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The NOVA SCOTIA MEDICAL BULLETIN

Editorial

"Time Will Tell"

In the December 1963 issue of The Nova Scotia Medical Bulletin the plan proposed by the Medical Society of Nova Scotia for "MEDICAL SERVICES INSURANCE" was published.

The physicians of Nova Scotia owe a debt of gratitude to the Special Research Committee This Committee has worked unselfishly to produce the Brief to the Royal Commission and the proposed plan of the Medical Society. The results of these efforts must await the findings of the Royal Commission which are expected in April.

In the same issue, Dr. F. Murray Fraser commented: "Let us not delude ourselves. By inviting the Government to participate in a plan of subsidization of medical care of such a nature and financial scope, we are inviting eventual Government control." The two defects as noted by Dr. Fraser, are lack of comprehensive care and lack of compulsory insurance.

The correction of these defects could be forced on the public of Nova Scotia by those individuals wishing a complete welfare state or by one of the political parties in a give-away program in an effort to become elected. Were this to be accomplished, and indeed the risk is present and growing, then the cost of such a program would be so prohibitive that Government control would be a must.

The Special Research Committee will need the support of all to present the viewpoint of medicine, and we must be prepared to subjugate our own selfish individual interests so that the motivating force will continue to be the common good of Medicine and of the public of Nova Scotia.

Will this happen? I am a pessimist. I remember the division of the Medical Society over the problem of Radiology. I remember the selfish interest that destroyed months of dedicated work by the last Fee committee. Time will tell.

M.G.T.

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Turning Points In Cell Biology*

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In the Spring of 1953, there appeared in the English scientific journal, NATURE, a short and rather modest paper which represented one of the turning points in the history of science. It may be said that the two young authors, one an American biologist just out of graduate school, James Watson, and the other an Englishman trained as a physicist, Francis Crick, launched a revolution in the way biologists think about their subject.

The first such great turning point in modern biology began in 1859, when Charles Darwin's "The Origin of Species" was published. The gradual evolution of species under the influence of natural selection, a concept which was so violently resisted by the orthodox both of science and religion, has now been almost universally accepted, no longer as a hypothesis, but as a fact. It is now recognized that natural selection operates by gradually eliminating those individual animals, plants or bacteria which are less well adapted to their environments than their more successful 'cousins'. What determines the extent to which an organismis adapted to its environment is the nature of the hereditary material it has received from its parents, that is, its genes. Full development of evolutionary theory began in 1900, when the modern science of genetics began with the rediscovery of the careful work of the Czech priest, Gregor Mendel. The genes which we receive from our parents will normally be passed on to our offspring in unchanged form through the sex cells; very rarely, we may produce a gene which is an imperfect copy of the one we received from our parents; such a genic change is called a mutation. Perhaps one mutation in a thousand will confer on an individual a greater fitness, or adaptiveness; it is by the natural selection of these exceptional adaptive mutations and of beneficial combinations of genes that the evolution of species occurs.

The second great turning point in modern biology actually began two years prior to the appearance of the "Origin of Species", with the publication in 1857, of a paper by Louis Pasteur, entitled "Memoire on the so-called Lactic Fermentation". In this memoir, Pasteur showed that the souring of milk, due to the fermentation of milk sugar to lactic acid, was caused by the growth and metabolism of the organisms which we know today as bacteria. Pasteur then turned his attention to the alcoholic fermentation of wine and beer, and attributed this complex process to the growth and metabolism of yeasts. It is difficult to imagine the open hostility with which the most prominent scientists greeted Pasteur's germ theory of fermentation. The great chemist, Friedrich Wöhler, published in the celebrated scientific journal, Annalen der Chemie, a hilarious satire, in which he supposed that Pasteur's yeast cell must be shaped like a distillation apparatus, taking sugar into its machinery and turning out alcohol and carbon dioxide, just like a miniature organic chemist, a little

*Adapted from a radio broadcast presented on March 15th, 1963, in the lecture series "Revolutions in Thought and Action", CBC Radio.

Wöhler, so to speak. Another great chemist, with whom Pasteur carried on a running battle for some years, Justus von Liebig, said Pasteur's ridiculous views about germs causing fermentation reminded him of the opinion of a child "who would explain the rapidity of the Rhine river by attributing it to the violent movement of the many millwheels at Mainz". Liebig believed that fermentation was due simply to the presence of chemical catalysts, like the inorganic catalysts used by chemists to speed up chemical reactions, and not to the growth of living cells.

The Pasteur-Liebig conflict was resolved in 1897 with the discovery that a juice pressed from fresh yeast, but free of living cells, could also ferment sugar to alcohol. Liebig was thus perfectly right: fermentation is caused by catalytic agents, now called enzymes, and this process does **not** require the presence of living cells. But Pasteur was also perfectly right: the enzymes causing fermentation are **produced** by living cells and are normally part of their structure. Just as in many another scientific feud, both sides were right in their facts, which were based on experimental data, and wrong in the theories which they deduced from these data.

The discoveries of Pasteur, Liebig and others led in the new century to an intensive study of the processes of fermentation and respiration in animal, plant and bacterial cells. It was found that a different enzyme was necessary to catalyze each step in these complex chemical processes. There thus rose the concept that enzymes were the prime determinants of cell metabolism and that each chemical reaction in the living cell was catalyzed by a specific enzyme. Biologists thus affirmed that the secret of **cellular specificity** — that is, why one cell is different from another — and **cellular activity** — why cells divide and differentiate, move and metabolize and secrete and so forth — lay in analyzing the kinds of enzymes present within living cells.

In the second and third decades of this century, there raged yet another scientific controversy about the nature of enzymes. One large school maintained that these biological catalysts were proteins, like hemoglobin or egg white, while others argued that enzymes were not proteins but some other, possibly unknown, species of molecule. In 1926, the first step in the resolution of this conflict occurred, when James Sumner of Cornell purified and then crystallized the enzyme urease and showed that it was in fact a protein. Although even within the last 7 or 8 years some scientists have claimed that certain enzymes are not of protein nature, it is safe to say that of the several hundred enzymes, coming from human, animal, plant and bacterial cells, which have been carefully purified and analyzed, all have proven to be proteins, although, as in the case of hemoglobin, some may have non-protein pieces attached to them. Proteins consist of long chains of smaller units, called amino acids, of which there are 20 different kinds in a typical protein molecule. Enzyme activity is due to the way in which these amino acids are arranged in the protein molecule.

Let me summarize what I have said so far about the situation in biology up to about 1930: — 1. The hereditary patrimony, which determines in any particular environment the fitness, the structure and function of all living things, consists of the genes, which all organisms inherit from their parents according to certain rules. 2. the chemical and biological activities of living cells and the differences between different types of cells lie in the nature of their enzymes and proteins. Now at this point, two problems loomed in the paths of biologists: — 1., in the first instance, the geneticists began to ask how the

genes exert their control over the structure and function of living cells and organisms. 2., in the second instance, the cell physiologists began to ask how the beautifully specific enzymes, which control cell function, are manufactured by living cells.

In the thirties and forties, came another dramatic turning point in biology, the discovery that genes are responsible for the manufacture of enzymes; with this discovery came the realization that the two problems which I have referred to were actually aspects of but one problem: how do genes control the manufacture of the enzymes? For it became apparent that genes exert their control over cell structure and function at one remove, so to speak; the genes see to the manufacture of the enzymes and proteins and these substances control the structure and function of cells.

In 1910, a physician named Herrick, working in Chicago, happened to examine the venous blood of a West Indian patient who was suffering from severe dizziness and headache. He noted the presence in the patient's blood of peculiarly shaped red blood cells, which he described in these words: "The shape of the red cells was irregular, and what especially attracted attention was the large number of thin, elongated, sickle-shaped and crescent-shaped forms." This serious and sometimes fatal condition took the name of sickle cell anemia, from Herrick's description of the shape of the abnormal cells. In studying the family pedigrees of patients suffering from sickle cell anemia, it was discovered that the condition was hereditary and was caused by a single recessive gene, that is, by a mutation; the patient must receive a mutant, defective gene from both of his parents.

In 1945, the great American chemist, Linus Pauling, showed that this mutant gene caused the anemia by producing an abnormal kind of hemoglobin; it was the presence of this abnormal protein in the red blood cells which caused them to become distorted and to form the bizarre sickle shapes. Pauling described this condition as a "molecular disease", that is, a disease caused by an abnormal molecule. Thus it was shown that the normal gene produces normal hemoglobin, whereas the mutant gene produces defective hemoglobin. It is from experimental evidence of this kind that the conclusion was drawn that genes act by controlling the kinds of enzymes and proteins manufactured by the cells of the body.

Enzymes are proteins. What are the genes composed of? Naturally, many scientists in the thirties and forties anticipated that the genes would ultimately prove to be proteins also. This anticipation has proven to be incorrect. Since the early days of genetics, and the work at Columbia University of Thomas Hunt Morgan in the early years of this century, it has been known that the genes are carried within microscopically-visible structures, known as chromosomes. Chemical analysis of the chromosomes carried out by histologists and biochemists revealed that they consist essentially of protein, and of another kind of substance called deoxyribonucleic acid, or DNA, for short. The gene might thus be composed of DNA or protein or both. Some of the early studies of the nature of the gene were performed by irradiating cells with ultraviolet light to induce mutations; it was found that the wave-lengths of the UV which were most efficient in inducing mutations or in killing bacteria were the very wave-lengths where DNA absorbed UV most strongly but not where the protein absorbed most strongly. Since only the UV light which was absorbed could have caused the mutations, it was concluded that DNA was at least part of the structure of the gene.

I would like to describe for you one of the lines of evidence which has shown that the gene consists essentially of DNA. This story begins in 1928, when a British microbiologist named Griffith performed a most exciting experiment (see Figure 1). He was interested in the way in which virulent strains of pneumococcus cause pneumonia in animals and man. Griffith heated a virulent strain of pneumococcus until all the cells were killed; these cells were not able to grow or to cause disease if injected into mice. He also used a non-virulent strain, which had not been killed by heat; these bacteria could grow nicely in liquid culture and would also grow in the bloodstream of a living mouse, but could not cause pneumonia. Griffith found that, if he injected

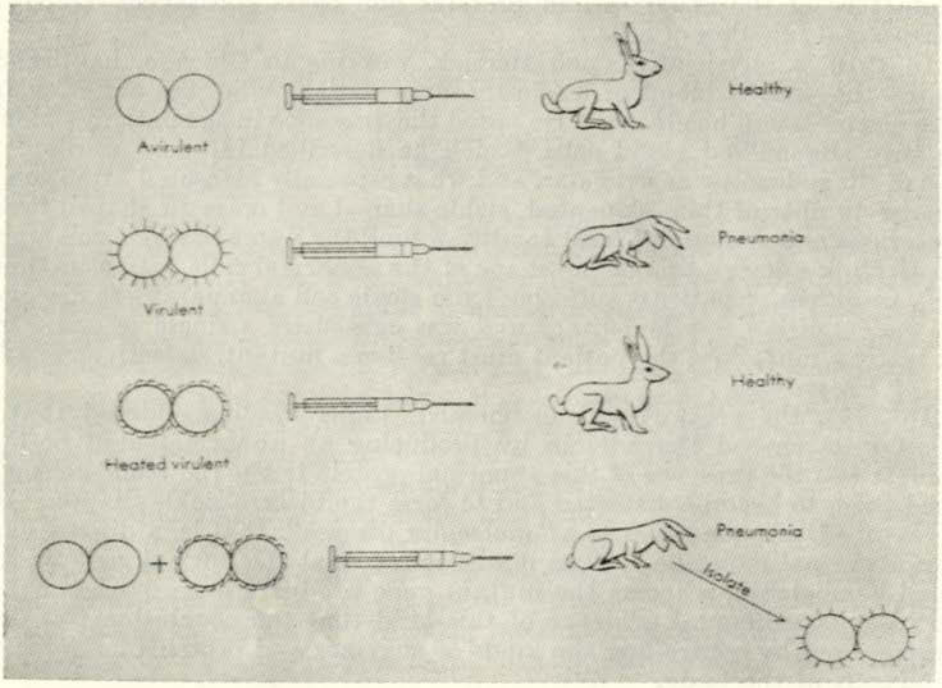
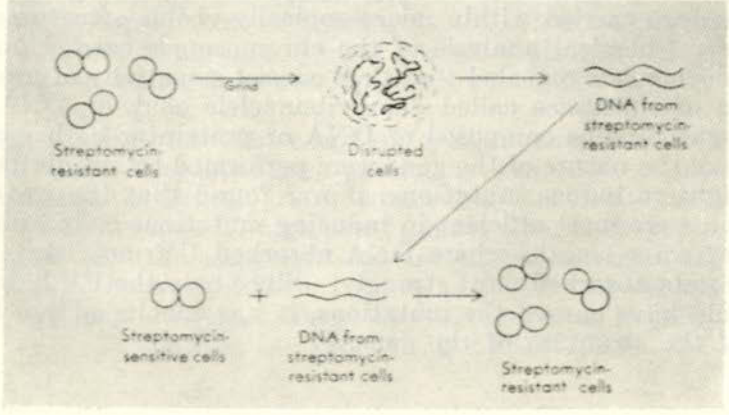


Figure 1: Top, transformation of pneumococcus *in vivo*. Bottom, transformation *in vitro*. In this illustration, streptomycin-sensitive pneumococcus cells are transformed to a condition of streptomycin resistance, by using transforming principle (DNA) obtained from streptomycin-resistant mutants. Figure courtesy of David Bonner (Heredity, Prentice-Hall, 1961).



simultaneously into a living mouse **both** the heat-killed strain **and** the living, non-virulent strain, the mouse soon succumbed to a fatal infection. From the blood of such infected animals he was able to recover living virulent pneumococcus of the same characteristics as the heat-killed strain. Griffith reasoned that some substance or principle which had come from the heat-killed, previously virulent strain had transformed the living, non-virulent bacteria in such a way as to make some of the latter virulent; these transformed cells were then able to pass on their virulence to the next generation, and to succeeding generations. In other words, something coming from the dead cells induced an inherited change in the living cells. Griffith's explanation of a hereditary transformation has proved to be correct; the substance which caused the transformation, coming from the heat-killed cells, has been called the transforming principle.

In the early thirties, a number of research workers showed that transformation could occur in a test-tube; one did not require the help of a mouse. They also showed that one could **extract** transforming principle from the virulent cells and that this cell-free material could cause the hereditary transformation. Careful study of the phenomenon suggested that the transforming principle consisted of pieces of the bacterial chromosome, that is, blocks of genes, which had been extracted from the donor virulent cells. When non-virulent recipient cells were treated with this material, some of these foreign genes were incorporated into the chromosome of the recipient cells, replacing the genes which were normally present in that particular place along the bacterial chromosome. It became clear that if one could identify the chemical nature of the transforming principle one would in fact have identified the chemical nature of the genes which were causing transformation.

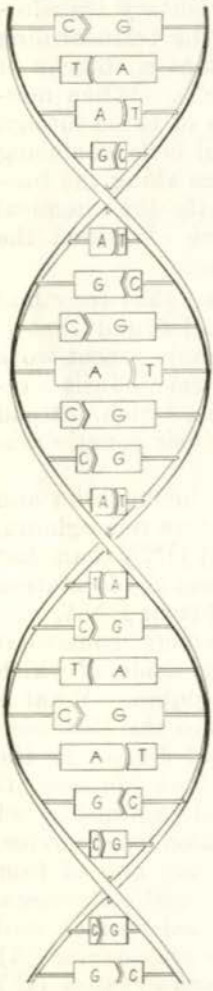
In 1944, scientists at the Rockefeller Institute announced that they had purified the transforming principle of pneumococcus and had found that it consisted of DNA. This classical experiment, together with more recent work on other organisms, especially viruses, have shown that the gene consists essentially of DNA. The only exceptions seem to be those viruses which, instead of DNA, have a related type of nucleic acid called RNA as their genetic material.

Since we have seen that the normal gene makes normal hemoglobin and the mutant gene which causes sickle cell anemia makes defective hemoglobin, it follows that the mutant gene must have a somewhat different DNA than that of the normal gene. The secret of the way in which genes control the formation of enzymes and other proteins must thus lie in the structure of their DNA.

We have seen that proteins consist of long-chain polymers, somewhat like nylon, except that the individual repeating units are amino acids, of which there are about 20 types found in a typical protein, like hemoglobin. What is DNA? Studies of the structure of DNA had already begun in the 19th century in Switzerland, and had been carried on in the United States in the twenties and thirties of this century. From the work of these pioneers, it became clear that DNA is also a long-chain polymer, like a protein, but instead of consisting of 20 different amino acids it is made of units called nucleotides, of which there are but four kinds. Each nucleotide possesses one of four possible nitrogen-containing molecules, which are what the chemist calls bases. Two of the four bases are of the class of organic molecules called purines, and two are of the class known as pyrimidines. The two purines are adenine (A) and guanine (G), and the two pyrimidines are thymine (T) and cytosine (C.) Thus, DNA, the molecular substance of the gene, consists of long chains of the

four nucleotides. One gene can differ from another in having different relative amounts of A, G, T, or C, or in having different sequences of these four bases.

We now come to the Spring of the year 1953, and the work of Watson and Crick, which marks the start of the fourth great turning point in modern biology. In their paper in NATURE, Watson and Crick proposed a model of the way in which the four nucleotides were arranged in the DNA molecule. Any model of DNA structure — and this was by no means the first — must fulfil four requirements: 1., it must be consistent with data obtained by studies of the way in which DNA scatters or diffracts beams of X-rays shot at them; such X-ray diffraction studies of DNA were published by two groups of English biophysicists in the same issue of NATURE in which Watson and Crick published their model of DNA structure; their model was to some extent based on the X-ray work, and was thus consistent with it. 2., The model must be consistent with the actual amounts of A, G, T and C, which had been found in DNA by Chargaff at Columbia University. 3., It must be useful as a guide to understanding how DNA reproduces itself or replicates at each cell division, thus accounting for hereditary continuity from one generation to the next. 4., It must be useful in accounting for the way in which DNA controls the manufacture of enzymes and other proteins, like hemoglobin. In addition to these four specific requirements, there is a fifth condition which is demanded of every hypothesis, and that is that it be fruitful in the planning of new experiments. Earlier models of DNA structure did not meet these conditions; the model of Watson and Crick met, and continues to meet, all five requirements.



The essence of the model proposed by Watson and Crick is that the DNA molecule consists of two long chains of nucleotides twisted round one another and held together by weak chemical bonds between adjacent bases, as illustrated in Figure 2. Imagine a very long ladder made of soft rubber, and suppose that we twist the ends of the ladder in opposite directions, until the ladder is coiled rather like a spring. The two twisted uprights represent the two chains of nucleotides, and the rungs represent the weak bonds holding the two chains together. The bonds which hold the two chains together link the bases. Watson and Crick found that such a double stranded model could exist **only** if at every region in either chain where there was, say, base A (a purine), there was corresponding to it in the other chain one particular pyrimidine, namely T; similarly, where in one chain there was purine G, there must be in the other the pyrimidine C. Thus, wherever one has A in one chain, one can only have T in the other; where one has G, one can only have C in the other.

A number of consequences emerge from this. In the first place it follows that in all DNA molecules, whether from the genes of viruses or man, the quantity of A must always equal the quantity of T and that of G must always equal that of C, since A is always paired with T in the oppo-

Figure 2: The double helix; DNA structure according to the Watson-Crick hypothesis. Figure courtesy of David Bonner, loc. cit.

site chain, and G always paired with C. One can easily imagine the suspense with which Watson and Crick studied the papers of Chargaff and the thrill they must have experienced when they found that this prediction of their hypothesis was borne out exactly by the actual composition of a variety of DNAs previously determined by Chargaff; the quantity of A was in fact equal to that of T, the quantity of G was equal to that of C.

The second consequence of this hypothetical structure is most important: if one knows the order of bases along **one** of the chains in the DNA molecule, one automatically knows the order along the other chain. This must be so, since each base in one chain can pair only with one specific base in the other chain, A with T, G with C, etc. Suppose we now break the bonds, or rungs, which connect the two chains, so as to untwist them. Now each of the chains can serve as a mould or template for the formation of a new partner chain, whose structure will be identical to that of the previous partner; we will thus have two new twin-stranded molecules identical to each other, and to the original molecule, as shown in Figure 3. Biologists believe that this is in fact the way in which at each cell division the DNA molecules of the genes replicate themselves; in this way, we pass on to our offspring genes identical to those which we, in turn, received from our parents. Thus is the genetic continuity of species assured.

Many elegant experiments have confirmed this hypothesis of the way in which genes replicate themselves. One study was published by the biochemist Arthur Kornberg, at Stanford University, three years after the Watson-Crick paper. Kornberg announced that he had extracted from bacterial cells an enzyme which could link or polymerize individual nucleotides to form long double chains: he had synthesized DNA in a test tube. One of the requirements for this test tube synthesis of DNA was the presence of a small amount of pre-formed DNA to serve as a template or primer; the order of the bases in the DNA formed by the enzyme was determined by the order of the bases in the primer.

For many years, Kornberg attempted unsuccessfully to synthesize the transforming principle in a test tube, by using the polymerizing enzyme and a small amount of transforming principle as a primer. In November, 1962, a charming young biologist named Rose Litman, working in Denver, announced that she had succeeded in synthesizing transforming principle, by using the Kornberg enzyme, mixtures of the four nucleotides and a small amount of transforming principle as a primer; the DNA formed in the test tube could be used to transform cells both of pneumococcus and of another species of bacterium. You will recall that transforming principle consists of groups of genes which had been removed from the donor chromosome. Thus, Rose Litman had in effect synthesized genes in a test tube; the intervention of living cells was required to make the original primer, or template, and the enzyme was able to do the rest in the test tube. Thus, we may say that biologists are well on the way toward solving the mystery of the manner in which genes replicate themselves at each cell division; a single strand of the original DNA serves as primer or template, and the polymerase enzyme links the nucleotides together to form a new chain exactly like the original partner chain of the primer strand.

How then does the DNA direct the manufacture of the specific enzymes and other proteins which are characteristic of each type of living cell? In 1955, the physicist, George Gamow, showed that this question was analogous

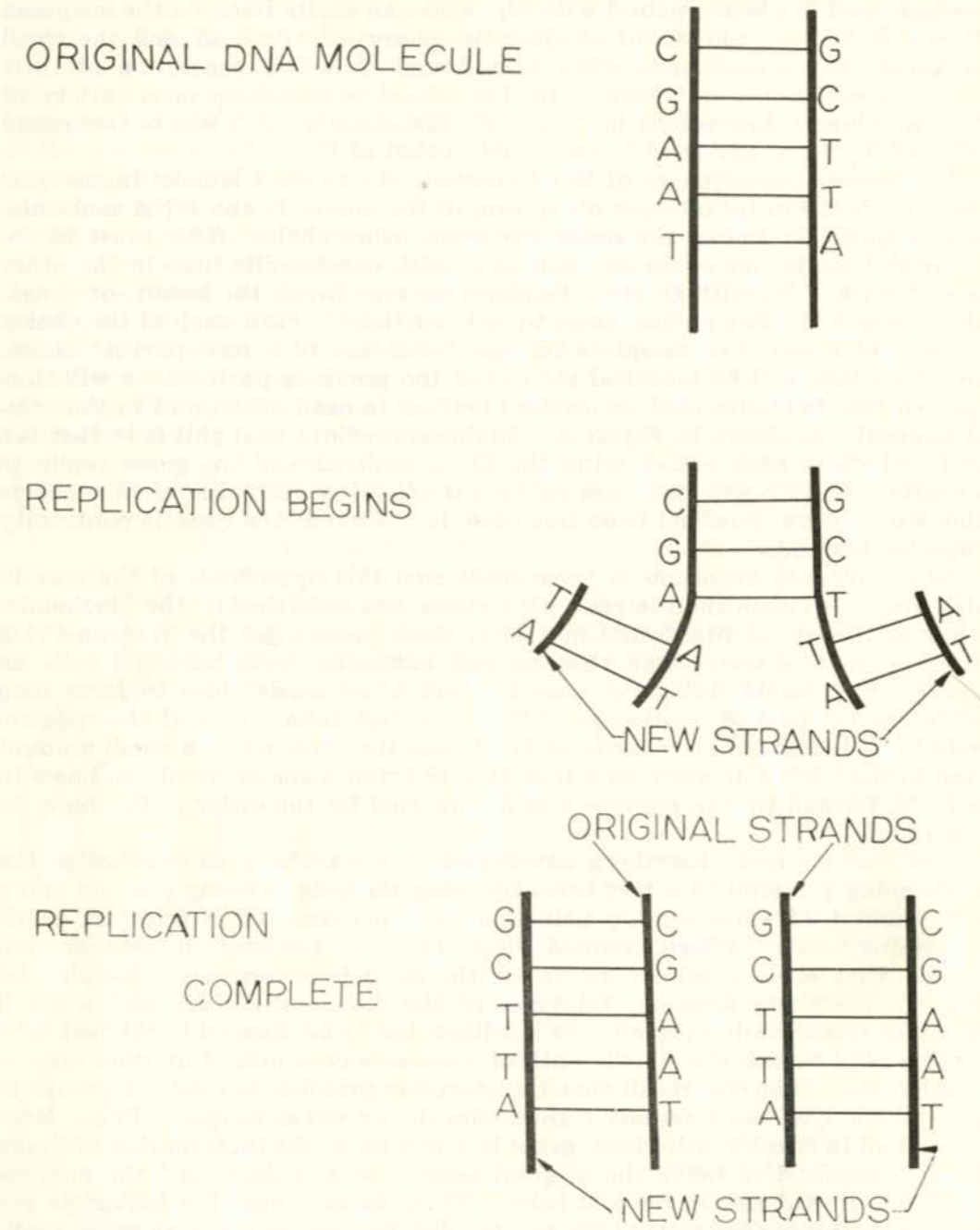


Figure 3: Model of DNA replication according to the Watson-Crick hypothesis. The author is indebted for this sketch to Mr. Allen Wong, of the Department of Physiology and Biophysics, Dalhousie University.

to a problem in the theory of coding. Briefly, the order of the 4 bases in the DNA must in some way represent a code which determines the order of the 20 amino acids in the protein whose manufacture it controls. Gamow showed that if each amino acid were represented by a combination of three bases in the DNA of the gene, then there are more than enough ways in which the 4 bases could be combined to code for all 20 amino acids. For example, the three bases AAA could represent amino acid X; AAG could represent amino acid Y, GGG could represent amino acid Z, etc.

According to the model of Watson and Crick, a mutation can be explained as a rare accident, in which a base is incorporated into a place in which it does not belong. Suppose that a section of primer DNA has a sequence of bases such that it should make a complementary sequence of, say AAA. In rare instances, say once in one hundred thousand times (which is a typical mutation rate for a gene) it makes instead, AAG, i.e., an abnormal sequence in the DNA has been created in which G has been substituted for an A in one region of the gene. Now it may happen that the new sequence is the code word for amino acid Y, whereas the original sequence is the code word for amino acid X, so for amino acid X, amino acid Y would have been substituted.

In 1957, a scientist at Cambridge performed an ingenious and painstaking analysis of the structure of normal and sickle cell hemoglobin. It was known that hemoglobin consists of about 580 amino acids arranged in 4 chains; two of the chains are of one type, alpha, and two are of another type, beta. The two alpha chains of sickle cell hemoglobin were identical to those of normal hemoglobin. But there was one small difference in the beta chains: at position number 6 of the beta chain of sickle cell hemoglobin there was an amino acid named valine where in the normal hemoglobin one finds an amino acid named glutamic acid. Thus the incorrect substitution of one amino acid out of the 150 in the beta chain of hemoglobin may lead eventually to the death of the individual from a sickle cell anemia. Since, as we have seen, sickle cell anemia is a hereditary disease caused by a single mutant gene, it follows that the mutant DNA contains a slightly altered code for the ordering of the amino acids in the protein whose formation it controls. This is direct evidence that the gene in effect contains instructions or blueprints for the sequence of amino acids in a protein.

Animal and plant cells consist of a central nucleus surrounded by cytoplasm. The genes are located in the chromosomes within the nucleus; it has been established that protein is manufactured by tiny little bodies located in the cytoplasm, the ribosomes. How then are the coded instructions of the nuclear genes transmitted to the protein-making factories of the cytoplasm? There is now strong evidence which shows that the gene acts first by transcribing its code into another molecular form known as RNA. The order of the bases of the RNA is a close copy of the sequence of those in the DNA. The coded RNA messenger then migrates from the nucleus to the protein factories in the cytoplasm where the code is translated into protein. It is the proteins which then assure the normal structure and function of the cell.

We may thus distinguish three distinct processes in the synthesis of genes and enzymes: 1., the first process is **replication,** whereby the DNA molecules produce exact copies of themselves prior to each cell division; 2., the second process is **transcription,** whereby the genetic code, represented by the DNA base sequences, is transcribed into RNA base sequences; 3., the third process is **translation,** whereby the code message contained in the RNA is translated into protein by the protein-making ribosomes of the cytoplasm.

Finally, I must draw the attention of my readers to the fact that this tremendously exciting and rapid advance has been restricted to an extremely narrow front of cell biology, that of molecular genetics and protein synthesis. But the major problems of cell biology have traditionally included, to name a few related ones: the behaviour of the chromosomes during cell division and during formation of the sex cells; the movements of the cytoplasm and the cell membrane during cell division; the initiation of cell division and its inhibition in adult tissues and organs; the mechanism of fertilization of eggs and the activation of embryonic development; the differentiation of the specialized cells and tissues during embryonic and foetal development; the control of cellular activity in higher animals and plants; the nature of the transformation which occurs when a normal cell becomes cancerous; the transport of substances into and out of cells, etc. I think it fair to say that these traditional problems of cell biology are almost as mysterious today as they were when they were first recognized 50 to 100 years ago. Biology today is searching for another great turning point in its path. These problems will probably not be solved until this new turning point is reached. Once the turn has been made, the solution will be there, right in front of our noses. And we shall say, to quote the words of Thomas Henry Huxley when he read Darwin's "Origin of Species", "How extremely stupid not to have thought of that!".

FROM THE BULLETIN OF FORTY YEARS AGO

The Medical Society of Nova Scotia Bulletin February 1924

State Medicine

The Associate-Secretary in several addresses to local medical societies has made the statement that the day of State Medicine was not far distant in this and other countries. It has been intimated that there are members of the profession who are endeavouring to hasten the arrival of this day. If this is true these doctors can be regarded as not caring for the best interests of the public or the profession. Any form of State Medicine, as yet adopted or outlined, falls far short of its objects, which must be to give the public the best possible service and the profession remuneration.

This form of medical service will come up in the shape of "Health Insurance," and three parties will be concerned in putting it in operation, - the Government, the Public and the Medical Profession. The point that the Associate-Secretary has stressed in his addresses is the necessity of the Profession taking the Public into its confidence and becoming leaders in the modern health campaign. Then, as partners, the Public and the Profession will lay their requirements before the Government and obtain a desirable and practical scheme. Failing in this the Public will make the Government enact legislation which will be unfair to the Profession, and not even in the best interests of itself.

Presidential Address

NEW BRUNSWICK MEDICAL SOCIETY 1963

B. L. Jewett, M.D., Fredericton, N. B.

Ladies and Gentlemen, Mesdames et Messieurs:

And with this vocal demonstration and experiment in biculturalism, I promise my Gallic confreres and friends that they will be subjected to no further suffering or indignity since I am fully aware that more than coincidence is involved in the observation that all my former French teachers are now rabid supporters of euthanasia.

My first duty is a most honourable one and that is to thank the Medical Society for the privilege you have accorded me of serving as your President this past year, but I would be quite remiss if I did not include my patients, whose loyalty and forbearance have allowed of my necessary absence on so many occasions and, last but not least, my own family, especially my wife whose co-operation and help has made this possible.

It is with the fullest realization I accept the responsibility that tradition has thrust upon me in presenting this, the Presidential Address, for, during the past years, when accorded the luxury of reflection, a most precious commodity, I have invariably enjoyed the memories of Dr. Rice's three A's, of Dr. Melanson's prophetic lamp, the charm of our own history as presented by Dr. Jennings or the lucid analysis of nursing education by Dr. Ross Wright, to name but a few.

I have, on occasion, and usually by those closest to me, been accused of over simplification of problems, a charge, though denied, I would, if true, plead guilty with a bit of occult pride. It is my earnest belief that, unless one does simplify and reduce a problem to its basic essentials, you are left either in a state of utter confusion or, worse still, with no yardstick by which the effectiveness, wisdom or outcome of any act, may be measured. Therefore, though cognizant of the previous accusation, I submit for your consideration, that the New Brunswick Medical Society exists for one and one reason only, that is to ensure excellence of medical care.

Excellence may be defined as the ultimate in achievement to the detriment of as few as possible, with the information available, at any point of time.

Paul Tillich, at the recent Life Dinner, used the expression, "the ambiguity of excellence," but I think that this was used mainly as an intriguing phrase since it would appear, at first glance, to be contradictory—always a most intriguing situation. However, if you examine the content of the learned gentleman's dissertation, you will find that his definition of excellence is the same as ours and points up the fact that "excellence" is synonymous with the best compromise solution to the detriment of as few as possible.

In measuring excellence, and to allow for comparison, the emotionalism inherent in nostalgia, must be deleted. Nostalgia was once defined as the kind thoughts about a place in which you would not live, and we must admit that this inherent component of nostalgia plays a very great part in the expression, "the good old days". Few, if any, on critical examination, would accept either the quality or inconvenience of the so called "good old days". Excellence should not be confused, either, with "moderation in all things"

because, so often, this is a rationalization of mediocrity, or justification of failure.

With these background definitions, let us examine the Medical Society composed of all the Medical Graduates in all the various facets of medicine practising in New Brunswick. I think you will agree that, within this august body, we have all the divergent opinions and forces necessary to produce the compromise position which I maintain, and I now say, in very good company, is synonymous with excellence.

We have the individual practising doctor as opposed to the doctor practising in a group; we have those dedicated to the preservation of the status quo position as opposed to those involved in the "Winds of Change" of Prime Minister MacMillan—be they zephyr or hurricane; we have those proponents of medically sponsored, non-profit service plans versus the supporters of the free-lance commercial carriers. We have those who are cognizant of the practical need for votes by any government which will allow the continuation of their administration as opposed to the idealistic isolationist. Also, we have those who find it most difficult, not an easy chore at any time, especally among Maritimers, to separate the pure medical statement from their politically affiliated and politically oriented citizen's opinions.

Which course can the Profession chart and pursue with the greatest safety and benefit for all? This is the answer your Medical Society is seeking. Do we have the information available to chart this course? It is my considered opinion our Society is lacking in information in at least two specific areas—(1) the opinion of the recent graduate. It is to this group that I direct these remarks and invite you to take an active part in the deliberations of your Society. (2) the second area of deficiency of information is what do the patients want? I have heard it voiced, "the people want something for nothing". If this is true, it doesn't occur among my patients. Dr. Hertzler, the author of "The Horse and Buggy Doctor", after being informed during a trip to a famous Medical Clinic in Boston that the recurrent laryngeal nerve, on occasion, ran within the capsule of the thyroid, remarked, "It may happen in Boston but it certainly doesn't happen in Kansas". So be it with our patients. It is my belief that we should make every attempt to gain this information.

I certainly believe that whatever the solution, it must be flexible and also that any decision reached today may quite easily be obsolete in ten years. . . . and this is as it should be and as it must be. Otherwise, there is an admission that no new information has become available, a monstrous situation in any active field of endeavour. So that no one may be under the impression that a stalemate exists or even that such a situation is approaching, in our Society, I think it would be well to reflect on a very comforting and constructive observation that exists in any democracy. If it would appear that obstructionism exists and, to the impetuous, to have reached its most frustrating pinnacle, and no progress is apparently being made, this process is inherently correct, and as it should be, since it is from just these divergent opinions to which I have previously alluded that the balance is established and progress is actually being made. As long as individuals or groups, dedicated to the same end, do not persist in and cherish their opinions too obstinately, progress is certain and excellence shall be the reward.

With excellence of medical practice being our only reason for existence, and service being the visible evidence, I am most pleased to be able to announce

to the people of New Brunswick the following positive results of our deliberations:

(1) To the Government we offer the services of the Special Committee on the Supply of Doctors, and the results of their deliberations to aid area planning and the continuation of quality medical care.

(2) To those in areas where medical services are temporarily lacking, we offer our every help in obtaining personnel, and we have proposed to the Medical Council that every avenue be explored, consistent with quality medical care to alleviate the situation.

(3) To New Brunswick Medical Students, the New Brunswick Medical Society, with the co-operation of the Bank of Montreal and the Royal Trust and with the Medical Society guaranteeing the loans, has ensured that no academically qualified New Brunswick student will ever have to terminate his studies for financial reasons.

(4) To the senior citizens and the needy of the province, we have directed our sponsored plan to enter into negotiations with the appropriate bodies and ensure that all of these citizens may have the benefits of prepaid medicine. The members of the New Brunswick Medical Society will subsidize this plan in the form of service.

And now, I join that distinguished group of Past Presidents, and promise, and I know that I speak of all the Past Presidents that we shall continue to be available to assist this society towards its one and only reason for existence—excellence in Medical Practice.

ADDRESS TO THE NEW BRUNSWICK CHAPTER
COLLEGE OF GENERAL PRACTICE OF CANADA

"Just a G.P."

Mr. President, ladies and gentlemen — I should like to discuss for a moment tonight, the present day role of the general practitioner — family physician, and what I consider to be his proper place within the medical fraternity.

How frequently have we as general practitioners referred to ourselves as "just a G.P."? How many times have our wives, our specialist confrères, and members of the public referred to us as "just a G.P."? What does this expression imply — does it mean the same thing to all persons? Does it really suggest in the minds of ourselves and others that we represent a group who know a little of everything, but not much of anything, that we are merely "Jacks of All Trades" but masters of none, does it really mean as has been suggested by some, that the general practitioner is one who has neither the brains nor the money to be anything else? Regretfully, there are those of our number who are "just a G.P." within this concept, those who are quite content to rest on the laurels established by our forefathers, the much respected and oft times honored "family doctor."

I would submit in all humility and with the greatest respect to the general practitioner of twenty years or more ago that the family physician of to-day must be better equipped to meet the needs and demands of his patient, if he is to maintain the proper position of general practice as the keystone and the backbone of medical care in our modern day. Time was when the family doctor **was** the medical profession. Even the teachers at all but the largest medical colleges were general practitioners, and the records will show that in the main they were good teachers able to pass on to their students all the scientific knowledge then accumulated, plus something less tangible, but equally as important, that quality which sets apart the really good doctor, often referred to among other things as a bedside manner.

The progress of medical sciences in the past twenty years no longer makes it possible for any one man to acquire the knowledge thus accumulated, and may make it difficult for him to perform the dual role of educator and clinician. The tremendous explosion of medical knowledge has changed the whole concept of medical education, has given rise to the full time medical educator, has drastically changed the teaching curricula of our medical schools, has pointed up the staggering differential between what a man has learned at graduation, and what he needs to know twenty years later, has pointed up the need for a mechanism of continuing education to provide the physician with the tools for a lifetime of learning.

These changes have likewise brought about a change in our role as family physicians. Are we aware of these changes, and are we doing all that we can to accept this new role for the general practitioner? There is abundant evidence of an ever increasing awareness of a need for general practitioners both from within the profession as well as from a large segment of society outside the profession. Following a period of marked interest and activity in the various specialties, the specialist is now concerning himself with the apparent shortage of family physicians. This concern is being shared by medical organizations, medical educators and by governments at various levels. Patients in ever increasing numbers are looking for an adequately trained family doctor, one who will counsel them on their medical needs, one who will

deal personally with those needs within the scope of his own training and competence, one who is aware of the limitations of his own knowledge and skills, one who will seek consultation with his specialist confrères whenever necessary, and one whose education is a continuing process, designed to keep him abreast of advancing medical knowledge. These are the legitimate demands being asked of those of us charged with the responsibility of providing quality medical care as family doctors in this present day society. How good a job are we doing in accepting this challenge? What facilities are available to us to best fit us to adequately meet these demands? Are we taking full advantage of these facilities?

We in this area are singularly fortunate, in having available to us the efforts of the post graduate division of Dalhousie University whose program of continuing education is second to none in this country. The annual Dalhousie Refresher Course, the many and varied "in hospital" short courses. the many guest lecturers at various centers throughout the provinces, the assistance provided at the scientific portions of divisional annual meetings, the assistance given to the many regional courses, and the participation in the clinical days such as the one you have had here to-day is ample evidence of their interest and activity in providing the doctors of the Atlantic Provinces with a program of continuing education.

The College of General Practice of Canada is likewise dedicated to assisting the family physician in keeping himself up to date by providing him with many of the facilities whereby this is made possible for him. The whole concept of the College is based on the knowledge that only through self education can the general practitioner attain the competence necessary to meet the needs of his patient, and in turn entitle him to his proper place in the medical community. Let us briefly recall the aims and objects of the College:

1. To establish an educational body of general practitioners with broad educational aims.
2. To encourage development of under-graduate curricula suitable for under-graduate teaching leading to the general practice of medicine.
3. To promote residency training for General Practice.
4. To promote the presentation of post graduate education for General Practitioners.
5. To promote research in General Practice.
6. To promote the publication of original articles by General Practitioners.
7. To promote the integration of General Practitioners into general hospital staffs.
8. To provide suitable recognition to members in the field of General Practice.
9. To do all things necessary to furnish and maintain the highest possible standard of service by General Practitioners to the public.

At the present time, one fourth of general practitioners in Canada have subscribed to these aims and objects, and have committed themselves to those educational requirements necessary for continuing membership in the College of General Practice. I submit ladies and gentlemen, that the discipline demanded by these requirements entitles the general practitioner who strives to maintain them, whether he be a member of the College or accepts them as his own standards without membership, to the recognition and prestige comparable to any specialty and precludes in its broadest concept, the title "just a G.P." being applicable to him.

One would be completely unrealistic, not to acknowledge the many other factors affecting the maintenance of these standards. It is not only necessary for the practitioner to be aware of the need to meet these requirements — important as this is. It is not only the matter of finding the mechanism to stimulate the practitioner to make use of the facilities available to him although this is of equal importance. There are many broader aspects of this overall problem, that must be recognized and dealt with if we hope to equip all general practitioners with the highest possible qualifications. These include among other things the recruitment of adequate numbers of general practitioners to meet the increasing demands for these services, a review of the various patterns of practice in an effort to establish the best grouping or association of practitioners to provide the family doctor with a way of life that acknowledges the need for adequate study, relaxation and participation in the politico-economic-educational aspects of the practice of medicine. It is a disturbing thing today to witness the large numbers of good general practitioners who are leaving their practices for other endeavours — solely because they cannot cope with the excessive demands imposed upon them by a too busy practice. In general we must recognize the need to make the general practice of medicine more attractive to those who are presently in practice, as well as to those who are yet to come. But this is a matter for discussion on another occasion — in the meantime let us be thinking about it.

I would like to close on the note reflected in a poem I recently had occasion to read, a poem written by Richard Armour in his book "The Medical Muse" and called "The G.P."

The general practitioner
I hail, salute, and sing,
The man who really needs to know
A lot of everything.

While others stick to nose and throat
Or allergies or ears
Or bones or skin or brains or glands
Or lungs or psychic fears.

He has to know the whole shebang,
From soles of feet to scalp,
For there are times he can't look blank
And helplessly cry, "Halp."

The specialists keep shorter hours
And get a higher fee,
But he outranks them all, for he's
A general, you see.

THANK YOU.

D. I. Rice

Present and Future Status of Laboratory Services, Province of Nova Scotia*

General:

Clinical laboratory services for the province of Nova Scotia were originally largely centralized in the Pathology Institute. During later years, however, rapid developments in the scope and utilization of such services resulted in smaller laboratories being developed in many of the major hospitals of the province. Nevertheless, the laboratories of the Pathology Institute continued to accept and process specimens of a routine nature from all parts of the province.

In the planning stage of the Nova Scotia Hospital Insurance Program it was evident, however, that the Pathology Institute would eventually have to become a specialized referral, consultative and training center for the province while continuing to accept routine work only from the Victoria General Hospital. The anticipated expansion of hospitals throughout the province, the attendant natural increase in the utilization of laboratory services in addition to the impact of the Hospital Insurance Program and the necessity for elevating standards in laboratory medicine throughout the province, necessitated planning for decentralization of facilities, pathologists and qualified technical personnel.

Accordingly, integration and development of clinical laboratory services in the province of Nova Scotia has been proceeding slowly during the past number of years on the basis of a prearranged plan, originally developed for this purpose by the Department of Public Health and concurred in by the Nova Scotia Hospital Insurance Commission.

This plan provides for the establishment and operation in smaller hospitals of local laboratories operated by technicians. These local laboratories are designed to refer all examinations of a more specialized nature to the Regional Laboratory serving the area in which they are situated.

Regional hospital laboratories are departmentalized laboratories under the direction of a pathologist. Activated Regional Laboratories are now operating in connection with the following hospitals: Halifax Infirmary, Yarmouth General, Aberdeen, St. Martha's, St. Rita, St. Elizabeth, Sydney City, Glace Bay General, St. Joseph's. Further Regional Laboratories have been approved by the Hospital Commission, following completion of construction, in the Blanchard Fraser Memorial, Dawson Memorial, Colchester County and Highland View Hospitals. Regional Laboratories are designed to refer specimens to the Central Provincial Laboratories for highly specialized laboratory and consultative services.

The Central Laboratories are operated by the Department of Public Health in the Pathology Institute and provide a complete staff of specialized professional and technical personnel in all fields of clinical laboratory service. Due to the proximity of these laboratories to the Victoria General Hospital, they also accept the referral of routine examinations from the Victoria General Hospital. Nevertheless, they are considered primarily as a Provincial Insti-

*Prepared by the Department of Public Health of N. S., and the Hospital Insurance Commission, July 15, 1963.

tution serving the entire province insofar as the provision of education facilities and specialized laboratory services of a direct and consultative nature, are concerned.

It is recognized that the laboratory system in Nova Scotia is in a transition phase at present, has been for some time and will continue to be for the next few years. During this period of rapidly increasing utilization of laboratory services decentralization of routine laboratory services from the laboratories of the Pathology Institute to the Regional and Local, hospital laboratories has been taking place. Such decentralization has been effected in part of the province. Though progress is very slow in other parts; plans are presently in progress or are being implemented for Regional Laboratories providing a complete coverage, in this respect, to the entire province.

It is acknowledged that this period must be particularly trying and difficult for the director and staff of the Pathology Institute. They have been forced to meet increased demand for specialized services and for training and their relief from routine work has been delayed in many areas.

The presentation that follows on occasion therefore refers to the eventual operating features of the plan when all units have been activated, although it is recognized that this is not the case and in fact not possible at the present time.

Pathology Institute:

1. General: — The Provincial Laboratories of the Pathology Institute are considered as primarily serving the entire province, in so far as Consultant, Referral, Training and Special Services are concerned. They are secondarily considered as providing routine laboratory services to the Victoria General Hospital.

2. Referral Services: — It is considered that the proper function of the laboratories of the Pathology Institute is to accept, examine and report on specimens of a problem nature previously examined by the staff of a regional laboratory.

It is not the particular function of the Pathology Institute to serve as a referral center for routine examinations when regional laboratories are, for one reason or another, deprived of the services of their professional or technical staff. Under such circumstances it is the responsibility of the hospital board concerned to make arrangements to obtain temporary replacement for the personnel in question. If such is not available it is their responsibility to arrange for the referral of specimens to other regional laboratories when at all possible.

3. Special Services: — It is considered that certain laboratory procedures, because of their complicated nature, require highly specialized techniques and apparatus for their performance. In this respect, examination of such specimens is centralized in the province in the Pathology Institute Laboratories. Such examinations at present are protein bound iodine, hormonal-analysis and all virological procedures.

4. Consultative: — Personnel of the Pathology Institute constituting the largest group of specialized laboratory personnel in the Province have been made available for consultation on problems of laboratory operation for which the resources of Regional Laboratories and the technical counselling service of the Hospital Commission are inadequate. Such services include, if necessary

to solve the problem, actual visitation of the laboratory concerned by the required specialist personnel.

5. Training: — The pathology Institute operates a central training course for laboratory technicians; covering the didactic portions of the general certificate course.

Publicity for recruiting candidates for such training is carried on throughout the province by the Counsellors of the Nova Scotia Hospital Insurance Commission without bias as to the ultimate placement of the trainee. The central training course is in no way obligated to accept trainees who in the opinion of its staff do not possess the required qualifications for the course. Central Training School is also, without reference, privileged to discontinue the training of any student whose work or attitude during the course is not satisfactory.

The Pathology Institute is prepared to offer short course training on an individual or group basis for laboratory technicians throughout the province. Personnel of the Pathology Institute are also available for required workshops conducted throughout the province in connection with the Standards Control Program of the Nova Scotia Hospital Insurance Commission.

The facilities and personnel of the Institute assist in connection with the standards control program of the N.S.H.I.C.

6. Victoria General Hospital: — The laboratories of the Pathology Institute accept and examine routine and special laboratory specimens referred from the Victoria General Hospital.

Regional Laboratories:

1. General: — Regional Laboratories are considered primarily as serving the area in which they are situated on a consultant and referral basis, in addition to providing routine laboratory services to the institution where they are situated. They have a departmentalized staff and the services of a pathologist at least 50% of the working week.

2. Referral: — It is considered that the proper function of any activated Regional Laboratory is to accept, examine and report on all specimens which are not of a special nature referred to it by the institution in which it is situated, and the institutions in the area in which it is placed.

Such services include: Routine Biochemical; Haematological, Bacteriological; Immunological; Haematoimmunological, Cytological (Cervical) and Surgical and Autopsy Pathology.

Regional Laboratories are obligated to provide these services and are not to assume that the Central Laboratories are responsible for accepting and examining specimens in these fields which are of a routine nature.

In certain instances, at the request of the Department of Public Health, such services may also include the bacteriological examination of milk and water.

It is also the proper function of the Regional pathologist to accept and perform medical legal work originating in the area served. Application for the pathologist's reimbursement for such examinations should be made to the referring authorities.

3. Consultant: — The proper function of a pathologist appointed to such a laboratory is as pathologist to the hospital laboratory and consultant patholo-

gist to all the hospitals in the area served. In respect to the latter, the local hospitals may request approval from N.S.H.I.C. for sessional indemnities for pathologists for an approved number of visitations per annum to the hospitals concerned.

4. Training: — Those laboratories as officially approved for such purposes by the C.S.L.T. or C.M.A. may provide practical training for a reasonable quota of technical students.

Local Laboratories:

1. General: — Local laboratories are in smaller hospitals. They are in charge of a staff of one or more qualified laboratory technicians and they may have the service of a pathologist on a consultant basis. They carry out examinations of a routine nature for the hospitals in which they are situated, and referred-in specimens from practitioners of the surrounding area.

2. Referral: — Local hospital laboratories are obliged to refer specimens beyond their capacity to examine and not of a special nature such as PBI's, Virology, Hormonal analysis, TBC cultures, etc. to their regional referral hospital laboratory as designated in Appendix A. It is necessary to make this obligatory as it is desirable both for standards and economy, to operate all Regional Laboratories at their optimum workload.

Technical Counselling Service:

1. General: — Two qualified experienced registered laboratory technicians are employed by the Nova Scotia Hosital Commission. These counsellors are ocated in the Commission offices.

2. Counselling: — the advice and counsel of these technicians is available to technicians with respect to problems at a technical level.

3. Publicity and Recruiting: — The counsellors are available for speaking engagements for high school groups and others with respect to the training program for laboratory technicians.

4. Standards Evaluation Service: — The counsellors supervise a Standards Evaluation Service which involves, in cooperation with the Pathology Institute Staff, preparing and sending out unknowns for examination to the various laboratories of the province.

5. Statistics: — The counsellors are responsible for the compilation of statistics and the preparation of indices, trends etc., in connection with the laboratory services of the province.

6. Training: — The Counsellors assist the staff of the Pathology Institute in the Central Training Course by acting as demonstrators, lecturers, etc., when at all possible during the academic term.

APPENDIX A.

Central and Regional Laboratories
with Referral Institutions

	Referring Institutions
	Victoria General Hospital
Central Laboratories	Halifax Convalescent
Pathology Institute	Rehabilitation Centre
Regional Laboratories	
Glace Bay General	
St. Joseph's	
Sydney City	St. Rita, New Waterford
St. Elizabeth's	Harbour View, Buchanan Memorial, Victoria County, Point Edward
St. Martha's	St. Mary's, Inverness Memorial, St. Ann's, Sacred Heart, Eastern Memorial, Guysboro Memorial, St. Mary's Memorial
Aberdeen	Sutherland Memorial
* Colchester County	Musquodoboit Valley Memorial, Lillian Fraser Memorial
* Highland View	All Saints', Bayview, South Cumberland, North Cumberland
* Blanchard Fraser	Annapolis General, Western Kings, Soldiers' Memorial, Eastern Kings, Payzant Memorial
Yarmouth General	Roseway, Digby General
* Dawson Memorial	Fishermen's Memorial, Queens General
Children's	Grace Maternity
Halifax Infirmary	Eastern Shore Memorial, Twin Oaks War Memorial

* Not activated as yet.
July 15, 1963

Dr. John C. Ballem

An Appreciation

Dr. John C. Ballem, widely known and deeply respected and loved, passed away quietly at his home in New Glasgow on November 27th, 1963. He was 82 years of age, and had practised his profession until within three months of his death.

In March of 1963 he and his wife had spent a winter holiday in Bermuda, playing golf while he was there. Despite an automobile accident on his return to Nova Scotia in which he fractured a fibula, confining him to his home for several weeks, he was swimming as usual at his cottage during the summer. His friends had, however, noted some slowing down, and in September at the urging of his son, Dr. Miller Ballem of Montreal, he had a complete check-up at the Royal Victoria Hospital. An exploratory operation revealed a condition beyond repair.

Born at Mount Albion, Prince Edward Island, he was already teaching school at the age of sixteen, prior to entering Prince of Wales College. He took his B.A. at Dalhousie, and transferred to McGill for his medical course, graduating in 1908.

After graduation, he returned to the land of his birth, practising at Bedeque for ten years. In 1919, after a year's post-graduate work in general surgery at the Royal Victoria Hospital, he came to New Glasgow, his wife's home, and has practised there ever since.

He married Ora Miller, the daughter of Dr. and Mrs. Charles Miller, and has four children: Elizabeth (Mrs. J. R. Harry Sutherland), New Glasgow; Dr. Miller Ballem, Montreal, P.Q.; Joan (Mrs. Donald A. C. Malcolm, St. John, N. B.; and John, a corporation lawyer, practising in Calgary, Alta.

Anyone writing a biography of Dr. Ballem would be amiss if, in addition to stating that he was a great medical man, high in ethics, diagnosis, treatment and surgery, they failed to say also that he possessed many other talents. He was a scholar, a student of classical literature, an historian and a fine conversationalist. Frequently during a quiet chat, he could and would, to prove a point, recall and quote a poem, or a passage from the writings of some great statesman. He was an inveterate reader of works by great authors.

For all of these attributes, and for his fine personality and warm friendliness, John Ballem will be long remembered by a host of friends in the medical world and in all walks of life.

V.H.T.P.

Clinical Staff Conferences

Effective January, 1964

We list below as many regular meetings, rounds, conferences and clinics as we have knowledge of in the Halifax area. This list does not pretend to be complete, but it will be revised as necessary and will be published four times a year for the information of members.

All events listed are open to any interested physician, and a cordial welcome is promised in every case.

We hope to publish information of similar arrangements at other hospitals throughout the Province in the future. Chairmen or Secretaries of Medical Staffs are invited to send time tables for publication. Anyone spotting an inaccuracy is also begged to let us know.

Halifax Infirmary

Department of Anaesthesia

Weekly Conference	Monday	2-3 p.m.	O. R. Suite

Department of General Practice

Monthly Conference	4th Thursday	8.30 p.m.	Auditorium
Weekly Joint Conferences - attended by Department members as follows: -			
with the Department of Surgery	Saturday	9 a.m.	
with the Department of Medicine	Saturday	9.30 a.m.	
with the Department of Pediatrics	Friday	11- 1 p.m.	
with the Department of Psychiatry	Wednesday	9-10 a.m.	
with the Department of Obs-Gyn.	Thursday	11- 1 p.m.	

Department of Medicine

Joint Conference with X-ray Dept.	Wednesday	11-12 a.m.	4th Fl. Clinic Rm.
Grand Rounds	Thursday	11-12 a.m.	4th Fl. Clinic Rm.
Intern-Resident Training Conference	Saturday	9-30-11 a.m.	4th Fl. Clinic Rm.

Department of Obstetrics & Gynecology

Weekly Rounds	Thursday	11- 1 p.m.	3rd Fl. Clinic Rm.
Monthly Meeting	3rd Thursday	11-12 a.m.	3rd Fl. Clinic Rm.
Interns Weekly Conference	Tuesday	4- 5 p.m.	3rd Fl. Clinic Rm.

Department of Ophthalmology & Otolaryngology

Weekly Conference	Tuesday	6.30 p.m.	E.E.N.T. Dept.
Monthly Meeting	2nd Thursday	7- 9 p.m.	E.E.N.T. Dept.

Department of Pathology

Clinical Pathological Conference	3rd Friday	12- 1 p.m.	Auditorium

Department of Pediatrics

Grand Rounds	Friday	11-12 a.m.	Pediatric Dept.
Pediatric Conference	Friday	12- 1 p.m.	Pediatric Dept.

Department of Psychiatry

Case Presentation	Wednesday	9 a.m.	2A Clinic Room
Weekly Conference	Wednesday	9-11 a.m.	2A Clinic Room
Monthly Conference	3rd Wednesday	9-11 a.m.	2A Clinic Room
Daily Ward Rounds		8 a.m.	Psychiatry Dept.

Department of Radiology

Weekly Conference	Thursday	at 3.30 p.m.	Radiology Dept.
House Staff Conference	Tuesday	1- 2 p.m.	Radiology Dept.

Department of Surgery

Weekly Conference	Saturday	9 a.m.	3rd Fl. Clinic Rm.

Department of Urology

Weekly Conference	Thursday	at 12 noon	Urology Dept.
Monthly Meeting	2nd Thursday	12 noon	Urology Dept.

INTERNS' SPECIAL TUTORIALS

During the months of February, March and April, daily tutorials are held in the subjects written during the Medical Council of Canada examinations, as follows: -

Monday	- Surgery	- 4.30-5.30 p.m.	- Third Floor Clinic Room
Tuesday	- Obs.-Gyn.	- 4.00-5.00 p.m.	- Third Floor Clinic Room
Wednesday	- Medicine	- 4.00-5.00 p.m.	- Third Floor Clinic Room
Thursday	- Pediatrics	- 4.00-5.00 p.m.	- Third Floor Clinic Room
Friday	- Public Health	- 4.00-5.00 p.m.	- Third Floor Clinic Room

VICTORIA GENERAL HOSPITAL

Department of Medicine			
Grand Rounds	Tuesday	8.30 a.m.	4th Floor Clinic Rm.
Rheumatology Ward Rounds	Tuesday	11.00 a.m.	1st F. West Annex
Rheumatology Out Patients Rounds	Wednesday	11.00 a.m.	3rd Floor OPD
Residents Clinical Conference	Monday	12.30 p.m.	O P D Conference Rm.
Combined Medical - Surgical Conferences			
Cardiology	Tuesday	12.30 p.m.	X-ray Conference Rm.
Neurology-Neurosurgery	Wednesday	9.00 a.m.	Pavilion Conf. Rm.
Neurosurgery - Pathology Conf.	Wednesday	9.00 a.m.	Path. Inst.
Haematology	Wednesday (1st and 3rd)	12.30 p.m.	X-ray Conference Rm.
Gastroenterology (2nd & 4th)	Wednesday	12.30 p.m.	X-ray Conference Rm.
Cardiopulmonary	Thursday	12.30 p.m.	O P D Conference Rm.
Bacteriology - Pathology Conference	Wednesday	3.30 p.m.	
Department of Surgery			
Conference	Thursday (2nd & 4th)	5.00 p.m.	5th Floor Clinic Rm.
Ward Rounds			
Surgery A	Friday	8.00 a.m.	6 South
Surgery B	Monday	8.45 a.m.	6 North
Surgery C	Wednesday	8.30 a.m.	6 South
Surgery D	Thursday	11.00 a.m.	6 North
Orthopaedics	Tuesday	9.00 a.m.	X-ray Conference Rm.
Out Patient Clinics			
Surgery A	Friday	9.30 a.m.	Outpatient Dept.
Sirgery B	Thursday	9.30 a.m.	Outpatient Dept.
Surgery C	Wednesday	9.30 a.m.	Outpatient Dept.
Surgery D	Tuesday	9.30 a.m.	Outpatient Dept.
Department of Gynaecology			
Conference	Tuesday	5.00 p.m.	5th Floor Clinic Rm.
Ward Rounds	Daily	9.00 a.m.	5 West
Pathology Conference	Tuesday (1st)	5.30 p.m.	Pathology Institute
Department of Radiology			
Conference	Daily	3.00 p.m.	Radiology Dept.
Proven Case Conference	Thursday	1.00 p.m.	Radiology Dept.
Clinical Conference	Thursday (Last)	5.30 p.m.	X-ray Conference Rm.
Department of Psychiatry			
Ward Rounds	Monday & Friday	10.00 a.m.	Pavilion
Seminar	Friday	4.00 p.m.	4th Floor Clinic Rm.
Child Guidance Clinic	Thursday	9.00 a.m.	Auditorium
Case Presentations	Monday, Tuesday, Friday		
	Saturday	9.00 a.m.	Pavilion Conf. Rm.

Department of Urology

Conference	Daily	4.30 p.m.	6 West

Department of Anaesthesia

Conference	Friday (first)	3.30 p.m.	

Nova Scotia Tumour Clinic

Conference	Friday (Third)	12.30 p.m.	Tumour Clinic
Clinics			
Lymphomas	Monday	11.30 a.m.	
Gynaecology	Tuesday & Friday	11.30 a.m.	
Skin, Soft Tissue & Intestine	Tuesday	12.00 noon	
Head and Neck	Wednesday	11.00 a.m.	Tumour Clinic
Ear, Nose and Throat	Wednesday	2.30 p.m.	Outpatient Dept.
Urology	Thursday	11.00 a.m.	Outpatient Dept.
Breast	Thursday	11.00 a.m.	Tumour Clinic
Pulmonary	Friday	12.00 noon	Tumour Clinic

HALIFAX CHILDREN'S HOSPITAL

Medical Conference	Wednesday	9.30 a.m.
Surgical Conference	Friday	11.00 a.m.
Metabolic Conference	Friday	2.00 p.m.
Ward Rounds	Daily	9.00 a.m.
	Tuesday and Thursday	4.00 p.m.

GRACE MATERNITY HOSPITAL

Staff Meeting Luncheon	Monday (Second)	12.30 p.m.
Obstetrical Conference	Tuesday (Third)	5.00 p.m.
Ward Rounds	Daily	9.00 a.m.
Journal Club Luncheon	Wednesday	12.15 p.m.
Prenatal Clinic	Tuesday, Thursday, Friday	2.00 p.m.
Well Baby Clinic	Tuesday and Thursday	2.00 p.m.
Postnatal Clinic	Tuesday and Thursday	2.00 p.m.

BOOK REVIEWS

"A Doctor Discusses Pregnancy." By Wm. G. Birch, M.D. with Dona Z. Meilach, Ph.B. Budlong Press Co., Chicago, Ill. Pp. 114.

The market in "books for the pregnant" must be booming, as we seem to encounter a new one every few months. The latest comes as one of a series, the others discussing menopause, teenagers, and marriage. The series has been widely distributed as a gift by a drug firm, but the real scheme is to buy them in bulk and give them to your patients.

The present volume is a very complete prenatal guide which is accurate and consistent with current North American teaching. The discussion of "childbirth training" lacks conviction, and many would disagree with the recommended exercises. It seems to have been inserted as a gesture toward the new philosophy.

For the patient who needs detailed information, this book can certainly be recommended but for the less sophisticated, it will probably be too much.

S. C.

A History of American Medical Ethics 1847-1912 by Donald E. Konold, price $4.75, 119 pages, published by Book Craftsmen Associates Inc., New York.

This study traces the evolution of medical ethics from 1847, when the American Medical Association developed its first code, to 1912, when it adopted its second revision of the original code. The reader of this book will be rewarded with insight into the practical situations which prompted physicians to apply ethical controls in the last half of the 19th century, and the early 20th century. It contains an extensive bibliography and is a scholarly study of American Medical ethics up to 1912.

I would recommend it to anyone interested in the evolution of modern day medical ethics, and it would be of great value to anyone appointed by a medical society to review or alter the present code of ethics.

D.F.S.

Personal Interest Notes

Sir Charles Tupper Building to Commemorate One Hundred Years of Confederation at Dalhousie

Big headlines in the news everyone sees. Often there are small items which interest a small circle. Nevertheless those items are important in order to interest more people more of the time. NO items of any kind have been sent in from the Divisional secretaries this month. PLEASE don't let your New Year resolution die a-borning.

Dr. C. M. Harlow, Director of Laboratories at Camp Hill gave a press report on the preliminary results of his experiment with the aid of 31 volunteers on the results of a high fish meat free diet. The experiment is aimed at assessing the effect on the blood cholesterol of the diet and its relationship to heart disease. Early results are encouraging."

Appointment

The President of DOSCO, Mr. A. L. Fairley has announced the appointment of Dr. J. S. Polson, F.R.C.P. as Chief of Medical Officer of the corporation, its subsidiaries and associated companies. Dr. Polson graduated from McGill in 1945 and has been with DOSCO as medical officer since 1951. He replaces Dr. J. S. R. Lynch who retired this year after 33 years of service, and who will continue to serve as a consultant.

Congratulations

Congratulations are in order to Dr. W. A. Cochrane, Head of the Department and Professor of Paediatrics, Dalhousie University, Chief Physician in the Department of Medicine at the Children's Hospital, who has been elected a Fellow of the American College of Physicians.

So also to Dr. W. C. Nicholas, a specialist in internal and endocrinology medicine and lecturer in Medicine, Dalhousie on his election as an Associate of the American College of Physicians.

A McLaughlin Foundation Travelling Fellowship has been awarded to Dr. W. Stuart Huestis of Halifax. In the next six months he will visit the leading neurosurgical centres in Europe and in North America with special interest in vascular surgery of the brain. Dr. Huestis, a native of Saint John,

N. B., graduated from Dalhousie in 1958. He is at present a member of the neurosurgical staff of Dalhousie and practises neurosurgery in association with Dr. H. H. Tucker. He plans to return here after the completion of this period of study.

Dalhousie Research Day - March 25, 1964

The Dalhousie Medical School is rapidly taking its place in Medical Research in Canada. All too often this work remains in the background and is unknown to many of us. In order to make better known to the Faculty and others just exactly what is being done in Research, and also to give those interested in Research an opportunity to discuss their problems, the Research Day at Dalhousie University was established. This year it is to take place on Wednesday, March 25th, 1964 in the nurses' auditorium, Victoria General Hospital. An interesting program has been organized for the morning and afternoon sessions. The day will end with a supper and a general get - together where new and old problems can be discussed in an informal manner. We are very fortunate this year to have as our after dinner speaker Dr. R. F. Farquharson, Chairman of the Medical Research Council who will speak to us on "Continuing Problems of Medical Research in Canada". All doctors are invited to attend.

Births

To Dr. and Mrs. P. J. Ferguson (Madeleine Boudreau), a daughter, Cecile Olivia, at the Halifax Infirmary, January 27, 1964.

To Dr. and Mrs. Benjamin Doane (née Margaret Clarkson), a son, Robert Durward, at the Grace Maternity Hospital, Halifax, on January 22, 1964.

To Dr. and Mrs. D. J. Higgins, a daughter, at Deep River, Ontario, on January 15, 1964.

To Dr. and Mrs. Kenneth Tulle, a son, Ian Christopher, at St. Joseph's Hospital, Dalhousie, N. B. on December 28, 1963.

To Dr. and Mrs. William Turner, a daughter, Sonia Lee, at the Grace maternity Hospital, Halifax, on January 25, 1964.

Obituaries

We regret to record the death on January 14 of Dr. Freeman Stuart Coolen of Fox Point at the Oak Manor Nursing Home, Mahone Bay. Dr. Coolen, who was 72, practised for many years in Chicago before retiring to Fox Point.

On January 15, in Providence, Rhode Island, died Dr. James Murray Beardsley, 63 years old. Dr. Beardsley has been widely known for his numerous publications and his surgical contributions in the repair of diaphragmatic hernia and for his development of procedures which was widely studied and copied in the intensive post-operative care required by patients after major surgery. He has held many executive offices, in Surgical Societies throughout New England. During the Second World War, his Rhode Island Hospital Unit won fame in its work in the China-Burma-India sector. To Dalhousians he is remembered as a graduate of the class of medicine, 1928, the time when the Medical school contributed many doughty members to the football and hockey teams,-which in those days did not tail the league. He was a star on both teams, coming to Dalhousie from Acadia where he graduated in Arts in 1921. We extend our sympathy to his wife the former, Sarah I. Morse, to his sister, Mrs. Grace Wallace, and to his mother who lives in Windsor.

Provincial Medical Board of Nova Scotia

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