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The University of Western Ontario

Medical Journal



**What The Stress Of Medicine Does To Some Physicians --
Don Quixote, M.D.**



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Cover drawing of Don Quixote by Linda Heier Meds '79.

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December 1976

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Editorial

Dr. Stan Brown's article on Artificial Insemination is both extremely interesting and timely, following closely as it does on the relatively recent initiation and development of artificial insemination clinics in Ontario. With adoption now a virtually non-existent alternative for childless couples, and with an ever increasing public awareness of the new availability of artificial insemination, it behooves every practising physician to acquaint himself with the opportunities available for his patients. However, as Dr. Brown has suggested, the matter goes well beyond its very considerable clinical importance. The philosophical and legal implications of Artificial Insemination Donor (A.I.D.) are not only matters of considerable academic interest, but also present a major challenge to the medical and legal professions.

In response to the very pressing and current needs of patients, those clinicians presently offering A.I.D. are operating in, and in spite of, what is, at best, an uncertain legal milieu. It is one of the cardinal rules of our legal and judicial system that that law by which people are expected to order their lives be predictable. It is the obligation of the courts and legislature to see that this is so. As is the case whenever they are required to adjudicate in new legal territory, the courts are characteristically cautious, even hesitant. Until the legislature chooses to act we play a kind of jurisprudential hand-ball, wherein old case law precedents are actively sought out, new arguments are advanced, and a few new cases actually on point greedily picked and stretched to the point of distortion.

The time-honored question of whether the courts should respond to the challenge of new legal issues with bold decisive action or await legislative action is too often decided in favour of the latter. It is to the legislature, then, that we must ultimately look for resolution of the uncertainty. The sad thing is that, on the basis of past experience, we can expect a considerable period of time to elapse before the rights and responsibilities of adopting and natural parents involved in A.I.D. are clarified by statute. A time during which physicians, and worse, the parties involved, are forced to live with uncertain law and the stigma that such uncertainty often carries with it.

The limited case law presently available in the United States and Canada is surely not the basis upon which interested

prospective parents and donors should be required to make decisions. It is the duty of the Ontario Legislature to recognize A.I.D. for the extremely important role it plays in the lives of increasing numbers of Canadian couples, and to afford A.I.D. the sanction and clarity of carefully drafted legislation. The present Office of the Attorney General has demonstrated a

refreshing willingness to propose new law where the need has been demonstrated. It is now the duty and responsibility of the medical and legal professions to provide the impetus for legislation to insure that A.I.D. is recognized as acceptable established therapy legally and socially as well as clinically.

Jeff Coleman

Letter to the Editor

Dear Sir:

While reading the article by Dr. Milne et al in the Oct. 1976 edition of the journal I noted an inconsistency in the formula quoted for the stroke volume. By referring to Reference #6 I discovered that the correct formula should read:

$$\Delta V = P \frac{L^2}{Z_0^2} T (dZ/dt) \text{ min.}$$

This aside, I enjoyed reading the U.W.O. Medical Journal and look forward to many more issues like it.

Best Wishes,
David Kogon (Dents I)
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What the Stress of Medicine does to some Physicians -- Don Quixote, M.D.

M.C. Randall (Meds '77)

This is a review of the literature concerning the personality of most future doctors and the unfortunate end-results that may be precipitated by a medical career.

The title of this presentation is not to be taken lightly! Many physicians are still cast in the role of Don Quixote whose fantasies of gallantry and idealism led him to pursue futile endeavors. The result? - A frustrated, confused, defeated individual.

But from where does the fantasy and romanticism originate?

An extensive review of questionnaires completed by students prior to acceptance to a professional or graduate school¹ indicated that the premedical student is likely single and is a product of a moderate to high socioeconomic background where high aspirations are stressed and encouraged, demonstrated by high grades throughout his premedical career. In the study, the prospective medical student often stood apart from students entering other fields by: his scientific interest, his concern for others, his dedication and somewhat conservatism, a desire for prestige along with a substantial salary, a much easier and consistent pursuit of his chosen career, and less holdups or interruptions in his education. His perceptions of medical school include, an expectation of excellent teaching and stimulating work with emphasis on clinical training, plus intense competition necessitating increased studying. He expects to defer marriage, as well as accumulate a large debt.

The more competitive spirit evident by the keener competition and persistence necessary to get into medical school than in other fields along with his other traits, frequently results in the description of the future medical student as an obsessive-compulsive person.^{2,4} This type often makes a favourable impression on admission committees usually composed of people with a similar personality.

On acceptance, with great anticipation, a major act in the story of the life of the new medical student unfolds - an act in which academia often supersedes emotions, security frequently over-rides pleasures, and altruism must be an important character.

Medical school has sometimes been described as four years in the knee-chest position. It certainly is not that traumatic,

but in the first few weeks the first-year medical student begins to experience the physical and mental demands of his new world. He is secretly afraid he will not make it, but paradoxically certain that he will.

The following excerpt describes it aptly:

"What happens after being selected? You go to the mecca of higher learning, the Medical Center, where you shall acquire... omnipotence. I still remember quite vividly my first day of medical school: my first 4-hour morning of lecture and lecture notes, eating lunch with my peers who seemed to be the most diverse group of weirdos I had ever met, returning for a few more hours of lecturer and lecturee, going home to my wife and relating this wonderful experience, but succinctly, because I had to go memorize that 7-hour stretch and prepare for the next day's marathon. After a few months of that, I looked around and said to myself, 'What the hell does this have to do with treating patients?!' I'm tired; my world consists of voluminous books with words I can't even pronounce, bits of a prosected body that leave an eternal smell on my lunch. I have a backache from looking through a microscope all day and half of the night; my contact with the rest of the world consists of stolen moments with Walter Cronkite, and I am a celibate because my wife vomits whenever I get close enough to give her a whiff of embalming fluid still on me from gross lab. The only thing that keeps you going those two years of continuous, didactic teaching are the occasional glimpses of a patient presented before the congregation and the hope that, in two years, if you eat all your porridge like a good boy, you will begin playing with the real thing, a patient."⁵

The first year of medical school is usually the most uncomfortable. A study at the University of Toronto in 1973-74 indicated the predominant stress factors for first-year medical students:⁶

High-

- (1) Final exams in important courses.
- (2) Fear of inability to absorb all the course material.
- (3) Fear of getting bad grades.
- (4) Number of study-hours required to keep up.
- (5) Limited social and recreational life.

Moderate-

- (6) Lack of sexual outlets.
- (7) Loneliness.

Irregardless of the individual student's socioacademic attitudes, a common component of doubt about one's capacities or competence in dealing with patients was evident, as shown by the anticipated major sources of stress.

- (1) Death of a patient.
- (2) Fear of error in diagnosis or treatment.
- (3) Dealing with a patient with a chronic and helpless disease.

Students with the greatest stress ratings were most likely to drop out although they were of comparable ability (as measured by MCAT scores and/or college grades) to those who persisted. These findings have been supported by other studies.^{4,7,8}

The obsessive-compulsive picture painted of premedical students was reprinted in many studies of first-year medical students.^{2,4,7,9,10,11}

At the University of Toronto, a 6-year comparison with general arts and science students locally as well as from many universities across North America, revealed that most first-year medical students have greater endurance and a higher need for achievement, more altruism and sympathy for people, but were less impulsive and carefree.¹⁰ In addition, they tended to be relatively unadaptable to change, which oddly enough is incompatible with clinical practice where incidences of uncertainty are frequently encountered. Repression (a stifling of anger, hostility and other emotions) and isolation (keeping disturbing matters at a distance by withdrawal) were prominent in medical students who not uncommonly presented with hypochondriasis or somatization.^{2,11} Neurotic, introverted students were found to perform better academically.⁹ This is because most schools unknowingly reward and reinforce these very traits.

Studies give a range of 13-30% incidence of medical students seeking emotional help at the Health Services.^{3,6,8,12,13} There are usually relatively more female students, who express more social isolation along with the sometimes unresolvable conflict between their chosen role in a "man's profession" versus "betrayal" of their traditionally more benign submissive role.^{3,14} About 16% of females leave medical school in their first year, often for non-

academic reasons.¹⁵ Of all medical students seeking emotional help, it is believed that 40% had personalities, prior to medical school, that predisposed to emotional disturbances. The other 60% were presumably reacting directly to the stress of medical school.¹²

Drug and alcohol indulgence seem comparable to the remaining student population. However, suicide is more common among medical students than the general student population, or even a similar student population if age, sex, race and socioeconomic background are considered.^{16,17} Lengthy studies encompassing a population of over 85,000 medical students give suicide rates of 36/100,000 or higher.¹⁸ These results more than double the predicted college student rate of 17/100,000.¹⁹

Whereas 20 years ago, many internships were virtually inaccessible for married graduates, today an unmarried graduate is the exception rather than the rule. Whereas more than two-thirds of first-year medical students are single, a half or more usually get married before graduation.²

But while the single student may have to be content with an impaired social life, the married student has predetermined commitments to his family. He is torn between contributing significantly to his family's growth, and his compulsive need to study. Guilt and irritability may worsen the already hampered situation.

What about his family's reactions?

Fortunately very few of these marriages include children; none the less, those that do, seem to affect the children adversely.²⁰

The majority of wives find the major disadvantages of being married to a medical student to be:

- (i) The long training period for their husband's career,
- (ii) The frequent loneliness and irregular hours, and
- (iii) The prolonged deprivation of certain luxuries (vacations abroad, expensive clothes, etc.) due to inadequate finances.

Most (89%) have a satisfactory sex life, but often felt that their husband's studies interfered with complete enjoyment due to time constraints as well as their husband's fatigue and tension.

The advantages that they foresaw, were: (1) Security, (2) A good future income, (3) Professional courtesy, and (4) The prestige of being the wife of a man essential to society. In fact, only 5% would want their husbands to choose another career.

Overall, 95% felt that their marriages were satisfactory and that their griefs could be overcome by extracurricular activities in addition to an understanding and supporting role. It would, they believe,

be worth the struggle eventually.^{2,20}

For the student, things do not improve drastically when the "clinical" clerkship finally arrives. Most of the time is spent in the hospital environment where a general lack of coordination exists. The course objectives are often not achieved, and the clerk is relegated to the menial tasks while the more lucrative activities are performed by the residents and interns, and not infrequently, the nurses. He is expected to be around for several daily rounds, seminars, operating room observation, patient admissions, progress notes updating, and sometimes night calls. Yet he should save his few hours off each evening reading his text books and the latest journal with a craving gusto. Otherwise, how can he become a half-decent doctor! During all this, he learns that the patient lies under the enormous pile and often happens to be around for a great deal of discomfort for "his own benefit", especially if he is old and senile, from a lower socioeconomic class, etc.

The preceding description is exaggerated, but not far from the truth. Whatever, the student's outlook is coloured. He develops a cynical attitude to medical school, and medicine in general, and becomes an insensitive and analytic computer quite unlike the originally naive but humanistic first-year student. Few escape unchanged. As many as 46% of final-year students are believed to have underlying emotional problems,¹² and 30-60% having marital and/or sexual problems.⁷ Regardless, the observation that 98% of the original class eventually graduates indicates great endurance.⁵

Yet, what has been the personal toll so far? How many alcoholic trends have been established? How many emotional breakdowns, occasionally resulting in suicide? How many unhappy marriages? Most important, as one author stated: "The doctor's long and arduous training does nothing to qualify him in psychology and does much to disqualify him. It keeps him so busy from age 18 to 25 he finds he is middle-aged before he has the leisure time in which to discover himself."²

Now that he is an M.D., where is he going?

Specialization will entail more rigorous training with a high failure rate at the end; on the other hand, general practice is an environment quite unlike the hospital domain and demands reasonable competence in every field. It is not an easy decision.

Nevertheless, the next phase of his career is entered with rejuvenated zest; but undergraduate education is often found to be generally inadequate for postgraduate work due to the constantly changing ideas of medicine and its educators. Consequently internship and, if pursued,

residency are periods of disillusionment -- loaded with pressures of an ill-equipped feeling, a heavy workload with great time demands, and the fear of failures in diagnosis and treatment that may cause morbidity and occasionally mortality. These pressures are greater on those with a need for omnipotence or dependency. As at the beginning of it all, feelings of insecurity, lack of confidence, and anxiety arise. In one study, 22% of postgraduate psychiatry residents were found to have neurotic depression.¹²

A licence to practise is not necessarily a passport to a better way of life, because medicine is a jealous mistress often demanding that patients come before family and leisure. In the early years, the wife is often left alone to handle pregnancies and childbirth, childrearing, illness and the finances. Many a meal and special occasion will be interrupted. Many a vacation will be postponed. In the meantime, the new practitioner attacks his work with great fervor, recognizing the enormous potential for prestige and power. The medical organizations plead, "Get involved! Exert your political punch!"²¹ Within a few years, he is an avid community participant -- his evenings are spent on committees, foundation drives, going to hear guest lecturers or being one himself and, oh yes, on Saturday mornings he is a volunteer at a free clinic, and so on.

The harried existence often results in long hours with irregular sleep and eating habits, few or no outside interests and little family and vacation time. Yet, amid this ball of confusion, he compels his patients to "take a break from it all, get away and relax with the wife and kids." Meanwhile, he becomes exhausted, irritable and frustrated. It usually "pays off". In the U.S.A., doctors are the largest occupational group of buyers of Lincoln Continentals; 72% have 2 cars, 40% have 3 cars. They have an average minimum of 3 children each, and their favourite sports are golf, tennis, handball and a perfunctory 6 lengths of the pool. These are, however, usually obsessive activities rather than for the sake of leisure, and seldom include the family. Yet, the average American doctor weighs 12 lbs. more than the average American male and has an 80% higher incidence of coronary artery disease between ages 45 and 65.²¹ The average age of death is 65 years for male physicians and 69 for females, lower than the general population.²²

The anxieties and frustrations are numerous. In a large Australian study, among the predominant fears of many doctors were: (1) failure of treatment (38%), (2) diagnostic difficulties (30%), (3) affected family life (29%) and (4) death of children patients (28%).³ Poor patient compliance, chronic illnesses with unsatisfactory progress, increasing psychosocial

diseases, and increasing malpractice suits are added burdens.

But how can the compulsive personality ever learn to live with it? He demands perfection which is impossible.

The physician usually suppresses his anger toward the patient and either develops the bad habit of suppressing it elsewhere, or he consistently unleashes it at home. In addition, "the constant exercise of authority carries with it the occupational hazard of tending to create unrealistic feelings of superiority".¹² This role is frequently carried home where the wife is expected to act as a subordinate — like a nurse. The wife, in turn, may be supportive of his dictatorial role and depends on her physician-husband, sometimes pressuring him to retreat from his home. Conversely, the wife may feel intimidated by his omnipotence, and develop a feeling of uselessness and/or resentment. Predictably, most wives prefer a loving, compromising companion to an expert adviser.

Although their physical welfare and material benefits are well taken care of, the children often lack the attention and emotional nurturing necessary for healthy and stable growth. They discover a possessive and dictatorial father whose profession regulates the household activities. Their own identity struggles may intensify and eventually may result in rebellious behaviour (e.g. drug abuse, long hair, etc.) unexpected in such a "well-providing" environment.²³

If you accept the opinion of an investigator that, for a relationship to mature, the individuals must see each other frequently under informal conditions without an overlay of role or situation seen in the public eye, then most medical marriages are doomed from very early.²⁴ Three areas of marriage difficulty usually precede disaster. Firstly, poor communication where feelings are rarely expressed, secondly, a conflict in their roles (more common in medical marriages than others); finally, sexual difficulties which the doctor may sidestep by developing a busier pattern intentionally.²²

The most common psychiatric symptoms in doctors' wives are: (1) depression, (2) somatization, and (3) drug abuse and alcoholism. The drug use is frequently permitted by or given by the physician-husband in an attempt to cover his guilt of not fulfilling his role as a husband and father.^{12, 13} In one study, 20% of the wives had I.M. or I.V. injections given by their husbands.¹²

In 1960-63, 52% of the wives admitted to several psychiatric hospitals, complained most about their husband's frequent absence, and in the majority this was in fact the precipitating factor. Average age

of hospitalization was 40.2 years (similar to that for physicians). It is important to note that most doctors' wives hospitalized had had good premorbid adjustments and personalities.¹² The above findings may explain why in a sample taken every woman interviewed said that she would not want her daughter to marry a doctor.²¹

The personality-type of the physician most prone to psychiatric illnesses has previously been described as one of a leisure-avoiding, obsessed, work addict who may oversympathize with his patients developing feelings of indispensability and leading a chaotic life. The glamour of medicine is initially a good insulation against the stress but, at this pace, things eventually become inefficient and disorderly. Increasing tension and uncertainty are aggravated by difficult diagnostic problems as well as overdependent patients. Soon there is self-doubt about everyday procedures and prescribing. The incentive is drained and depression sets in. Relief at home may be sought but a resentful family might reject the sick doctor. Heavy professional involvement is frequently an escape from the painful realities of his life, and the doctor, who lacking insight into his own feelings, self-diagnoses and self-treats—usually inadequately. Habitual self-medication at the office, and alcohol at home may be rationalized by a need to relieve fatigue for the "patients' sake", especially if, in addition, he has a nonlethal annoying organic illness.

Alcoholism, drug addiction, frank depression and a destroyed marriage usually follow. But denial of a serious illness or of being considered a hypochondriac, delay the search for help. Here is an example:

"A middle-aged psychiatrist had severe depression and suicidal preoccupation. During all this, his marriage had ended and he had lost an important position. He began to drink more and self-prescribed low doses of antidepressants which he took intermittently, stopping the minute he felt better. He delayed seeking psychiatric treatment for six months. His explanation? - Since early morning awakening was not a part of his depression, then he assumed the illness was not serious."¹²

The physician who seeks help more than likely has done so in reaction to pressure by his family, his profession and/or the law. Many doctors are phobic about seeking psychiatric help even though they try to convince the public that it is not shameful. Surprise of doctors about a colleague's illness ignores the fact that physicians are not immune to psychiatric illnesses.

It is difficult for a doctor to become a patient, and similarly hard for his physician-doctor to adhere to standard therapeutic regimes as he tends to identify with the physician-patient giving rise to

doubt and fears about his own stability. Hence the severity of the condition is often underestimated and the treatment inadequate. Note: this also applies to the families of physicians.

Serious consequences may result:

"A seriously depressed and addicted doctor was admitted to hospital with his licence to practise under review. His doctor omitted putting a psychiatric diagnosis on his charts because it could have erased the patient from the physician registrar. The patient was soon discharged. He was readmitted in one month as a severe suicidal risk."¹²

On the other hand, physician-patients tend to be very uncooperative and uncompliant. In a study of institutionalized physician-patients, 33% rejected treatment while 25% left hospital against medical advice.¹² This has been substantiated in another study.³

The exact prevalence of psychiatric illnesses in physicians is unknown. This reflects the sociocultural advantages of doctors where psychiatric disturbances frequently go unrecorded. Figures obtained (up to 47%) depend on where and how these doctors were treated; for example, in a metropolitan city, physicians accounted for 0.5% of the patients in a public psychiatric facility compared to 2.7% in a private facility.¹²

Alcoholism and drug dependence compose a major portion of physician-psychiatric illnesses. In three studies of physician-psychiatric hospitalizations in the U.S.A., Canada and Britain, the combined incidences of alcoholism and drug dependence were 51%, 57%, and 29% respectively.¹³ (Note: The U.S.A. figure included secondary disorders.)

The most common drugs used are morphine, meperidine (demerol), barbiturates, minor tranquilizers and amphetamines, often in combination with alcohol,^{12, 25} and narcotic abuse is estimated to be 30-100 times that in the general population, mainly because of availability.^{17, 27} In the U.S.A., an estimated 1-2% of doctors are addicts while, in many countries, 15% of known drug addicts are physicians.^{12, 19} However, they differ from the typical addict in age (average 38 years) race, socioeconomic status, etc. They also have a higher incidence than similar socioeconomic groups.¹² Yet, although the physician-addicts are more psychopathic than control physicians, they are less so than non-medical addicts.²⁷ Alcoholism, on the other hand, has an incidence similar to that of the general population (2-3%).²⁶⁻²⁸ It is often a cause of charges laid against doctors²⁵⁻²⁷ (over an 11-year period); 3.2% of doctors appeared before the A.M.A. for this reason.

The physician's reasons for alcohol or drug dependency are one or more of: (1)

overwork, (2) chronic fatigue and (3) physical disease, in addition to the demand by family, knowledge and time, with the threatening feeling imposed by patients and colleagues to maintain professional competence.^{12, 13, 17, 25} The reason for continuing use is a desire for euphoria.

Suicide is often the endpoint of the turbulence. Suicidal rates for the general population in most well-developed countries range from 10.5-12/100,000.^{19, 21} Suicidal rates for doctors range from 30-83/100,000 or higher from country to country but are relatively high everywhere.^{13,17,19,27,30,31} These rates are higher than the combined rates for auto accidents, plane crashes, drownings and homicides involving physicians.^{17,29} The current annual rate in the U.S.A. is believed to approximate an average graduating medical class in number.^{9,21,23} The rate is also significantly higher than similar socioeconomic groups.¹⁹

Typically, the suicidal individual is an occupationally mobile male of 45 years or older and with a family history of broken homes and/or death of both parents before age 5. The act is often violent (70% of white males who suicide do so by hanging or with firearm).^{19,32} The doctor's background is generally different and the act is usually non-violent (55% use drugs, especially barbiturates.^{17,27,32} The majority 28% occur in the age group under 40 years, while only 9% occur in the general population of the same age groups.^{12,17} For doctors, the ratio of success to unsuccessful attempts is 1:5 as opposed to 1:8 in the general population.^{19,32}

Among physician suicides, 40% are associated with alcoholism and 20% with drug abuse. Ten per cent of physician drug addicts commit suicide, and the highest rate is among physician-psychiatric patients.^{12, 17}

Male physician suicides have an incidence of 1-1.5 times that of the general population of white males.³¹ Relatively more female physicians commit suicide. The incidence of 7% is estimated to be 3-4 times the general female population.^{17,31,32} Besides sharing the obsessive-compulsive personalities of their male counterparts, these professional women who have selected male-oriented careers are frequently single (unmarried, separated, divorced or widowed) because of unreconcilable differences including choice of medicine over marriage, as well as difficulty finding compatible partners after graduation, due to their age and scholarly attributes. This social isolation becomes deepened as they are often rejected by wives of male colleagues who may feel inferior.

Physician suicide rates are usually lower than reported, in the same way that recorded psychiatric illnesses are lower

than actually exists. Accidental causes are often actually concealed suicides. In 1970, an investigation of 18 known suicides revealed that a reputable medical journal listed 9 correctly, 1 as suspected, 3 causes not disclosed, 4 causes listed incorrectly, and 1 not recorded at all.³⁰ This gives only 50% accuracy. Also, it has not been satisfactorily verified that certain groups, e.g. psychiatrists, are more prone to suicide.^{17, 27}

Each physician suicide is a turbulent personal agony, a family tragedy, the loss of a close relationship for his patients, and an enormous cost to the nation.

Physician-psychiatric illnesses have often been "explained" by:^{3,9,12,13,17,25}

- 1) The stress of long medical training.
- 2) Increasing demands by the profession and public due to increasing patient education and sophistication about medical matters, as well as additional roles for which he often feels inadequately prepared (such as sex and marriage counselling, interpersonal and family therapy, etc.).
- 3) Overwork and responsibility in life-and-death situations.
- 4) Easy availability of drugs resulting in higher addiction rates.
- 5) Hypochondriasis or denial of a real illness.

However, these reasons have not been supported by some authors since many other professions are regarded as being equally demanding.¹² Besides, only a small minority of physicians develop psychiatric illnesses. The opinion is that a predisposing personality present from childhood is a major factor, with a history of psychosomatic difficulties in childhood with chronic disturbances of close interpersonal relationships, basic insecurity, and excessively high, unrealistic aspirations.^{12,21,25} In a group of physician drug addicts, only 3% held their father in high esteem, while only 12% spoke warmly of their mother, and the majority were sickly in childhood (colicky, enuretic, etc.), studied ambitiously, disliked sports and were sexually inhibited. Most of these physicians were also oversensitive, highly self-critical and emotionally immature.^{12,25} The chosen occupation may influence the form and outcome of the underlying illness if there is a mismatch between the individual's psychological needs and the sociopolitical consensus about his career. Unfortunately, this mismatch is common for those who succumb.

In summary, it appears that most physician psychiatric illnesses are occupational manifestations of pre-existing disturbances, while the remainder are as a direct result of the stress of medicine.

Many American states have laws with a provision to automatically suspend a physician's licence if he is judged incompetent as a result of organic illness, marital or psychiatric disorders, loss of motor skill, drug or alcohol abuse, etc. The accused doctor has the right to receive copies of the examining physicians' reports. In addition, he has a guarantee that the ultimate decision will not be used against him in any future legal proceedings.²⁹

But prevention of many of these illnesses is possible and to some extent has already been initiated.

Primary prevention is best at the premedical level by screening for pre-existing personality traits that may predispose to the type of individual under discussion. Already the MCAT has additional sections to test this.⁵ Some medical schools also attempt to check for this.¹² Also, more students are entering medical school with better preparation—e.g. at the University of British Columbia more than 30% have Bachelor Degrees when accepted.² This likely holds true for most medical schools.³³

Secondary prevention at the medical school level is already seen by:

- 1) Increasing social and extracurricular student activity,³³
- 2) Increasing student vocalization in response to some stress factors.²
- 3) Less frustration in the first two years in medical schools where clinical exposure occurs earlier.³³

Medical students should be enlightened about Physician Illnesses. Earlier recognition by students to seek psychotherapy, if needed, should be encouraged. The British Medical Association advocates assessment of the mental stability of each student before conferring a medical degree.²⁷

At the postgraduate level, tertiary prevention is achieved by encouraging yearly checkups (physical, mental and marital), relaxation without drugs or alcohol, and family participation.²¹ Family medicine programs may help reduce anxiety in future family physicians. Most important, early recognition and appropriate treatment is needed. Emotional illness in a physician should be accepted by his colleagues without shock or fear, with a responsibility to assist and treat him. Solo practitioners are at greater risk since in group practices more leisure time is attainable, plus the partners may be able to detect another's need for help. Physician addicts are best treated in hospital after which it is advisable to employ them in salaried positions out of direct contact with drugs, though not necessarily giving up patient contact.²⁵ This will discourage a relapse, as well as providing more time for relaxation.

What effect can medicine have on an individual and the people close to him?

Here is a passage from the letter written by the wife of a very competent and dedicated physician who was **not** mentally ill:

"There is no way to describe what it's like to be a married woman for 27 years and to never have had a marriage or a husband, simply a man who came and went as he wished; completely impersonal, completely clinical; never responding as another human being would do if any love at all was present. I feel now that I have finally buried all my emotions related to him and I can never, ever go through that procedure again . . . I only wish things were different, that I had some happy memories to rebuild on, but I don't. No one is more sorry than I am."²⁴

If you do not want to be a Don Quixote, M.D., take these recommended ten tips:²⁴

- 1) Recognize and admit your needs. Know thyself!
- 2) Establish a hierarchy of priorities in your life.
- 3) Provide for relaxation and vacations.
- 4) Avoid drinking because you "need" one.
- 5) Never prescribe narcotics for yourself.
- 6) Sedatives and stimulants are to be handled with care.
- 7) You are not indispensable: your wife may be.
- 8) Wives have needs too.
- 9) Children are chips off the old block.
- 10) Seek help when necessary - pride goeth before the fall.

M.C. Randall (Meds '77)
U.W.O.

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Medical Imagination - A Name Like Yours

by J.C.E. Kaufmann

"With a name like yours, you might be any shape, almost".

Lewis Carrol. Through the Looking-Glass. Chapter 6.

One day when I was living in South Africa, a photograph of a handsome smiling couple in *The Star*¹ caught my attention (Figure 1). The caption read: "Birds of a feather do flock together — take the case of the Finches and the Sparrows. Miss Dolores Finch (23) and Mr. Dennis Sparrow (24) celebrated their engagement at a family party in Kensington Johannesburg, at the weekend. Dennis is in fact following a family tradition. His mother was one of four Hancock sisters. She and one of her sisters married two brothers by the name of Sparrow and the other two married another set of brothers, called Partridge. Not to be outdone, one of the Partridge daughters married a Mr. Hen. The name of Mr. and Mrs. Sparrow snrs. house — 'The Nest'".

My interest was aroused and I found myself wondering whether that curious flocking together of surnames was by accident or by design. So I began to take note of any strange proper name that I came across and in this way gradually assembled the small collection which follows.

It was soon clear that medicine abounds in curiously appropriate and inappropriate names of doctors and patients.

Sometimes a doctor's surname is so remarkable that it immediately raises some questions. Long ago a man engaged in a particular occupation might be given a surname that was appropriate to his work, like Cartwright to Cooper. Now, is this process not working in reverse so that a man with a certain name is perhaps subconsciously driven to take up a particular branch of medicine to fulfil his destiny? Or is it rather that during childhood an association with his name is so often remarked upon that his interest is finally aroused and so he is launched on a medical career? Or is it only a matter of coincidence after all? If so then there are some strange coincidences listed in Medical Registers.



(Fig. 1) The Betrothed



(Fig. 2) Lord Brain

The most famous example of this is Lord Brain who died in 1966. Not only did he rise to become one of the most eminent neurologists of his time, but he also edited the journal *Brain* for many years (Figures 2 & 3). Who was his predecessor in that position? None other than Dr. Henry Head (Figures 4 & 5). Another neurologist and neuropathologist remembered in connection with Krabbe's disease or globoid cell encephalopathy is Knut Krabbe. Three neuropathologists who have been leaders in their field have agricultural names — Greenfield, Blackwood and Haymaker (Figures 6, 7 & 8). A Johannesburg neurologist, Dr. Alan Bird was one of the sponsors of a beautiful folio of bird illustrations by Dick Findlay and he used to keep a variety of caged birds in his house including parrots. Some years ago Dr. Bird took ill with a pyrexial illness that was demonstrated on serological tests, as you will have guessed, to be ornithosis. To complete the story, he then took up flying and at the time of my departure had more than 1000 hours in his log book.

Amongst the other specialists there are two dermatologists who have collaborated

Brain

A Journal of Neurology

EDITOR

THE LORD BRAIN, D.M., F.R.S.

Part of the title page
(Fig. 3)



(Fig. 4) Henry Head

on papers — Mole and Horn. Frank G. Slaughter has achieved fame as a novelist but he is also a surgeon in his own right. A Dr. Hack used to practise as a surgeon in Pretoria, Dr. Mes* is a surgeon in Krugersdorp and Dr. Butcher is a surgeon in Durban. A colleague studied at Oxford with a Dr. Tony Blood who subsequently became a surgeon. Dr. Suckling is a well known paediatrician in Cape Town. Both Dr. Buss** of Cape Town and Dr. Batchelor of Durban are obstetricians and gynaecologists.

* mes means knife in Afrikaans

** to buss is to kiss (archaic)

Two local anaesthetists were the subject of a story circulating a few years ago: Professor Arthur Bull from Cape Town and Professor O.V.S. Kok from Pretoria went overseas and, *inter alia*, attended an international anaesthetics conference. It was said that a wit who met them on their return asked that they tell the profession

the Kok and Bull story of the Conference. The professor of pathology at the University of Otago, Dunedin, New Zealand for many years was a Dr. D'ath. Three general practitioners in the South African Register are Dr. Doctor, Dr. Nurse and Dr. Payne. There is also a Dr. Comfort but he is a surgeon. It is not certain from the article "Phenformin (DBI) in the management of Diabetes Mellitus" if the first author is an endocrinologist or not. His name is Samuel J.N. Sugar.²

Students, but not medical students, also have a place in this collection. Dr. Graham Bull was a lecturer in Medicine at the University of Cape Town contemporaneously with an arts student, Miss Queenie Cow. There was also a male student at the University at this time named Heffer. Other students talked of and half planned a dramatic meeting without their prior knowledge at which they would be introduced to each other, but the talk came to nothing.

Patients names are occasionally uncannily connected with their diseases. In such instances one cannot help reflecting whether the connection is again merely coincidence or whether there is some kind of poetic justice at work. For instance the Peripatetic Correspondent of the *Lancet* wrote of attacks of diarrhoea in some members of an orchestra caused by a *Salmonella*. The species was *S. brandenburg*.³ A few years ago at the Johannesburg General Hospital, a pathologist colleague now at Stanford Medical School cut a frozen section on a breast lump that turned out to be a carcinoma. The patient's complaint was a discharge from the nipple and her name? Mrs. Schlegmilch[†]. At about the same time in the same hospital an elderly female patient with the prominent sym-

Brain

A Journal of Neurology

EDITED BY

HENRY HEAD M.D. F.R.S.

Part of the title page
(Fig. 5)

ptom of hypothermia died. Her brain was removed by the Neuropathology Department and the lesions of Wernicke's encephalopathy were found. Her name was Mrs. Eisenberger. Not long afterwards in the same laboratory sections of a hidradenoma of the eyelid were reviewed. The tumour probably arose in Moll's glands. The patient's name was Moll.

Colleagues added other names to the list of patients in this collection: a patient Hart from Pretoria who underwent a cardiac operation in Durban at about that time, a patient Mrs. Potts once treated for a sprained ankle in the Casualty Department at the Johannesburg General Hospital and a patient Curling admitted to the late Dr. Lee MacGregor's ward in the same hospital suffering from a Curling's ulcer.

To end this part on a sombre note: there is a well known firm of undertakers in Cape Town called Human and Pitt.

My collection lay fallow for some years and then I took it out again in September to try to divert an audience at a scientific

meeting. A few Canadian contributions followed: Dr. Blizzard recently sent a surgical specimen to the University Hospital Pathology Department from Labrador^{††}, the Co-ordinator of the Sexuality Clinic of the University of Calgary is Miss Love⁴, our own Quinlan, P. took a Meds IV Selective Course on "Prolonging Life and the Nervous System", and through one of our chest physicians I have learnt of a chest physician in Oklahoma, Dr. Safety A. First. As this is being written the festive season is upon us and so it is appropriate to conclude with the name of a patient who is presently in University Hospital: Mary Christmas.

† literally "bad milk" in German

†† No. S. 5651-76

Finally if the Reader happens to know of any other curious names, especially medical names, I would be very grateful to hear from him or her as I might as well let the collection grow again. Thank you.



(Fig. 6)
J.G. Greenfield

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Thanks are due to Mr. Don Bodrug and colleagues who have provided me with a number of the examples cited, to Philip Quinlan and those colleagues who have given permission for their names to be used, and to Dr. M.J. Ball for the photograph of William Blackwood.



(Fig. 8)
William Blackwood



(Fig. 7)
Webb Haymaker

Legends

Figure 1. The betrothed. (See text.)

Figure 2. Lord Brain

Figure 3. Part of the title page of the journal during the latter part of the editorship of Lord Brain from 1954-1966.

Figure 4. Henry Head.

Figure 5. Part of the title page of the journal during the editorship of Henry Head from 1905-1921.

Figure 6. J.G. Greenfield

Figure 7. Webb Haymaker.

Figure 8. William Blackwood.

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It Happened in Canadian Medicine: Michel Sarrazin, Physician & Scientist

by Paul Potter

Michel Sarrazin was born September 5, 1659 in the town of Nuits-sous-Beaune, Burgundy, the son of a minor legal official. In the summer of 1685 he immigrated to Quebec, then a city of approximately twelve thousand, where he began to practise his art as a surgeon; within a year he was named surgeon-in-chief of the troops. After a very successful surgical, and it also seems medical, career during which he attended patients in many different regions - he held hospital appointments in Quebec and Montreal - he returned in 1694 to France to obtain a proper university medical education.

Because of his extensive practical experience, application and natural intelligence, he was able to complete the lengthy course of study in a fraction of the normal time and return to Quebec in 1697 with an M.D. from the university of Reims. During his stay in France Sarrazin became acquainted with Joseph de Tournefort, a physician and professor of botany at the Jardin des Plantes in Paris, who no doubt helped to foster his new interest in natural history, and who two years later assured his elections as a corresponding member of the Academie Royale des Sciences; coincidentally the same year that Sir Isaac Newton also became a corresponding member.

On his return Sarrazin quickly reestablished himself as the leading physician and surgeon of the colony - he was named "Physician of the Hospitals of New France" by royal decree in 1700 - and became over the subsequent thirty-five years of his life a symbol of devotion, piety and compassion to patients far and wide. In addition to his medical services, this period of his life was also characterized by an extensive and profound study of the regional flora and fauna, which he communicated to the Academie in numerous letters.

Today it seems strange that a trained master surgeon as Sarrazin already was on his first trip to New France should lack a medical education, but this is to be explained from the relationship between the two professions in the seventeenth century. Surgery was a trade, sometimes combined with barbering, learned by practical experience mostly on the battle-field and based on slight theoretical principles, these communicated in the vernacular. Medicine on the other hand was a true form of higher education imbued

with the prestige and mystique of a centuries-old scholastic tradition derived from the ancient authorities and discussed only in the language of erudition. Physicians were gentlemen, surgeons were craftsmen; and needless to say, the vast majority of practitioners in the colonies were surgeons - that is, the ones who weren't outright quacks!

But even the school medicine of the age, for all its highly sophisticated argumentation and clever syllogisms had none too much to offer the suffering patient, as many contemporaries knew: particularly enlightening is Moliere's portrayal of the Parisian medical world in the "Malade imaginaire". The Paris faculty, at which Sarrazin did part of his training, was a bastion of conservatism, celebrated for its resistance to anything new, including "such alleged discoveries as the circulation of the blood."

The medicine which Sarrazin practised in New France at the beginning of the eighteenth century was little different from that practised in Greece two thousand years before. His main methods of treatment were: purging, emetics, blood-letting, massage, plasters, baths, fomentations, rest, fresh air and a number of non-specific drugs mainly of vegetable origin. By their skilled application we may imagine that he had some success against many self-limiting diseases, including the numerous recorded epidemics: influenza (1700), small-pox (1702 and 1703), yellow fever (1709) and the ever present scurvy. His practise was designed to assist the "healing power of nature"; the type of direct, specific treatment which we are able to apply in many cases, was unknown.

Surgery at that time confined itself mainly to obvious lesions such as abscesses, wounds and external tumours. The thorax or abdomen were never opened, which will come as little surprise in an age lacking anaesthesia and antiseptic technique, and even the removal of a bladder stone was fraught with danger.

The hospitals of Quebec were organized at an early date and by 1690 the Hotel Dieu de Quebec had between thirty and fifty beds arranged in three separate rooms, one each for women, men, and officers. Numerous autopsies are recorded in this period, usually in cases where the cause of death was uncertain.

Sarrazin's most remarkable achieve-

ments are his work in zoology and botany (strangely enough, we have no record of his having ever communicated on a medical subject) reported to the Academie. When we read his descriptions of how in cramped quarters with meager facilities he overcame seemingly insurmountable obstacles to carry out his studies, we cannot help but be reminded of Harvey with his birds and deer, or Leeuwenhoek in his draper's shop in Delft. This was the age of the dedicated, isolated seeker, whose only qualifications as a scientist were a restless curiosity, infinite patience and boundless ingenuity.

Sarrazin's letters are partly published in the Academie's "Memoires" (between 1704 and 1736) and partly still extant as manuscripts in its archives. Among the animals whose detailed anatomy we find described are the beaver, wolverine, muskrat, cat-fish and seal; only with the skunk would Sarrazin admit defeat! In his studies he sometimes employed a magnifying glass sent to him by the French zoologist Reaumur, a fellow member of the Academie. He also undertook some physiological investigations and provided useful descriptions of the animals' habits which he examined; these it must be noted were not his own, but obtained from the *coureurs de bois*.

As the representative of the Academie in New France, it was also Sarrazin's duty to send specimens of indigenous plants to Paris for inclusion in the Jardin des Plantes. We have a manuscript list of the plants he sent in 1704 totalling over two hundred species. One of the plants Sarrazin described was the pitcher plant, which his colleague Tournefort named in his honour the *Sarracena purpurea*.

Sarrazin also furnished reports on matters of agricultural interest such as the production of maple sugar and types of grains. Because the French winter wheat and rye when sown in Quebec in the fall would not survive the more severe winter, the farmers had turned to using only summer wheat which produced a flour inferior both in quantity and quality. Sarrazin attempted to solve this problem by importing types of Swedish wheat and rye which were hearty enough to survive the winter.

In contrast to his public life, Sarrazin's private life seems to have been less than ideal. He married at fifty a woman of some standing, but in spite of the considerable property this match brought, his chronic financial problems continued. He was of a delicate constitution, greatly strained by his incessant labours, and had the reputation of being "melancholic and a dreamer."



Belly dancing nurses in "The Dung Show".



Meds '77's cast in "Star Wreck" — The reading of the old earth newspaper "Le Globe et Mail".



Meds' wives and Freddie Flasher in the "Sounds of Madness".

Tachycardia '76

By Jeff Coleman and
photographs by

Late October to mid November once again found a friendly host of talented thespians, egregious exhibitionists, maudlin muggers, caustic cranks and other assorted misfits from the medical sciences deeply steeped in gross dereliction of their studies, writing, directing, producing and performing in Tachycardia '76.

Bodies were flaunted (but why didn't the nurses use real breasts for eyes, a la Las Vegas?), gases expelled, appendages hypertrophied, expletives exploited and medical terminology hideously tortured, all in an effort to amuse - an effort that probably justly deserves the title of the most unrestrained and amusing farce on Western's normally staid campus.

The evening opened with Meds' wives and the combined rehabilitation disciplines of Physiotherapy, Occupational Therapy and Communicative Disorders performing their version of the "Sounds of Madness". Following an exposure to diarrhea, amenorrhea, and pizzaria the audience was conducted on a light-hearted tour of several hospital departments. Freddie Flasher was the star of the psychiatric ward while on the obstetrical floor the curtains of modesty were opened by the eager academic interest of the obstetrical clerk. The halls were truly alive with the sounds of madness.

The "Too Tight Show" featuring Johnny Carcinoma, Ed McMammary and Doc Caesarian was the comic vehicle employed by the first year medical class. Featured on the show were the president of Canada's first sperm bank (The Bank of Mount em all), the Mighty Carcinoma Art Players and a new game show entitled "Beat the Doc". Doc Caesarian's advertisement for a new drug "Rectal Reader" or "G I Goalot" promised to increase one's reading capacity and was a high-light of the fine first year performance.

Meds '79 produced a comparatively well-polished musical comedy adaptation

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A scene from the Meds '80 Production with Johnny Carcinoma and the spermbank president.

to prepare for this year's skit. (Perhaps if they'd just had a little more time....) In their search for a new president of The University of Western Ontario, the "faculty committee" introduced unlikely representations of candidates, Dr. W.J. Dunn, Dr. L. Valberg, Dr. W.C. Watson, Dr. J.H. Watson and the Right Honorable John Diefenbaker. The final candidate, Mr. William "Bill" Byles was piped onto the stage by the pipers of the medical faculty. The heart-warming tribute to Bill Byles was in recognition of his 50 years of continuous employment within the Faculty of Medicine. At 76 years of age Mr. Byles is the oldest employee on the payroll of the University. After brief deliberation it was the committee's unanimous choice to have "Byles for President".

Top honors for best production (based on criteria no one is really clear on, nor does it matter) went to Meds '77. A word about Meds '77. These folks have consistently produced excellent shows for their Tachycardia appearances and surely deserve special congratulations for their sustained enthusiasm and contribution to Tachycardia frivolity over the past four years. Speaking of accolades, one to each of Richard Casey and Bonnie Flannigan for producing, overseeing and putting the whole thing together.

Occasionally the show suffered from tired over-worked jokes and, in a few instances, even bordered on bad taste. Notable in the latter regard was the mockery of the anything but risible plight of Westminster incurables, and the barbed comment on "modern women" in medicine. However, it is hardly necessary to reply that Tachycardia does have a certain tradition for the ruthless and risqué and if the metes and bounds of good taste are only seldom grossly overstepped, and if the level of entertainment is predominantly light and lively, and if the show sells out to four happy audiences, and if "everyone has a good time", who's to complain?....No complaints.



Meds '79 and the soft shoe number "You've got to get a specialist."



"Clinical jerks" asking a well known faculty member for more basic science (B.S.) in Meds '78's "O-Liver"



The faculty members' tribute to William "Bill" Byles and the selection of "Byles for president".

Migraine is one of the longest recognized and most common of all neurologic conditions. It shares with epilepsy the distinction of having been identified and discussed for over 2000 years. Hippocrates recognized the syndrome and noted the visual prodrome, intense headache and accompanying gastric distress. The Roman physician Celsus stressed its constitutional nature, the nausea and vomiting and the not infrequent precipitating role of excesses of temperature, sunlight and alcohol. Although later on the scene, Aretaeus of Cappadocia (modern Asiatic Turkey) has usually been regarded as the discoverer of migraine because of his classical description of a condition he termed heterocrania. The Greek physician Galen who taught and practised in Rome is credited with introducing the term hemicrania which was later corrupted into the low Latin hemigranea and finally, in the 17th century, evolved into the French term migraine, which we use today.

Throughout the years, many precise and detailed descriptions of this condition and its various manifestations have appeared in medical writings of all languages, but considerable difference of opinion has existed as to how many clinical entities should be included under its umbrella. Traditionally, the term has implied a particular kind of episodic vascular headache varying in frequency, duration, severity and location. It is, however, much more than just a headache as one may gather from its frequent and striking prodromes, accompaniments and sequelae. These may include frank neurologic disturbances, (particularly of vision), mood changes and signs of autonomic instability such as flushing or pallor, sweating, nausea and vomiting and pilomotor erection. These disturbances of the autonomic nervous system have been so striking that some have considered the term paroxysmal dysautonomia to be an appropriate label for migraine, such a term encompasses both clinical and pathophysiological parameters.

The degree of diagnostic precision applied to a disease depends in large measure on the amount of fundamental physiological, biochemical and pathological knowledge of that state. There is still comparatively little such basic information known about migraine and we are forced to depend more heavily on clinical symptoms and signs, responses to

treatment and other observations to decide upon the diagnosis. The Ad Hoc Committee on the Classification of Headache of the National Institute of Neurological Disease and Blindness in 1962, by noting both similarities and distinctive features of various vascular headaches formulated a classification for migraine which is summarized below:

Vascular Headache of Migraine Type:

Recurrent headaches widely varied in intensity, frequency and duration, commonly unilateral and associated with anorexia, nausea and/or vomiting, may be preceded by or associated with sensory, motor or mood disturbances and are often familial.

A. "Classic" Migraine: Vascular headache with sharply defined transient visual and other sensory or motor prodromes or both. More common in women as is "B".

B. "Common" Migraine: Vascular headache without striking prodromes and less often unilateral than "A" or "C". Often environmental, physiologic and other stresses are associated with its precipitation.

C. "Cluster" Headache: Vascular headache predominantly unilateral, usually associated on same side with flushing, sweating, rhinorrhea, lacrimation and at times a partial or complete Horner's phenomenon; brief in duration, occurring in closely packed groups separated by variable but at times long remissions and much more common in men.

D. "Hemiplegic" and "Ophthalmoplegic" Migraine: Vascular headache distinguished by sensory and motor phenomena which persist during and after the headache.

E. "Lower-Half" Headache: Headache of possibly vascular mechanism, centered primarily in the lower face. This group may contain instances of other facial neuralgias.

Classic Migraine:

Typically the headache is preceded by an aura or harbinger of neurologic dysfunction. Most commonly this is a visual disturbance such as scintillating scotomata, teichopsia, or homonymous blurring or hemianopsia. They are described as sparkles, fireflies, or wavy lines resembling heat waves or fortification figures. They are usually stereotyped in any one person. The visual disturbance may be

quite dramatic, for example it has been described as "the spread of a prairie grass fire -- it first appears as a sparkling blaze or burning, dazzling light in one visual field or another, spreading over 5-30 minutes in an evergrowing semicircle, burning back the field of vision until it invades the periphery, scintillates in a zigzag circle until it subsides and the green grass of vision begins to grow back into the charred area" -- as the headache begins. In many, however, the visual disturbances may merely be the sudden appearance of "holes in the vision" or heat waves or bright spots scintillating in one or other of the visual fields, usually in an hemianopsic fashion (i.e. postchiasmal) but they may be monocular (i.e. prechiasmal, probably retinal). As well, there may be parasthesias of the limbs or face ipsilateral to the visual symptoms of similar duration. Rarely a language disturbance or face or hand twitching may occur. On occasion the visual and other disturbances may occur simultaneously with or accompany the headache or may recur in a different form during the headache course. The fact that the neurologic disturbance usually precedes the headache is of important differential diagnostic significance for the reverse is usually seen in the presentation of structural vascular disturbances such as arteriovenous malformations and aneurysms.

The neurologic auras of migraine are usually contralateral to the headache but in 15 to 20% of cases, they may be ipsilateral. Although one side or the other is favoured for the occurrence of the prodromes and headache, often enough the opposite side is eventually involved, declaring the diagnosis as being migraine and not a structural or other vascular abnormality. The prodromes may be precipitated by sudden strong stimuli such as powerful light, noise, smells or minor head trauma. In distinction to common migraine, this type of headache may occur more frequently during pregnancy and if the diagnosis has not already been established, may cause concern because of the more frequent declaration of underlying structural vascular defects or disorders of thrombogenesis seen in that state.

The headache which is usually unilateral is severe and throbbing but may have fluctuations in intensity and may become diffuse throughout the head later in the attack. It is more commonly bilateral in

children but bilateral occurrence in adults should not exclude the diagnosis of migraine in spite of its etymological origins. The headache tends to peak in one-half to one hour and to last only a few hours. At times, it may be very mild and particularly in later life, the prodrome may occur without the headache following. Classic migraine is more common in women than men and it is more likely to appear "out of the blue" than common migraine, nevertheless, there are frequent stress precipitants than can be identified. As a group it accounts for about 20 to 25% migraine sufferers and is more likely to disappear with age than is common migraine.

One distinct type of classic migraine which deserves mention is so-called basilar migraine. Again, this occurs more typically in young women and girls and frequently is associated with the menstrual cycle. Prodromes may include both visual loss or scintillations throughout both halves of the visual fields followed by vertigo, ataxia, dysarthria and occasionally tinnitus and parasthesias of the extremities. The order of occurrence may vary and disturbances of consciousness may occur. The prodromes last from several minutes to an hour and are followed usually by a severe, throbbing occipital headache accompanied by vomiting. This syndrome tends to resolve in the late twenties to early thirties and is often replaced by more classic variety of migraine. On the basis of the prodromes, it is thought to be related to changes in the basilar artery or its branches.

Common Migraine:

Common migraine more frequently affects women than men and out-numbers all other types in frequency. Prodromes are often vague or non-existent but may be characteristic in individuals and occur hours in advance of the headache. The prodromes may include fatigue, lack of drive, excessive yawning, depression and other mood alterations or alternatively exhilaration, excessive appetite or a sense of well being. The headache which usually begins slowly may come on during sleep or shortly after waking. It is frequently accompanied by anorexia, nausea or vomiting, photophobia, irritability and numerous autonomic phenomena, including nasal stuffiness, sweating, chills, hot flushes, cyanosis or lividity of the extremities, pallor or suffusion of the facies, abnormal thirst, polyuria, peristaltic rushes, tachycardia, tachypnea and pilomotor erection. The scalp and periorbital areas, as well as the cranial vessels, may be tender. Sleep may give some relief but the entire attack may last days. The patient is frequently exhausted afterwards.

This headache is more likely to show

some relationship to a stressful episode in life either during the event or upon its cessation. The story is often told of the busy executive who only has his migraine on weekends seemingly when the week's stresses are finally relieved, while his wife only has hers on the weekend while under stresses generated by her husband's presence and his affliction. In women such headaches may be related to the menstrual cycle and may be modified or disappear during or at the end of the first trimester of pregnancy only to recur shortly after parturition. Common migraine is more likely to continue on throughout life than is the classical variety. It is common migraine which most frequently causes diagnostic difficulties because of its vagueness and not unusual accompanying tension or muscle contraction headache.

"Cluster" Headache:

These headaches are characteristically recurrent, severe, unilateral, about or behind one eye of a boring, intense quality, sudden in onset and resolution and lasting 20 to 90 minutes. Attacks favour one side and always occur on the same side in any particular cluster. Frequently, they will occur after one to two hours of sleep and there may be three to four such attacks a day over the course of six to eight weeks. The frequency and severity of the attacks tend to wave towards the end of the "cluster". There may be long remissions but temporal patterns of recurrence may be identified and aid in prophylactic treatment plans. The pain may be so severe as to cause the patient to literally "hit his head against the wall" in desperation.

There are frequent characteristic associated phenomena, which include excessive lacrimation from the affected eye, nasal stuffiness, conjunctival suffusion, flushing or excessive sweating and occasionally an ipsilateral Horner's syndrome, either partial or complete. The Horner's syndrome usually resolves with the headache but on rare occasions has been a more or less permanent phenomena. Superficial temporal vessels may be tense, prominent and tender. Vomiting is infrequent and other neurologic accompaniments are notably absent. Between headaches a dull ache may be left, as well as some tenderness. They occur predominantly in males, frequently beginning in the early 20's and ending by the 60's. There is a frequent preceding history of migraine and there may be a preceding traumatic relationship. These headaches are confused at times with the other cranial neuralgias, including tic douloureux.

Ophthalmoplegic and Hemiplegic Migraine:

Of the several migraine varieties termed by the Europeans as complicated migraine, the above two types deserve some

comment. In ophthalmoplegic migraine the attacks of headache are associated with transient, occasionally permanent, paresis or paralysis of the ocular muscles. They are usually ipsilateral and accompany or follow the headache and on rare occasions occur without the headache. A background history of migraine is usually present with the headache usually retro-orbital and excruciating. The periodic attacks of migraine suddenly become more severe and of longer duration and the first eye signs then manifest. In the vast majority, the third nerve is involved, either partially or completely. The 4th and 5th nerves have also been implicated. It is a rare condition and only eight cases in five thousand patients were noted over a thirty year period in one series. Various mechanisms have been put forward in explanation, but none has any good basis from a clinicopathologic point of view.

Hemiplegic migraine may be familial or sporadic. The hemiplegia or hemiparesis occurring before, during or most commonly after the headache resolves may include loss of speech and language, be sudden and may be accompanied by sensory disturbances on the same side. The familial cases are thought to be transmitted in an autosomal dominant fashion and are less severe than the sporadic ones. It, too, is an exceedingly rare condition.

Lower-Half Headache:

These headaches are possibly of vascular origin with pain centered mainly in the lower face. It may include some instances of atypical facial pain and sphenopalatine and vidian neuralgia. These headaches are also extremely rare and will not be discussed further.

Migraine Equivalents:

Migraine equivalents are phenomena which occur in some patients who have a history of migraine and are thought to be either early manifestations of the condition before the actual headaches begin or occur as substitutes or replacements for the actual migraine attacks.

Typically, a migraneur as an infant may have been subject to feeding problems and colic; then as a small child experience motion sickness and again in the early school years have recurring bouts of abdominal pain labelled as cyclic vomiting or bilious attacks. Frequently these attacks have been related to pleasant or unpleasant experiences, mental or physical fatigue, dietary indiscretions or changes in the weather. With time migraine headaches enter the picture and these other phenomena wane. Other conditions which can be related less well to migraine but are included by some as migraine equivalents are paroxysms of tachycardia, vertigo, or attacks of precordial thoracic,

abdominal, pelvic or extremity pain. Cyclic edema, confusion, lethargy and disorders of mood and sleep are sometimes also placed in this category. It is thought that the stimulus normally causing the disturbance within the cranial vasculature to produce migraine may be affecting another portion of the vegetative nervous system, resulting in the above presentation. It should be emphasized that the relationship of these disorders to migraine is not clear.

Associated Phenomena:

Abnormalities in the EEG are more frequent in the migraine population but, as yet, there is no diagnostic significance attached to this observation. It has also been noted that nocturnally occurring migraine has its onset usually during the REM period of sleep, that is during the period that may be the most stressful of the sleep cycle.

Many genetic studies have been done and a dominant mode of inheritance has been suggested, but environmental, as well as hereditary, factors are thought to be important in the familial occurrence of migraine.

Psychogenic factors are thought to play a role in the production of migraine, particularly in a migraneur's reaction to stressful situations which ordinarily might be of no significance in others. Much emphasis has been placed on the role of the typical migraneur's personality. They have been described as being intelligent, perfectionistic, obsessive, compulsive, and hard-driving. There is, however, a wide variability amongst migraneurs of both intelligence and personality type, although something may be said for the sensitivity to which they react to emotionally charged situations.

Pathogenesis:

The preheadache prodromes are thought to be related to focal ischemic changes in appropriate intracranial vessels with a secondary process of spreading cortical depression accounting for the slow progression of developing symptoms and signs. These contentions are supported by blood flow and thermographic measurements taken during this phase. There then follows a phase of vasodilatation in a less well demarcated area which is accompanied by a local sterile inflammatory reaction about the extracranial vessels at least. As vasodilation itself is not painful, the accompanying inflammatory response is thought to be, in part, responsible for pain production.

There is some fragmentary evidence that supports several vasoactive substances as having a role in inflammation production, including catecholamines, histamine, serotonin, the peptide kinins and the ubiquitous prostaglandins. Their actions collectively

include the ability to contract or relax smooth muscle, constrict or dilate arteries or veins, induce water and sodium diuresis, fever, wheal and flare reactions and induce pain, including headache. As well, vasoactive substances like tyramine and phenylethylamine are found in foodstuffs which are known to precipitate migraine attacks in susceptible individuals. A defect in tyramine conjugation has been noted in some.

It is thought, in some way, that substances such as histamine, serotonin, the plasma kinins and perhaps other vasoactive substances participate in a sterile inflammatory reaction to produce painful, distended blood vessels. It is certainly not clear yet what the initiating or precipitating factor or factors are in this process.

Differential Diagnosis:

A migraine must be differentiated from other causes of recurrent headache which may have a neurologic accompaniment. These include a berry aneurysm, arteriovenous malformations and other angiomas. Neoplasm, either primary or secondary, should rarely be mistaken and vascular events such as thrombosis, embolism or hemorrhage usually have sufficient clinical characteristics to make their differentiation possible from mig-

rairie. In the older age group, any change in the headache pattern, or the occurrence of neurologic accompaniments should be viewed with suspicion and a close review with appropriate screening procedures is indicated to rule out structural lesions or conditions such as giant cell arteritis or trigeminal and other neuralgias.

Treatment:

The treatment of migraine in the first instance can be directed towards the pharmacologic relief of the acute attack and in some instances in the prophylaxis of recurrent or continuing attacks. Importantly though, the basis of therapy should be the delineation of any patterns to the headaches and their relationship to stressful situations, both physical and psychological. The recognition of these particular patterns of occurrence and the identification of physical, stressful precipitants such as light, noise, smells, and food-stuffs may by their elimination or modification, be of significant therapeutic benefit. It is of advantage to have the patient keep a diary of their headaches, along with any dietary indiscretions. As well, helping the patient to gain insight into the potential psychologic causes of their headaches and counselling directed at modifying their reaction to stressful situations may be all that is required.

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Pharmacologic management is essentially the same for all vascular headaches and consists of treatment of the acute attack and prophylaxis. In the acute attack, of all agents used, the various ergotamine containing products have been the most effective. It is important that these vasoconstricting medications be administered early in the attack. It follows that these agents are more efficacious in the classic attacks where a prodrome acts as a flag for the oncoming headache. There are potential serious side effects which accompany their use and dependence may develop. A variety of other agents with vasoconstrictive properties have been tried with less success, although medications such as caffeine which exert a synergistic action with ergotamine have been of benefit as have a combination of these agents with an antinauseant or sedative. A whole host of analgesics have been employed and on occasion with severe and prolonged headaches, narcotic preparations such as meperidine have been employed for the prophylaxis of migraine but, except for methysergide, a serotonin antagonist, their success has been variable at best, in terms of reduction of headache frequency or severity. These agents have included propranolol, diphenylhydantoin, cyproheptadine, clonidine, antihistamines and antidepressants. The vast array of old and new medications used for the prophylaxis of this condition reflects the difficulty in finding a consistently appropriate agent, although in individuals dramatic results with any of them may occur. Such responses, whether they are related to a placebo effect or not, should not be considered unusual and should be used to the patient's advantage.

Present evidence suggests that oral contraceptives should not be used in migraine sufferers because of exacerbation or worsening of the headache and because of the possibility of thrombogenic complications occurring in this higher risk population. Diuretics have been employed with some limited success in women who have edema premenstrually and whose headaches occur during that time.

Psychotherapy, biofeedback and other methods of altering or attempting to control the patients reaction to stress have been of benefit as well. As yet, however, no one single pharmacologic or other therapeutic modality has been consistently successful in alleviating or modifying all the attacks in all individuals.

In summary, migraine headaches can be considered a paroxysmal condition frequently precipitated by stressful, physical or pharmacologic events which may, at first, produce vasoconstriction and then vasodilatation of the extra and intracranial vessels accompanied by a sterile inflammatory response which produces the head pain, the vasoconstrictive phase being related to the prodromes. For the most

part, it is a benign condition which, nevertheless, has caused great suffering and a loss of work and social enjoyment for those who are afflicted.

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The Declaration of Independence

Colonial Medical Contribution and Canada's Role

(In Recognition of The American Bicentennial)

D.W.B. Johnston

The bicentennial celebrations of the Declaration of Independence have focused world attention on this historic document. The important part which Canada played in it's origin has not received the recognition it deserves. Equally unrecognized are the very important effects which the Declaration and subsequent events have had on the moulding of our political and cultural processes in Canada. As members of the medical profession we will be surprised and proud to learn that five of our medical colleagues supported and signed the Declaration in 1776.

The capture of Quebec by Gen. Wolfe in 1759 followed as it was by the Treaty of Paris in 1763 and the Quebec Act of 1774 led inexorably to the Declaration of Independence in 1776.

One look at a map of North America in 1760 (Fig. 1) shows that the thirteen colonies were contained to a narrow strip of Atlantic seaboard, surrounded completely by the huge territories of New France. The colonists were constantly threatened from the North and from the West and depended upon the English for defense. By the treaty of 1763 and subsequent Quebec Act of 1774 this threat was removed, as was, of course, dependence upon Britain for defensive support. Verchennes, a discerning French statesman of the time, was quick to note the importance of this change and stated, "England will soon repent of having removed the only check that keeps her colonies in awe."

To the English parliament, however, the acquisition of these huge territories extending from Hudson's Bay to Florida meant more and more administrative and military costs. The Quebec Act of 1774 by it's very generous terms placated the French Canadians but at the same time infuriated the colonists. The latter felt betrayed as the Act had turned over all the rich lands west of the Appalachians to the hated Roman Catholic, French Canadians. Adding insult to injury the British parliament, in order to defray expenses for administrative and military costs, passed the following Acts of parliament in which, of course, the colonists had no representation:

1765 - The Stamp Act.
1766 - The Declaratory Act.
1767 - The Mutiny Act.

Tea Party).
1774 - The Quebec Act.
1773 - The Tea Act (leading to the Boston



1764 - The Sugar Act.

England by this time was ruled by the aristocracy. George II is quoted as saying, "Ministers are King in this country". We cannot, therefore, lay all the blame on the monarchy although by the time of George III, the monarchy had (by devious means) gained control over the aristocracy. There was in England at this time much political turmoil. As a result of the Industrial Revolution and the failure of the government to represent majority opinion, radical thoughts sprang up. A leader in this movement was John Wilkes who was expelled from parliament, imprisoned, but finally honoured by being elected Lord Mayor of London. The Junius Letters, written anonymously, attacked the King and Parliament and goaded them into backlash fury. Acceding to the colonists wishes were taken as being signs of weakness and were rejected. It is true that Pitt, who by now was an old man, did use his influence to effect repeal of the Stamp Act. Birk and Fox likewise argued in parliament for a temperate stand but all compromise was rejected and events proceeded, driven by political and geographical equations to the Declaration of Independence and the war known as the American Revolutionary War.

Canada, therefore, played an important part in its origin but as well Canadian history was to be altered completely by its final outcome. A.R.M. Lowther has stated, "The American Revolution bore not one nation but two in its womb". When the war ended one of the conditions demanded by Britain was that all Loyalists were to be given amnesty and that any who wished could leave the colonies. Forty thousand of these English speaking loyalists entered Canada. This fact has led to many of our problems but at the same time to many of our successes.

It is of interest to the medical profession that five physicians signed the Declaration and that one physician, Josiah Bartlett,

was the first member of Congress to vote for it. The following are short biographical sketches of the five signators and their place is appropriately shown on the signature roll (Fig. 2).

Josiah Bartlett, 1729 - 1795. This physician had apprentice training only, which was the common practice in the colonies at that time. In 1750 he opened practice in Kingston, New Hampshire. In 1775 he was dismissed as Justice of the Peace and Colonel of the Militia because he had adopted the patriotic cause. He was the first member of the Congress to vote for the adoption of the Declaration of Independence and the remainder of his life was spent in politics and law, where he became Chief Justice and completed his career as Governor of New Hampshire.

Lyman Hall, 1731 - 1790. Graduated from Yale in 1747 with an A.B. degree and did apprentice medicine in Connecticut. He moved to Georgia and practiced medicine in the 1750's. He was elected to the Continental Congress in 1775. He continued to practice medicine and become Governor of Georgia in 1783.

Benjamin Rush, 1745 - 1813. Studied medicine in Edinburgh and received his M.D. degree in 1768. He had previously done apprentice training in New Jersey, after receiving an A.B. degree from Princeton. He was elected to the Continental Congress in 1776. He was asked to resign from politics in 1778 because he was one of those who undertook the task of replacing General Washington as leader of the Armed Forces of the Colonies. He continued his medical career in Psychiatry and published the first American book on medical diseases, entitled, "Medical Enquires and Observations Upon Diseases of the Mind", 1812.

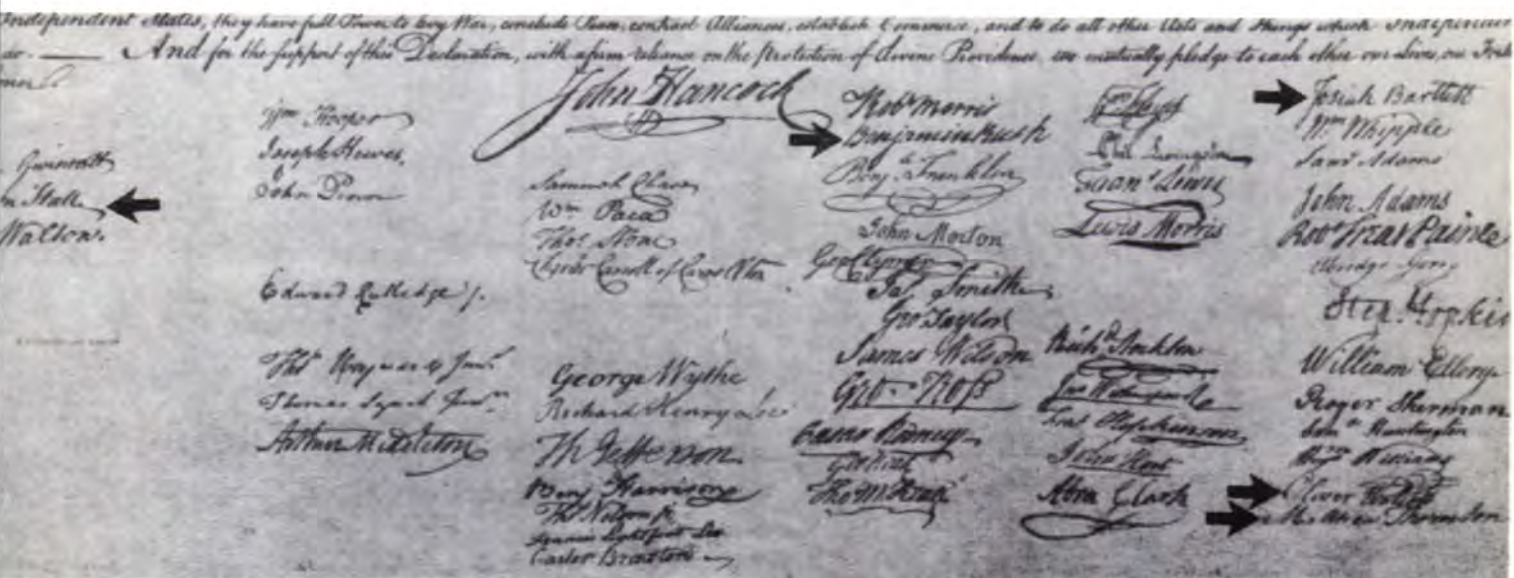
Matthew Thornton, 1714 - 1803. Studied medicine in Worcester, Mass., as an apprentice. He served in the French War as

a surgeon; was elected to the Continental Congress in 1776. Later he sat on the Bench in New Hampshire and was a member of the House of Representatives.

Oliver Woolcott, 1726 - 1797. Graduated from Yale in 1747 and entered politics in 1771. He was elected to the Continental Congress and commanded a Brigade at the Battle of Saratoga. In 1796 he was elected Governor of Connecticut.

Another and much better known signatory was Benjamin Franklin. This unusual man proficient in all else was not a physician. He was, however, closely associated with the leading medical figures in the colonies and also in London where he had spent several years. He was a close friend of Lettson and Fothergill. No doubt because of his close association with these medical men he was an ardent supporter of the new Pennsylvania Hospital out of which grew the famous University of Pennsylvania Medical School. Always an activist he wrote a book supporting the new hospital. It is entitled, "Some Account of the Pennsylvania Hospital from the First Rise to the Beginning of the Fifth Month, May, 1754". The book was planned and written with the object of rallying support for this new and striking hospital.

In this bicentennial year it is natural for Canadians to look back and survey the important part Canada played in the American Revolution. It is also stimulating to learn that the medical profession was ably represented in the framing of this historic document, the Declaration of Independence.



The Signatures of the five Physicians on the American Declaration of Independence (Arrows)

I. Introduction:

It has been estimated that 15% of all couples in this country are involuntarily infertile. In approximately 40% of these cases a male factor is responsible. The problem may be one of a total absence of sperm (azoospermia), a sperm count too low to achieve fertilization (oligospermia), severely retarded sperm motility or viability (asthenospermia) or in rare instances a mechanical or anatomical disorder (impotence, severe hypospadias, retrograde ejaculation). At the present time, at least on this continent, there are virtually no treatment modalities available which have proven satisfactory in improving sperm quantity or quality in patients with significant semen abnormalities. This leaves approximately one of every twenty couples unable to achieve a pregnancy on their own.

In the past when male infertility was diagnosed, people could turn to adoption as a means of achieving a family. This is no longer an alternative for most people. Widespread use of effective contraception and the availability of therapeutic abortion has drastically reduced the number of adoptable babies available. In many centres a couple applying for adoption face a waiting period of two or more years and are therefore forced to consider other alternatives if they are to have children. Artificial insemination is the only other option for the majority of these people.

Artificial insemination refers to the technique whereby semen is "artificially" introduced into the genital tract of a woman. Although the practice has been carried out in animals for centuries it was not until 1970 that Dr. John Hunter, using the semen of a husband with hypospadias, performed the first successful insemination in humans.¹ The first case in North America was reported by J. Marion Sims in 1866. Because of moral, religious, and legal confusion surrounding artificial insemination in humans it was initially used infrequently and with little publicity. However, increasing acceptance by all spheres of society over the past 50 years combined with a great deal of exposure in the news media, especially in the past decade, has resulted in a rapidly rising number of patients requesting this procedure. It is estimated that in the United States alone there are over 250,000 people who are products of artificial insemination

and that 10,000 to 20,000 children are being born annually in the country as a result of this technique.

II. Definitions:

There are three types of artificial insemination:

1. Artificial Insemination Homologous (A.I.H.) where the husband's semen is used. This technique may be used where there is an anatomical or psychological condition preventing natural insemination in the face of fertile semen (impotence, hypospadias, etc). Intrauterine insemination of homologous semen is being advocated in cases where there is a good count but low semen volume or sperm motility or when impenetrable cervical mucus is considered the cause of infertility but results are difficult to interpret.^{2, 3} A.I.H. using a split ejaculate has been employed in cases of oligospermia but the outcome in most series has been poor with regard to pregnancy (in the majority of men the first part of the ejaculate contains the highest concentration of sperm so that only this portion is collected and used for insemination). It is generally conceded that A.I.H. is rarely indicated and that the use of A.I.H. to circumvent oligospermia is not successful.^{4, 5}

2. Artificial Insemination Donor (A.I.D., Heterologous Insemination) where semen from a fertile donor is used. A.I.D. is the type of insemination most commonly performed and carries with it the greatest potential for psychological, ethical and legal problems. A.I.D. may be carried out using either frozen banked semen or fresh donor semen.

(a) Frozen Semen: There are several advantages to be gained by preserving semen in a frozen state. Specimens can be obtained and frozen at a time convenient to both donor and laboratory. Having a ready supply of semen samples from a variety of donors allows easier matching of donor to recipient's husband. By dividing the ejaculates into several portions prior to freezing, patients may be inseminated more than once in each cycle from the same donor.

The major drawback to this technique is the adverse effect that the freeze-

thaw process has on semen quality. Sperm motility is greatly reduced and the ability of sperm to penetrate cervical mucus is significantly affected. The result is a decreased fertilizing capacity, an effect which is reflected in the lowered pregnancy rate when this method of insemination is utilized.

The theoretical advantages of the freeze-preservation procedure have led some investigators to employ it in an attempt to increase the fertility of semen in oligospermic men. Several samples are collected from these patients over a period of weeks, the specimens being frozen as they are collected and later thawed, pooled and centrifuged in order to increase sperm concentration prior to A.I.H. Unfortunately, pregnancy rates are discouraging.

(b) Fresh Semen: In most centres where artificial insemination is performed the use of fresh donor semen is preferred. The sperm sample is deposited in the patient's vagina within one to two hours of its collection by the donor. The specimen may be used in its entirety or divided for the insemination of two patients.

The advantages of this method include the use of a semen sample in which there has been little interference with sperm quantity or quality, and most important a high pregnancy rate. As well, there is virtually no risk of confusion of specimens whereby a donor of inappropriate racial or other characteristics is used for a particular patient, a possibility which albeit remote could occur more easily when banked frozen semen is used.

The obvious drawbacks are both donor and patient inconvenience and greater difficulty with matching since a patient can only be inseminated once in each cycle with sperm from any given donor.

3. Combined Artificial Insemination (C.A.I., A.I.H.D.) is a technique where the semen from an oligospermic husband is mixed with that of a fertile donor prior to insemination. The proponents of this method suggest that the husband's low count is bolstered by the addition of normospermic semen and the possibility that a sperm from the

husband will fertilize the ovum is increased. On the other hand, if there is a defect in the husband's semen that has prevented him from impregnating his wife, this abnormality might theoretically have an adverse effect on the added donor sperm. This procedure is not commonly performed and can more easily be accomplished by simply advising the couple to have intercourse on the days when A.I.D. is done.

III. The London Program:

London is the only city in Southwestern Ontario where a program of artificial insemination is carried out. It has been active in its present form for approximately three years although inseminations were done on a less organized basis for several years prior to that. The program is based in the Reproductive Endocrinology Clinic at University Hospital. In this centre, inseminations are performed using fresh donor sperm.

A. Patient Selection.

By the time a couple presents with a request for A.I.D. a certain amount of selection has already occurred. The concept of artificial insemination obviously invokes a considerable amount of discussion between a husband and wife, since this cannot be a unilateral decision. Usually when one or other of the partners is undecided or opposed to the procedure they will defer from requesting a referral to the Clinic until these doubts are resolved one way or the other. Because of this the majority of couples seen are highly motivated and secure in their decision. Nevertheless, at the initial visit each couple is interviewed at length by a Nurse Practitioner and one or two physicians and a detailed questionnaire is completed in order to assess their acceptability for the program and to explain the procedure and its implications.

The results of previous investigations concerning the couple's infertility are obtained from the referring physician. It is essential that accurate results of at least two semen analyses are seen to confirm the diagnosis of male infertility. Consistent moderate to severe oligospermia (less than 20×10^6 sperm per c.c.) is usually necessary before a couple is considered for A.I.D. If there is evidence on history or laboratory examinations that there may be a reversible etiology for the oligospermia the husband is seen by an Andrologist or Urologist.

At the initial visit, blood is taken for grouping and the woman is given a general as well as a gynaecologic examination. She is instructed in keeping basal body temperature graphs in order that the time of ovulation can be ascertained. Over the next few weeks a hysterosalpingogram is

performed to ensure that there is no fallopian tube obstruction or uterine abnormality.

If there is no contraindication to A.I.D. both husband and wife sign a consent form which outlines various aspects of the procedure and the responsibilities of the couple.

B. Procedure

Inseminations are performed twice monthly for each patient, two days apart, in order to coincide with her most fertile period. The days are chosen based on the time the patient ovulates as determined by menstrual history and previous basal body temperature graphs. Since sperm are capable of fertilizing for up to 48 hours after deposition in the genital tract, a period of approximately four days is "covered" should the patient ovulate earlier or later than is usual for her. Basal temperatures are recorded continually and examined monthly to determine retrospectively whether A.I.D. was performed at an appropriate time. On the first day of each menstrual period the patient calls to arrange her appointments for the succeeding cycle so that she knows 10 to 12 days in advance of when the inseminations will be done. If there is a problem with an irregular ovulatory pattern, Clomiphene citrate is administered so that ovulation may be accurately timed.

Inseminations are performed in the mornings and an attempt is made to keep the procedure as uncomplicated and comfortable as possible. The patient is gently examined and the cervix located with the examining fingers. A plastic or metal cannula is inserted and the donor specimen injected against the cervix. After lying still for approximately 10 minutes the patient leaves.

In some centres the specimen is deposited in a small cap which is placed over the cervix and later removed at home by the patient. Intra-uterine or intra-cervical inseminations are advocated by some authors, especially in cases where A.I.H. is being performed because of oligospermia or asthenospermia. With these techniques, the risk of introducing infection is increased and if more than 0.3 c.c. of semen is injected, vasomotor instability, nausea and severe uterine cramps may occur as a result of the high prostaglandin content of the semen. It is our feeling that the more atraumatic and simple the insemination is, the less anxiety is evoked in the patient toward a procedure that may have to be repeated many times.

C. Donor Selection.

The success of a therapeutic insemination program is dependent on the appropriate selection of donors. For obvious reasons this aspect is of great concern to patients as well.

Numerous articles have been written dealing with the screening of potential sperm donors. The protocol in this centre has been established based on suggestions from some of these authors and in accordance with the recommendations of legal authorities.⁶

Prospective donors are interviewed and a detailed personal and family history obtained to rule out the presence of any genetically transmissible diseases or abnormalities. A complete physical examination is performed and blood taken for metabolic and chromosome studies as well as blood type and VDRL. In addition a semen analysis is performed. Physical characteristics (height, weight, hair and eye colour, race) and educational background of the donor are recorded. The "ideal donor" is a married man with two normal children (proven fertility) and over the age of thirty-five at which time most latent hereditary conditions (Huntingtons Chorea, etc.) should have become manifest. However, in London which is a relatively small centre, such restrictions are impossible if a sufficiently large donor population is to be maintained. Finally it must be determined that donors are in no way related to potential recipients.

Donor candidates are required to sign a consent form waiving any claim over children born through artificial insemination. If a donor is married it is necessary that his wife be fully informed and consent to his participation. The development of a urethral discharge or any other condition which might preclude his use of the program must be reported. The remuneration given to donors for each specimen varies from centre to centre.

In the past because of the limited number of donors available, very little matching of donor to patient's husband was possible in London's program. Fortunately this caused no problems. At the present time matching as closely as feasible to such characteristics as hair and eye colour, body build and blood type is done. Since fresh semen insemination is performed a particular donor can be used only once in any given patient's cycle. Therefore a minimum of three donors are matched to each patient with two of those donors being randomly chosen for the two inseminations performed each cycle. In this way it would be impossible to link any one donor to a particular patient should a paternity investigation be launched for any reason.

In a program such as this, anonymity for both patient and donor is essential. Donors are committed to refrain from any attempt to identify the patient or the child who may be conceived through A.I.D. Similarly recipients are given no information as to the identity of donors. The physical arrangement of the Clinic is such that donors and patients do not come in contact with each other. No records are kept of which donor was used for a given insemination.

Donors are notified approximately one week in advance of when they are needed and are required to remain sexually continent for a minimum of 48 hours prior to the appointment day. Specimens are produced at home by masturbation into a clean glass jar, delivered to the clinic and used for insemination within one or two hours from the time of collection. Ideally a donor should not be used more frequently than once every two weeks.

D. Success Rate

The reported success rates of artificial insemination range from 35 to nearly 100 percent with an average of 60 to 70 percent.^{7, 8} In the London program, the pregnancy rate is 75 percent with a subsequent spontaneous abortion incidence of 12 percent and no cases of congenital anomalies. This rate is determined by excluding those patients who discontinued therapy after less than six cycles of A.I.D. Reasons for discontinuation include patient relocation, adoption and discouragement. It is stressed to couples that they should plan on persisting with A.I.D. for a minimum of six months since it is in this group of patients that the highest pregnancy rate is demonstrated. Other studies have shown that 90 to 95 percent of those women who will achieve a pregnancy through heterologous insemination will conceive within the first six months of treatment. If the pregnancy rate in our series is computed at three months rather than six months, the success is approximately 47 percent. At the present time there are approximately 35 couples undergoing therapeutic insemination in this centre with eight to ten patients being referred monthly for consideration.

IV Psychological, Legal and Ethical Aspects of A.I.D.

A. Psychological.

The addition of an extramarital aspect to the normally private and personal matter of procreation poses several potential difficulties for both husband and wife. A study by David¹⁰ in which couples were questioned regarding the attitude of the husbands toward their infertility, feelings about A.I.D. versus adoption, feelings concerning the pregnancy, etc. revealed that the majority of husbands had guilt

feelings with respect to their manhood, their inability to fulfill the expectations of their families and society as well as self-accusation toward their wives who were forced to undergo therapeutic insemination because of the husband's infertility. A large percentage of the wives also expressed guilt feelings directed toward their husband's infertility.

On the other hand, there was unanimous agreement that A.I.D. was superior to adoption. The involvement of the husband throughout treatment and especially the pregnancy and delivery was viewed as one of the prime benefits of artificial insemination. The inheritance of the child of his/her mother's genetic make-up was felt to be a major advantage by all couples. There was definitive consolidation of the marital relationship evident during therapy as well as after delivery. Other studies have shown a surprisingly low rate of marital disharmony and divorce in couples who had had children by A.I.D.¹¹ The favourable attitude held by these couples toward heterologous insemination is evidenced by the significant number who return requesting the procedure for the second and third time. It is also clear however that with the increasing demand for A.I.D. there is a definite need for closer investigation and follow up from a psychological viewpoint than is currently being employed in most centres.

B. Legal.

The greatest area of uncertainty with respect to A.I.D. is in the legal status of children conceived through this technique. Are such children legitimate? What is the status of the child with regard to succession of property or in the event of marital separation? Does A.I.D. constitute adultery or a marital offence? Can the physician performing the procedure be held civilly or criminally responsible for his acts?

There is very little legislation in Canada governing artificial insemination. There has been no legal recognition afforded the procedure and it is therefore, by default, not illegal.¹² Judicial opinion on the question of whether A.I.D. constitutes adultery is divided.

In Canada, if the husband consents to the A.I.D., a petition for divorce on the ground of adultery would fail because connivance (the adultery has been caused or knowingly permitted by the other spouse) is an absolute defence.¹³ It is probable, according to legal authorities, that even in the absence of the husband's consent, a Canadian court today would find that A.I.D. does not constitute adultery.

The question of legitimacy has not yet arisen in Canadian courts. In several American states, legislation has been passed which declares all children born through A.I.D. to be the legitimate

offspring of the couple involved. A child may be legitimated by adoption but because of requirements under the Child Welfare Act¹⁴ this would require the consent of every person who is a parent including the donor, which would present an obviously impossible situation. The question of legitimacy has critical bearing on rights of succession of these children as well as on the right of support should the marriage dissolve. The Ninth Report of the Royal Commission on Family and Children's Law stated: "We believe that when a child is conceived through A.I.D. within marriage, all the legal protections of the marital relationship should be automatically in force."⁶

Clearly the legal ramifications of heterologous insemination are poorly understood and require definitive legislation. To this end, both members of each couple requesting A.I.D. must sign a consent which states their responsibility toward a child which may result and absolving the physician involved of responsibility for any complication of pregnancy or defect in the offspring. Couples are strenuously advised not to discuss the fact that they are undergoing A.I.D. with friends or relatives. In some centres, it is recommended to such couples that they obtain legal advice prior to participating in the program.

C. Ethical.

The moral and ethical implications of A.I.D. have been discussed by legal, religious and medical authorities in various publications with few consistent decisions or recommendations resulting. Many couples contemplating artificial insemination face difficulties of this nature when conception by such techniques is contraindicated because of their religious or ethnic beliefs and customs. Situations such as this can add considerable anxiety and/or guilt to a procedure which in itself may provoke significant concern.

Editor's Note:

Section 73(5) and (6) of the Child Welfare Act R.S.O. 1970, ch. 64 permits the court to dispense with the consents required in an adoption proceeding where it is satisfied that "every reasonable effort" has been made to obtain consent and, having regard to the best interests of the child. Although the Ontario Court of Appeal has said in a recent case (*Re Liffiton et al and Campbell* [1972] 26 D.L.R. (3d) 260 (C.A.)) that the consent of natural parents should be dispensed with only for the most serious reasons, it is reasonable to assume that the courts would be sympathetic to a request to dispense with consent in an A.I.D. situation where one natural parent would be anonymous.

The Editor

Some philosophers and scientists, recognizing the need for legislation in this area, have seriously questioned the degree of government control that should be allowed over artificial insemination through such legislation. The spectre of eugenic control arises when suggestions are made that only genetically superior individuals be used as donors. The complaint has also been advanced that with the use of carefully selected donors conception is no longer a random union of genetic pools and that the normal evolutionary process is thus interfered with.¹⁵ Although prognostications such as these have been put forth for many years by authors and philosophers, it is highly unlikely that our society would ever allow such genetic manipulation. Nevertheless, it will be necessary for our legislators to act with a great deal of responsibility should guidelines for the use of A.I.D. be established by the judiciary.

One aspect of A.I.D. that is occasionally mentioned is the possibility of marriage of two children conceived through heterologous insemination from the same donor. The risk of congenital malformations in children resulting from such a union would be considerable. The likelihood of this occurring is extremely remote as predicted by McLaren in his discussion of the biological aspects of A.I.D.¹⁶ However, it is imperative when therapeutic insemination is being performed on more than one couple from a smaller community that different donors be used.

Finally, the question of whether a child who is a product of A.I.D. should be informed of this fact has drawn some attention. It is the opinion of the vast majority of authorities that this is unnecessary and may in fact be damaging to the child and/or his father.

Conclusion

Because of the steadily increasing demand for A.I.D. and the myriad of potential difficulties that may arise as a result of this practice, it is incumbent on the physicians involved to exercise great care in such areas as patient selection, donor selection and documentation. Thorough counselling of couples with regard to the ethical and legal issues inherent in the procedure is of paramount importance. There is no doubt that A.I.D. is an excellent alternative for selected couples and will continue to be so until successful methods of reversing male factor infertility become available.

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November, 1976

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The Dr. William Pelton Tew Memorial Fund

The Board of Governors of The University of Western Ontario have authorized the establishment of a fund to perpetuate the memory of the contribution made by Doctor Tew to the University, medical students, patients and friends. The trustees of the fund will be Dr. W.L. Tew or his delegate, The Chief of Obstetrics & Gynaecology at Victoria Hospital, the Chief of Gynaecology at the University Hospital, the Chief of Obstetrics & Gynaecology at St. Joseph's Hospital and the Dean of Medicine.

The goal of the fund is \$50,000. The interest will be used to establish a Dr. William Pelton Tew Visiting Professorship. A substantial honorarium and expenses will enable the Department of Obstetrics & Gynaecology to invite, annually, a world authority to "live in" the department for a period of at least one week. During this period, the visiting professor would take part in all departmental activities, i.e. medical student and resident teaching and research programs, present one formal lecture to which all interested persons would be invited and

where appropriate, would be requested to undertake a review of all departmental activities. In this way, valuable use could be made of the healthy scrutiny which an outside observer could provide. The time of visitation would be made widely known in order that former residents and other physicians might visit the department at this time.

The format of the memorial would be reviewed from time to time by the trustees and might be changed as needs change. In establishing this fund, Doctor Tew's contribution to Obstetrics & Gynaecology will be perpetuated in a fresh and productive manner which characterized the man himself.

Cheques should be made payable to the Dr. William Pelton Tew Memorial Fund and sent directly to the Office of the Comptroller, Stevenson-Lawson Building, The University of Western Ontario, London, Ontario. A receipt for tax purposes will be returned and the Tew family will be informed that a contribution has been made in your name.

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Wednesday, April 20 and Thursday, April 21, 1977
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Wednesday, April 27, 1977
University Hospital

May, 1977 (actual date to be confirmed)
St. Joseph's Family Medical Centre

Friday, May 6, 1977
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May 13 and 14, 1977
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Wednesday, May 18, 1977
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The above program is subject to alteration and additions.

For further information, please contact:
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