

# THE NOVA SCOTIA MEDICAL BULLETIN

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## The Role of the University in Training of Personnel in the Health Sciences

Earlier in this century the planning for training of people in Medicine and the related health team was relatively simple. For many years the training of medical graduates has been in the University and its related hospitals. The nurse, who complemented the medical doctor, was trained in hospital Schools of Nursing. The present day needs are complicated both by the numbers of people involved, the specialization of the members of the health team and the increasing role of what is sometimes referred to as the para-medical sciences.

The present day physician or surgeon despite, or perhaps because of, his training in depth is not able to carry out his work without the assistance of laboratory technologists, X-ray technicians and a host of other important health team personnel.

The training of these various people is a complex and changing challenge. It requires a broad perspective of how it can best be done with maximum efficiency as well as minimal cost. It needs constant re-appraisal since what may have been satisfactory ten years ago may be less than desirable today. Who can judge the most important member of the health team? The medical or surgical specialist with ten to fifteen years post-secondary education training is severely handicapped if the technician with two years post-secondary education is not adequately trained or, more important, is not morally and ethically aware of the effects of his or her great contribution which, indeed, may be equally important to the patient's welfare. These technical skills must be as meticulously carried out in the modern team approach

to complicated medical problems as the procedures of the physician or surgeon.

In 1961, Dalhousie University established the Faculty of Health Professions. The School of Nursing became a part of this established Faculty along with the College of Pharmacy which had previously been a separate institution known as the Maritime College of Pharmacy. In 1957, a committee was formed to investigate the possibility of establishing a School of Physiotherapy and Occupational Therapy and this committee recommended Dalhousie University as the most suitable site for such a School. The University accepted this responsibility and approved in principle the establishment of this School. However, due to lack of accommodation and funds, it was not formally established until September, 1963, when Dalhousie commenced a two year diploma course, following senior matriculation, in Physiotherapy. The School of Physiotherapy is a part of the Faculty of Health Professions and it is anticipated that a School of Occupational Therapy will commence in the very near future. In 1966, a School of Physical Education was established at Dalhousie as a basic four year programme of professional preparation leading to a Bachelor of Physical Education. This School is also in the Faculty of Health Professions. A School of Dental Hygiene was established in 1961 as a diploma course and is in the Faculty of Dentistry although some of the courses such as Anatomy, Physiology and Microbiology are taken along with students in the Faculty of Health Professions.

The University School of Nursing offers several programmes. The programme for a Bachelor of Nursing is a four year integrated course of eleven months during each of the first three years and has, as its primary objective, the preparation of a nurse who will be skilled not only in professional nursing techniques but who will also be competent to assume a position of leadership in the profession after an appropriate period of experience. The Royal Commission on Health Services recommended that, as a future goal, approximately 25% of the nursing profession should be people trained at the Bachelor's level and able to assume positions of leadership and responsibility in the health team. It is obvious that there is still a large gap to be filled, but this degree course offers a great opportunity for students wishing to pursue this aspect of the nursing profession, and an increasing enrollment is expected. The School of Nursing also has three courses of one year's duration for graduate nurses. The three courses are: (1) Public Health Nursing, (2) Teaching in the Schools of Nursing and (3) Nursing Service Administration. In 1967, a two year diploma course for graduate nurses in Out-post Nursing was established. This is for training for selective Northern agencies to prepare nurses for positions in remote areas of Northern Canada where physician care on a continuous basis is not available. The major areas of study include Public Health Nursing, complete Midwifery and basic Clinical Medicine. Instruction during the entire course is highly individualized and the number of students that can be accommodated is limited. This is the only such course in North America.

The College of Pharmacy of Dalhousie offers a four year University degree course and is the only Pharmacy training in the Atlantic Provinces. These graduates will be playing an increasingly important role in the health team, since not only will they be offering professional help in retail pharmacy but they are playing an enlarging role in specialized hospital pharmacy positions, in pharmaceutical industry and in research.

The School of Physiotherapy has, despite its limited enrollment due to existing facilities, already helped to relieve the great shortage of trained physiotherapists in the Atlantic Provinces. The present course of two years following senior matriculation is a very heavy one and most such courses in other Universities are of at least three years duration in order to cover the necessary material and to give practical clinical training. The Occupational Therapist of the modern medical team is, unlike some earlier graduates, less involved in Arts and Crafts of a recreational type and is an active member of the rehabilitation and treatment team, with a considerable number involved in psychiatric work and with mental health groups. This requires a considerable depth of knowledge of psychology and sociology as well as orientation

in medical, surgical and psychiatric training. Accordingly, it is expected that the institution of this programme of training in the near future will be as a four year degree course.

A study is underway concerning a degree course in Medical Laboratory Science which would include training in laboratory methods but which would have a greater background in university subjects such as biochemistry and microbiology thus preparing graduates able to assume more senior positions in larger hospital laboratories.

There are other areas of training for people who play an important part in the health team which are not included in the Faculty of Health Professions as set up at Dalhousie. Nevertheless, the University has primary responsibility for such training. These areas include Clinical Psychology and University training in Social Work. The close cooperation required between psychologists of the Faculty of Arts and Sciences and psychiatrists of the Faculty of Medicine in these paramedical fields is facilitated by the University setting. University training in Social Work produces trained personnel who will render service as members of the health team in various ways. Some will be employed with Welfare Departments and other community organizations, some as medical social workers. The need for close liaison between such personnel and others in the health field is obvious. Another specialized area of health personnel training is in Speech Therapy and Audiology: this clearly falls within the responsibility of the University, but has not yet been developed in the Atlantic Provinces. The training of Dietitians and Nutritionists is carried out at several Universities within Nova Scotia; at Acadia University, Mount St. Vincent and St. Francis Xavier, and at Mount Allison in Sackville, N. B. These graduates may be employed in the school system with teaching as their prime responsibility, but many are involved with hospital work or are Nutritionists with the respective Provincial Departments of Health.

The development of post-secondary technical colleges and institutes has permitted the combined training of many health personnel. This group training of Medical Technicians of various types will become increasingly important. In addition, hospitals will continue to be involved in the technical training of other health personnel.

The inter-relationship of the many and varied groups of health team personnel is beyond the purpose of this editorial. Some indication has been given of those areas in which the University assumes major responsibility and where the University and its various members of staff have a partial responsibility. However, there are many other equally important branches of health team technology in which the University rightly assumes less responsibility and in which the various Technical Institutes and Colleges as well as Hospitals have the major responsibility to evolve and develop

technical training. With this increasing complexity of training in modern medicine, it is imperative that close co-operation between the various groups should exist. It would appear likely that a division of responsibility will gradually evolve in which the University will be primarily responsible for the courses requiring degree training whereas the Technical Institutes, with their improved facilities, will, with their own staff and in co-operation with Hospital and University staff, have major responsibility for a large group of technical personnel. This does require an increasing degree of communication and indicates the need for a Planning Council for Health Related Professions and Technicians made up of representatives of the Universities, of the Department of Education, the Hospitals, the Nova Scotia Hospital Insurance Commission and the Department of Health.

At the present time, the Health Industry ranks third in numbers after Agriculture and Construction Industry in the U.S.A. but with the rapid increase in health personnel it is estimated that it will be the largest consumer of manpower by 1970. Since Canada has greater social legislation than the U.S.A., it is likely that the Health Industry is, or will shortly be, the number one employer in Canada. Accordingly, it is most important that there be clear thinking and careful planning, taking into consideration all factors, including financial ones, if we are to obtain the maximum efficiency of training, prevent overlapping and allow a reasonable degree of interchange of selected personnel who may wish to advance from one type of training programme into another.

R. M. MacD. □

## Introduction to Symposium on Paramedical Services

When the Editorial Board of The Nova Scotia Medical Bulletin decided some months ago to assemble a symposium on paramedical services we had a great deal of difficulty defining what was a paramedical service and what was a community organisation. Obviously, many voluntary organisations make a tremendous contribution to the welfare of individual patients, and may assist in helping many hundreds back to full health and happiness. Many of these organisations offer active assistance to the physician in caring for his patient, in addition to drumming up community support for worthwhile projects. However, those organisations who employ trained technologists, or professional people on a full time basis in the direct provision of services to patients were chosen as falling within our particular definition of a paramedical service. Even so, this definition covers a multiplicity of disciplines and organisations, and approaches were therefore made to a number of these asking for a profile of their particular contribution as a paramedical service, and requesting details of the growth of their organisation as well as their future growth prospects. The response has been prompt and enthusiastic, to an extent which has overwhelmed the capacity of the Bulletin to publish all the submissions in a single symposium. Thus the articles here presented are but a sampling of the many paramedical services which are available to assist the doctors of Nova Scotia, and we are hopeful that at a later date we may have the opportunity to issue a second symposium on this subject which will, together with this first symposium, be a reference source of paramedical services for the practitioners of this Province.

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| 10,000        | \$ 1401        | 2000                  |  | 935             | 466         |
| 12,500        | 2088           | 2500                  |  | 1401            | 687         |
| 15,000        | 2918           | 2500                  |  | 2088            | 830         |
| 20,000        | 4940           | 2500                  |  | 3878            | 1062        |
| 25,000        | 7152           | 2500                  |  | 6027            | 1125        |
| 35,000        | 12,009         | 2500                  |  | 10,759          | 1250        |

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| Contract Year Anniversary | Guaranteed Interest Rate | Dividend | Total Rate Credited |
|---------------------------|--------------------------|----------|---------------------|
| February, 1958            | 3.50%                    | .75%     | 4.25%               |
| February, 1960            | 3.50%                    | 1.00%    | 4.50%               |
| February, 1962            | 3.50%                    | 1.75%    | 5.25%               |
| February, 1963            | 3.50%                    | 1.83%    | 5.33%               |
| February, 1964            | 3.50%                    | 1.99%    | 5.49%               |
| February, 1965            | 3.50%                    | 2.09%    | 5.59%               |
| February, 1966            | 3.50%                    | 2.10%    | 5.60%               |
| February, 1967            | 3.50%                    | 2.19%    | 5.69%               |

### COMMON STOCK FUNDS

| Date              | Unit Value |
|-------------------|------------|
| December 1, 1957  | \$10.00    |
| December 1, 1959  | 12.58      |
| December 1, 1961  | 16.28      |
| December 1, 1962  | 15.20      |
| December 1, 1963  | 16.90      |
| December 1, 1964  | 20.06      |
| December 1, 1965  | 20.59      |
| December 1, 1966  | 18.52      |
| September 1, 1967 | 23.32      |

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# Rehabilitation

F. G. WELLARD\*

Halifax, N. S.

The term "rehabilitation" has a new connotation as related to illness and disability and it may be well from time to time to invite the attention of the practising physician to the newer concept. He is bound to be preoccupied with the physical and mental wellness of his patients so that, while he acknowledges the fact that good health is more than merely the absence of illness, his busy routine may not permit him to consider other services which would minister to the total needs of the patient.

Even government services are susceptible to change - usually improvement - because change is generated by public opinion. Rehabilitation services were first directed to the needs of the physically handicapped. This was largely because of the demonstration of what could be done for that great sample of handicapped persons, disabled war veterans. Because the end in view is economic and social self-sufficiency, the same techniques - apart from treatment - apply to persons with a variety of disabling conditions. It is not surprising then, with the great improvement in treatment and prognosis for the mentally ill and the militant drive to better the lives and living conditions of the mentally retarded, that these techniques have been applied to rehabilitation planning for those two large categories of disabled persons. The next step, and one foot is already off the ground, is extension of the services to those who are "disadvantaged" for any reason.

In many cases medical treatment reduces the physical and mental effects of disabilities so that they do not become or remain handicaps. In many more, impairment is so severe that a wide range of services in addition to treatment is needed to bring about the optimum self-sufficiency. In medicine the team concept has new meaning and medical specialists and paramedical personnel apply their resources together to the needs of their patients. So also in the nonmedical aspects of rehabilitation, no one agency or department can meet all the needs of rehabilitants. They are found working together, and with the treatment services *all become one team*. The basic need for the family doctor is an awareness of services he can secure for his patients and of a place of referral.

The government departments involved in the main in rehabilitation are Education, Health and Welfare at the provincial level, and Manpower at the federal level. The place of referral is the

Co-ordinator of Rehabilitation, Department of Public Welfare, Halifax, N. S.

It should be understood that rehabilitation is not a process which takes in disabled people at one end and turns out rehabilitated people at the other end like a sausage machine. Each case is individual. Each may require all or only some of the services available. Rehabilitation of a wage earner may require, in addition to medical treatment and restorative services, a vocational plan which will involve counselling, training or retraining and special placement in employment. On the other hand, rehabilitation of a housewife may involve no more than her restoration to the optimum physical condition and the adjustment of her household so that she may use her remaining abilities most effectively. Rehabilitation of an older person may involve no more than the provision of some aid which will make living more comfortable and effective. For some, handicaps may be so severe that they can never work or live in a normal setting, and sheltered living and employment services are necessary. Essentially, however, the rehabilitation program is concerned with helping disabled persons to develop practical plans for becoming socially and economically self sufficient.

## Eligibility

Any person sixteen years of age and over is eligible for service. Referrals for rehabilitation are received from a variety of sources. Doctors, hospitals, clinics, welfare services, health services, education services, manpower services, compensation boards, voluntary organizations are all sources of referral. In addition, many individuals refer themselves. In all cases, a medical report by the family doctor or case history from the referring hospital, doctor or clinic furnishes necessary medical information for evaluation of the physical or mental condition which is handicapping. This is supplemented by a personal inventory or social case history giving data on personal assets with which the rehabilitation staff can plan. Broadly speaking, disabilities are classified under nine headings - amputations, hearing, vision, neurological, neuro-psychiatric, neuro-muscular, respiratory, cardio-vascular, miscellaneous.

## Assessment

A Rehabilitation Assessment Team composed of two doctors, rehabilitation counselors, a training specialist, an employment specialist and the director of services, review cases. If the medical con-

\*Provincial Coordinator Of Rehabilitation.

sultants consider it necessary, they may authorize examination by specialists concerning disabling conditions which present special problems. The Team then relates physical and mental assets to potential work situations on the basis of vocational planning recommended by the rehabilitation counselors. Maintenance allowances may be paid for patients for whom treatment in approved out-patient departments is prescribed and approved by the Rehabilitation Assessment Team. In selected cases, but not in general, artificial limbs and other aids and appliances which will further rehabilitation plans may be financed. Maintenance may also be paid for persons receiving vocational assessment in an approved assessment centre.

### Training

In some cases the Rehabilitation Assessment Team and/or the rehabilitation counselors may consider that training or retraining is a necessary part of rehabilitation plans. This is in cases where the disability is sufficiently handicapping to prevent return to a previous normal occupation. In other cases recommendations may be made for special placement in selected occupations.

Recommendations for training are reviewed by a Training Selection Committee, chaired by the Director of Vocational Education and consisting also of the Principal of the Nova Scotia Institute of Technology, the Regional Consultant on Rehabilitation of the Canada Manpower Service, and the Provincial Rehabilitation Co-ordinator. The secretary of this committee is the Supervisor of Special Vocational Training, an employee of the Division of Vocational Education, who is responsible for the arrangement of those training projects which are approved. Training may be in provincial or approved proprietary training schools. Maintenance allowances are provided for trainees in training. The al-

lowances vary according to the marital status of the trainees and whether or not they live at home or away from home during training. A special training device is the training-on-the-job project in which the Division of Vocational Education shares with an employer, the cost of wages of an employee during an agreed training period.

### Employment

When training is not considered possible or necessary, referral is made to the Canada Manpower Service. Employment Counselors in local Canada Manpower Offices deal with placement of the handicapped. Referrals are accompanied by employment evaluation based on reports by the rehabilitation counselors and prepared for the guidance of the Employment Counselors. In some cases rehabilitation counselors and voluntary agencies must co-operate in efforts to find suitable jobs, and, as said before, some will find meaningful activity only in sheltered workshops.

Working relationships are maintained with voluntary organizations concerned with the rehabilitation of general or specific disability groups. Programs are integrated so that the voluntary organizations may take advantage of services available from government sources and so that the government may take advantage of special services provided by voluntary organizations and not available from government sources.

This article deals mainly with vocational rehabilitation. Perhaps it would be interesting to know that 1151 cases were closed in the 11 year period 1955 to 1966. The cost of maintaining these people before service by their families or more often, by public assistance, was \$629,745.00. a year. Their combined annual earnings following service are \$2,315,633.00. □

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# The Nature of Inhalation Therapy

## A NEW PARAMEDICAL SERVICE

R. V. PARLIAMENT, RT, CSITT

*Halifax, N. S.*

### Introduction

"Inhalation Therapy is the fastest growing paramedical specialty in Canada" was the statement made by Dr. A. W. Conn, Chief of Anaesthesia at the Hospital for Sick Children in Toronto, during a paper which he presented to a meeting of the Ontario Chapter of the Canadian Society of Inhalation Therapy Technicians in January 1965. The succeeding two years have seen a tremendous growth in membership of the Society, in participating hospitals, and in teaching facilities: nevertheless, the demand for qualified Inhalation Therapy Technicians far exceeds the supply, making it certain that this rate of growth will be maintained for many years.

Inhalation therapy can be defined as the administration of moist oxygen or other gas mixtures with or without the addition of the nebulised drugs in the treatment of respiratory disorders, and treatments of this type have formed part of the medical armamentarium for many years. However, increasing knowledge of respiratory physiology, and increasing sophistication of methods of treatment have taken inhalation therapy beyond the realm of self-administration by the patient. Present techniques, while increasing the range of benefits, require considerable skill in management of patient and machine, and are time-consuming: they are best administered by an individual specially trained in this type of work, the Inhalation Therapist.

### The Development of Inhalation Therapy

The discovery that respiratory depression during anaesthesia could be overcome with the use of manual positive pressure ventilation applied intermittently to the airway was of little importance until the widespread introduction of muscle relaxant techniques into anaesthesia made intermittent positive pressure ventilation a necessary part of almost every anaesthetic. Research into the application of this technique led to a spectacular development in the understanding of respiratory physiology, with a parallel development of mechanical devices for maintaining assisted or controlled ventilation. These techniques spread rapidly from the operating room to the recovery room, and were soon applied wherever patients were in need of respiratory assistance. Members of the Anaesthetic, Medical and Surgical staffs of a number of hospitals in the Montreal area began to train lay personnel to

maintain these machines and to assist in the administration of treatments to patients. From these centres, trained personnel spread to other parts of Quebec, to Ontario, and to the United States, where similar developments were occurring. A short time later, interest spread from the United States to the western provinces, commencing with a nucleus in Alberta and extending from there to Manitoba and British Columbia.

The need for uniform training and maintenance of standards, coupled with competition from the United States for trained personnel, led, under the initiative of the Quebec and Ontario groups, to the idea of a national society for the advancement of Inhalation therapy. The Canadian Medical Association, approached for affiliation, endorsed the idea, and set up a joint C.M.A. - Canadian Anaesthetists Society Committee to assist the new Society into being. Under the guidance of this committee, By-Laws were formulated, educational requirements laid down, and a national training curriculum and Registry set up. In 1964, The Canadian Society of Inhalation Therapy Technicians was officially incorporated with an initial membership of 75 registrants from all parts of Canada. Now, three years later, there are nearly 400 members in 97 Hospitals: three University Hospitals have set up approved training schools, and nine other training centres are awaiting approval.

The National Society acts as a coordinating and policy making body, checking the educational qualifications of those admitted to training, operating, under the guidance of the joint C.M.A. - C.A.S. Committee, the necessary examinations for qualification and registration of its members, and encouraging co-operation with hospital administrations, Industry, and the medical profession.

The Society publishes a quarterly journal, The Journal of Inhalation Therapy, which serves as an excellent medium for the expression of ideas and the exchange of information on equipment and techniques. The Classified Ads section testifies to the increasing demand for qualified staff required in hospitals from Kamloops, B.C. to Pleasantville, Newfoundland.

Perhaps the greatest service to the morale of a widely scattered membership that the Society provides is the opportunity to meet at the Chapter and National level with individuals of similar



interests for assistance, advice and the discussion of common problems.

Thus, the main purpose of the Society and its Registry is to standardize and improve the training of Canadian Inhalation Therapy Technicians in order that they may render the best possible service to the hospital, the doctor, and most important of all, to the patient.

### **Inhalation Therapy in the Maritimes**

In early 1964, The Victoria General Hospital, Halifax, acquired an Inhalation Therapist, and a short time later, hospitals in St. John, N.B., and Moncton, N.B. each sent a trainee to Montreal for an intensive refresher course. When these therapists returned, inhalation therapy began in earnest in the maritimes, and in a few months it became evident that a very great increase in personnel would be required in this area.

It is almost an occupational hazard, that as soon as the services of trained Inhalation Therapists are available, the obvious benefits lead to an overwhelming rise in the work load: as a result, the Victoria General Hospital inaugurated a two year training programme, admitting a first class of seven students drawn from three hospitals. Graduates from this programme now staff hospitals in Halifax, Sydney and Antigonish, and the fourth class now entering training contains students seconded for training from these hospitals, and from hospitals in Kentville, Sydney and St. John's, Newfoundland. The demand for trained staff, however, is likely to exceed the supply for at least ten years.

### **The Training of Inhalation Therapy Technicians**

Entering training with the minimum qualifications of a grade 12 education, trainees are required to complete a two year course at an approved training centre before being eligible to sit the National examinations. The course consists of at least twelve months academic training, during which the student receives a grounding in the anatomy and physiology of the respiratory and cardiovascular systems, learns the physics and chemistry applicable to gases and aerosols, and the principle drugs used in the treatment of chest disorders. In addition he acquires an intimate knowledge of the working parts of all types of respirators and nebulisers in common use, and a practical understanding of effective methods of sterilisation.

During the final twelve months of his training the student is rotated through a series of affiliations: to a pediatric and obstetric unit, where he learns the problems associated with neonates and infants; to the operating room, where he is taught control of the airway, manual ventilation and the care of the unconscious patient, and to the Pulmonary Laboratory, where he receives practical training in

pulmonary function tests including the determination of blood gas tensions and acid-base balance. In addition, he assists in the 24 hour coverage of the provision of treatments to patients, maintenance of satisfactory ventilation in patients on respirators, and forms part of the emergency resuscitation team for cardiac arrests.

After satisfactorily completing his course, and attaining a sufficient standard in the training school examinations, he is eligible to sit the National examinations leading to registration as a Registered Inhalation Therapy Technician.

### **Functions of the Inhalation Therapy Technician**

As a member of the patient care team, the Inhalation Therapy Technician acts as an extension of the physician's arm in carrying out the physician's orders pertaining to respiratory therapy. According to the order, he may supply and set up oxygen catheters, masks and tents, carry out treatments using nebulised medications at various intervals, or set up respirators to maintain adequate ventilation. Because many of these treatments are capable of producing profound alterations in the patient's physiology sufficiently complete written orders should be available for the therapist *before* treatment is started, unless the delay in writing these would constitute an immediate threat to the patient's life. In setting up these modes of treatment, the therapist must be capable of explaining sympathetically to the patient the nature of the procedure and what is required of him, and to be able to reassure him in the presence of unfamiliar machinery.

In all apparatus in continuous use, the therapist will institute regular checks to see that the apparatus is functioning correctly, is adjusted to meet the needs of the patient, and that the desired effect is being achieved. The results of treatment will be tabulated on the Inhalation Therapy record of that patient, together with any necessary clinical, technical, and sociological information, so that treatment can be effectively continued by the therapist who relieves him.

The Inhalation Therapist will include in his rounds regular checks on the emergency resuscitation equipment stationed on each floor, and on the supplies of piped gases and tanks in the operating rooms and other anaesthetising locations.

The avoidance of infection is a vital part of the therapists work, and the maintenance, repair and replacement of equipment and accessories, together with their cleansing and disinfection is a major responsibility of the Department.

A final responsibility of the Department of Inhalation Therapy is to see that the safety rules laid down concerning flammable materials and oxygen are observed by patients, visitors, hospital personnel and others.

### Co-operation with the Nursing Staff

Because of the continuous nature of many forms of inhalation therapy, it is necessary for the nursing staff to share the responsibility for the continuation of treatment once it has been started by the inhalation therapy staff. In particular, they can be of great assistance in maintaining effective treatment through reassurance and explanation to the patient, and in giving information to the therapist concerning the apparent effectiveness of the treatment in relation to the patient's general condition. Where drugs have been ordered for nebulisation in inhalation therapy treatments, these are dispensed by the nurse and checked with the inhalation therapist.

Sharing a joint obligation to the patient and the doctor, and a common interest in cleanliness and sterility, the nursing and inhalation therapy staffs must work together in close harmony, to achieve a satisfactory increase in effective patient care.

### Co-operation with the Medical Staff

Where a particular aspect of patient care becomes the specific responsibility of a paramedical specialty, there is a danger that the development of machines and techniques within that paramedical

specialty will not become known to the medical staff, and that medical developments will not be passed on to the paramedical service for implementation. There is clearly a need for two-way communication to be maintained between doctors in training and the Inhalation therapy Department, through joint discussions and seminars as well as at the bedside of the patient.

### Summary

Since 1964, when Inhalation Therapy acquired the official status of a profession through the organization of a National Society, there has been a phenomenal growth in qualified members and in training centres.

Wherever inhalation therapists have been employed, there has been more efficient and effective treatment of patients with respiratory disorders, lessening of the work load on nursing and medical staffs, better management of pipeline and cylinder gas supplies, and more economical utilization of inhalation therapy equipment.

The Society is constantly revising the standards of training, teaching and examinations to provide a better trained and highly responsible individual capable of fulfilling the many functions required of the Inhalation Therapist. □

Our clinical experience confirms the findings of a growing body of workers in the United States and Europe who have used this substance over a period of time approaching three and a half years . . . This new preparation appears to be a safe and clinically effective therapeutic agent in situations in which parenteral iron is indicated.—Dorothy C. H. Ley, M.D., B.Sc.(Med.), F.R.C.P.(C) Toronto and S. C. Robinson, M.D., Halifax, N.S., Canadian Medical Association Journal, August 8, 1964.  
—reprints of complete article and full Jectofer disclosure available on request.

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# Physical Therapy

BERNA TRAINOR, DPT, (TC)\*

Halifax, N. S.

## Development (1914-1967)

The application of physical agents had long been accepted as a means of relieving pain or contributing to the general good health of the recipient. A survey of ancient and medieval "remedies" may leave us rather aghast today but certain of them are still with us in modified forms, for example, heat has been utilized for centuries as a means of relieving pain from "rheumatism" and other disorders.

It was not however, until the first world war that medical personnel began to investigate more thoroughly the effects of exercise and of the application of physical agents such as various heating devices, muscle and nerve stimulators. The war itself was of course the stimulus for this study and organization. Great numbers of wounded men had to be returned to the field as soon as possible, while the more severely handicapped had to be rehabilitated in order to function in the civilian society to which they returned. It was at this time that the first major developments in the field of prosthetics were made.

In Canada, small groups in Montreal and Toronto organized short courses in "physiotherapy". These courses stopped soon after the war and it was not until 1920 that the remaining members of these groups founded the Canadian Physiotherapy Association with its head office in Toronto.

In 1929 the need for more qualified physiotherapists was recognized and a school was established at the University of Toronto, sponsored by the Faculty of Medicine. The course ran, rather spasmodically, through the depression years gradually gaining a firm footing. As the demand for therapists increased, more schools were established, with McGill University graduating its first class in 1945. Over the years more schools have been established and at the present time there are eleven schools scattered across the country. (The University of British Columbia, University of Saskatchewan, University of Alberta, University of Manitoba, University of Western Ontario, University of Toronto, Queen's University, McGill University, University of Montreal, Laval University, Dalhousie University.) All are sponsored by the Medical Faculty, or where such exists, the Faculty of Health Professions. The courses at present vary from a two year diploma course in physical therapy, through a three year combined diploma

course (physical and occupational therapy), to four year degree courses in physical therapy or a four year combined degree. It is felt by many that the two year course is now inadequate to cover the basic requirements in the best manner possible and most schools are planning for expansion to three or four year degree courses.

The school at Dalhousie University was established in 1963 and incorporated into the Faculty of Health Professions, earlier established in 1961 to include the School of Nursing and the College of Pharmacy.

The school at the present time offers a two year diploma course, accepting sixteen candidates per year, many being drawn from this province. Clinical training during these two years is undertaken in the physical therapy departments of the following hospitals: Camp Hill Hospital, Canadian Forces Hospital, Grace Maternity Hospital, Halifax Children's Hospital, Nova Scotia Rehabilitation Centre, and the Victoria General Hospital. It may be seen that the students are presented with a wide selection of cases and gain experience in treating many conditions.

After two years training all candidates are required to serve an internship of five months in an accredited physiotherapy department in Canada, in order to qualify for admission to the Canadian Physiotherapy Association.

Prior to the establishment of the Dalhousie School the major sources of physiotherapists for this province were the British hospital-based schools, McGill University and the University of Toronto.

These sources together with the new school have made it possible to establish hospital departments in Antigonish, Bridgewater, Glace Bay, Halifax, Kentville, Lunenburg, Middleton and Yarmouth. In addition to these, the Canadian Arthritis and Rheumatism Society staffs mobile or home treatment units in the areas of Amherst, Cape Breton, Dartmouth, Halifax, Truro and Yarmouth.

It is to be hoped that more departments will open as the supply of qualified therapists increases.

## Today - 1967

Physiotherapists frequently remark that many doctors with whom they work regard them as technicians rather than professional people who are capable of exercising judgment with respect to the

\*Lecturer, Dalhousie University School of Physiotherapy, Halifax, N. S.

treatment offered the patient. This opinion is, fortunately, less prevalent among those doctors who have worked with physiotherapists over substantial periods of time. This situation would seem to indicate that, in first light, many physiotherapists present themselves in such a manner that doctors have no choice but to label them technicians. Perhaps this could be avoided if both sides were to take an objective look at the manner in which this misunderstanding develops.

It would be good for our ego if we could lay the blame at the physician's doorstep, but unfortunately for us this is not the case. The physician does not arrive at this judgement unaided, and their chief assistants, oddly enough, are the therapists themselves.

How many therapists are willing to express an opinion on the treatment of their patients? Too few! Yet their training has been such as to prepare them to do just that.

The doctor today cannot hope to keep abreast of all developments in all fields related to patient care. Paramedical personnel, including physiotherapists, therefore have a duty to keep up to date in their own fields and to report such advances to the doctors with whom they work whenever these would seem applicable to particular patients. The doctor, as director of the medical team, is of course free to accept or reject these suggestions as his own judgement indicates. It is this possibility of rejection which makes many therapists hesitant to offer information, but we would do well to remember that even if rejected for that particular patient at that time, the suggestion has been added to the fund of information on which the doctor draws in the treatment of other patients.

There are many ways in which the physician could assist us in overcoming this problem. Would that more doctors encouraged or indeed insisted that therapists use their training. Rather than simply carrying out orders, written in great detail by the doctor, therapists should be permitted to exercise their judgement within the limited sphere where it is safe for them to do so. Where necessary they should be "forced" to do this. Initially this might appear to be an unwarranted drain on the physician's time and energy. In the long run however, this would eventually save his time, now being consumed in long sessions on the phone, or dictating detailed letters.

Those of you reading this article may ask "Can I trust this person to exercise judgement accurately with regard to the treatment of my patients?" This I believe can be answered by a review of the training received by physiotherapists in this country. The basic studies extend over a period of two to four academic years, followed by a period of internship. The courses include one in gross Anatomy, with the emphasis on the study

of: joints, their structure and movement; skeletal muscles, their origins, insertions and functions; peripheral nerves, their courses, relations and specific areas of innervation; circulatory system; respiratory system; lymphatic system. In addition, the physiological activity of the above systems is covered in some detail.

The student also covers the anatomy and functions of the central nervous system particularly as it relates to musculoskeletal activity.

Having studied the normal, the student is then exposed to courses describing faulty or impaired activity of these structures. This information is usually provided by doctors whose specialties enable them to present this material in the clearest and most up to date manner. These courses are classified as in the Medical School (e.g. Medicine, Surgery, Psychiatry, Neurology, Obstetrics and Gynaecology, Orthopedics, Paediatrics, etc.).

In addition, degree students take selected courses to enable them to approach problems in the field in a more logical, scientific manner.

All students spend considerable time learning and perfecting the practical techniques of the profession and then learning to apply these for specific conditions. Here are included studies of muscle function, analysis of movements, types of exercise and apparatus to assist or resist the patient's efforts. A thorough study is made of the electrical apparatus utilized by therapists to heat specific areas or stimulate nerve or muscle as the case requires.

Thus for any condition where physical therapeutics might be applied, therapists have studied:

1. the normal structure and function of the area involved.
2. the dysfunction that results with disease of, or damage to this area.
3. a basic presentation of the medical and/or surgical management of the condition.
4. the physiotherapy techniques that would prove useful in the treatment of this patient.

They have studied the effects the treatment should have and if the original regime proves to be ineffective or less effective than desired, they are capable of adapting the treatment to meet the situation.

Therapists should serve then, not simply as technicians carrying out the program set out by the doctor, but as professional members of the medical team, contributing to the treatment program in an active, purposeful and efficient manner.

May I express the thanks of the Nova Scotia Branch of the Canadian Physiotherapy Association to The Nova Scotia Medical Society for the opportunity to present this information to its members. □

# A Profile of Occupational Therapy in the Halifax-Dartmouth Area

NOVA SCOTIA SOCIETY OF OCCUPATIONAL THERAPISTS

What is an occupational therapist and what is her role as a member of a hospital team? Her existence and function is dependent on you, the doctor, and perhaps in the following lines an insight into her purpose, utilization and value can be achieved.

What is occupational therapy that we need it? Occupational therapy is a medically directed treatment by an occupational therapist using selected modalities for the restoration of physical and mental function, maintenance and improvement of existing healthy function, exploration of latent abilities, diagnostic assistance, and assessment of the emotional, mental and physical capacities of the patient. By medically directed treatment we mean that an occupational therapist does not diagnose and prescribe, but accepts the patients for treatment only upon referral from a qualified medical practitioner. The nature of the activity employed by the therapist will depend entirely on the nature of the patient's disability.

Arts and crafts have been the traditional tool of the occupational therapist but in modern technological society, this is no longer true. Although crafts still play a useful role in treatment, the therapist is moving increasingly toward the use of more functional activities such as:

**Activities of Daily Living:** helping the patient achieve as high as possible a degree of independence in self care: It entails the training or retraining in dressing, eating, personal hygiene, ambulation, etc.

**Pre-Vocational Assessments:** detailed investigation and long term observation of the patient's abilities to function in a variety of conditions, plus an exploration of his latent capabilities, with the direct purpose of vocational training or job placement.

**Industrial Therapy:** the use of purposeful and productive work with remuneration in a controlled environment for the restoration of physical, emotional and mental health.

**The Use of Specialized and Adaptive Equipment:** it is impossible in a short article to list the extensive variety of specialized equipment in use. Briefly, these range from an adaptation of heavy equipment such as the bicycle saw, light equipment such as the use of holding devices in self care training for the physically handicapped, to the use of special play materials and work sheets for perceptual

training of the minimally brain damaged child.

**Social and Recreational Activities:** it has long been known that social and recreational activities play an important role in rehabilitation; the present focus is on the extent to which they are being used and the more dynamic organization and supervision of these activities to tailor them to the needs of the individual patient.

What does the occupational therapist do that other people can't do? The occupational therapist offers:

1. Objective relationship not offered by other disciplines.
2. An environment tailored to the needs of the patient.
3. A controlled and adapted environment to allow the patient to experience at his own rate and without losing the ability to adapt, the following: frustration, failure, stress, concentration, physical limitations and capabilities, socialization.
4. An environment that can be controlled and altered to assist the adaptation to disability in a very broad setting.
5. An environment in which to explore the functional relevance of organicity.
6. Occupational therapy offers a particular relationship with a real person - one who participates with the patient in everyday activities.
7. It provides a link between the hospital and the community.

There are presently six occupational therapy departments in the Halifax-Dartmouth area:

## **The Victoria General Hospital**

*Number of Staff:* 2 registered therapists plus one vacancy.

*Patient load, average per month* - 29 physical patients, 28 psychiatric patients, total number of patients 57; total number of treatments - 337.

*Types of patients treated:* psychiatric, arthritis, CVA'S and other neurological disorders, cerebral palsy, brain tumors, spinal injuries, muscular dystrophy, amputees, burn cases, orthopaedic cases.

*O.T. Department:* small space for treatment of physical inpatients and outpatients and psychiatric inpatients. These groups are treated daily. Treatment through the use of activities of daily living is carried out on the wards. O.P.D. facilities are used for splint making.

*Future Plans:* these include hopes for new quarters and an expansion of the amount of space plus an increased number of therapists thus enabling an increase in the services to be offered.

#### **Halifax Mental Hospital**

*Number of Staff:* 2 registered occupational therapists, 2 untrained female attendants plus 1 female member of staff who is presently attending the occupational therapy assistants course in Kingston, 2 male attendants, each with two years of Art College training.

*Patient load:* average per month - inpatient, 70; day hospital, 10; with numbers increasing as patient numbers in day hospital increases to a maximum of 25.

*Program:* the major part of this program consists of the remotivation of long-term chronic patients through the use of social, recreational and vocational activities, plus the assessment of the potential of these patients for regeneration and a possible return to society.

*Future Plans:* improvement of existing program, development of the day hospital program, plus the inauguration of a home visiting program.

#### **Nova Scotia Rehabilitation Center**

*Number of Staff:* 2 full time registered therapists, adult section; 1 full time registered occupational therapist, children's section.

*Patient load:* average per month - outpatient treatments 175 to 200; inpatient treatments 200-250; children 75-100.

*Conditions more frequently treated:* adult section: spinal cord injuries, strokes, congenital and traumatic amputations, polyneuritis, multiple sclerosis, extensive and multiple skeletal fractures, cerebral palsy, rheumatoid arthritis, head injuries; children's section: cerebral palsy, minimally brain damaged children, mainly in perceptual training.

These treatments are carried out on the wards, in a light workshop and in a heavy workshop.

*Future Plans:* due to extreme limitation of space there can be no expansion in the present facilities. A new rehabilitation center is being planned which will house an occupational therapy department large enough and with enough occupational therapist staff positions to meet the heavy rehabilitation demands of this area.

#### **The Nova Scotia Hospital**

*Number of Staff:* 3 full time registered occupational therapists, 2 half-time registered occupational therapists, bringing the occupational therapy staff to its full complement. A new quota is presently under consideration. Thirteen other persons employed in a variety of categories varying from R.N. to untrained, and including 3 trained occupational therapy assistants.

*Patient load:* average number of new referrals per month - 68.6 inpatients, a small number of outpatients and after care patients. The total number of patients treated in the last calendar year - 823.

*Program:* a broad scope of assessment treatment and rehabilitation for the short-term and medium-term psychiatric patient including a program of treatment for the inpatient alcoholic unit and the increasing number of children in the children's service. As the average patient age is 30.6 years, the majority of patients are in the prime of their productive years and require a dynamic treatment approach to return them as quickly as possible to the community and useful employment.

*Future Plans:*

1. A pre-vocational assessment unit.
2. Expanded industrial therapy program and greater coordination with sheltered employment programs which will be developed in the community.
3. A separate assessment and treatment unit for children.

#### **Canadian Armed Forces Hospital, Halifax**

*Number of Staff:* 1 registered occupational therapist (RCN), 1 position vacant.

*Patient load:* average number of treatments per month (based on one-half hour unit of treatment) - outpatient, 534; inpatient, 1004.

*Type of patient treated:*

1. Psychiatric.
2. Surgical and Orthopaedic: (a) remedial cases, both in- and outpatients, the majority being outpatients. Many patients start occupational therapy while still in hospital and continue as outpatients upon discharge. Many patients are referred directly from outpatient clinics. (b) preventative therapy; this includes long-term bed and ambulatory patients who are not ready for remedial occupational therapy.
3. Medical: treatment is limited due to shortage of occupational therapists. A service is offered to diabetic patients to assess and simulate a day's normal activity.

*Present Program:* patients suffering disability as a result of fractures, sprains, dislocations, nerve lesions, burns, crash injuries, severed tendons and sports injuries attend the occupational therapy department twice daily. The treatment of hand disabilities is stressed and all hand splinting is done in the department.

One of the most important functions of the occupational therapist in psychiatry is to assist in the assessment as well as to provide therapy. Projective techniques on an individual and group basis are used extensively.

*Future Plans:*

1. Expansion of a program for ward and bed patients.
2. Development of testing and assessment area for psychiatric patients.
3. An increase in the general psychiatric rehabilitation program.

4. Plans for special groups structured to bring out suppressed and repressed hostility in psychiatric departments.

#### **Camp Hill Hospital:**

*Number of Staff:* 3 registered occupational therapists plus 1 vacancy, 2 remedial occupational therapy assistants.

*Patient Load:* Inpatients per month (this is an approximation): psychiatry - 40, medical, surgical - 25, new admissions - 33.5, discharges - 36.

*Outpatient:* - About 2 patients per month for 1966. During 1967 the numbers have steadily increased with the trend towards earlier discharge and treatment on an outpatient basis.

*Program:* Psychiatric - diagnostic battery assessments. Daily push program (from 9 - 4:30) consisting of recreational sports, work therapy, social activities, group therapy and individual treatments.

Medical-Surgical - A.D.L., specific remedial treatment, and supportive measures covering cardiac conditions, arthritis, neurological conditions, cerebral vascular accidents, spinal cord injuries amputees, and the visually handicapped.

*Future Plans:* Geriatric program.

Expansion and updating of present program.

Research.

#### **The Association of Occupational Therapists**

The Canadian Association of Occupational Therapists is a national organization formed in about 1930 to maintain professional standards, provide a means of trans-Canadian communication for working therapists, and to standardize training. In order to become a member of the C.A.O.T., an applicant must be graduated from an approved school of Occupational Therapy and have undergone a prescribed period of internship in an accepted occupational therapy department. Each province has a Society of Occupational Therapists which functions as a branch of the national body. The annual general meeting of the C.A.O.T. is held each fall, at which time, and in conjunction with the business meeting, there is a conference for the presentation of scientific papers.

Whereas in the past these meetings were held in Toronto or Montreal, in the last decade, with the increase in schools and numbers of therapists across the country, the annual meeting has been held in a variety of provinces. In 1967 the 37th annual meeting took place in Halifax; this was the first time that the Maritime Provinces hosted this meeting. It was extremely successful and we felt that it had been most appropriate to hold this meeting here in centennial year. We skip across the continent and look forward to the 1968 conference in Vancouver. In conjunction with this meeting there is usually a pre- or post-conference study course dealing with a variety of topics related to the practice of Occupational Therapy.

The Nova Scotia Society of Occupational Therapists holds monthly meetings at which time local business is dealt with, scientific papers are presented, and there is a general exchange of ideas. Our present and most pressing problem is to change the legal status from a society to an incorporated organization. This would mean, in practical terms, that in order to practice as an Occupational Therapist, a licence would have to be obtained through this body. A means would then be available to prevent non-qualified persons from calling themselves Occupational therapists. Although this has not been a problem locally, it has occurred extensively in more populated areas and is a foreseeable problem in the future.

A major problem at the present time is the shortage of qualified occupational therapists, not only in the Halifax-Dartmouth area, but to a greater extent in all the Maritime Provinces. This situation can be alleviated only by the establishment of a local training centre. There are plans under consideration at Dalhousie University for a four-year course leading to a degree in Occupational Therapy. Such a course would not only provide badly needed therapists, but would help upgrade the standards of treatment, as each existing department would be called upon to function as a clinical training centre in close liaison with the university. This would necessitate the expansion of these departments and lead finally to a broader and higher quality of service to the community.

No future plans for occupational therapy can be mentioned without considering the two new centres, one in the planning stage, and one under construction. The new Rehabilitation Centre will certainly provide the increased space and facilities to meet the needs of the community. There is no doubt that this centre will require more therapists to staff its occupational therapy department than are presently available in this area. It is the hope of the Nova Scotia Society of Occupational Therapists that the new Children's Hospital will include an occupational therapy department.

The rehabilitation of the long-term mentally ill in Nova Scotia has been improved recently by the establishment of two new occupational therapy departments. There are still two of these hospitals whose rehabilitation programs are curtailed by a shortage of therapists.

The Department of Public Welfare in newly organized houses for disabled children, disabled adults and the aged, are seeing pressing needs for activity programs which would be best organized and supervised by a qualified therapist who could assess the individual and direct his rehabilitation, if any was required. As well, the therapist could organize a full day's program to help the residents of these homes achieve and maintain their highest level of independence.

There is a trend in occupational therapy to move into the community and treat patients, not only in the hospital, but in the home, and to help patients upon discharge to readjust to the home and the community by assessing the home and suggesting required alterations that would aid the patient in achieving independent functioning, and by exploring the community resources.

The only goal of the occupational therapist is to assist the ill in having the shortest possible hospital period and to assist all the disabled to function at their highest level of independence. There has, in the past, been a high degree of dependence on the part of patients for minor disabilities. This is diminishing as the number of therapists increases and will continue to diminish as occupational therapy services to the community increase. □

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# The Aims of Social Work

".....TO ENHANCE, MAINTAIN AND RESTORE."

L. T. HANCOCK, RSW\*

Halifax, N. S.

We frequently hear that modern social welfare programs destroy the moral fibre of our people, undermine initiative and make sots and ne'er-do-wells of certain members of society. The same accusation is sometimes levelled at social work by people who should know better but who have failed to grasp the essential motive of all social welfare legislation and of the profession of social work. Obviously the "lady bountiful" and the "sturdy beggar" cast long shadows.

In sharp contrast to the above, the primary aim of all social work is rehabilitation and restoration. This involves helping people to strengthen their own resources so that they may succeed in the future where they failed in the past. The ultimate aim is a productive, satisfying life for all.

In the early days of the social welfare movement when most of the work was done by untrained volunteers who had little knowledge of human behaviour, undoubtedly much of the help given tended to make people dependent rather than independent.

Tossing coppers into the hat of the beggar who sat at the gate did little more than perpetuate his agony. Such acts of charity frequently gave more satisfaction to the giver than help to the recipient.

At the turn of the century we made "friendly visits" and some help was given. Unfortunately the focus was frequently on the symptom rather than the cause, and in many instances the visit gave little lasting help. Later, as our knowledge of people and of motivation increased we emphasized self-help and described our work with the phrase "helping people help themselves". This change of emphasis led to effective practice but the phrase did not capture the unique nature of social work. We needed something more accurately descriptive.

As the profession has continued to evolve and as the nature of practice has changed in response to the needs of society, we have sought to capture the change in a definition. In his book entitled, "Objectives of the Social Work Curriculum of the Future", Werner Boehm defines social work as follows:

"Social work seeks to enhance the social functioning of individuals, singly and in groups, by activities focused upon their social relationships which constitute the interaction between man and his environment. These activities can be grouped into three functions: restoration of impaired capacity, provision of individual and social resources, and prevention of social dysfunction."

The three functions are detailed in the following manner:

1. **Restoration.** This function seeks to identify and control or eliminate those factors in the interactional process that have caused a breakdown or impairment of social relationships. It aims at a return to a maximum level of functioning. This function may be seen as *curative* and *rehabilitative*. Its curative aspects are to eliminate factors that have caused breakdown of functioning, and its rehabilitative aspects to reorganize and rebuild interactional patterns.

2. **Provision of Resources.** This function entails the creation, enrichment, improvement, and better coordination of social resources, and the mobilization of existing, but inoperative, individual capacity for interaction in the physical, intellectual, emotional, or spiritual realms. This function may be seen as *developmental* and *educational*. Its development aspects are designed to further the effectiveness of existing social resources or bring to full flower personal capacity for more effective social interaction. Its educational aspects are designed to acquaint the public (including recipients of service) with specific conditions and needs for new or changed social resources. Also involved is leadership in determining and applying principles by which this function can be carried out.

This function derives its rationale from the socially sanctioned nature of social work which obligates the profession to contribute to the welfare of the community.

3. **Prevention.** This function entails early discovery, control, and elimination of conditions and situations that potentially could hamper effective social functioning. The following subdivisions may be identified:

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a. *Prevention of problems in the area of interaction between individuals and groups.* This is designed to eliminate or control and to follow up individual or environmental factors in interaction that may cause problems to occur, to recur, or to be aggravated; to anticipate and take precautions about "tender areas" where problems may occur.

b. *Prevention of social ills* This is designed to collect and interpret data on the incidence and predictability of problems in interaction. In combination with related aspects of the function of provision, this aspect of prevention contributes to the creation of social health. In pursuing it, much may be learned about social infection" and "social contamination" which will contribute to the further development of both functions.

In practice, the three functions of social work are not entirely separable. Activities carried on in relation to any given problem in interaction may simultaneously have restorative, provisional, and preventive functions, or may have implications for one while emphasizing another.

Although this definition has been challenged, it remains as a reasonably accurate description of current social work practice.

One serious objection to the definition is its length. The 1962 official statement of curriculum policy for Master's degree programs in graduate professional schools of social work prepared by the Commission on Accreditation of the Council on Social Work Education reduces the definition in this manner:

Social work as a profession is concerned with the restoration, maintenance, and enhancement of social functioning. It contributes, with other professions and disciplines to the prevention, treatment, and control of problems in social functioning of individuals, groups, and communities.

This concept of social work has brought a new freedom to the profession. It has led directors of child welfare across the country to be interested not only in dependent and neglected children but in all children - rich or poor, strong or weak, dependent or independent. It has led Children's Aid Societies to move from a focus on children to a concern for the entire community. It has led to community projects which have involved medicine, sociology, engineering, economics, architecture, community planning and social work. In brief, it has led social work to bring to bear all the forces of our society on problems of social functioning.

Another outgrowth of this new concept of social work has been the gradual departure from the traditional separation of the social work methods known as casework, groupwork and community

organization. Previously we practised these methods in comparative isolation. We recognized commonalities but we kept the methods separate. Today we see these converging into a single social work method. This method can be used to help all members of society. The new social work perspective is on the individual in his total social environment. Caseworkers and groupworkers practise side by side in situations which defy separation. In addition, all social workers are involved in some form of community organization or community development. For some it is their stock in trade. For others it is a leisure time activity which finds expression in the many community services they perform, such as serving on Boards and Committees or providing free advice and counsel on matters of social concern.

Whether during the hours of professional practice or whether during the hours of leisure, the social worker is constantly concerned with problems of social functioning and seeks to help individuals, groups and communities play out their respective roles in an increasingly effective and productive manner. □

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# Laboratory Technology

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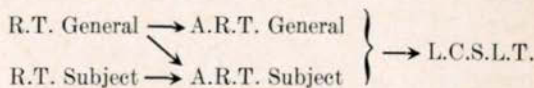
Halifax, N. S.

## Organisation

In 1936, in Hamilton, a physician, a surgeon, a pathologist, an analytical chemist, a secretary and sundry technicians began planning the organization of persons who worked in medical laboratories. Their efforts reached fruition in 1937 when the Canadian Society of Laboratory Technologists was incorporated under Dominion charter. From this small beginning the Society has grown to include over 8000 members with Branches or Affiliated Societies in every Province of the Dominion. Approximately 1200 students register annually and after training at C.M.A. approved training schools, for periods varying from eighteen months to two years, are eligible to write the C.S.L.T. examinations for certification.

## Levels of Qualification

Educational requirements for students are senior matriculation with passes in two mathematics, chemistry and one other science, together with other subjects required for Provincial examinations. Successful candidates in the R.T. General examination, which includes papers in general knowledge, clinical microbiology, haematology, clinical chemistry, histology and blood banking are entitled to use the initials R.T. (Registered Technologist). Advanced examinations at the A.R.T. (Advanced Registered Technologist) and L.C.S.L.T. (Licentiate) levels may be taken a minimum of three years after successful completion of the R.T. and A.R.T. examinations respectively. These advanced examinations are of a specialized nature and are usually taken in one discipline. The Society also has certification at the F.C.S.L.T. (Fellowship) level but this may be achieved only by nomination or recommendation and is designed to honour outstanding leaders in the field of laboratory technology. In accordance with its policy of catering to the ever changing needs of laboratory technology an examination in a subject discipline (R.T. subject) was introduced in 1961 to enable technologists employed in one discipline to gain certification. Examination papers at the R.T. subject level require a greater depth of knowledge of the particular discipline by the candidate than do those at the R.T. general level. The scheme of progression through C.S.L.T. examinations is as follows:



## The Canadian Society of Laboratory Technologists

A national administrative staff under the capable direction of the Executive Director (Mr. A. R. Shearer), is available to serve the needs of the membership. In addition to the myriad executive committees necessary for the efficient operation of the Society, a Certification Board (which deals with all matters pertaining to certification, and an Advisory Committee (of prominent laboratory scientists) are in existence to advise the executive on the changing needs of laboratory technology. The Society offers three publications; The Canadian Journal of Medical Technology and also a News Bulletin (which are published in alternate months) and a publication for members of the Science Sections. The Society is affiliated with the C.M.A., and C.S.L.T. representatives are included in C.M.A. inspection panels for Schools of Medical Technology. The C.S.L.T. maintains close liaison with other para-medical groups and societies. The C.S.L.T. is the official registry for Laboratory Technologists in Canada, has a code of ethics and a pledge, and works constantly to fulfil the purposes and objects mentioned in its charter, namely:

"To improve the qualifications and standing of laboratory technicians in Canada; to promote research endeavour in all branches of laboratory work; to promote a recognized and professional status for technicians; to promote closer co-operation between the medical profession and the technician; to more efficiently aid in diagnosing and treating disease."

## Laboratory Technologists in Nova Scotia

The Nova Scotia Branch of the C.S.L.T. was formed, at the largest gathering of technologists in the Province's history, in 1960 when 92 members attended an organizational meeting of technologists. At this meeting the technologists, hitherto a scattered, diversified group, agreed to unite in one body and elected the formation of a branch of the C.S.L.T. in preference to an alternative independent Society. The main functions

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of the Provincial Branch are: (a) the promotion of continual educational advancement of laboratory technologists and (b) the continued study of employment relations and welfare relating to laboratory technology within the Province.

The educational advancement of laboratory technologists is achieved mainly through conventions, workshops, seminars and weekend study courses, in addition to formal programs offered at meetings of local technologists who have formed "Academies". Four such Academies presently exist in the Province of Nova Scotia and contribute much to the fellowship and scientific advancement of local technologists. The Nova Scotia Branch was host to the National Convention in 1963 and, in addition to a stimulating scientific program and the first comprehensive workshop program ever offered at a National Convention, did much to aid the tourist bureau by arranging one of the most enjoyable social programs ever offered. The Branch will also be hosting the National Convention in 1971.

Under the competent leadership of Sister Agnes Gerard, the Provincial Education Committee has been the forerunner in contributing to advanced education in laboratory technology in Nova Scotia. Following submissions compiled by this Committee and presented by the Provincial Branch in 1965, an advisory committee was established by the Nova Scotia Department of Education to study education in Laboratory Technology in the province. As a result of this advisory committee, an advanced course in Haematology was recently introduced at the Nova Scotia Institute of Technology. A.C.S.L.T. Branch committee on Employment Relations and Welfare was recently formed and is conducting an extensive survey of conditions existing in the province.

Undoubtedly the greatest advance in laboratory technology in the province has occurred in the training system for initial certification. Doctor D. J. MacKenzie in his excellent article in *The Bulletin*<sup>1</sup> has illustrated the development of medical laboratory services in the Halifax area, and the present full time educational staff of fourteen lecturers and demonstrators under the able direction of Doctor Hugh Brown is a far cry from the volunteer (in the truest sense of the word) staff who contributed to this program until the new school was opened in 1964. The present school can accommodate up to ninety students most of whom receive a bursary during their training. The program is a "two-phase" system with a concentrated course

of lectures and practical work for a period of ten months at the N.S.I.T., followed by a rotational or intern period of nine to twelve months through a C.M.A. approved hospital laboratory. Graduates of this course are eligible to participate in the R.T. examination.

### Future Developments in Laboratory Technology

Today's physician has, of necessity, come to demand more service from the laboratory in the form of new and more complex tests for the better diagnosis and treatment of disease. Thus, the laboratory has been faced with a rapidly expanding workload and, in many cases, the staff are unable to cope with the flow of specimens directed towards it.

It is evident that the new developments in the field of electronics and the resulting automation could help resolve the chronic problem of laboratory workload. This will necessitate a greater depth of knowledge for the operation and maintenance of intricate instruments. More than this, it will be necessary for the laboratory to extend service into more critical studies on patients whose "automated profile" reveals to the physician such a need. Thus, the technologists will become a more valuable member of the health team.

The benefits of a stable laboratory staff are recognized. We believe that the fact is gaining increasing acceptance that it is no longer economically or technically efficient management technique merely to fill laboratories with personnel. In order to fulfill effectively its function in the medical team, the medical laboratory must offer its personnel the benefits of a professional career. Good working conditions, coupled with attractive salary and personnel policies together with opportunities for educational and personal advancement, are beginning to be recognized as contributing factors to an efficient and progressive laboratory service. The Canadian Society of Laboratory Technologists has been constantly devoting its energies to the promotion of these criteria; it cannot succeed on its own. Without the active co-operation of the medical practitioner and the other members of the health services' team, the ultimate aim "to assist the practitioner in the better diagnosis and treatment of disease" will become only an aim instead of a reality. □

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# The Victorian Order of Nurses

MISS JEAN FORBES, RN\*

Halifax, N. S.

The function of the Victorian Order of Nurses is to provide in the patient's own home, a bedside nursing service that is both curative and preventative in character. This service to physicians is available to meet the needs of patients who do not require hospitalisation, or who have returned home after a short or prolonged hospital stay. The V.O.N. nurses providing this service are graduates of accredited schools of nursing, the majority having a diploma in Public Health Nursing: they will visit the patient daily or more often as required. In addition to the week-day schedule, essential service is provided at night, on holidays, and at week-ends, so that the V.O.N. nurse is available twenty-four hours a day, seven days a week.

## General Nursing Care

The V.O.N. nurse, at the request of the doctor, can assist the patient in many ways in addition to general nursing care, treatments, dressings and injections. Supportive care may be requested, with follow up supervision, and referrals and reports to the doctor, as well as to other community services may be undertaken, especially where social problems are encountered in the course of the home visit. Nursing care is available following either operation or accident, and V.O.N. care makes it possible for convalescent patients to be cared for at home instead of occupying much-needed hospital beds. Rehabilitative nursing for the chronically ill or aged is not merely palliative, since every effort is made to interpret the doctor's orders so that the patient may be assisted and encouraged towards a more rewarding and active life.

## Health Education

Another aspect of V.O.N. activities is health education. The nurse can assist the doctor in his pre-natal program, emphasising, under his direction, nutritional factors and general health practices for the expectant mother. She will visit any mother returning home from hospital with a new baby, demonstrating how to bathe the baby, and how to prepare feedings, and will discuss the routine care required for the new baby. She can help to reinforce the doctor's teaching to his patients, for example, by guiding the patient with a colostomy through the required procedure, helping him to meet the needs brought about by the colostomy, and enabling him to return more rapidly to his normal life pattern. Many diabetic patients are taught in the home how to administer their own insulin, or, failing this, some responsible member of the family is instructed.

## Co-operation

As a voluntary agency, the V.O.N. has demonstrated its flexibility by providing a variety of services in different communities across Canada, adapting its program to the changing needs of the individual community and by co-operating with other health services as they have developed over the years. As the official agencies assume more responsibilities in the public health field, the V.O.N. can concentrate on the provision of other nursing services, relinquishing such public health programs as immunization clinics, well baby clinics and school work to the official agency.

In Nova Scotia, many V.O.N. branches were organized before there was any public health agency, and their program attempted to fill the needs of the community at that time. Some of their original activities are still being provided by the V.O.N. alone, while some are shared with the official agencies.

## General Information

The Victorian Order of Nurses was started in 1897 by Lady Aberdeen, the wife of a former Governor-General of Canada. It now maintains its Canadian Headquarters in Ottawa, and has 108 branches in nine provinces, ranging across Canada from Cornerbrook, Newfoundland to Victoria, B.C. There were over one million visits made by a staff of approximately 730 nurses to 115,000 patients in Canada last year.

In Nova Scotia, there are 15 branches of the order, maintained by local boards of management and employing forty-six nurses. Branches are located in Amherst, Truro, Windsor, Wolfville, Kentville, Digby, Yarmouth, Liverpool, Halifax, Dartmouth, New Glasgow, Pietou, Sydney, Northside and Glace Bay. In these areas last year, over 12,000 patients were cared for, 81,000 visits being made at an approximate cost to the branches of \$290,000.00, giving an approximate cost per visit of \$3.50.

## Fees

Although the V.O.N. service is available to all, regardless of ability to pay, there is a charge based on the average cost per visit, computed annually for each branch. Those who are able to pay this charge are expected to do so, but, when necessary, a reduction in fees is arranged, and no patient is refused care because of inability to pay. No fees are charged for advisory visits, such as those made for pre-natal and post-natal care.

\*Formerly District Director, Halifax Branch, Victorian Order of Nurses.

## Finances

The V.O.N. is financed and supported by means of grants from the United Appeal, fees from patients, provincial and municipal grants and the additional money-making efforts of the local boards of management. Recently, The Canada Assistance Act went into effect and it is expected that this Act will provide a means of reimbursing voluntary agencies for services rendered to patients coming under the provisions of the Act.

## Expansion

In recent years, the areas in which the V.O.N. provides service have extended to include not only the towns but also the fringe and rural areas adjacent to the towns. In many instances, the public health nurse and the V.O.N. nurse share responsibilities when a question of boundaries arises, so that adequate patient care is given. The V.O.N. will respond to any call from the physician to give nursing service, the amount of care given being according to the doctor's wishes and the needs of the patient.

## Referral System and Liaison

Since it is in the best interests of the patient, their families, the doctors and the community, many hospitals in Nova Scotia arrange to provide uninterrupted care to the patient as he moves from home to hospital and back home again. This is done through a referral system set up in the hospital with the V.O.N. nurse providing the liaison. With the doctor's sanction, the V.O.N. liaison nurse in the hospital, on discharge of the patient, notifies the appropriate V.O.N. branch or public health nurse that further nursing or supportive care is required in the home, thus providing a link between hospital care and home care for the patient. The V.O.N. or the public health nurse in the patient's home area are promptly supplied with doctor's orders and information concerning the care required at home. This information enables the nurse and the patient's own doctor to provide uninterrupted care to patients on discharge from hospital. Similarly, it is frequently easier for the physician to arrange for V.O.N. service to be available by contacting the V.O.N. liaison nurse at the local hospital. This service often helps to lessen the strain on the other members of the patient's family by teaching them how to help the patient recover faster.

## Organised Home Care

It is the hope of the V.O.N. in Nova Scotia, that in the not too distant future, the Medical Society will see fit to encourage and perhaps sponsor an organized Home Care Program. These programs are designed to co-ordinate efficiently any or all of the services which may be required to enable a patient to be cared for at home. These services may include medical care, bedside nursing, rehabilitation and physiotherapy, as well as the provision

of social service, housekeeping services or the provision of special equipment in the home. The Victorian Order of Nurses is at present participating in co-ordinated home care programs of this type in thirteen areas in Canada. These programs are financed in a variety of ways, receiving funds from Provincial Governments, National Health Grants and Hospital Service Commissions, to provide remuneration for the community service visitors on a per-visit basis, without charge to the patient. Sometimes these programs are administered by city health departments, sometimes by hospitals or doctors, but nine of the thirteen at present in operation are administered now by the V.O.N.

## Medicare

Most people believe that Medicare will lead to increased demands on the doctors time: the V.O.N. believes that their nurses can be of very real assistance to family physicians, by conserving the doctors professional time and energy, and enabling him to provide effective care for more patients. □

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# The Medical Radiological Technician

SISTER EDMUND CAMPION, RT, RN, BA

*Halifax Infirmary, Halifax, N. S.*

I am grateful for the opportunity of presenting something about our profession in your excellent journal. Since you are well aware of the scope of our work, this article will outline a little of the history of radiology and the development of our society. If the material seems to emphasize the role of the radiographer, the technician in diagnostic radiology, it is not intended to minimize in any way the other two branches, radiation therapy and nuclear medicine. Simply, there are more radiographers, the author belongs to that category, and its history goes back a little further (indeed, to the invention of photography!)

On November 8, 1895, Wilhelm Conrad Röntgen, professor of physics at Wurzburg, discovered "a new kind of ray", long existing but hitherto unrecognized, of which the startling property was its ability to penetrate matter in relation to its thickness and density. His careful investigations and reports may be read in the biography, "Dr. W. C. Röntgen" by Glasser. Among other experiments, he made "X-ray photographs" of several inanimate objects and finally of his wife's hand. It was these weird pictures that caught the attention of the public; it was a newspaper editor who first suggested their application in medicine. Thus the Vienna 'Presse' for Sunday, January 5, 1896: . . . . . "The light from a Crookes tube penetrates dense objects as easily as sunlight penetrates a piece of glass. Biologists and physicians, especially surgeons, will be very much interested in the practical use of these rays, because they offer prospects of constituting a new and very valuable aid in diagnosis. . . . ."<sup>2</sup>

Since all physics laboratories were equipped with apparatus similar to Röntgen's, it is no matter of surprise that: "Within a few days of the announcement of the discovery, (several German scientists) produced excellent X-ray pictures. Also from Vienna a picture of a cadaver hand was sent to Röntgen (in which) the veins had been injected with Teichmann's mixture of lime, cinnabar, and petroleum via the brachial artery and stood out in beautiful relief. . . . . This effect produced by injecting blood vessels suggested the possibility of other organs of the human body, such as the esophagus, stomach, intestines, lungs, gallbladder, and brain being filled with heavier substances so that by contrast on the X-ray plate the organ and its function would be revealed."<sup>3</sup> What is amazing is that a great many of our very "new" procedures

were known in principle at that time but had to await suitable materials and apparatus before they could be performed safely and with reasonable ease.

Röntgen, in order to protect his photographic plates and other materials, worked from within a lead-lined booth and thus unknowingly protected himself from harm. However, reports soon came to him of a particular skin reaction (sunburn type) in persons working with X-rays.<sup>1</sup> Dr. E. H. Grubbé was the first to apply this effect of the rays in treating tumour of the breast, in January 1896; shortly after that he began using lead-foil to shield the surrounding tissues. In November 1896, one year after the discovery of X-rays, Becquerel reported that uranium gives off a similar type of rays; this observation was followed up by such scientists as Rutherford and the Curies. X-ray therapy and radium therapy in turn led to the necessity of standardization of dose units, detection and protection methods, another whole fascinating subject. We technicians study the basic facts and factors in "Radiobiology and Protection."<sup>4,5,6</sup>

The first use of X-ray evidence in court was in March 1896, to prove that a professional dancer had indeed injured her foot at work in the theatre. "X-ray photographs" of both feet were accepted as evidence, to substantiate the statement of her physician.

That inventive genius, Thomas Alva Edison, became greatly interested in X-ray apparatus. The machines were small and/or clumsy; the exposures required were very long (half an hour for a single view of the hand!) partly due to the poor output and partly due to poor recording materials designed for regular photography. Edison greatly improved the fluoroscope by finding chemical salts that give off a brighter light in response to X-rays. He sent some of his "fluorescent screens" and X-ray tubes to Professor M. I. Pupin of Columbia University, who in turn made a new application of them. On March 28, 1896, he wrote to Edison: ". . . . I do not think that (the fluoroscope) will entirely supersede the photographic method of diagnosis in surgical work and am inclined to the belief that a combination of the fluorescent screen placed in immediate contact with the photographic film will be the correct thing. My experiments in this direction give very encouraging results. . . . ."<sup>7</sup> Pupin was right. But it was many years before manufacturing difficulties were overcome so that good reliable intensifying screens became available commercially.

Now where does the Medical Radiological Technician come into the picture? The first X-ray technicians were the doctors themselves. As the volume of work grew, the doctors turned for assistance to the most adaptable groups of trained personnel: photographers, electricians, sometimes nurses. But this pioneer work was largely guesswork due to the unstable nature of the gas-filled X-ray tubes. The first major breakthrough for technical work came in 1913 with the invention of the hot-cathode vacuum tube which can be precisely controlled. One of the great proponents of the use of standardized technical factors was E. C. Jerman, who travelled and lectured extensively as head of the Educational Department of the (now) General Electric X-ray Corporation. He was also to be one of the founders of the American Society of X-ray Technicians.

During the First World War there was a great impetus to training in radiology for the medical corps, not only for the doctors but also for the indispensable assistants then known as "X-ray manipulators" or "X-ray operators" who would look after the technical work. Many of these operators attained considerable skill; some had previous experience in civilian hospitals and offices but most were corps-trained. Upon demobilization many of them continued their work in hospitals or in doctors' offices. Unfortunately, there were a few who set up "studios" where the gullible could, for a fee, have X-ray pictures taken without benefit of medical interpretation. Not only was unnecessary radiation given, but a false reassurance to perhaps seriously ill persons. Hence the need for sorting out of the competent from the unskilled, and the ethical from the quack. With the cooperation of the radiological societies (organized as early as 1900) qualifying bodies for X-ray technicians were established: in Britain, the Society of Radiographers (1920); in America, The American Society of X-ray Technicians (1920); the American Registry (1922)<sup>4</sup>. Membership was open to Canadians and a fair number took advantage of it.

In Canada, the first X-ray technicians' society was formed in Winnipeg in 1929 and is still very active, though now a part of our Canadian Society instead of being affiliated with the American Society. The next group to organize was the Ontario Society of Radiographers in 1934. They conceived the idea of a national society, and in 1939 began to contact technicians in the larger centers across Canada with a view to forming provincial societies which would then unite. The person contacted in Nova Scotia was Albert Perry, then chief technician at Camp Hill Hospital. An Englishman, his career in radiography dates back to Red Cross work in Serbia in 1913. He is now retired in Bridgewater. With the assistance of a small provisional committee in Halifax, he circularized all the hospitals in Nova Scotia to the effect that such a

society was in formation and that the radiographers might join by application and nominal fee. The first annual meeting was held in Halifax in 1941. Once the register was closed to "charter members" further entrance was by examination. Examinations and student qualifications were based on those of the Ontario Society of Radiographers. A feature of the early meetings was the carefully planned "refresher course" on the basic subjects to help the members prepare for examination, as there was very little organized formal training at that time. When the Canadian Society of Radiological Technicians was incorporated in 1943,<sup>5</sup> almost its first act was to set up an examining board, later known as "Committee on Qualifications". This set up standards for entrance to training and at first approved examinations set up by provincial bodies. The first standard nation-wide examinations were set in 1945. These were essay questions, hence tedious to evaluate. Examinations are now of the completely objective type, much more difficult to set up but quick to check; results are back in two or three weeks. Requirements for entrance to training in Nova Scotia have always been fairly high, but we were surprised to learn that for some time we were a year "higher" in educational standing than the rest of Canada. A Nova Scotia Grade XII certificate is required, including mathematics and a science (preferably physics, unless already covered in Grade XI); the number of applicants is large so that a careful screening of candidates has been possible. This is reflected in the very high rate of success in the Registry examinations here these last few years.

Other services offered by the Canadian Society of Radiological Technicians to its members, either nationally or through the member-societies (provincial branches) are:

- 1) Interchange of information through meetings and its journal.

- 2) Status of a Registered Technician. This includes the right to reciprocity in societies of several countries: U.S.A., Britain, Australia, and now Holland (pending). But this works only from one's original society to the other, and not along a chain of transfers. And if any of these societies changes its standards, the agreements with the other countries are reviewed by the respective Boards. There is also now an International Society of Radiographers and Radiological Technicians which meets in conjunction with the International Congress of Radiology but carries on most of its work by correspondence. Canada is the leader in the Americas (oddly, the U.S.A. group did not join).

- 3) Legislation. Nova Scotia along with most other provinces now has an Act concerning radiological technicians. This is needed not only as a socio-economic measure but even



more because of the dangers of ionizing radiation in the hands of unqualified personnel. The Act limits the field of employment to Registered Technicians and, of course, student technicians under their supervision.

4) Economic improvement, through the committee on Personnel Policies and Salaries. This is rather a recent development and must only follow along behind the prime purpose of professional excellence.

5) Improved education through control of training schools and by means of refresher courses and post-graduate lecture series.

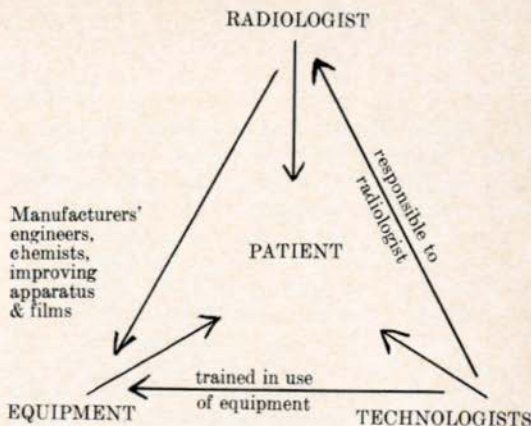
Specifications for training schools are set up within the society by the CSRT Committee on Technical Training, which works closely with a similar committee of Canadian Association of Radiologists, together forming the Joint Council on Technical Training, CAR-CSRT. The CAR committee communicates with Canadian Medical Association, through whose facilities the actual inspection and accreditation of the schools is carried on.

At present, the main business before the Joint Council is the revision of the whole *Syllabus in Radiographic Technique*. For example, the new Chapter VII, "Recording the Radiographic Image", has dropped certain obsolete material, and has added data relative to various types of camera, cinefilm, television, and videotape for use with image amplifier units.

In 1957, training for technicians in *Radiotherapy* was made a separate entity, with its own syllabus. By design, it was limited to large radiotherapy centers, with not more than one student to be admitted for each Registered Technician in the center.

*Nuclear Medicine Technology* (Radioisotope Technology) is, of course, the newest branch and one which is developing very rapidly. Training programs have been something like very nice step-children of both the Laboratory and Radiological Technicians' societies and it has been possible to become registered under either. There will soon be a separate organization directly under the auspices of the Canadian Medical Association. It is perhaps of interest that at present a technician qualified in one of the three branches of radiologic technology is allowed to write examinations in a second branch after at least one year of additional training in that discipline.

In his book, "Modern X-ray Technic" (Modern in 1928), Jerman stated: "The three essentials, each of which is of equal importance with the others, in the development of the X-ray art from a diagnostic standpoint, are, in the order of their proper sequence, Equipment, Technic and Interpretation". In the following diagram I have attempted to portray this. It could be expanded by adding a Radiation Physicist and others, for therapy and work with radioisotopes.



"THE RADIOLOGIC TRIANGLE"

All three contribute also to the education of the future technician:

Radiologist - by formal lectures, by daily interest and direction, by committee work.

Manufacturers of equipment, films, chemicals - by supplying technical lecturers, literature, posters and visual aids, and by offering prizes for essays and exhibits.

Technicians themselves continue to do the greater part of the training, and there is now growing up a classification of Instructors who are employed full-time in teaching and school administration; the chief Radiologist, however, is Director of the school as of the other activities of his department.

For the future, it is expected that within a few years the pattern of training will change in that the basic theory will be taught at the Institute of Technology or other establishment under the Department of Education. Such institutes are becoming quite common across Canada and we shall benefit from the experience of other technicians in that type of situation. The students would spend a month or two in hospital orientation before entering the Institute, and would spend at least the second year entirely in hospital. To ensure the excellence of this hospital training, the Joint Council on Technical Training has published a firm guide to emphasize those items which best lend themselves to teaching and/or review "on the job". Needless to say, qualified instructors and a good library would still be minimum essentials for the participating hospitals. We hope that the new type of teaching center would also serve as a nucleus for continuing education programs for Registered Technicians.

To be a real X-ray technician requires all the best attributes of a public relations officer, file clerk, nurse, computer, artist, owl, cleaner, weightlifter, babysitter, and sphinx. Please don't ask the technician to interpret that emergency film for you over the phone! She has been trained **not** to attempt interpretation; that is the radiologist's responsibility. Also, for emergency work it is much appreciated if the patient can be accompanied by someone so that the technician can leave the patient when necessary to develop the films. There is a fine balance of concern to be maintained, between safety and care of the three-dimensional polychromatic patient and obtaining excellence of the two-dimensional monochromatic projection of his inner structures to be captured upon film for medical use. It is not easy, but it is fascinating. □

**Acknowledgement:** To Austin Singer, R. T., Halifax Children's Hospital, for suggestions regarding material for this paper.

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## One Hundred Years Ago

Extract From The Minutes, Dalhousie Faculty of Medicine

January 3rd 1868

A meeting of the Medical Faculty was held at Dr. Reid's office. Present: Drs. Slayter, Sommers, Farrell, Hattie, Woodill, and Reid (in the chair).

The Dean and Secretary reported that there had been a meeting of the Board of Governors, that the communications had been laid before them were well received and that a committee of the Board and Senate had been appointed to confer with three members of the Faculty and three delegates from the Halifax Medical Society. He also reported communications which were submitted viz from Dr. Dickson, Dean of Queens College, Kingston, Canada, acknowledging receipt of communications coupled with the best wishes for the success of the project and the interest he took in the effort, with advice as to the means for carrying out and urging the formation of a full Faculty with six month sessions, as the Board of Medical education for Ontario did not recognize those of three months! -

From Dr. Shattuck, Secretary of Faculty of Medicine, Harvard University, Boston, recognizing our session as an equivalent for a year's study with a preceptor and as naturally equivalent to their summer course - he promised another communication after a meeting of the Faculty: -

From Dr. Draper, Dean of the Medical Faculty of the University of the city of New York, reporting a Meeting of the Faculty and recognizing our summer session as equivalent to a year's study with a preceptor, and that though our courses could not be taken as their's yet an equivalent would be given either in attendance on their lectures or in the fees to be paid them as deemed most appropriate but this subject would be a special action of their Faculty: -

From Dr. Campbell, Dean of the Faculty of Medicine of McGill University, Montreal, recognizing our summer session as equivalent to a year's study with a preceptor, and any two of our single classes equivalent to one of their's on the same subject, but that our students would require to pass a matriculation examination similar to their's either here or in Montreal before being qualified to go up for their degrees.

Drs. Hattie, W. I. Almon, and Reid were chosen a committee to confer with that of the Governors\* and after a conversation the Faculty adjourned.

A. P. Reid, M.D.  
Dean and Secretary

\*At that meeting on January 14th, 1868, the Board of Governors of Dalhousie University approved the establishment of the Faculty of Medicine. □

# Red Cross Services in the Health and Welfare Field

C. L. ILLSLEY\*

Halifax, N. S.

The basis of Red Cross participation in the Health and Welfare Program of our province is that set for us by J. Henry Dunant, Founder of Red Cross more than 100 years ago, when he said "All men are brothers." The Act of Parliament authorizing the Canadian Red Cross Society states as its purposes "Promotion of health, prevention of disease and the mitigation of suffering throughout the world."

In administering any such program, our Society is guided by Red Cross basic principles set forth by the International Red Cross. These basic principles require that Red Cross assistance shall be governed by principles of humanity, impartiality, neutrality, independence, voluntary service, unity and universality.

In Nova Scotia the major Health and Welfare Programs of the Society are as follows: - The Blood Transfusion Service; Emergency and Disaster Aid to Individuals; Enquiry and Family Reunion Service; Homemaker Service; programs of the Red Cross Youth for Handicapped and Crippled Children, and the development of good health habits; Home Nursing courses for adults and teenagers; a Free Sickroom Equipment Loan Service; the promotion of Water Safety, Survival Swimming and Artificial Respiration knowledge.

## Blood Transfusion Service

The Free Blood Transfusion Service operated by the Canadian Red Cross Society is the result of co-operation by the Government of Nova Scotia, the Department of Public Health, the medical profession, and the hospitals concerned. Through the Blood Transfusion Service blood is collected, processed, tested and made available to the hospitals in the form of whole blood or many derivatives or fractions. Developments within the last few years have resulted in the much more sophisticated use of blood, and with the new plastic packs, one donation of blood may serve the needs of several patients. The needs of the heart-lung machine and the artificial kidney machine throw additional demands on the Blood Transfusion Service, the current requirement being 1,000 donations of blood per week to meet the needs in our province.

The key to this invaluable service is the volunteer donor, but the donor needs motivation and a sense of achievement. Here is where doctors and nurses can do much to promote the availability of donors, by telling patients and their relatives of the great benefits derived from the Blood Trans-

fusion Service. Too often we take good things for granted, and here is a case where helpful promotion is always welcome.

## Emergency Aid Services

Emergency Aid in the form of Disaster Service to the victims of individual house fires, the Enquiry and Family Reunion Service for displaced persons, and verification of the need for emergency leave for American servicemen are part of a very personal service rendered by Red Cross. With the coming of the Canada Assistance Plan it is probable that much of the emergency aid to families will be available from the regular Welfare Services of the Department of Public Welfare. Where doctors play an important part is in connection with the verification of the necessity for emergency leave for American servicemen, especially Canadians serving with the American Forces. The American Forces require a diagnosis and prognosis report with doctor's recommendation before authorizing emergency leave for servicemen, and these requests usually come either through Red Cross or through the family direct.

## Homemaker Service

Canadian Red Cross operates the largest Homemaker Service on the North American continent, employing more than 500 homemakers at approximately 40 locations in Canada. Here in Nova Scotia we have only two Homemaker Services, one in the Halifax-Dartmouth Metropolitan area and one in the Amherst area. There is no question but that Homemaker Service will be greatly expanded in the immediate future. The Minister of Public Welfare has authorized a survey in this regard and Homemaker Service has been declared a service recognized as eligible for participation in the Canada Assistance Plan.

Through the Homemaker Service, trained, capable women are provided to go to a home where a mother is ill or in hospital while the father is absent at work, and take care of the children, do the necessary cooking, in short to be a substitute mother. There is a charge for this service but this charge is graduated according to the ability of the family to pay. Of course, clients served under the Canada Assistance Plan will have the homemaker paid by the municipal units concerned. While in the past this service has been basically for maternity cases or cases where the mother is in hospital, it is hoped that it can be expanded to assist elderly persons, the disabled, and families where there is a retarded child.

\*Commissioner Nova Scotia Division The Canadian Red Cross Society.

### Red Cross Youth

Through the Red Cross Youth Program, Junior Red Cross is organized in the elementary grades, as well as High School Red Cross for the High Schools, and an alumni group for University level. The purposes of the Red Cross Youth Program are service to others, international understanding, and good health habits. Particularly in the elementary schools this program can contribute much to the teaching of good habits. An adjunct to the Youth Program is the Fund which assists Handicapped and Crippled Children. This has been in operation since 1924 in the Province of Nova Scotia, and through it, thousands of boys and girls have been fitted with prosthetic devices, provided with transportation, drugs, or other necessary assistance. Of late, with the coming of free hospitalization, the demands on this Fund have fallen more into the field of assistance with transportation and certain prosthetic devices and eyeglasses.

### Home Nursing

The Red Cross provides two excellent texts on "Care in the Home", one for adults and one for teenagers. Classes in these subjects are taught by volunteer registered nurses and many of those who take the courses go on for additional training in Hospital Experience Programs where hospitals co-operate in this regard, and many of them register in the Emergency Measures Organization as hospital or emergency workers. Others assist with Well Baby Clinics, Immunization Clinics, and other programs of the Department of Health and Welfare, or with Blood Donor Clinics or other community projects. The courses are so designed that each lesson is complete in itself, and these lessons are often given by experts in the field, such as a dietitian giving the lesson on special feeding for bed patients, bland diets, etc., a doctor or perhaps a Public Health Nurse giving the lesson on recognition of communicable diseases and emergencies in the home. There are excellent grounds for co-operation in this manner, and whenever it is possible to arrange such lectures, they make the course more interesting.

### Sickroom Equipment Loan Service

A valuable free service to the community is the loan of hospital beds, wheel chairs, crutches, and smaller sickroom needs through Canadian Red Cross. This service is available from a provincial pool at Division Headquarters in Halifax, or through more than 100 branches located at various points in the province. The Society has many hundreds of hospital beds and wheel chairs, and thousands of pairs of crutches on loan throughout the province. This service is not intended as a long term loan service, but for short term illness and convalescence. The limit on loans is normally not more than three months. There is no charge for the use of the equipment, but users are expected

to pay the cost of transportation both ways. Needless to say, contributions for use of the service are gratefully accepted and this money is used to purchase additional equipment. Although this service is available to anyone, when there is a shortage preference is given to the needy, and those who are able to buy their own equipment would be expected to do so. One particular problem in administering this service is persuading people to return the crutches. The larger items, such as hospital beds and wheel chairs are returned readily, but crutches seem to be easy to lose sight of and there are many hundreds of these that are overdue. Nurses and doctors, when suggesting the use of such equipment can assist by stressing the importance of having it returned promptly so another user may be helped.

### Water Safety

The Water Safety Program of Canadian Red Cross has grown from a few children involved in 1946 to more than 35,000 Participants in 1967. While this program teaches the various levels of swimming skills, with pertinent tests and awards, its basic purpose is the teaching of water safety and survival swimming, indeed this year a new Program called "Survival Swimming" has been instituted and is proving to be very well accepted. Along with this is taught the basic mouth-to-mouth artificial respiration skills and there can be no question that this knowledge taught to many of our young people - and older people too - will result in the saving of many lives.

There are many other Programs of Red Cross in the international field, of relief in time of war, with our veterans, and at the Port of Halifax for immigrants, but those listed above are the ones most closely associated with the Health and Welfare field.

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### INSTRUCTIONS TO AUTHORS

Members and others wishing to contribute to *The Bulletin* are invited to submit their material to the Offices of The Medical Society, Sir Charles Tupper Medical Building, Halifax, N. S. In general the rules laid down for the *Canadian Medical Association Journal* and published therein under the heading "Instructions to Contributors".

Material should preferably be typed on one side of paper 8½ x 11 inches, with wide margins. Carbon copies are not satisfactory. Any table, illustration etc. quoted from another published source must have the permission of both author and publisher.

Opinions expressed in articles appearing in *The Bulletin* do not represent the policy of The Medical Society of Nova Scotia unless specifically stated to do so.



# MEDICAL-LEGAL ENQUIRIES

IAN MAXWELL, M.B., Ch.B.

## RESPONSIBILITY FOR THE ACTS OF ANOTHER

### PART II

#### PARAMEDICAL PERSONNEL

Last month we considered the responsibility of the attending physician for acts performed by a second licensed practitioner. This month THE BULLETIN is devoted to a review of some of the paramedical services in our province, and it would be appropriate if we considered some of the questions which have been submitted regarding our responsibility for their actions

#### A. PHYSIOTHERAPY

Q: "If I send a patient to Physiotherapy for infrared treatment for such-and-such a period and the technician gives ultraviolet treatment by mistake and produces severe burns, am I liable for damages?"

A: As detailed elsewhere in this issue, physiotherapists are highly trained persons who take a pride in their profession, and who are probably more cognizant of the correct dose of radiant energy than is the doctor himself. It is unlikely, therefore, that excessive ultraviolet treatment would be administered by a trained physiotherapist, even if it were so ordered by the physician by mistake. The questioner, however, must have some specific case in mind where some such mishap actually occurred, and it is possible that the individual in this case was unlicensed or untrained. In such a situation the department head, the hospital, and the person who administered the wrong treatment would probably be liable for suit, but we do not think the physician would be liable, providing his instructions were clear. This is not always the case; it is all too common for doctors to give verbal or telephoned instructions to non-medical persons or to write a barely legible order on a scrap of paper. If such instructions are carried out wrongly, the physician may be held to blame later, and this is not surprising. In most hospital departments there are usually specific requisition forms which will go a large way to preventing mistakes.

Q: "If I wish to prescribe ultrasound for, say, a tennis elbow and am unsure of the correct dose, is it not perfectly acceptable for me to instruct the physiotherapy technician to read the correct dose off the machine and to administer this?"

*I ask because some hospitals are unwilling to instal ultrasound apparatus because there is no specialist in physical medicine on their staff."*

A: As the questioner is no doubt aware, ultrasound treatment is fraught with serious consequences if misapplied. The hospital is held responsible by law to exercise such reasonable care and attention for the safety of any of its patients as their conditions, if known, may require. Salaried physicians, nurses, and attendants on the hospital staff are considered, when practicing within the confines of the hospital, to be acting as its agents, and the hospital is jointly responsible for their actions. In its contract with the patient the hospital implicitly agrees that it has taken all reasonable measures to ensure that its agents are adequately trained to carry out their duties and that they will exercise reasonable care, diligence, and their best judgement in each case. Even if it can be shown that injury to a patient has occurred as the result of treatment by a trained person acting negligently, the hospital can be held liable for such injury under the doctrine of **respondeat superior**<sup>1</sup>.

Ultrasound machines carry directions from the manufacturer suggesting appropriate dosages, but it is very questionable whether the manufacturer could be held responsible for individual injury if these directions were followed by simple rule-of-thumb. In fact, trained physiotherapists and specialists in physical medicine pay little attention to machine directions regarding the correct dose of therapy in each case and consider that this must be assessed for each patient and each condition individually. The question naturally arises "Can the trained physiotherapist be considered competent to prescribe and held personally responsible for such a decision?" Time was

when the taking of X-ray photographs was considered so hazardous a procedure that it could only be entrusted to a doctor, but it is now obvious that the X-ray technician knows vastly more about this than does the attending physician. The same certainly holds true for most aspects of physiotherapy - in fact a physiotherapist would be considered negligent if she carried out without question the request of a physician for ultrasound or short wave diathermy in a patient known to be suffering from osteomyelitis or malignancy. For this reason many departments will refuse to carry out these procedures, and others of like nature unless they have a signed requisition from the physician indicating the probable diagnosis. In each department, however, rules may differ regarding the competence to prescribe certain forms of physiotherapy. In some a specialist in physical medicine will personally oversee all therapeutic measures, in most he will delegate authority for some to a trained staff, and in some he may only take responsibility for therapy in cases personally referred to him as a consultant. The situation in the individual hospital referred to by the questioner would, therefore, have to be assessed before a definite answer could be given.

## B. BLOOD TRANSFUSION

**Q:** *"If a technician mismatches a transfusion, who will be held responsible the technician, the Red Cross, or the Doctor?"*

**A:** The questioner did not suggest the pathologist or the hospital, both of whom would share in the responsibility.

The transfusion of blood, though commonly regarded as being an innocuous procedure which is valuable as a harmless tonic, is, in reality, potentially hazardous. It has been estimated that in the United States there are more than 3,000 deaths annually directly attributable to blood transfusion<sup>2</sup>. This takes no account of the morbidity of the procedure or non-fatal sequelae which probably amount to at least five times this figure.

In most cases morbidity or mortality arise not from technical errors in cross-matching but rather from clerical errors, which may involve either the laboratory staff in mislabelling a bottle or specimen, or the operating room or ward staff in administering the cross-matched bottle to the wrong patient, febrile reactions or unknown contamination of the blood by the virus of homologous serum hepatitis or cold-growing organisms.

Other problems which may be encountered in cases of multiple transfusions are the production

of so-called immunization (antibody formation), transfusional hemosiderosis, and myelophthisic anemia.

While the physician who administers the blood assumes liability for any of his own negligent acts in the procedure, such as interstitial transfusion or median neuritis, he cannot be held to account for laboratory errors in mismatching or mislabelling, nor can the laboratory or its director on their part be held to blame for actions on the part of the doctor or the ward staff. In either case, however, the hospital may be held culpable. It is questionable whether successful suit could be brought for hemosiderosis or serum hepatitis developing as a result of transfusions which were clearly indicated but the physician might have to answer a case if the excessive use of blood was not supported by commonly accepted medical practice in the condition he was treating - for example, pernicious anemia.

Most hospital laboratories are under the supervision of a medical director or pathologist who can be held to account for the negligence of technicians acting under his charge, even though, in most cases, the technician is paid not by the pathologist, but by the hospital. The law is not completely clear on the point, but it is generally held that the performance of laboratory tests is an integral part of the practice of medicine, and as neither the hospital nor the technologist is licensed to practice this art, they can do so only by virtue of delegation of duties by a person so licensed. Whether or not this doctrine holds in the case of all laboratory tests, such as urinalysis, may possibly be open to question, but it undoubtedly holds in the case of injection of biologicals or the transfusion of blood.

The questioner asks about the responsibility of the Red Cross in the case of a transfusion mismatch. If the cross-match is performed by the Red Cross laboratory, it has the same responsibilities as outlined above for a hospital laboratory, and it is presumed these would no longer fall on the hospital as well. More and more across Canada, however, the Red Cross is passing these responsibilities over to the larger hospital laboratories and in such cases cannot be held responsible for cross-matches performed by personnel other than its own. Can it be charged with negligence, however, if a person contracts serum hepatitis as a result of transfusion provided through its banking and distribution services? This matter was considered by the U.S. Court of Appeals in 1957<sup>3</sup> where a patient developed acute viral hepatitis following transfusion of plasma which had been processed commercially.

This interesting and important case was based on the plaintiff's interpretation of the Federal Food, Drug and Cosmetic Act which prohibits the sale or delivery of any food, drug, device or cosmetic that is adulterated. A drug is "adulterated" under the statute "if it consists in whole or in part of any filthy, putrid, or decomposed substance."<sup>3</sup> The Court held that blood plasma was unquestionably a "drug" as defined by the statute, but that hepatitis virus could not be construed as "a filthy substance" in that it cannot be adequately described, nor seen with the most powerful microscope, nor can its presence be detected except by virtue of its ultimate effects.

In a dissenting opinion, **McAlister C. J.** held that the fact that the undoubted adulterant

could not be detected did not negate the fact that it constituted "a filthy substance" under the meaning of the statute and that judgement should be upheld against the appellant company. It would seem fairly certain that if the contaminant were bacterial rather than viral, the supplier of blood products might indeed be held responsible for distributing contaminated drugs.

(to be continued)

I.M.

#### References

1. 72 A. L. R. 2: 408
2. J. A. M. A. 165: 1111, 1957
3. *Merck v Kidd* (USCA 6C), 242 F 592 (1957).

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## Canadian Association of Medical Students and Internes

Encouraged by the successful operation of summer schools in Haiti in 1966 and Inuvik in 1967, the Canadian Association of Medical Students and Internes (C.A.M.S.I.) has now planned a program of "Summer Field Clinics" in Jamaica for August 8 to September 2, 1968, under the direction of M. Arseneau of Ottawa.

This project will enable 70 Canadian medical students and internes to learn clinical medicine through assistance and active participation, along with Jamaican medical students, in clinics and hospitals in and around Kingston, Jamaica.

The purpose of the Summer Field Clinics is to enable Canadian medical students to develop a higher standard of Canadian citizenship, through personal contact with each other and people of other countries; to instill in Canada's future doctors an understanding of people, institutions and developments at home and abroad; to allow the free exchange of ideas, medical and non-medical; to provide the opportunity to students and the medical organizations of the host country to work together as a unit in the practice of medicine.

Students of either sex, between the ages of 18 and 25, who have completed at least their second year of medicine are eligible to apply for participation in the project, which includes a three-day orientation period in Toronto. The project, sponsored by the C.M.A., CIBA Company Limited of Dorval, Quebec, A.C.M.C. and students, is designed to "promote learning through assistance and experience".

For full details, students should contact their C.A.M.S.I. representative. Deadline date for registration is February 21, 1968.

QUERIES TO: Mr. R. L. Garnett, CAMSI Summer Field Clinics '68, 297 Laurier Avenue East, Apt. 3, Ottawa 2, Ontario.

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# Aspiration Pneumonia (Mendelsen's Syndrome)\*

Reprinted from the Canadian Medical Association Journal September 4, 1965, Volume 93.

A 25-YEAR-OLD single white woman was pregnant for the first time and her expected date of confinement was June 4, 1960. She first consulted a physician for prenatal care when four months pregnant. During her prenatal course she visited her physician on 10 occasions and received vitamin and iron supplements. The weight gain, blood pressure and urine were normal on each visit.

Routine radiographic pelvimetry on June 4, 1960, was reported as follows: "The position is left occipital transverse; the anteroposterior diameter of the inlet is 10.5 cm.; the transverse diameter of the inlet is 11.75 cm.; the anteroposterior diameter of the midpelvis is 10.25 cm.; the transverse diameter of the midplane is 9.5 cm.; the anterior sagittal diameter of the outlet is 5.25 cm. and the posterior sagittal diameter of the outlet is 7 cm. The head is just entering the pelvis. The measurements are borderline at the inlet and small at the midpelvis."

The patient was admitted to hospital on June 29, 1960, at 2:55 p.m. with irregular uterine contractions. The blood pressure was 124/60 mm. Hg. and the fetal heart rate was 130 per minute. Her general condition was satisfactory and the hemoglobin (Hb.) level was 13 g. %. Labour became well established by 8:00 p.m. on June 29, five hours after hospital admission. Her physician saw her at 11:00 p.m. and because of the pelvic measurements a consultation was held with an obstetrician, who suggested that the patient have a trial of labour. When examined at 11:45 p.m. the patient's cervix was 5 to 6 cm. dilated and the fetal head was low. The membranes were ruptured by the attending physician. The amniotic fluid was stained with meconium, but the fetal heart rate was 112 to 130 per minute. Because of the discomfort of labour, she was given 50 mg. of promazine hydrochloride and 50 mg. of meperidine hydrochloride (Sparidol) at 11:45 p.m. June 29 and at 5:00 a.m. on June 30. She had moderate contractions during the night every three to four minutes.

At 10:30 a.m. June 30, the patient was taken to the case room and, under general anesthesia, an episiotomy was performed and an attempt made to apply Simpson's forceps. The fetal vertex at that time was at the level of the ischial spines. This attempt at forceps delivery failed, and further ex-

amination revealed that a rim of cervix was present. The consultant obstetrician was called and he confirmed the findings and advised closure of the episiotomy and a further trial of labour. At 2:15 p.m. further sedation consisting of 50 mg. of promazine hydrochloride and 50 mg. of meperidine hydrochloride was given intramuscularly.

At 5:10 p.m. on June 30, it was thought that she was ready for vaginal delivery. At 6:00 p.m. a qualified anesthetist gave a general anesthetic (cyclopropane, nitrous oxide and oxygen). After the anesthetic was given, the episiotomy was reopened and Simpson's forceps application attempted by the attending doctor and the consultant obstetrician. During this attempt the head was pushed out of the pelvis and the cord prolapsed. The fetal heart rate, which had been 140 per minute, dropped to 70 per minute. A low transverse Cesarean section was performed immediately and a stillborn 7 lb. 14 oz. male infant was delivered.

The anesthetist entered the following note in the patient's chart: "Following induction the patient regurgitated and aspirated a small quantity of bile-coloured fluid. Saline was instilled into the endotracheal tube and suctioned. The chest seemed relatively clear until the closure of the abdomen and start of the episiotomy repair. Respiratory embarrassment increased until frank pulmonary edema occurred. This gradually improved under positive-pressure oxygen. The duration of the anesthetic was one hour."

She was initially treated for pulmonary edema with oxygen, hydrocortisone (Solu-Cortef) 100 mg. intravenously, and aminophylline 2 c.c. intravenously. At 8:00 p.m. (one and one-half hours post partum) a second 100 mg. of hydrocortisone was given intravenously, followed by morphine, 1/6 grain, intravenously. The infusion of 5% glucose and water, begun at surgery, was continued. Oxygen was administered continuously and a Levin tube was passed into the stomach. A consultant anesthetist saw the patient at this time and postural drainage was attempted.

At 9:00 p.m. (two and one-half hours post partum) the third 500 c.c. of 5% glucose and water was started and intravenous digitalization was begun using digoxin. The total intravenous fluid intake up to this time was 1000 c.c. The pulse was 170 per minute, and tourniquets were applied

\*This series of articles arranged by an editorial subcommittee of the C.M.A. Committee on Maternal Welfare, and originally published in the Canadian Medical Association Journal, is being reproduced in the Bulletin at the request of The Medical Society of N.S. Committee on Maternal and Perinatal Health, by kind permission of the Editor of the Canadian Medical Association Journal.

to the legs in an effort to treat the pulmonary edema. At 10:25 p.m. she was examined by a medical consultant, who noted tachycardia, sweating and pulmonary edema. An electrocardiogram showed a heart rate of 160 to 200 per minute and supraventricular tachycardia. Procaine amide hydrochloride, 100 mg., was given in the intravenous drip without effect on the heart rate. The systolic blood pressure was 70 mm. Hg, and 16  $\mu$ g. of nora-drenaline (Levophed) was added to the intravenous drip. The pulmonary edema seemed to clear somewhat with the continuous positive pressure oxygen.

At 2:30 a.m. July 1 (eight hours post partum), the blood pressure was 104/60 mm. Hg, the pulse was 112 per minute and the respirations were 30 per minute. At 2:45 a.m. morphine, 1/12 grain, was given intravenously. At 4:00 a.m. (nine and one-half hours post partum), the blood pressure was 136/70 mm. Hg, the pulse was 116 per minute and the respirations 34 per minute. At 5:45 a.m. on July 1 (eleven and one-half hours after the delivery of the stillborn), the patient died.

A complete postmortem examination was performed on the mother and the baby. Autopsy of the mother revealed diffuse bilateral chemical pneumonia (Mendelsen's syndrome) and marked bilateral edema of the lungs. The autopsy of the baby showed bilateral atelectasis of the lungs, congestion of the liver and brain, and petechial hemorrhage of the thymus. The cause of the death of the baby was prolonged intrapartum anoxia due to a prolapsed cord.

### Decision of Committee on Maternal Welfare

The subsequent conclusions reached by the Provincial Committee on Maternal Welfare after a review of the case were as follows: "This was a practically preventable indirect maternal death. The preventable professional factors are as follows: It was felt by the Committee that she received meddlesome operative obstetrics and was given two general anesthetics. She aspirated concentrated stomach secretions during the induction of the second anesthetic. This caused a chemical pneumonia and pulmonary edema which resulted in her demise eleven and one-half hours postoperatively. This maternal death has been considered to be ideally 'preventable' under the terms of reference of the Provincial Maternal Welfare Committee and there is no implication of any negligence."

### Discussion

Radiographic pelvimetry demonstrated that this patient had relative cephalopelvic disproportion at all planes of the pelvis. The pelvic inlet was

borderline, and the midplane measurements were critical with a transverse diameter of 9.5 cm. and an anteroposterior diameter of 10.25 cm. When the midplane transverse diameter is less than 10 cm., without other shortening, operative delivery (by forceps or Cesarean section) may be required in almost one-half the cases. Where the contracture is combined with anteroposterior shortening, as in this case, the incidence of operative delivery is still higher. Hence Cesarean section should be performed to accomplish delivery in most patients with combined transverse and anterior contractures of the midplane. With relative cephalopelvic disproportion at the inlet and the midpelvis, the incidence of operative delivery is still higher. A trial of labour is indicated in the majority of similar cases; however, if progress of labour is unsatisfactory, Cesarean section is mandatory.

After 20 hours of labour when the presenting fetal vertex was at the level of the ischial spines, a general anesthetic was given; an episiotomy was done and premature forceps application attempted prior to complete dilatation of the cervix. Two common causes of failed forceps delivery were present in this case, namely relative cephalopelvic disproportion and incomplete dilatation of the cervix. The recognition of the first cause depends on the obstetrical judgment of the physician, while incomplete dilatation of the cervix should be recognized prior to attempted forceps application. At this stage in this patient's labour, performance of a Cesarean section would have prevented this maternal mortality.

Approximately seven and one-half hours after the first failed forceps attempt, a second general anesthetic was given and a second attempt at forceps extraction failed. It was apparent that the presenting part was now pushed out of the pelvis, and the cord prolapsed. During the induction of the second anesthetic the patient aspirated a small quantity of gastric contents. All women in labour have delayed gastric emptying and this is particularly marked in prolonged labour. If aspirated, these secretions may cause a chemical pneumonia. This complication is unusual when oral feedings are restricted during labour, if the patient receives gastric lavage or an emetic prior to general anesthesia, or if spinal or conduction anesthesia are used.

### Summary

A maternal mortality was reviewed by the Provincial Committee on Maternal Welfare. The pathological cause of death was aspiration pneumonia (Mendelsen's syndrome) which occurred during the induction of a general anesthetic. The preventable factors are discussed. □