, \$1.75.

This is a very readable book written by a family doctor practising in Croydon, England, and is short enough to be read and digested in a few sittings. The author has had an extensive practical experience of treating the elderly and his personal experience and considerable wisdom are balanced by a wide reading of the geriatric literature, so that as he states in the preface to his book "emphasis has been laid where relevance to general practice seems to require it, and where deeper understanding might result from recent advances in knowledge the appropriate sections have been expanded".

There are excellent chapters on examining the elderly patient, the mind, vision, and hearing in old age, cerebral syndromes and heart disease in the elderly, and on incontinence and pressure sores. There is a chapter on various Social Services that can be called upon to assist old people and while some of the details of these services are only relevant to practitioners in the United Kingdom, the whole chapter impresses upon us the need for the team approach in dealing with the problems of old age; it also points out the lack of some much-needed facilities in those countries such as Canada and the U.S.A. where the Social Services are less highly developed and less readily available to the public at large than in the United Kingdom under the National Health Service. The final chapter in the book, written by Dr. Trevor Howell, a consultant geriatrician, is an attempt to delineate the problems facing a physician in charge of a hospital geriatric department and their ultimate solutions. I think he aptly sums up the essence of this book when in his conclusion he states "care of the aged is essentially a combined operation involving team work. It is the privilege of the family doctor to give the signals for putting the team into action and of making sure that it takes the right road".

This book is recommended reading for all family doctors and allied health workers involved with the care of the elderly.

□  
H. C. Still

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## Messages, Machines — and Man

A recent event in a hospital caused me to consider some of the problems of communication in this automated age: problems which we as humans have to face in order to preserve our own links in a society which is dominated by the machine, the medium—and still the need for the message.

Operative treatment was required in Nova Scotia for a boy whose father, a doctor, was at that time some 4,000 miles away. The father was informed of the impending operation about two hours beforehand; however, the personnel required for the operation in Halifax were not informed until five minutes *after* the scheduled time of surgery! Communication at a distance was actually superior to that within one small locality on the opposite coast of this continent. Of course, as space travel has shown, efficacy of communication is by no means a function of distance.

This incident is just one example of a recurring problem, with which we are all familiar. How often does one hear the complaint: "It's a problem of communication".

Implicit in this is the accusation that it is those mythical beings, "they", who are at fault. But communication is a two-way street, to be utilized by "us" as well as "them". The main implication is that however efficient are our technological devices, human fallibility must always be taken into account. Indeed, as technological aids to communication develop, as the earth's population grows, and as the need for communicating knowledge and instructions becomes ever more important, so human weaknesses are likely to become more significant. Probably we should consider not only the techniques of modern communication, we should also consider the real need for basic training and discipline in the art of communicating with each other in this message-crazy world. It is at least reassuring that when there are tricky problems of both communication and technology, there is the capacity in ourselves to overcome such problems, as one hazardous voyage of Apollo clearly showed.

By and large, human beings do fail in the art of communicating between themselves. Even in close personal relationships the lack of communication, and understanding, are responsible for untold misery. Yet the corollary exists: immediate, perceptive, and unspoken communication between two persons is one of the joys of human relationships. It would seem that today, bombarded as we are by crass visual communications and asinine auditory antics, which rely on the maxim, "the medium is the message", we are so numbed by the abundance of irrelevant messages that we come to lose the ability to use our innate sense of communication with others.

It's a moot point whether devices such as visual attachments to telephones and "intercom" equipment, which now plague such proper areas of quiet as operating rooms, will necessarily make communication more efficient. A picture connected to a 'phone makes for lack of care in getting one's message across accurately with words, while the "squawk box" gives the false impression that the message is immediately understood, because of the proximity of the voice. Thus is laziness bred: efficient modern devices may well be the most effective means of communication potentially, but they still require human know-how for their proper use.

In the end, we have to take trouble when we have a message to get across. With the increasing complexity of society, understanding of the importance of communication will play more and more an important role in our lives. But even in the relatively straightforward business of running a medical practice or operating room, or in looking after the affairs of an organization like the Medical Society, it will be interpersonal relationships which must be attended to with care. Communication is by people, for people; its success depends on the individuals who understand the means available, and its limitations are those of ourselves. □

D.A.E.S.

# FIBRINOGEN

## (DRIED, HUMAN)

Fibrinogen (Dried, Human) is prepared from normal human plasma. The material is produced by the cold ethanol plasma fractionation process of the late Professor E. J. Cohn and associates. It is dried in vacuo from the frozen state in quantities which should be reconstituted for use by the addition of sterile, pyrogen-free distilled water.

Fibrinogen (Dried, Human) may be indicated in hypofibrinogenaemia whether this be congenital or associated with other conditions. The product has been found useful in instances of abruptio placentae or in cases involving a dead fetus.



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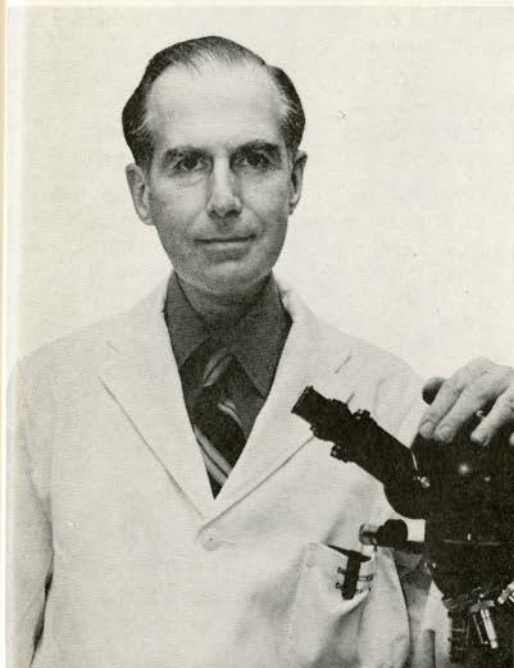
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## Personal Interest Notes



**JOHN F. WOODBURY, M.D.**  
President 1970-1971

**John F. L. Woodbury, B.Sc., M.D., C.M., C.R.C.P.(C), F.A.C.P.**, officially took office in November as President of the Medical Society of Nova Scotia for 1970-1971.

Although a Nova Scotian who can trace family roots in the province back to about 1750, Dr. Woodbury was born in London, England. A 1943 Dalhousie University medical graduate, he acquired his postgraduate training in the Canadian army and became a captain in the RCAMC, assuming the duties of trainee specialist in medicine at the Halifax Military Hospital.

Following his army career, Dr. Woodbury spent five years in general practice in Halifax, soon becoming interested in rheumatology.

Today he is Professor of Medicine at Dalhousie University; Chief of Service, Rheumatology, the Victoria General Hospital; Director of the Dalhousie Rheumatic Unit; Consultant Rheumatologist to the Dalhousie Uni-

versity Teaching Hospital and a member of the Medical and Scientific Committee of the Canadian Arthritis and Rheumatism Society.

Dr. Woodbury is also a Past President of the Canadian Rheumatism Association and a former Chairman of the Executive of the Medical Society of Nova Scotia.

He lives in Halifax and is married to the former Mary Johnson. Mrs. Woodbury returned to Dalhousie University to acquire her Master's Degree in Psychology when family duties permitted and is now engaged in clinical psychology at Canadian Forces Hospital Stadacona in Halifax.

They have three children: Susan, who obtained her B.Sc. at McGill University, Montreal, and is now a meteorological officer with the federal Department of Transport; Gail, with a B.Sc. from Dalhousie University and who is currently working toward a B.Sc. in physiotherapy at McGill, and Frank, now in his second year of science at Dalhousie.

Dr. Woodbury, in association with Drs. K. R. Rozee and J. Embil, has recently presented a comprehensive report on microbiological studies of fluids and tissues from arthritic patients. In association with Dr. T. Ghose, he is also conducting a study of immunology in arthritis and is using a computerized reference system for the disease.

The 117th Annual Meeting of the Nova Scotia Medical Society and the 6th Annual Meeting of Council was held in November at the Lord Nelson Hotel, Halifax. A bigger agenda than ever was presented, and the social events were enjoyed as usual. A fuller account of the meeting will appear in the next issue of the *Bulletin*.

At the meeting, **Drs. H. J. Pothier**, of Yarmouth, and **G. R. Forbes**, of Kentville, were both named as Senior Members of the Society. **Dr. C. K. Fuller**, of Yarmouth, also received Honorary Membership of the Society.

Members of the Medical Society were honoured recently with investiture of the Order of St. John. **Dr. J. E. H. Miller**, of Halifax, was promoted to the rank of Commander, and **Drs. Eileen Vanora Haldane** and **Stanley H. Krysek**, also of Halifax, were promoted to the rank of Officer.

**Dr. Graham Simms**, of Halifax, has been named to represent the province of Nova Scotia on the National Steering Committee on Health Care Costs.

**Dr. M. Delorey**, of Bridgewater, was recently elected as MLA for Bridgewater. Other medical members of the Nova Scotia Legislature are **Drs. T. J. McKeogh**, of Sydney, and **J. MacLean** of Inverness.

**Dr. Paul Cudmore**, presently of the Division of Continuing Medical Education, Dalhousie University, has been appointed Assistant Dean, Dalhousie Medical School.

Dr. A. Naqvi sends news of doctors in Cape Breton Island. **Dr. S. S. Causing** is now associated with **Drs. T. J. McKeough** and **B. S. Ignacio** in practice in Sydney. **Dr. A. R. Gaum**, of Sydney, has returned from a recent trip to Spain. New arrivals in Sydney include the following: a son, Vikram, to Dr. and Mrs. L.S. Gursohani; a son, Allan Rodi, to Dr. and Mrs. Albert Prossin; a daughter, Kathleen Louise, to Dr. and Mrs. Murdock A. Smith; and twins, Jennifer Lynn and Alexander Neil, to Dr. and Mrs. Donald E. MacKenzie.

**Dr. M. G. Tompkins, Sr.**, having practiced in Glace Bay for fifty-six years, has now retired from active practice. His outstanding work in the community of Glace Bay will be remembered by the people of Glace

Bay and by his fellow physicians. We also extend to him our sympathy on the occasion of the recent loss of his wife, Anne.

Members will have heard of the way in which **Dr. and Mrs. J. Carson Murray**, of Springhill, are enjoying the reflected sunshine of their daughter Anne's fame, in her being the recipient of a Golden Record for the song, Snowbird.

**Dr. Everett Smith** was recently appointed as medical director of the Halifax County Hospital. He moved from the Nova Scotia Hospital to take up this post on October 1, 1970.

### NEW MEMBERS

The Physicians listed below have joined The Medical Society of Nova Scotia between September 1, 1969 and August 31, 1970. A most cordial welcome is extended from the Society.

Dr. Siraj Ahmad	Halifax, N.S.	Dr. M. F. Lydon	Windsor, N.S.
Dr. D. M. Andrews	Dartmouth, N.S.	Dr. H. S. Montgomerie	Elmsdale, N.S.
Dr. J. D. Archibald	Pictou, N.S.	Dr. R. C. Montgomery	Barrington, N.S.
Dr. Margaret Barr	Truro, N.S.	Dr. A. H. Murray	Pictou, N.S.
Dr. L. W. Caines	Halifax, N.S.	Dr. J. G. McCleave	Halifax, N.S.
Dr. M. T. Casey	Halifax, N.S.	Dr. R. A. Nicholson	Pictou, N.S.
Dr. W. E. Gaum	Dartmouth, N.S.	Dr. N. G. Pillai	Halifax, N.S.
Dr. J. R. Gould	Halifax, N.S.	Dr. J. T. Sheridan	Tusket, N.S.
Dr. M. H. Halipoto	St. Boniface, Man.	Dr. Muriel Smith	Halifax, N.S.
Dr. Park-Ming Kao	Bras d'Or, N.S.	Dr. Kwang Yang	Halifax, N.S.

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