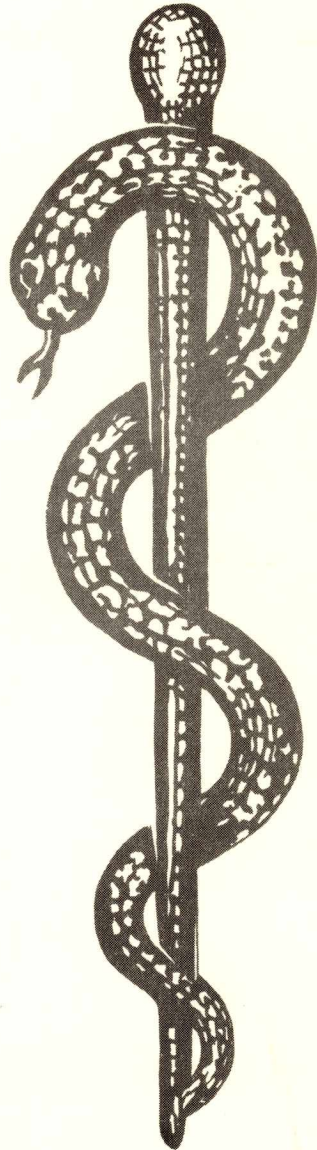


18-3,

CA

DALHOUSIE

MEDICAL JOURNAL



SPRING 1965

ARCV

R
11
D35
v.18
no.3
1965

basic numbers for individualized pain control

Codeine, combined with acetylsalicylic acid, phenacetin and caffeine, continues to be preferred for the relief of pain. By varying the amount of codeine in this combination, adjustment to individual needs and circumstances is provided.

"222" TABLETS (white)

Codeine phosphate..... $\frac{1}{8}$ gr.

"282" TABLETS (yellow)

Codeine phosphate..... $\frac{1}{4}$ gr.

"292" TABLETS (pink)

Codeine phosphate..... $\frac{1}{2}$ gr.

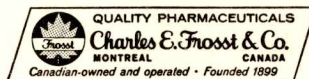
Acetylsalicylic acid $3\frac{1}{2}$ gr.
Phenacetin $2\frac{1}{2}$ gr.
Caffeine citrate. . . . $\frac{1}{2}$ gr.

Dosage: One or two tablets as required.

N Telephone narcotic prescription permitted.

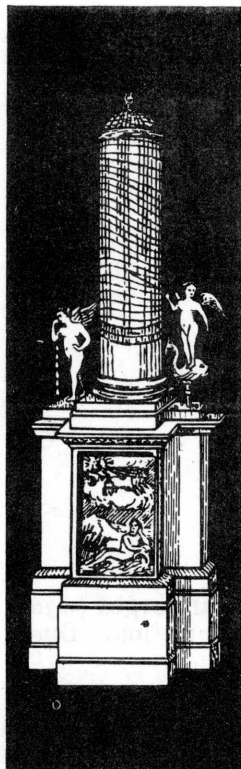
and when codeine is not required

"217" TABLETS — the synergistic formula basic to Frosst analgesic products.



1
"222"
3
4
5
6
7
"282"
"292"

Dalhousie Medical Journal



CLEPSYDRA An antique clock measuring time through the regular dripping of water

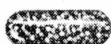
... an oral LARGACTIL "drip"

LARGACTIL[†] SPANSULE^{*}

all-day or all-night therapeutic effect of LARGACTIL with a single oral dose

INDICATED IN ALL CASES WHERE OTHER ORAL FORMS OF LARGACTIL HAVE PROVED VALUABLE

1 LARGACTIL 'SPANSULE' CAPSULE



30 mg

replaces
1 tablet
10 mg t.i.d.



75 mg

1 tablet
25 mg t.i.d.



150 mg

1 tablet
50 mg t.i.d.



300 mg

1 tablet
100 mg t.i.d.

CHLORPROMAZINE HYDROCHLORIDE

When 24-hour therapeutic effect is required, the morning dose should be repeated in the late afternoon or in the evening

bottles of 50, 500 and 1,000 transparent capsules

[†] A Rhône-Poulenc Canadian Patent

^{*} Reg. T.M. for Smith Kline & French's Sustained Release Capsules

poulenc LIMITED

8580 ESPLANADE, MONTREAL 11

Dalhousie Medical Journal

DALHOUSIE MEDICAL ALUMNI ASSOCIATION

Founded June 19th, 1958

Aims: To advance Medical Education in Canada and in particular at the Medical School of Dalhousie College and University of Halifax, Nova Scotia.

Honorary President — Dr. R. A. MacLellen

Officers:

President — Dr. C. L. Gosse
Secretary — Treasurer — Dr. G. R. Langley
Past President — Dr. F. M. Fraser
Vice President — Dr. E. F. Ross

Additional Members of the Executive Committee

Dr. G. Ronald Forbes
Dr. W. A. Murray
Dr. E. P. Nonamaker
Dr. H. I. MacGregor
Dr. Byron Reid
Dean of Medicine (ex officio)

All medical graduates of Dalhousie University are urged to join and take active part in the activities of this organization. Dues: \$5.00 annual fee; Life Membership: \$50.00.

ASSOCIATE MEMBERSHIP: Wives or husbands of actual members; any members of the teaching staff, their wives or husbands, by payment of the annual or life membership fee; by vote of the executive any friend of the University or Medical School.

Address all communications to the Dalhousie Medical Alumni Association, Dalhousie Public Health Clinic, University Avenue, Halifax, Nova Scotia.

DALHOUSIE MEDICAL JOURNAL



Published by
The Dalhousie Medical Students'
Society
Halifax Nova Scotia

VOL. XVIII SPRING 1965 No. 3

Honorary Editor BARRY YOELL '66	Editor-in-Chief DOUGLAS INGLIS '66	Co-Editor LEONARD LEVINE '67
Editorial Staff MELVIN FREEDMAN '66 PHILIP BAGNELL '68 MARLENE MATTHEWS '68 GEORGE WHITMAN '68	Faculty Advisors A. J. MacLEOD M.D. J. G. ALDOUS Ph. D. L. B. MacPHERSON Ph. D.	
Business Manager ERIC JAMIESON '66	Circulation Manager VERNON BOWES '67	National Advertising JOSEPH BURTON '67
	Local Advertising Staff LEONARD LEVINE '67 Manager	
A. MacDONALD J. CURRY C. McNEIL F. FRENCH W. LENCO H. CAMERON	B. KLINE D. KNICKLE D. SEAMAN W. PARKHILL A. COAKLEY L. NEWMAN	R. MICHAEL S. PARKER E. SMITH G. FRASER S. RUBIN R. MYERS

CONTENTS

WE WONDER WHY	4
Editorial	
RECENT CHANGES IN MEDICAL EDUCATION	5
G. R. Langley M.D., F.R.C.P. (c)	
some borderline PSYCHIATRIC CONDITIONS	11
David V. Hicks M.B., Ch. B.	
AN ALLEGORY	17
By Arthur L. Murphy	
PSYCHOCYBERNETICS & THE CONSOUS STATE	21
PRE - HYPERGLYCEMIC MANIFESTATIONS OF DIABETES MELLITUS	25
David A. Baker '66	

Dalhousie Medical Journal

Editorial

WE WONDER WHY:

1. our student organization, the Dalhousie Medical Students' Society, must remain such a weak voice in the determination of our affairs. Only a faithful few from each class attend meetings and work on committees; nevertheless, everyone attends the Med Ball, parties, benefits from awards and prizes, makes use of the Bookstore, and receives the Journal. Only when every medical student of every class endeavours to lend support, will the Society be strong enough and have the necessary assurance to present constructive student opinion to the Administration with any hope of result.

No one knows better than the student where the gaps in effective teaching lie. A united and stronger voice then could not help but improve teaching and eliminate many of the grievances which continue to beset individual classes year after year. Moreover, it seems reasonable that to create a strong Medical Students' Society now would be invaluable practice for the united stand we must make as Doctors on the question of Medicare legislature. Perhaps we can do something to destroy the "let-someone-else-worry-I'm-too-busy" attitude which most Physicians have toward politics, administration and finance.

2. methods of grading students must remain so obsolete here at Dalhousie Medical School. With the small number of students, and the large proportion of teachers to students, every teacher knows at least some students - either directly or by reputation. The only fair way to conduct written examinations then is to assign each student a number, so that the marker is entirely unaware of the examinee's identity. It is difficult enough to be objective when marking exams without being influenced by such factors as; the student's previous marks in the course; whether he has repeated a year or written supplemental examinations; whether he is a member of the Honour Society, and so on.

Evaluations based on the student's performance in oral examinations, ward duties, attendance, general attitude, and inter-personal relationships must be factor, but this should have a previously determined value of the total mark and should be decided upon completely apart from the written performance.

In this way, if the Faculty decided to fail a student who has been able to get passing grades, because of non-attendance, poor attitude or some similar and equally valid reason, then he would be failed for that reason - subject to the discussion and opinions of the whole Faculty; and NOT because Dr. X. (F.R.C.P. F.R.C.S. etc.), influenced by the knowledge that the student in question was: lazy; of dubious parentage; unappreciative of his funny stories; gave him 45 on his written examination.

3. the majority of our clinical teachers - men with eight to twelve years of University education under their belts, and with letters ad infinitum after their names, must continually refer to "the patient" as "they"!! For example; "The patient will always tell you THEY are tired." Since this sort of thing tends to be contagious, we (editorial "we" meaning "I") feel that each doctor should try to improve THEIR grammar.

Editor

Dalhousie Medical Journal

RECENT CHANGES IN MEDICAL EDUCATION G.R. LANGLEY M.D., F.R.C.P. (C).

It was following Abraham Flexner's classic report on Medical Schools in the United States and Canada in 1912 that the first hard look at undergraduate medical education occurred on this continent. In the next five decades a number of changes occurred in medical schools and medical school teaching which profoundly influenced and changed medical education. Of these, several stand out as landmarks.

Prior to 1912 most medical schools on this continent were concerned with a vocational type of training. Following the Flexner report there was a rapid change in emphasis in medical education. This change was pioneered by Johns Hopkins and so complete and rapid was the success of this university that within two decades its own graduates reproduced it in a considerable number of schools of medicine. The changes which Johns Hopkins introduced were to develop a strong scientific basis to medicine and to develop a core of university teachers in both basic and clinical departments.

Medicine has developed from being largely empirical, to a science which depends for its understanding on a knowledge of normal human physiology and biochemistry. The acquisition of new knowledge has been phenomenal and it has been calculated that the number of new facts in medical science will double every three to five years. These new facts not only add new knowledge but indicate that previous facts and theories were erroneous. As one distinguished scientist tells his class of students "half of what we teach you is wrong but unfortunately we don't know which half." We have only to consider the new science of clinical cardiology, of understandings of metabolic processes, of knowledge of human genetics and of factors concerned with blood coagulation to appreciate this rapid increase in knowledge. The implications of this rapid increasing fund of knowledge was to indicate that if in medical education all these facts were to be communicated to the student, the course must necessarily be lengthened, or that specialization would be necessary before graduation. Fortunately the developments at Johns Hopkins and elsewhere were to turn medical education away from an attempt to communicate all these facts, away from a vocational type of training to a university emphasis, that is to stimulate the intellectual growth of the individual. Implicit in this was the recognition that intellectual growth was not "turned off" at the end of four years medical undergraduate education, but must continue throughout the lifetime of the individual if he is to provide for the health needs of his patient and provide them with the best that medical science has to offer.

In an attempt to teach medicine as a meaningful whole, Dean Joseph Wearn in 1948 initiated a change in the curriculum of Western Reserve University School of Medicine, which crossed departmental barriers and added a new dimension to medical education. Recognizing that human disease begins with a disturbance of normal cell function which then progresses to disturbed organ function, the new medical student began his medical training with a course in the biology of the cell. In this course cellular ultrastructure was correlated with function so that disturbances in both would be more readily appreciated. Following this, correlated physiology, biochemistry and anatomy courses were given. Other changes in the curriculum have been the introduction of courses in community medicine and behavioral sciences such as those pioneered by the University of Kentucky.

Dalhousie Medical Journal

CLASSIFIED ADVERTISEMENTS

Rates: \$5.00 for each insertion of 40 words
or less; additional words 10¢ each.

Mr. George Fraser
Advertising Manager
Dalhousie Medical Journal
Dalhousie Medical Library
Halifax N. S.

Apparatus for sale
Fellowships
Locum Tenens Wanted
Locum Tenens Wanted
Positions Vacant
Positions Wanted
Practice
Residences Miscellaneous



H.W. MacKinnon Ltd.

Dispensing Opticians

CONTACT LENSES
ARTIFICIAL EYES

—

HALIFAX
5990 SPRING GARDEN RD.
423-7879
6038 QUINPOOL RD.
422-5949

DARTMOUTH
139 PORTLAND ST.
466-7518

—

Where Your Doctor's Prescription
Is Precisely Filled.



WEBSTER'S CHINA and GIFTS LTD.

HALIFAX SHOPPING
CENTRE

Phone 454-8649

FOR FINE GIFTS AND CHINA
CHARGE ACCOUNTS WELCOME

Dalhousie Medical Journal

Probably the most significant advance in medical education came from a more fundamental understanding of the learning process. In the early 1950's Dr. Nathaniel Cantor at the University of Buffalo published three books concerned with the dynamics of learning. In his teaching Cantor had recognized the importance of communicating to the student the responsibility for his own learning. The exciting approach in Cantor's books was appreciated by several individuals in the Medical School of the University of Buffalo, including Dr. George Miller an internist and clinical investigator. During the next 10 years this group studied many aspects of the teaching-learning process and ushered in a new concept in medical education, which the recent Canadian Royal Commission on Health refers to as the "student centered" era of medical education. In 1959 Miller et al published a text "Teaching and Learning in Medical School" containing a vast amount of information about the teaching-learning process.

One of the major factors which has forced us to study the teaching-learning process has been this rapid advance in medical knowledge with its resultant accumulation in facts important for medical care. In order to make the best use of our undergraduate years it became necessary to understand how the student learns and how he learns most efficiently. This re-evaluation of the teaching-learning process has indicated the sharp difference between teaching on the one hand and learning on the other. Education has usually been concerned with teaching and programs of instruction are often designed around what knowledge there is to be incorporated into the course, what personnel there are available and what hours have been allocated. If our goal is the education of students, then emphasis on how he learns best should be one of our major interests. Given a finite intellect we all recognize that the interested or motivated student is the one who learns most efficiently. It is therefore of some importance for us to understand what motivates students. It is important that we not throw up our hands and say that the student is interested or not and there is nothing that can be done about this. The fact that a student has chosen medicine as a career indicates motivation. However he usually chooses this career so that he can look after sick patients and follow up studies indicate that more than 95% become practising physicians. If this is one of the primary motivating influences on the student then it is important that some relationship to his ultimate goal should be obvious in the courses he takes.

Most students are anxious to do well in whatever they undertake and achievement is a recognized stimulus to optimal learning as is illustrated by the saying "nothing succeeds like success". Since achievement is important to the student it is necessary to define within realistic limits what the student can do in the time at his disposal. What is really gained by giving a student more than he can do? On the other hand the encouragement that the student gets from completing his work will help to make him a more effective and efficient learner. In order to get the impetus to learning from achievement all learners require information on how close they are to reaching their goal. This feedback is vitally important to the learner as a "learning experience" where value judgements are not made. By indicating to the learner where he is in relation to ultimate goals learning is facilitated. From the studies and writing of Tyler we have recognized for many years that education consists of three phases, all interrelated. (Figure I)

OBJECTIVES

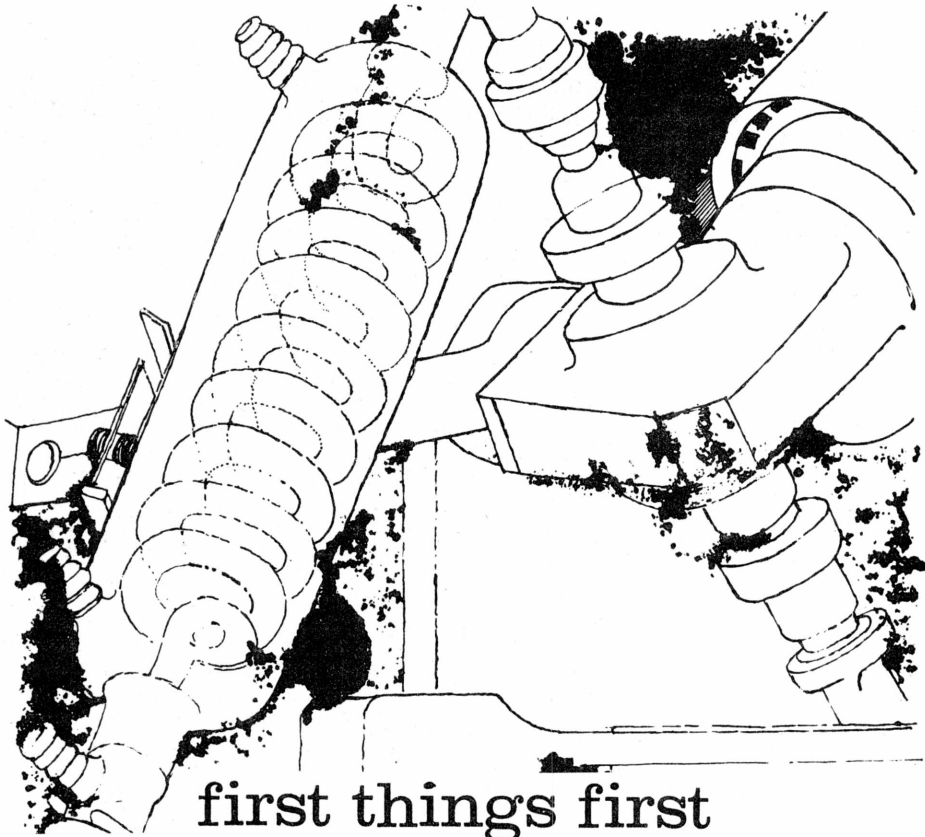
EVALUATION

CURRICULA

FIGURE I

Some recent thoughts concerning these three components of the educational process may be of interest.

Dalhousie Medical Journal



first things first

When Smith Kline & French of Canada decided it was time to move into larger quarters, there was no question whose needs would get first consideration. That's why, in 1964, our Research and Development people — physicians, biologists, chemists and pharmacologists — have preceded the rest of us in moving to Senneville, on the western tip of Montreal Island. There they will occupy newly-completed facilities at the heart of SK&F's integrated pharmaceutical centre, the remainder of which will be constructed over the next few years.

This move not only reflects the growth of our Company, but emphasizes our belief that research is the lifeblood of our business. Increased laboratory space and the most up-to-date equipment are essential to our continuing efforts to make better medicines for Canadian physicians and their patients.

(As you may know, we already manufacture a considerable number of widely prescribed ethical pharmaceuticals. You can find out about them by consulting Vademecum International, or by writing directly to us.)



SMITH KLINE & FRENCH • MONTREAL 9, QUEBEC

Dalhousie Medical Journal

Medical school objectives are classically divided into overall school objectives, departmental objectives and individual teachers objectives. In general objectives are designed specifically to indicate and detail how the individual department can help the school to achieve its overall objectives. The objectives of the individual teachers being directed by the departmental objectives. In this way a co-ordinated approach within the school is achieved.

The importance of Figure I lies in its implications for the educational process that is designed. If curricula are prepared on the basis of the objectives of the school and if an attempt is made to measure if these objectives have been achieved it becomes important to state objectives in such a way as they can be translated into a curriculum and can be evaluated. Since a teacher's *raison d'être* is to educate students it follows that objectives should be stated in terms of changes expected to occur in student behaviour, that they should be precise and be stated in "measurable" terms. For example it may be one of the goals of a school that the student become a critical thinker. But what is a critical thinker? If however the objective is that the student must be able to interpret data both clinical and physiological it is possible to test him for the ability to do so. For this reason an effort should be made to avoid terms such as "basic undifferentiated doctor" since this is open to a variety of interpretations and has no intrinsic precise meaning unless it is further qualified in measureable changes expected to occur in students.

Objectives of medical education that many schools are now proposing are concentrating on three broad fields, that is attitudes, knowledge and skills. We now recognize that it is possible for students to develop new attitudes and for educators to reinforce those the student has which are desirable for a career in medicine. For instance the recognition that medical knowledge is rapidly increasing and will continue to do so, has indicated the most important contribution a school can make, is to ensure the development in the student of a desire to continue a life time of learning. This requires the development of an attitude, the appreciation of the importance of lifetime learning and a willingness to do so.

The design of a curriculum will depend primarily on the objectives of the school. In presenting this curriculum to the student a variety of methods are available, the lecture, small group seminars directed by the teacher or by the student, bedside teaching, independent learning or closed circuit television to name only a few. Each of these has advantages and disadvantages. For instance if the objective in a given period is to give the student information, lecturing may be the best method. If the objective is to allow the student to discover the significance of knowledge, the student directed seminar has advantages. It is important to decide what the aim of a given period is to be and to then select the most appropriate technique. A recent publication of the United States Public Health Service on "Effectiveness of Learning" has indicated that there is no superior method when gain of factual knowledge is tested. Jacob's study of students values in College has shown the striking differences in student attitudes in different colleges, which may indicate however that there are superior methods to communicate attitudes. These are as yet however, not clearly defined.

Finally it may be said that the ultimate goal of education is that teaching is no longer necessary but that the learner seeks out knowledge and learns by himself using resource people when they are necessary for his own aims. When a student does this and is working to his full capacity the educational purposes of a school can be said to have been successful.

Dalhousie Medical Journal

All Maritime Doctors

10 % Discount

On All Medical Books



write:

STUDENTS' MEDICAL BOOK STORE

CARLETON STREET : HALIFAX

DALHOUSIE UNIVERSITY

— Leading university in the Maritimes —

The Dalhousie Medical School maintains one of the largest continuing postgraduate systems for medical education in North America. Many regional courses are conducted in medical centres throughout the four Atlantic Provinces. The Department of Post Graduate Medicine will be glad to organize a course in your community.

For information please write to Dr. L. C. Steeves, head of the department, care of Dalhousie University, Halifax, N. S.

Dalhousie Medical Journal

SOME BORDERLINE PSYCHIATRIC CONDITIONS

David V. Hicks M. B., Ch. B.

The borderlines to be discussed are those between schizophrenia on the one hand and normality, personality disorders and neurosis on the other, leaving out affective disorders, mental retardation, brain syndromes, and psychophysiological reactions.

No books have been written on this subject and it is the rare textbook which does more than nod acquaintance with one or several of the terms to be mentioned. The commonly used diagnostic and statistical classifications are equally unhelpful, as are Psychiatric dictionaries. Thus we are dealing with a vague and complex area which seems to have provoked over the years an astonishing terminological inventiveness. To illustrate this and with some satisfaction I list the following:

Borderline, . state, . patient, . case, . schizophrenia, . psychosis, . neurosis;

Abortive, . ambulatory, . attenuated, . benign, . chronic undifferentiated, . incipient, . latent, . marginal, . masked, . potential, . prepsychotic, . pseudoneurotic, . pseudo-psychopathic, . residual, . subclinical, . transitional, . under-active, ever controlled, . schizophrenia;

Schizophrenia mitis, . schizophrenia in remission, . hysterico . schizophrenia, . pre-schizophrenia, . overideational preschizophrenia, . schizophrenic character, . oneirophrenia, . bipolarphrenia, . diegophrenia;

Decompensated schizotype, . schizoidism, . schizoid psychopath, schizoid personality, hebephrenoid personality, . schizoid compulsion neurotics, . pseudoschizophrenic neurosis, . compulsion neurotic delirium, . neuropsychoses, . psychotic character, . prospective and larval psychosis, . mixed manic-depressive psychoses and static and transitional borderline cases.

The total is forty-nine terms and one might without embarrassment add "pseudonormal schizophrenia" for the sake of completeness.

I do not propose to discuss each of these terms in turn: the majority are synonymous. A number of writers have attempted to establish a clear-cut group from among the borderline cases and these will be discussed shortly.

In reading the literature one of the most frequent issues mentioned was the point of contact, if any, between neurosis and psychosis. I have no evidence that there was any great concern about differentiation between insanity and neurosis from the time that CULLEN coined the term "neurosis" in 1769 until FEUCHTERSLEBEN introduced, in the mid-eighteenth century, the word "psychosis" with its rather scientific and professional ring (although intended to mean all disorders of personality). Certainly since the beginning of this century controversy has raged, and in most instances admission has been delinquency, perversion, and addiction (4) an arrested psychosis posing as psychopathy and (5) psychosis provoked by therapeutic or didactic psychoanalysis. He modified this in 1956 and described two groups - one which shows an abortive or arrested psychosis, may have

Dalhousie Medical Journal

had an earlier acute brief psychotic phase and subsequently stabilized at their best possible adjustment; the second including those with prospective psychosis who harbour a psychotic core dissociated from the rest of the ego; the healthy part struggles to keep the psychotic nucleus covered up by various defences. The outcome depends on life circumstances and other factors.

SANDOR RADO conceived of "schizotypal organization" and its possible types of adaptation. In his article "Theory of Schizotypal Organization", 1953 he wrote "Through its interaction with the environment, the inherited predisposition (genotype) causes the schizophrenic phenotype to develop an organization significantly different from that of all other human types. This actual expression of the inherited predisposition we call schizotypal organization." Schizotypes have two inherited defects - an integrative pleasure deficiency (anhedonia) and a proprioceptive diathesis (or disturbance of self-concept and body image). Four modes of adaptation are available to the schizotype (1) compensated - the schizoid personality (2) decompensated - the pseudoneurotic schizophrenic (3) disintegrated - the overt schizophrenic and (4) deteriorated - the deteriorated schizophrenic. Thus the decompensated and possibly the compensated schizotype fall within our category of borderline conditions.

HOCH and POLATIN described the clinical entity "pseudoneurotic schizophrenia" in 1949, having observed, like Freud, that many patients treated unsuccessfully for neurosis proved eventually to be unrecognized schizophrenics. The basic features of this condition are (1) an autistic life approach, (2) withdrawal from reality, (3) gross ambivalence in many areas, (4) some emotional imbalance, but no gross affective changes, (5) pan-anxiety (the term used to designate the all-pervading anxiety which may vary markedly in intensity, but "leaves no life-approach free from tension" despite the massive defensive manoeuvres used), (6) par-neurosis (indicating the presence of several or many different forms of neurotic manifestations, and may include obsessions, compulsions, phobias, hysteria, depression, hypochondriasis, depersonalization phenomena and neurasthenia, successively or simultaneously), (7) no gross thinking disorders, but minor ones discovered by psychological testing, (8) vagueness of elaboration of symptoms, (9) occasional presence of micropsychotic episodes with hypochondriasis, ideas of reference, and feelings of depersonalization, otherwise absence of so-called accessory schizophrenic symptoms, (10) dramatising, antisocial, drug dependent behaviour may be present, (11) chaotic infantile or perverse psychosexual organization. These patients are anxious and suffer, but their contact with reality and social adjustment are well preserved so that often they maintain a precarious existence, and usually they have enough anxiety or insight to seek help spontaneously.

R. P. KNIGHT, whose views are most consistent with those of this reviewer, describes the "borderline state" as "one in which normal ego functions of secondary process thinking, integration, realistic planning, adaptation to the environment, maintenance of object relations and defenses against primitive unconscious impulses are severely weakened." As KNIGHT points out, the concept of borderline states has no official status; it conveys the idea that the patient is quite sick, but not frankly psychotic, and is used where features of both neurosis and psychosis are present and where there is a reluctance to classify him as psychotic since he has "not yet broken with reality" but on the other hand the severity and ominous clinical signs preclude a diagnosis of neurosis. Thus "borderline state" conveys more about the uncertainty and undecidedness of the psychiatrist than about the patient's condition. Many of these patients, present at the office or open unit as failures of usual treatment, have previously been diagnosed as severe neurosis: obsessive - compulsive, phobic, hysterical, anorexia nervosa, depressed, paranoid or character disorder. Thus many diagnostic errors occur. Preferred as an approach to understanding this condition is Freud's metaphor of the retreating army--various detachments made, albeit rather reluctantly at first, that all cases can not be fitted into a classical or typical framework and that atypical or borderline cases occur.

Dalhousie Medical Journal

GREGORY ZILBOORG, who coined the term "ambulatory schizophrenics" in a paper on this topic in 1941, gave the following lurid description: "The ambulatory schizophrenic may appear normal in all respects; suave, warm, even worldly; he thinks more than he talks (the first sign of autism); he is rarely brilliant or successful and has frequent changes of occupation and interests. They are literally suffused with hatred which is usually seen in two guises: (1) physical tension and (2) anxiety - an inner, violent helplessness rage that they are often not aware of. They carry out the motions of living, have acquaintances but no intimate friends; they do not confide. Very often alcoholic, they are pathologically jealous. Sensations are experienced in a "pure" form with no emotional component. They are just as apt to kill someone else as to kill themselves." ZILBOORG stated that his observations included extremely few females of this type, that these people are rarely hospitalized, mostly on the loose - thus the term "Ambulatory schizophrenics" - and constitute the "difficult or problem people," "poor personalities" or "psychopathic personalities." Although usually hypochondriacal, they often actually do have many minor ailments. Unconscious homosexuality plays an enormous role but is seldom overt. "Not infrequently (they) are sexual perverts, transvestites or fetishists or both, or criminals, mostly impulsive murderers." Almost invariably they get into trouble with the law unless they suicide. ZILBOORG stated: "I have in mind men who are apprehended for exhibitionism, for cutting women's hair, for stealing their fur-pieces, or for masturbating on women's clothes while standing in line in post-offices, or railroad ticket offices or theatres." From this description, one would probably agree that these people may well be schizophrenic.

MELITTA SCHMIDEBERG has described "the borderline patient." For her "the borderline" represents a clinical entity bordering on normality, the neuroses, the psychogenic psychoses and psychopathy, and contains elements of any or all of these. This blending produces not merely a quantitative but a qualitative difference. She stresses that these patients usually remain substantially the same throughout life, are stable in their instability and show a constant pattern of peculiarity.

Obvious psychotic symptoms are lacking, there are no delusions, hallucinations, extreme disorganization, regression, elation, depression, true paranoid, dramatic hysterical or marked obsessional features. They may have depressive, anxious or other feelings and one may "often find various offenses, sex-perversions, homosexuality and prostitution, alcoholism, drug addiction, hypochondriasis, eccentricities, peculiar behaviour, querulousness and vegetarianism, but they may occur in other conditions and even normals under stress." SCHMIDEBERG'S concept thus resembles somewhat ZILBOORG'S earlier description of "ambulatory schizophrenics," the difficulty, however, is to differentiate the borderline from the milder forms of simple schizophrenia, from character disorders and from normal but disliked people under stress.

DUNAIF and HOCH described "pseudopsychopathic schizophrenia" as a clinical concept in HOCH and ZUBIN'S book "PSYCHIATRY AND THE LAW" 1955, the main features being pan-neurosis, pan-anxiety, and chaotic sexuality along with psychopathic behavior and often micropsychoses. This clinical entity seems to be more clear cut, the underlying schizophrenia always present, flaring up occasionally and only to be missed if the eye catching psychopathic features alone are concentrated on.

GUSTAV BYCHOWSKI outlined his concept of "latent psychosis" in a paper in 1953 entitled "THE PROBLEM OF LATENT PSYCHOSIS." He listed in his descriptive definition five conditions (1) character neurotic difficulties becoming a psychosis under appropriate provocation (2) neurosis with the same outcome (3) deviant behaviour e. g. make a stand against opposition and conduct holding or delaying operations at various points where the terrain lends itself to such, while the main force retires much to the

Dalhousie Medical Journal

Walsh's Drug Store

J. ESMONDE COOKE, Ph.C., B.Sc.

We will always appreciate and welcome your patronage.

Your friendship is the treasure we hope to permanently possess. We will make every possible effort to earn it.

Spring Garden Road, corner of
South Park Street
Opposite Lord Nelson Hotel

HALIFAX NOVA SCOTIA
Phone 423-6896

ONLY ONE DRUG STORE, BUT A GOOD ONE

Compliments of

Reid Sweet

"YOUR CAMERA SUPPLY HOUSE"

PHOTOGRAPHIC SUPPLIES & EQUIPMENT



PHONE 423-8381

6 BLOWERS ST.

HALIFAX, N. S.

Compliments of

The Dartmouth Free Press

"Quality Picture Paper

in the Maritimes

195 Wyse Road

469-2494

DARTMOUTH, NOVA SCOTIA

Dalhousie Medical Journal

rear. Thus the forward defensive operations protect the bulk from disaster. But they may not be able to hold out and may have to retreat at any time, or, the main army may be able to regroup, add reinforcements or new leadership and recapture its morale, then the forward positions may hold long enough for the main forces to move to or well beyond the stubbornly defended outposts. This picture indicates the psychoeconomy and indicated treatment of borderline states. The outposts which may be obsessive, hysterical, compulsive, phobic, etc., must not be attacked while the ego is laboring badly because of constitutional, earlier traumatic or recent precipitating stress factors. It is most important to assess the TOTAL EGO-FUNCTIONING by means of several interviews (necessarily structured situations), a history from another source, and psychological testing (unstructured situations in which the ego-alienness of unusual responses can be determined), tions in which the ego-alienness of unusual responses can be determined).

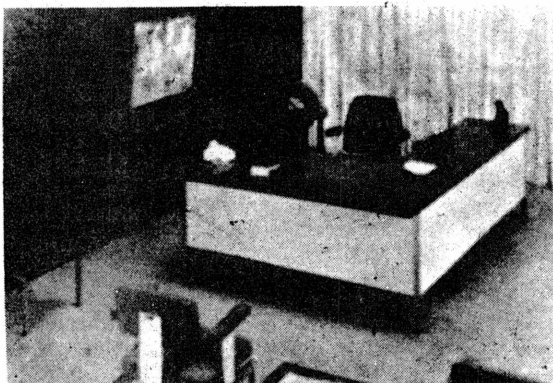
MILTON H. MILLER in an important article has described the frequent appearance of borderline patients in medical and surgical practice, as marginally adjusted patients preoccupied with somatic complaints, and he points out that even if diagnosed early they are often looked after by non-psychiatric personnel who may maintain them for many years in fair adjustment without realizing it since the patients' somatic complaints remain unchanged.

A statement concerned with incidence of borderline conditions seems more appropriate at the end of such an article as this, since its usefulness and validity can be better judged after determining the fairly diverse nature of the group of conditions under consideration. PIOTROWSKI and LEWIS state that 50 per cent of patients discharged from the New York Psychiatric Institute with a diagnosis of "neurosis" subsequently became schizophrenic. EISENSTEIN -- 30 percent of 250 private practice patients seen in consecutive consultations fell within the borderline category, as did 30 percent of WOLTMAN'S diagnostic referrals of private adult patients. These are high percentages regardless of the inevitable differences in diagnostic criteria. The present unofficial classification of these conditions is obviously unsatisfactory; perhaps "the group of borderline schizophrenias" would be an appropriate term, subdivided according to the predominant "non-schizophrenic" symptomatology. Perhaps, as LANGFELDT has suggested, much of aetiology is to be discovered on careful nosological subdivision.

BIBLIOGRAPHY

- RADO, Sandor. "Psychoanalysis of Behaviour".
 MILLER, Milton H. "The Borderline Patient". Ann. Gen. Med. Vol. 46. April 1956.
 KNIGHT, R. P. "Borderline States", Bull. Men. Clin. 17: 1953.
 DUNAIF, S. L., HOCH, P. H. "Pseudopsychopathic Schizophrenia", in "Psychiatry and the Law" Hoch and Zubin 1955.
 SCHMIDEBERG, M. "The Borderline Patient", Am. Hbk. Psych.
 ZILBOORG, G. "Ambulatory Schizophrenics", Psych. Vol. 4, 1941.
 ZILBOORG, G. "Further Observations on Ambulatory Schizophrenics", Am. J. Orthopsych. October 1957.
 HOCH AND ZUBIN, "Current Problems in Psychiatric Diagnosis".
 HOCH AND POLATIN, "Diagnosis of Early Schizophrenia", J. N. M. D. March 1947.
 HOCH AND POLATIN, "Pseudoneurotic Forms of Schizophrenia", Psych. Quart. 23: 1949.
 HOCH AND CATTELL, "The Diagnosis of Pseudoneurotic Schizophrenia", Psych. Quart. 33: 1959.
 BYCHOWSKI, G., "The Problem of Latent Psychosis", J. Am. Psychoan. Vol. 1: 1953.
 BYCHOWSKI, G., "The Borderline Case", J. Am. Psychoan. Ass. Vol. 4: 1956.
 BYCHOWSKI, G., in "Psychoanalytic Office Practice", by A. H. Rifkin.

Dalhousie Medical Journal



YOU CAN LEASE
 . FURNITURE
 . DRAPES
 . CARPETS

Similar to this Office
 For Less Than
 \$29.00 A MONTH

OFFICE FURNITURE • INTERIOR DESIGN



SEAMAN-CROSS
 LIMITED



FOUNDATION

A University Education for your
 child may be obtained for as
 little as \$9. per month.



Ask us how to provide for it the CST
 way. Write or phone our nearest of-
 fice for complete information.

EASTERN & CHARTERED
 TRUST COMPANY

Atlantic Region Branches: Lunenburg . New Glasgow . Sydney . Fredericton
 Moncton . Saint John . Charlottetown . St. John's

Head Office: Toronto . Atlantic Regional Head Office: Halifax

Dalhousie Medical Journal

THE TEST

AN ALLEGORY

By ARTHUR L. MURPHY

The man gave a lot of attention to lacing his shoes. He knew the test would be long and hard; but he was eager for it. It was a test almost every man wished instinctively to face.

The man checked the bread and butter, and the water bottle in his knapsack. God looked down and put a little more butter on the bread, because it was spread thin.

The man walked to the starting line. It was the finish line, too, but he did not think of that, only of starting and doing well. There were a few people loitering on the grass inside the circular track. They rested, or stood about in little groups. They paid no attention to the man. A fellow wearing a bowler hat, as if it were part of a uniform, stood at the starting line. He has a bright red vest beneath his black coat. He motioned the man onto the track. The man checked his laces again, made sure that his knapsack was snug on his shoulders. He started off.

He was a poor runner but he knew that with perseverance he would improve. His wind was short, his gait heavy and uneven. He had a strong soul. This did not help his running, but it was a comfort to him.

As he ran his stride became more even and breathing was less of an effort. There were others running, too. It was not a race, but the man was pleased when he passed one of them. He did not like anyone to pass him. Often he could not run fast enough to prevent it. Once a runner passed him, then, only a little further on, stopped on the grass to rest, so the man moved ahead of him again.

The fellow with the bowler hat had his coat open wide. The man liked to see the red vest each time he rounded the track.

He was running well now. He gloried in his strength, his easy stride and his manhood. His head was high. He ran lap after lap without even noticing the fellow with the bowler. He ran happily, for the sake of running. People in the grass sometimes turned to look at him. He noticed this and was proud.

His joy lasted a long time. Gradually it changed to monotony. He was running as well as ever, but with less verve. Those who were slower, he passed. He made no effort to pass those who kept ahead of him. When a runner went by him from behind it no longer disturbed him.

The grass inside the track looked cool and fresh, relaxing. He saw others pause to dally there and enjoy themselves. He wanted to stop, too, but he felt that he must not. He kept on. He reached back in his knapsack for bread and butter. The butter was thicker than he had remembered and he was thankful for it.

His feet were hurting him. He wanted to loosen the laces. He knew he was only seeking an excuse to stop. He knew loosening them would make his feet worse. A cool breeze

Dalhousie Medical Journal

Your Druggist, in his special capacity, serves the community by protecting your health in the careful compounding of your Doctor's prescriptions.

Compliments of

Provincial Wholesale Drugs Limited

P.O. Box 1390, North Postal Station
5515 Cogwell St., Halifax, N.S. Phone 455-0435

Compliments of

National Drug and Chemical Company of Canada Limited

Halifax Branch

HALIFAX CHRYSLER-DODGE

IMPERIAL
DODGE

CHRYSLER
VALIANT

"Special Prices To Medical Students"

LARGEST CHRYSLER DEALER IN THE MARITIMES

**3737 Kempt Road
Halifax, N. S.**

**Telephone
455-0566**

Dalhousie Medical Journal

from somewhere passed across his forehead and he felt refreshed.

He was not running as fast. The bystanders did not look at him anymore. He pounded his feet down harder but this only jarred his body and made his head ache. He passed the fellow with the bowler. The coat was buttoned and he could not see the red vest anymore. He asked the bowler a question with his eyes. The fellow shook his head without expression.

The man ran on. He was tired but he did not think to stop. Running was a habit. The grass was a blur of green, perhaps because his eyes kept watering. It no longer attracted him. He saw no people. He was alone on the track. If anyone passed him, he did not notice. He ate less bread and butter and drank more water. He felt his skin drawing tight over his bones and his muscles wasting, painfully.

The man knew he was running slower and slower, but he seemed to pass the fellow with the bowler more often. Each time he looked at him, questioning. Sometimes the fellow shook his head: sometimes he ignored the man.

The man knew nothing but running and breathing and the pounding in his ears. This was what he had always done, for ever and ever; yet he thought back to when he had come on the track and it seemed only a little while.

He came around the track again. He asked his question again. The red vest was shining. The fellow with the bowler nodded his head.

The man's body shuddered, frightened. His soul leaped with expectancy. He threw his head high. He pounded proudly with his feet and thought he moved faster. He thought a bystander turned to look, but his sight was blurred and he could not be sure. It did not matter, anyway.

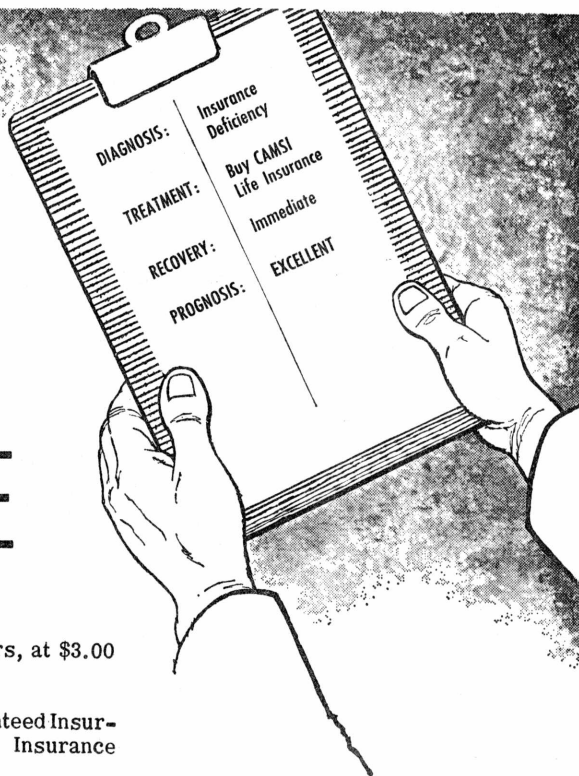
He came around the last turn on the track. He could see the tape stretched across, at the finish line. It had been the starting line, he remembered, with a vague wonder. He pumped his arms to help him breathe. He could see the fellow in the bowler clearly now. There was expression in his face for the first time. He looked surprised, as if he had not expected the man to break the tape, as if nobody had ever broken it.

The tape was coming closer to him. The man reached out his hand. A few more pounding steps would be enough. The tape stopped coming to him. The man fell on the track with only one gasp of pain.

The fellow with the bowler was not surprised any more. He nodded to attendants who came and put the man in a box. One piece of bread was left in the knapsack. They saw the butter on it was very thick. They put the bread in the box, too, and put the box in one of the holes beside the track. They left the man's soul lying where he had fallen.

God put the man's soul in the palm of his hand. He looked at it and was satisfied. God breathed on it.

CAMSI LIFE INSURANCE



Exclusive to Camsi members, at \$3.00 per thousand.

An Optional Benefit: Guaranteed Insurability Benefit - "Future Insurance Non-Medically"

Over \$75,000,000.00 of CAMSI Insurance has been sold, proof of its acceptance by medical students, interns and residents.

Consult your local MUS President or Interne Representative, the local Canadian Premier Life Branch Office, or write direct to the companies' Head office.

Canadian Premier Life INSURANCE COMPANY

Head Office; 360 Broadway Ave.,
Winnipeg 1, Manitoba.

Dalhousie Medical Journal

"The building of a perfect body crowned by a perfect brain, is at once the greatest earthly problem and grandest hope of the race." - Dio Lewis

PSYCHOCYBERNETICS & THE CONSCIOUS STATE

Marvin Reinberg 68

Not long ago nearly everyone subscribed to the concept of brain mind dichotomy. According to this concept, even the most complete and detailed understanding of the physical structure and operation of the brain could never suffice to explain mental activity. The mind was considered to be something nonphysical, outside the realm of the natural sciences; it was believed to make use of the brain as the agent of some of its activities but was thought to possess properties and powers that could never be interpreted on the basis of any conceivable organization of cells and tissues.

In recent years the dualistic brain mind concept has steadily lost ground to the mechanistic point of view. The development of machines capable of performing thought like processes has aided this trend. Throughout the years, medical research workers have learned that whatever their philosophy, they make consistent progress in learning how living organisms operate by assuming that they are subject to the physical laws of nature and by painstakingly applying the technique of scientific investigation. As a result the history of medical research largely consists in repetitions of a single theme; the removal of one after another of the organs of the body from the realm of the physical unknowable and unexplainable to which all living processes were once assigned. In former times the idea that the heart is no more than a complicated pump which would one day be replaceable by a man-made device during a lengthy surgical operation would have seemed as shocking to most people as the modern discoveries that the brain, too, operates in accordance with the physical laws of nature.

Most impressive of all, are the observations that reveal the physical basis of the "higher processes" of emotion and intelligence. The discovery of pleasure and punishment centers in the brain-discrete, localized, stable aggregations of neurons in which an electric current means a sense of well-being, hunger, sexual gratification, rage, terror or pain - made difficult for those whose thinking emphasized the dichotomy of the brain and the mind. This difficulty was further increased by the evidence for the controlling effect on personality of the integrity of the neuronal connections to the frontal lobes as well as by the clear relationship established by Penfield between stimulating cortical currents and the "mental" processes of speech and memory, and evidence for the automatic machine-like nature of some of the learning processes has further aggravated the plight of the brain mind dualist.

Nowadays it is commonplace to emphasize the analogy between the human brain and electronic digital computers. The secret of the power of modern computers resides in the discovery that extraordinarily complex operations can be broken down into steps that can be handled by very simple processing elements. In mathematical calculations, any operation that the mathematician has invented can be broken down into such elemental steps and caused to control the generation of the voltages representing output numbers. And in logic problems, the computer can deduce new conclusions from given propositions by the application of the rules of logic which can be broken down into the same simple processing steps as those used in mathematical computations. This would also appear to be a valid description of the essence of brain function.

However, as we move up the scale of intellectual complexity beyond the kinds of phenomena that we arbitrarily categorize as "automatic learning" we come face to face with a formidable philosophical problem - the sense of consciousness.

This subject is awkward and embarrassing to a mechanist. It is important at this stage to consider what is meant by consciousness. Consciousness is a state - a relative state - that cannot exist without a subject.

The state of consciousness has two evident components, awareness and reactivity. I am aware that I am conscious and you assume that I am by the appropriateness of my reactions. In common with so many attributes of neuronal function it, therefore, has a motor

Dalhousie Medical Journal

Compliments of

MAJOR BROTHERS LIMITED

GENERAL INSURANCE

79 Granville St.

Halifax, N. S.

Telephone 423-1239

Want money? Come to the Commerce

See how quickly the Commerce
can tailor one of a
wide variety of loans
to your exact needs!

**CANADIAN IMPERIAL
BANK OF COMMERCE**

Over 1300 branches to serve you

The **LORD NELSON**
HOTEL HALIFAX
Spring Garden Road

NEW CONVENIENT
FASHIONABLE REASONABLE

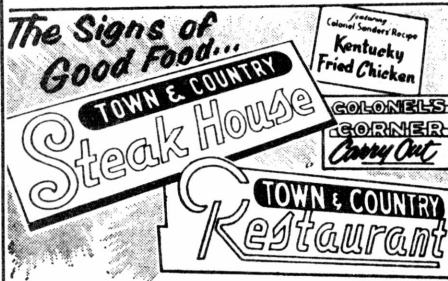
NEW—Every room the ultimate in
the decorator's art.

FASHIONABLE—Halifax's most dis-
tinguished address overlooking
the beautiful Public Gardens.

CONVENIENT—ideally located in
downtown Halifax and adjoining
all shopping faculties.

REASONABLE—Singles from \$8.00;
Doubles from \$11.50 - all rooms
have private shower-bath, tele-
vision and radio.

Home of the Victory Lounge
and
The Lord Nelson Beverage Room
and Mens' Tavern



WHERE TO CALL

Town & Country Restaurant
6310 Quinpool Road 423-6151
Dartmouth Branch 34 Main St.
469-7556
Spryfield Herring Cove Road
477-2546
Rockingham Branch 455-3188

Dalhousie Medical Journal

and sensory component. There are variations in the form of consciousness as in sleeping and waking, sleeping being a state of lowered reactivity and selective awareness and there are also variations in the level of consciousness which is a relative, not an absolute state. As a rule when consciousness is disordered awareness and reactivity are diminished in like degree to establish the hierarchy of coma which passes through light and deep confusion, semicoma, to deep coma. Sometimes reactivity may be diminished alone or principally, in pure forms causing the condition of akinesis with mutism which is physiologically the same as what the psychiatrist calls stupor. In this state recall may be lost though in it awareness can persist unaltered.

In previous times, as mentioned earlier, many physicians spoke as though a patient could lose consciousness without a loss of use of some parts of the nervous system; or if they admitted that there was loss of use of nervous arrangements along with loss of consciousness, the inference from the statement of that admission often was that the nervous arrangements affected did not represent parts of the body but are centres having nothing to do but to "play upon" the lower centres. Morphologically they were spoken of as part of the body, but physiologically they were spoken of as if they were distinct from it as the most psychological of psychologists suppose mind to be independent of organization. In other words consciousness was not a function of the higher centres; it was simply concomitant with their functioning.

Present scientific advances have led to a remarkably rapid increase in the knowledge of the way the reticular formation of the brain stem with its cephalic extension affects a person's consciousness—work beginning with Herrick's comparative anatomy, Hess and Ronson's observations on sleep states and Bremer's observations of the effect of section of the brain stem on reactivity. It is since the systematic researches of Mogoun and his colleagues that the past decade has been a dramatic convergence of interest on the subject and the growth of a convincing body of knowledge. This integrating device in the brain stem confers on the organism a flexibility of attention and response closely related to changes in internal and external environment. It modifies the state of consciousness.

One may conclude from the above that the state of consciousness is a purely physical phenomenon and that eventually we may be able to explain volition, ideation, reasoning and emotion on the basis of definite anatomical configurations. Suppose we now carry this blending of the physical and biological a step further. Consider the following line of speculation; it is now known that there is no essential difference between living and non-living matter. Living matter has or has almost been synthesized in the laboratory out of inert ingredients, the statement depending upon just where the line is drawn in the very fuzzy region that separates life from nonlife. Rapid progress is also being made in breaking the genetic code; it is no longer purely science fiction to speculate that one day man may be able to synthesize the chromosomic content of the cell nuclei and, by providing a suitable growth environment thereby "build" living organisms of considerable complexity. Now if the resulting animal is similar to a naturally, created higher animal will it be conscious? It would be hard to doubt that it will. What then if a creature of similar behavior and intelligence were to be fabricated from components of quite a different kind - with a nervous system and brain based on electronic components instead of neurones, for example? Would it too possess consciousness and the subjective feelings that go along with it? For all we know today, surely this has to be considered to be a possibility. And how about existing electronic digital computers? Is it possible that somewhere among their wires and transistors, there already stirs the dim glimmering of the same kind of awareness that has become, for man, his most personal and precious possession? Fantastic? Perhaps.

BIBLIOGRAPHY

- (1) Wooldridge, Deane "The Machinery Of The Brain" P. 229
- (2) Young, J. Z. "A Model Of The Brain" P. 14
- (3) Williams "Old And New Concepts Of The Basis Of Consciousness" Page 13
"The Brain And It's Functions" A Symposium
- (4) Brain, S. M. Russell "Hughling Jackson's Ideas of Consciousness in The Light Of Today" Page 83

Dalhousie Medical Journal

Radios — Musical Instruments — Pianos — Self Service Record Dept.

SILVERMAN'S LIMITED

LARGEST MUSIC CENTRE IN THE EAST

Jewellery — Appliances

—§—

Barrington at Blowers Street

Telephone 423-6764

10% DISCOUNT TO ALL STUDENTS

INVESTMENT SECURITIES

Private Wire — TELEX — TRANS-LUX TICKER SERVICE

ORDERS EXECUTED ON ALL STOCK EXCHANGES

Stanbury & Comb Company

HEAD OFFICE: — HALIFAX —

MONTREAL — SAINT JOHN — DARTMOUTH

NEW GLASGOW — KENTVILLE

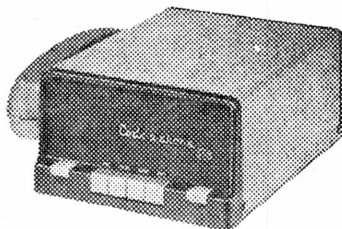
COLWELL BROTHERS LIMITED

453-457 Barrington Street,

HALIFAX,

NOVA SCOTIA

Colwell's, you can always depend on advice regarding the proper clothes for any occasion or any climate. Colwell's reputation for quality in both merchandise and service is your assurance of complete satisfaction.



CODE - A - PHONE

answering and recording unit. . .
saves time and customer callbacks.

**MARITIME TELEGRAPH &
TELEPHONE COMPANY**

Limited

Dalhousie Medical Journal

PRE-HYPERGLYCEMIC MANIFESTATIONS OF DIABETES MELLITUS

DAVID A. BAKER '66

Typical textbook definitions of Diabetes Mellitus almost invariably include the terms "hyperglycemic" and "glycosuria" and indeed in clinical practice most cases of Diabetes are diagnosed because patients exhibit these manifestations of carbohydrate intolerance. However, in the past fifteen to twenty years a wealth of knowledge about diabetes has accrued, much of which indicates that by equating diabetes with hyperglycemia we are making our definition of this condition much too narrow.

A full discussion of the evolution of our present concept of this disease is beyond the scope of this paper. However, there are several observations made by clinicians through the years which have led the way to expanding this definition. For one thing, it has been known for some time that women who have excessively large babies have a tendency for later showing overt abnormalities of carbohydrate metabolism. Secondly, many clinicians have been struck by the high correlation of obesity and diabetes in those patients who manifest their disease in later life. Thirdly, physicians occasionally found themselves treating more than one member of a family with this condition, or, on inquiring, discovered that their diabetic patients had a diabetic grandparent or a diabetic cousin. The first two observations led some thinkers on this subject to wonder if perhaps there were metabolic abnormalities present long before a person developed overt diabetes; that large babies and obesity were reflections of the metabolic defect which years later resulted in hyperglycemia and glycosuria. The third observations cited above, that is the familial occurrence of diabetes resulted in the supposition that this was a genetically transmitted condition although the exact mode of transmission was for some time not known and indeed is still questioned by several authors. That diabetes is an inherited disease has been amply substantiated in recent years. That is not to say that all patients who exhibit loss of carbohydrate tolerance do so on a genetic basis. It is well known for instance, that patients with Acromegaly, Cushings' Disease, Carcinoma of the pancreas, etc. may manifest an abnormality of carbohydrate metabolism with hyperglycemia and glycosuria, but clearly this is not the same disease as that of the typical diabetic.

Once it was shown that diabetes is an inherited disorder, investigators of this disease re-evaluated the concept that diabetes meant hyperglycemia. They reasoned that diabetes is genetically determined and whatever way this genetic determinant eventually brings about deficient insulin activity, the basic abnormality has been present since conception.

Diabetes, then, begins not with hyperglycemia, but when the ovum is fertilized. This is when genetic potential, later to result in hyperglycemia, is put into motion. Hyperglycemia may start at birth or it may begin at age 75 or anywhere in between; but whether hyperglycemia is present or not, the genetic disturbance still exists.

From this reasoning has evolved the picture of Diabetes mellitus as a life-long condition with several different stages. Overt diabetes with elevated blood sugars and symptomatology is a late stage in this picture. It is preceded by an asymptomatic stage, demonstrable only by blood and urine tests following a glucose load. Indeed, at times, abnormal glucose tolerance may be brought to light only by going a step further and creating a state of metabolic stress by administering steroids to the individual in the hours preceding a glucose tolerance test. This asymptomatic stage may be called "Chemical Diabetes".

Dalhousie Medical Journal

But what about the period prior to this when there is no demonstrable loss of glucose tolerance by even the most sensitive tests at our disposal?

This is the stage which has been commonly called "Pre-diabetes". This Pre-diabetic stage has been receiving increasing attention by investigators in the past few years and will probably continue to do so. And this is the stage to which the balance of my paper is devoted.

The term pre-diabetes strictly speaking means before diabetes and therefore implies that diabetes does not yet exist. But since Diabetes is an inherited disorder, the genetic abnormality has been present since conception and diabetes therefore really exists from that time. It is perhaps preferable to follow Levine's suggestion and call this phase "Diabetic Pre-mellitus", that is diabetes before it becomes "sweet", before hyperglycemia and or glycosuria.

The Pre-mellitic phase of Diabetes may be defined as that period of time from conception to the demonstration of diminished insulin activity by whatever method is considered to be the most sensitive in this respect at the time. Practically speaking it means the interval between conception and the time when hyperglycemia develops in response to a provocative glucose tolerance test. Although the duration of this phase is extremely variable, except for cases that have their onset in childhood, it may be the longest stage of diabetes.

The clinical diagnosis of Diabetes Pre-mellitus can be justified only when we can detect an early abnormality which precedes and is not dependent on insufficient insulin activity. When the parameter measured does depend upon diminished insulin activity even though transient, the situation should be regarded not as diabetes pre-mellitus, but as chemical or subclinical diabetes. I stress this point because there is disagreement in the literature as to the use of the term pre-diabetes. Some authors use it to signify the period which I have defined above as Diabetes Pre-Mellitus while others use it to denote the asymptomatic phase I have called "Chemical Diabetes". As you can see, this leads to no end of confusion and difficulty in ascertaining just what period an author is discussing.

It should now be evident that the concept of diabetes which has evolved in the last decade or two is much broader than that expressed in textbook definitions of this disease. Diabetes must now be thought of as a disease whose basic abnormality is present from before birth, not just when glucose intolerance begins, for this point, the point where insulin activity becomes deficient is probably a fairly late one in the course of the disease. It is this concept that has led to a search for clinical features, chemical and histological indicators of the genetic disturbance preceeding hyperglycemia.

I have already mentioned one clinical feature commonly associated with the pre-hyperglycemic phase of diabetes, namely the birth of oversized infants. Priscilla White has pointed out that the birth of an infant weighing more than eight pounds, fourteen ounces predicts the possible future development of maternal carbohydrate intolerance. The frequency of overt diabetes actually parallels the degree of oversize; 90% when the birth weight is thirteen pounds, and virtually all women who have infants in excess of 14 pounds will later show overt diabetes. Likewise there is a higher rate of perinatal mortality of infants born to women who later lose carbohydrate tolerance.

It has been shown that not only do pre-mellitic women often have an abnormal course

Dalhousie Medical Journal

of pregnancy with toxemia, hydramnios, premature delivery, etc. but their histories also reveal an early menarche. Thus women who developed overt diabetes after the age of eighteen years had the earliest published mean menarcheal age.

In spite of these and other associated features, recognizing a pre-mellitic on clinical grounds is as yet extremely difficult, and most authors agree that a diagnosis of diabetes pre-mellitus can be made with certainty only in retrospect, once diabetes has declared itself. However, in order to study possible histological and chemical abnormalities during the pre-mellitic phase of diabetes it is necessary to make a prespective diagnosis so that subjects to be studied may be chosen. Such a prespective diagnosis may be made with a high degree of probability on genetic grounds. As revealed by Steinberg, susceptibility to Diabetes is likely to be associated with a recessive gene. Children of both a Diabetic mother and a diabetic father must, therefore be considered homozygous for the Diabetic gene, that is potential overt Diabetics or Diabetics in the pre-hyperglycemic phase.

I should point out at this juncture that not all authors on the subject are satisfied with the simple Mendelian recessive mode of inheritance. In a recent article, Dr. Nancy Simpson of Toronto, states that the genetic basis for diabetes may be multifactorial and not simply the recessive member of a pair of alleles at a single chromosomal locus.

I think it is fair to say however, that the majority of physicians now feel that diabetic susceptibility is transmitted by an autosomal Mendelian recessive. Certainly, those investigators inquiring into the changes of the pre-hyperglycemic state consider this to be the case. They have chosen for their subjects two types of individuals. First, those who have both a diabetic father and a diabetic mother and secondly, identical twins of diabetics. These two groups are considered to be genetic diabetics in the pre-mellitic phase (providing of course, that they have normal glucose tolerance tests).

It is from studies comparing these subjects with normal controls and with overt diabetics that most of our knowledge of the pre-hyperglycemic changes is derived. The studies thus far reported in the literature are, for the most part, preliminary reports of long term projects in which follow up examinations are to be performed at six month intervals for several years. Also, in most cases, the number of subjects studied to date is still relatively few and results obtained may later not stand up to statistical analysis. With these qualifications in mind, let us now look at what has been shown about the pre-hyperglycemic phase of diabetes.

Carbohydrate metabolism of subjects considered to be in this phase was, by definition, normal when tested by oral standard, oral cortisone, and rapid intravenous glucose tolerance tests.

The serum insulin-like activity (ILA) of these subjects however, was not normal. In one study, the mean value of fasting serum insulin-like activity in thirty controls was 83 microunits per milliliter as compared to 203 u/ml. for the 24 so called pre-diabetics. In another study the mean value for 56 controls was 91 u/ml while 42 persons judged to be in the pre-mellitic phase of diabetes gave a mean of 172 u/ml. In short, the insulin like activity of persons in the pre-mellitic phase was significantly elevated above that of the controls. When compared to 33 untreated, clinically overt diabetics, however, there was no significant difference in the serum (ILA) of these pre-mellitic subjects. In other words, the serum ILA of so-called pre-diabetics is greatly elevated as compared to normal controls but virtually the same as that found in overt untreated Diabetes.

Dalhousie Medical Journal

**MUTUAL OF OMAHA
INSURANCE COMPANY**



315 ROY BUILDING — — HALIFAX, NOVA SCOTIA

"The Greatest Name in Health Insurance"

Compliments of

SHANE'S

MEN'S SHOP

Finest In Men's Wearing Apparel

112 SPRING GARDEN ROAD

HALIFAX, NOVA SCOTIA

For Reservations by AIR, SEA or LAND

MARITIME TRAVEL SERVICE LTD.

"YOUR TRAVEL AGENT"

76 GRANVILLE STREET

HALIFAX, Nova Scotia

Phone 422-4441

Dalhousie Medical Journal

Since high fasting ILA in these pre-mellitics was not associated with a tendency for hypoglycemia, studies on the state of insulin in the blood were carried out. It has been shown that insulin in blood is found in both the "free" form and as a bound complex, the ratio depending on the metabolic state. In the fasting state, the predominant form circulating in the blood is the inactive complex. A rise in blood glucose results in increase of free insulin and a decrease in the concentration of insulin complexes to the point of near-disappearance.

In five of six persons in the premellitic phase it was found that after an overnight fast, insulin was present primarily as the bound complex, and this form was still predominant with a smaller than normal decrease after the administration of intravenous glucose. Nevertheless, there was a rise in "free" insulin which was within normal limits.

Studies of renal function in pre-mellitic subjects have all yielded normal results. Urinalysis, creatine clearance, protein excretion and kidney size on X-ray were all within normal limits.

Likewise, nerve conduction velocity in the ulnar, median and peroneal nerves of pre-mellitics was found to be normal as were x-rays of the legs, pelvis and abdomen, and electrocardiograms.

On evaluating the vascular system of pre-mellitic subjects, however, several deviations from normal were found. Firstly, the venule-arteriole ratio in the bulbar conjunctive was found to be significantly elevated and this venular dilation was found to be maximal during the morning and when the subject was relatively inactive. Venule-arteriole ratio in the fundus, on the other hand, was found to be normal.

Secondly, on examining biopsies of the ear lobes of pre-mellitics under the electron microscope, three deviations from normal were found. Most dermal capillaries from normal subjects were clearly patent. However, under identical biopsy and preparatory techniques, the dermal capillaries of the pre-mellitics were found to be constricted, this constriction was frequently quite marked and involved the dermal capillaries only, never those of the subcutaneous tissues or muscle beds examined.

The second change was found in the venules. Usually the venules of control subjects show close approximation of the endothelial cells to each other and to the basement membrane. However, the pre-mellitic venule shows some degree of separation between endothelial cells and expansion of the space between the basement membrane and the endothelial cells. Strictly speaking, both these vascular changes can be considered within the range of physiological variation, but their constancy among this group of subjects suggests a vascular liability not present in the normal controls.

The third change found in the earlobe was in the elastic tissue of dermal vessels. In pre-mellitic subjects this tended to be rather more electron-dense than normal, and to have a more fibrillar structure than the normal amorphous elastic tissue.

Perhaps the most interesting findings to come out of this early work on subjects in the pre-mellitic phase resulted from kidney biopsies done on two pre-mellitic girls, one seven and one eleven years of age. Both these youngsters fit the criteria of pre-mellitics. That is, both were offspring of two diabetic parents and both had normal glu-

Dalhousie Medical Journal

THE MEDICAL SOCIETY OF NOVA SCOTIA

THE NOVA SCOTIA DIVISION
of the
CANADIAN MEDICAL ASSOCIATION

This Medical Society was founded in 1884 and incorporated in 1861. There are nine Branch Societies in Nova Scotia. It is affiliated with the Canadian Medical Association as the Nova Scotia Division.

The Medical Society of Nova Scotia is a separate body from the Provincial Medical Board which has the authority to grant licenses to practice in Nova Scotia.

Membership in the Medical Society of Nova Scotia and the Canadian Medical Association is voluntary. The total membership in the Medical Society is 619 (1963)

The Organization has 27 Standing Committees and 3 Special Committees; it sponsors 6 research projects and has representatives on 6 organizations.

Members receive a Newsletter at least four times yearly and the Nova Scotia Medical Bulletin each month. Group disability insurance is available to any member regardless of medical history. Eligibility to make application for group life insurance is also a prerequisite of membership.

Membership in the Canadian Medical Association provides the Canadian Medical Journal every week and eligibility to participate in the Canadian Medical Retirement Savings Plan and the Canadian Medical Equity Fund.

Conjoint membership in the Medical Society of Nova Scotia and the Canadian Medical Association is available to any physician licensed to practice in Nova Scotia.

Further information may be obtained from:

C. J. W. BECKWITH, M.D., D.P.H.,
Executive Secretary,
DALHOUSIE PUBLIC HEALTH CLINIC
UNIVERSITY AVENUE,
HALIFAX, NOVA SCOTIA

Dalhousie Medical Journal

cose tolerance curves. Similarly, both had normal renal function and were entirely asymptomatic. Light microscopic studies of their renal tissue revealed irregular thickening of PAS - stained material in the glomerular basement membrane and parietal layer of Bowmans capsule. The glomerular basement membrane thickening was most prominent in the axial capillary loops but was occasionally observed in the peripheral loops as well. The irregular thickening of Bowmans capsule was somewhat less marked. Also there was thickening of PAS stained material in several afferent and efferent vessels consistent with premature arteriosclerosis and the basement membrane in certain tubules were also found to be thicker than normal.

Electron microscopy of the glomerular basement membrane showed considerable variation with widths of about twice normal in certain areas. These early changes as seen by the electron microscope are consistent with earlier observations of biopsy material from subjects with established diabetes. The early renal lesions demonstrated in these two pre-mellitic girls are by no means pathognomonic of overt diabetes, but they are similar to the changes observed to a more marked degree in later stages of the diabetic syndrome.

In summary then, what has been shown about persons in the pre-mellitic stage of diabetes:

Firstly, there was no significant difference found between these subjects and normal controls in carbohydrate tolerance, clinical evaluation of renal status, motor nerve conduction velocity, electrocardiograms and vasculature of the retina.

Changes thus far observed in pre-mellitic subjects not seen in controls were venular dilatation in the bulbar conjunctiva, elevated fasting insulin-like activity, probably incomplete dissociation of the "bound" insulin in serum after intravenous glucose, changes in the dermal vessels from ear lobe biopsies, and morphological changes in the basement membrane of Bowmans capsule, glomerular capillaries and proximal and distal renal tubules.

The significance of these findings and of the concept of a pre-mellitic phase in diabetes is probably obvious. No longer is it tenable to say that a person "becomes diabetic" when he manifests a decreased tolerance to carbohydrate, for this probably represents a late stage in the total syndrome of diabetes.

Contemporary thought makes it mandatory that we detect the patient with latent diabetes and treat him since it is hoped that by so doing diabetic angiopathy may be prevented or at least delayed. There is growing evidence however, that the vasculature has by this time already suffered an insult that will manifest itself in later years.

It is probably true that we are dealing with a damaged person by the time we are able to make the clinical diagnosis of diabetes, but we need not assume that he is irreversibly damaged at birth. We must regard as possible the proposition that the genetically transmitted abnormality might be susceptible in the pre-mellitic period to exogenous influences. Such influences might alter or even prevent the clinical manifestations of diabetes as we know them today.

From the patients view point, the development of methods for the diagnosis of Diabetes pre-mellitus and the discovery of exogenous factors which may prevent later stages of the syndrome, could usher in a new era of preventive medicine in diabetes.

BIBLIOGRAPHY

1. Camerini-Davalos, R.A. et al, "Preliminary Observations on Subject with Pre-diabetes," *DIABETES*, vol. 12, #6, November - December '63.
2. Conn, J.W. and Fajano, S.S., "The Prediabetic State, a concept of Dynamic Resistance to a Genetic Diabetogenic Influence," *THE AMERICAN JOURNAL OF MEDICINE* Vol. XXXI, No. 6, December 1961.

Dalhousie Medical Journal

3. Levine, R., "Symposium on Diabetes Mellitus", NEW YORK STATE JOURNAL OF MEDICINE, Vol 63, No. 13, July 1, 1963.
4. Ellenberg, M. "Diabetic Neuropathy-Evaluation of Factors in Onset", AMERICAN NEW YORK ACAD. SCIENCE, Vol 82: 245, September 1959.
5. Simpson, Nancy, "Multifactorial Inheritance, A Possible Hypothesis for Diabetes", DIABETES, Vol 13, No. 5, September - October 1964.
6. Steinberg, A.G., "Heridity in Diabetes Mellitus", DIABETES, Vol 10, 1961.
7. Steinke, J., et al, "Studies on Serum Insulin-like Activity (ILA) in Prediabetes and Early Overt Diabetes", DIABETES, Vol 12, No. 6, November - December, 1963.
8. White, Priscilla, "Prediabetes", JOURNAL OF THE AMERICAN MEDICAL WOMAN'S ASSOCIATION, Vol 17, No. IV, April 1962.

When You're ready for the BEST, see —



BLIGH RADIO LTD., QUINPOOL RD. HALIFAX, N.S.

PHONE 422-7476

Bedford Pharmacy Ltd

A.W. DUNBAR

Phone 835-3354

Box 400

Bedford, N.S.

"Where Pharmacy is still a Profession"

BALCOM - CHITTICK LIMITED

Drug Stores

"Serve you better".

* Prescription Specialists.

* Fashionable Cosmetics.

* Laura Secord Candies.

Halifax.

Kentville.

Sheet Harbour.

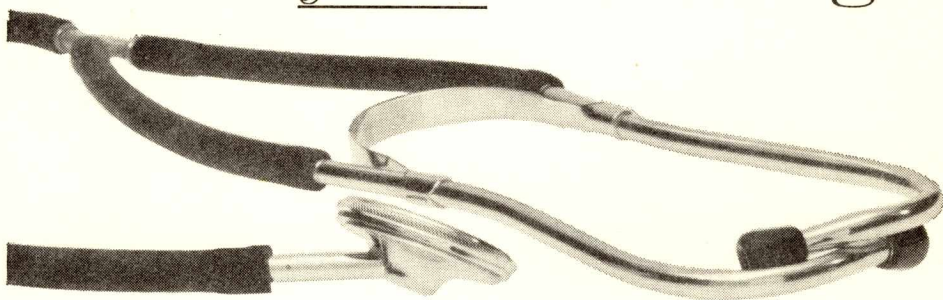
Dalhousie Medical Journal

List of Advertisers

	Page.
POULENC LIMITED	1.
DALHOUSIE MEDICAL ALUMNI ASSOCIATION	2.
DALHOUSIE MEDICAL JOURNAL-CONTENTS	3.
CLASSIFIED ADVERTISEMENT	6.
H. W. MacKINNON LTD.	6.
WEBSTER'S CHINA and GIFTS LTD.	6.
SMITH KLINE & FRENCH	8.
STUDENTS' MEDICAL BOOK STORE	10.
DALHOUSIE UNIVERSITY	10.
WALSH'S DRUG STORE	14.
REID SWEET	14.
THE DARTMOUTH FREE PRESS	14.
SEAMAN-CROSS LIMITED	16.
EASTERN & CHARTERED TRUST COMPANY	16.
PROVINCIAL WHOLESALE DRUGS LIMITED	18.
NATIONAL DRUG and CHEMICAL COMPANY OF CANADA LIMITED	18.
HALIFAX CHRYSLER-DODGE	18.
CANADIAN PREMIER LIFE	20.
MAJOR BROTHERS LIMITED	22.
CANADIAN IMPERIAL BANK OF COMMERCE	22.
THE LORD NELSON HOTEL	22.
THE TOWN & COUNTRY RESTAURANT	22.
SILVERMAN'S LIMITED	24.
STANBURY & COMB COMPANY	24.
COLWELL BROTHERS LIMITED	24.
MARITIME TELEGRAPH & TELEPHONE COMPANY LIMITED	24.
MUTUAL OF OMAHA INSURANCE COMPANY	28.
SHANE'S MEN'S SHOP	28.
MARITIME TRAVEL SERVICE LTD.	28.
THE MEDICAL SOCIETY OF NOVASCOTIA	30.
BLIGH RADIO LIMITED	32.
BEDFORD PHARMACY LIMITED	32.
BALCOM-CHITTICK LIMITED	32.
Inside front Cover	Inside back Cover
CHARLES E. FROSST & COMPANY	JOHN WYETH & BROTHER (CANADA) LIMITED

Dr. J. G. Aldous,
Medical Science Bldg.,
College St.,
Halifax, N. S.

The sounds of life —now your challenge



The many sounds and rhythms of life now have your ear. Your skills are challenged . . . to modulate discordant tones, to maintain healthy ones.

Standing with you are many scientific colleagues in Wyeth Laboratories. *Their* challenge is to provide you with new agents to complement your hard-earned skills, your training, and professional knowledge.

Wyeth pledges:

to supply you with products of therapeutic merit, and with adequate information about their use

a continuing search for new and useful pharmaceuticals, biologicals, and nutritionals

readily available services through well informed representatives.

John Wyeth & Brother (Canada) Limited, Windsor, Ontario.



POSTES CANADA POSTAGE
3 C.
No. 501
HALIFAX, N.S.