

A. Yibert Douglas

Publications

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TERCENTENARY OF THE ROYAL GREENWICH OBSERVATORY

BY A. VIBERT DOUGLAS

Kingston Centre, R.A.S.C.

The Tercentenary of the Royal Observatory Greenwich (RGO) was celebrated by holding an International Historical Symposium from July 14–18, 1975, at the National Maritime Museum situated at the foot of the Observatory hill, Greenwich. This was the Fourth Joint IAU/IUHPS Symposium on the History of Astronomy. The theme of the symposium was “The Origins, Achievements, and Influence of the Royal Greenwich Observatory, 1675–1975”.

The published list of participants in the Symposium included 107 names, late registrations brought the number to about 140, representing many nations: South Africa, Japan, India, USSR, Poland, Czechoslovakia, Hungary, East and West Germany, Switzerland, Denmark, France, Portugal, U.S.A., Canada (five representatives) and of course, the United Kingdom. As at all such meetings the informal social events are of special value. The “Meridian Party” was a reception by the Trustees and Director of the National Maritime Museum in the “Queen’s House”, the central section of the Museum which was built as a summer palace for Queen Charlotte, wife of Charles I. On the fourth evening, most of us went in to London to the spacious rooms of Carleton Terrace as guests of the President of the Royal Society and the President of the Royal Astronomical Society. The next day we went by bus to visit the Royal Observatory at Herstmonceux with its Isaac Newton telescope and six smaller domes, its library and lovely gardens. Here, following the unveiling by Princess Anne of a bust of the first Astronomer Royal, Rev. John Flamsteed, and a large sundial, a garden party was held. The “Transit Dinner” in the Trafalgar Tavern in Greenwich concluded the program except for a Commemoration Service in Westminster Abbey on Sunday July 20 at the invitation of the Dean and Chapter. Just before Evensong, Sir Richard Woolley laid a wreath on the flagstone over the grave of King Charles II, founder of the Royal Observatory in 1675. The first lesson was read from Ecclesiasticus XLIII, 1–10 by Alan Hunter, C.B.E., Director of R.G.O. Herstmonceux. The second from portions of Acts XXVII was read by Basil Greenhill, C.M.G., Director of the National Maritime Museum. The address was given by Sir Bernard Lovell, O.B.E. The first hymn was Addison’s poem, “The Spacious Firmament on High”.

To mark this Tercentenary, a special 80-page illustrated booklet was ably

compiled and written by Professor W. H. McCrea, F.R.S. This is a beautiful and valuable record of events of astronomical importance through the terms of eleven Astronomers Royal, 1675–1971, and 2 Directors, 1971–75. The Director-designate is Dr. F. Graham Smith who takes over from Dr. Alan Hunter in 1976. This book is issued by Her Majesty's Stationery Office at £ 1 net. In it we read that after Flamsteed had set up his great clocks, his equatorial sextant and his 7-foot mural arc, he was visited by Peter the Great in 1698; that the first Nautical Almanac (for the year 1767) was published in 1766 under the directorship of Maskelyne; that in 1818 the Admiralty took control of the RGO and this control lasted until 1965 when it was handed over to the Science Research Council; that since 1822 the RGO has had charge of the Navy chronometers; that in 1884 the Greenwich meridian was chosen to be the Prime Meridian for the whole earth; that in 1880 Greenwich Mean Time became legal time in Great Britain; and that the transfer of all instruments from Greenwich to Herstmonceux was completed by 1958.

The opening paper at the first session was a well-illustrated invited discourse given by Prof. Owen Gingerich of the Smithsonian Astrophysical Observatory, a formidable task ably accomplished. The assigned topic was "The Development of Astronomical Theory and Practice from the 17th to the 20th Centuries". Subsequent papers covered a wide range: the founding of the Royal Observatory; the problems of navigation and quest for reliable chronometers; lunar tables; the observations and calculations of the early Astronomers Royal, Flamsteed, Halley, Bradley; early European observatories; the Paris Observatory planned in 1667 and established in 1671; Newtonian astronomy; the Nautical Almanac; instruments and their uses at RGO from 1675 to 1775; the "Airy Era"; Greenwich Time and the Prime Meridian; western astronomy in India; Greenwich instruments and the aberration of light; refraction, twilight and the height of the atmosphere; positional astronomy from Bradley to Bessel; the RGO in the mainstream of science – (i) gravitation, (ii) measurement, keeping and distribution of time, (iii) principles of observation and theory of errors, (iv) geophysics and planetary science arising from astronomical observations, and (v) structure of the universe using optical astronomy directly and in cooperation with radio, infrared, X-ray, gamma ray and cosmic ray astronomy.

I conclude this report with one lengthy quotation from a paper presented by Alan Chapman.

By the mid-eighteenth century, the Greenwich observations had become acknowledged as an international standard of accuracy, which had been achieved through the successful application of the telescopic sight, micrometer and improved methods of graduating circles to astronomical measurement by the instrument

makers of London. Indeed, the early Royal Observatory was fortunate to flourish at a time when the works of craftsmen such as Sharp and Bird could be put to maximum effect by observers of the calibre of Flamsteed and Bradley. Resulting from these developments, the observations of Bradley showed an improvement of ten-fold upon those of Flamsteed, and sixty-fold upon those of Tycho.

Particular mention must be made of the warm courtesy and kind helpfulness of Commander D. W. Waters, Deputy Director of the National Maritime Museum and of Commander H. D. Howse, Head of the Astronomy Department of the Museum. Their contribution to the success of this gathering merits sincerest thanks.

Thank You, Stephen Leacock!

REPRINTED FROM THE MCGILL NEWS, WINTER (DECEMBER), 1939

By
A. VIBERT DOUGLAS

WITH intense interest and delight I read *All Right, Mr. Roosevelt*.* Not being an economist nor an historian, I quite possibly learned more from it than would many people; but it is not the facts that it contains, but the general impression of earnestness underlying the light banter, and the real, the serious message of the pamphlet, that make it outstanding. Its message is needed in Canada as well as in the neighbouring country.

Intolerance springs up and grows like the gourd, and like the apples of Sodom it is devoid of life-giving qualities. And intolerance is present in our midst; though more voices are being raised against it in 1939 than in 1914—that at least is ground for hope. Well do I remember the intolerance of some of us in 1914-15.



Blank & Stoller

STEPHEN LEACOCK

It was many-sided, and one aspect was a complete lack of appreciation of the American problem. Not until seventeen years later when travelling through Dakota, Montana, Wyoming, New Mexico, Kansas, did I understand something of the situation President Wilson had to face—the difficulty of making a people, born and bred in those vast western regions so far removed from the throbbing heart of world affairs, realize that the problems of one hemisphere are the problems of another.

Professor Leacock played a part in those years and now he is continuing the good work.

But this battle against intolerance, hasty judgments, and lack of sympathetic comprehension must not be limited to the sphere of international relations, of politics and policies. In the realm of ethical principles, of spiritual values, there must be maintained the right to freedom of conscience, the right to expression of honest opinions. Intolerance in this realm exists in our midst. It raises its ugly head, it breathes forth a poisonous atmosphere of superficial patriotism and easy jingoism which many people inhale with corrosive results.

Is it not fitting that we resurrect the battle cry of Voltaire?—*Ecrasez l'infâme!* Crush the infamous thing—injustice in his day so rampant in church and state; injustice in our day so obviously rampant in dictator countries, so insidiously present in some of the social structure of our own country. *Ecrasez l'infâme!* Fight against intolerance, for it is an infamous thing, subtly undermining sincere honest thought, discouraging the careful examination of basic principles and ideals, drowning the voice of conscience and self-criticism under the thunder of invective against the shortcomings and evil deeds of others.

Many of us who were ignorant and intolerant of pacifism and non-resistance in 1914, feel very dif-

ferently about these things today; and whether we do or do not believe that these methods are applicable in the present crisis, we should honour the moral courage and sincerity—and perhaps the true vision, for the majority are not always nor necessarily right—of those who still maintain that the way of force is not the way to permanent world peace. Certain it is that when the present struggle shall have brought the free democracies to the point called Victory, the way of force must be replaced by the way of mutual helpfulness, sympathy, understanding and co-operation. No policy of suppression of a nation can lead to permanent peace.

But this brief article set out to be a tribute to Stephen Leacock. When he and I were both on the teaching staff of McGill University, I used to hope that some day he would lecture at the R.V.C. and I would have the opportunity to quote a certain verse from *Punch* in his honour. But the opportunity never came and now he has been elevated to the high dignity of a Professor Emeritus and I have been reported by an old-timer at McGill as “gone to a better world!”

From this other world, I want to pay my tribute to Professor Leacock, to tell him that I sometimes turn up a back number of the old *University Magazine* and re-read one of the gems from his pen—Master Caxton and his apprentice boys and all the problems of the ethics of journalism arising in the first few days of the world's *First Newspaper*. I want to tell him that his relatively recent essays on Oxford and on sending his friends to fish in a fishless pool gave me incalculable pleasure; and I want him to know that *Serge the Superman* brought laughter into our lives in those dark anxious days in England in the winter of—was it 1916? Not yet had some of us learned that there is a large measure of wisdom in the Voltairian maxim—Solemnity is a disease. Anxieties from without and from within, the burden of the world's suffering, lay heavy upon us. Into this atmosphere of grim tenseness there came *Further Foolishness* dripping merriment from the pen of Stephen Leacock. Many a strained muscle was relaxed, many a burdened heart was lightened. Sir Owen Seaman paid his tribute in several verses in *Punch*. The last verse only remains in my mind and I quote it here as memory dictates, a borrowed tribute to one the sparkle of whose mind banishes our gloom today even as yesterday, while his underlying serious message impels us to pause and to think.

“I would be proud as a peacock
To have it inscribed on my tomb
That I trod in the footsteps of Leacock
In banishing gloom.”

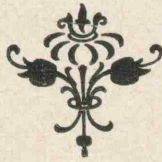
When I paused and pondered after laying down *All Right, Mr. Roosevelt*, the thought that came pressing in upon my mind was that here and now it is the duty of every one of us—not of that gifted author alone—to fight against injustice and intolerance in all their forms with every means at our disposal and with all the energy and weight of conviction that is ours. *Ecrasez l'infâme!*

*No. C. 1—Oxford Pamphlets on World Affairs. The Oxford University Press, Toronto: 10 cents.

THINKING IN CENTURIES

by

A. VIBERT DOUGLAS



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January-February, 1961

THINKING IN CENTURIES

Many Tragic Situations Are Due to Shortsightedness

Dynamic View of Knowledge Should Be Instilled In Young People

by A. Vibert Douglas

● "Few men and fewer woman can think in centuries." These words were spoken to me a few weeks before the Armistice in 1918, spoken quietly and thoughtfully by Sir Auckland Geddes — afterwards Lord Geddes — my Chief, in the War Office and later in the Ministry of National Service, in London during the First World War.

Auckland Geddes was a remarkable man. He was professor of Anatomy at McGill when the First Great War began; he became a realistic and determined soldier, and then when a serious accident relegated him to the War Office, he evinced a rare clarity of insight into the problems of harnessing British man power and he became an outstandingly competent organizer and administrator. In the early 1920's he served as British Ambassador to Washington and later became the active far-

This article was taken from an address given in Toronto in 1959 by Dr. A. Vibert Douglas, professor of Astronomy, to a meeting of Queen's graduates in the teaching profession.

sighted chairman of the Rio Tinto Mining Company. This is the man who deprecated the average person's myopic vision. Many of the complexities and perplexities of our own lives, as well as many of the tensions and tragic situations in the world are due to shortsightedness. Even our statesmen have rarely had far vision, the ability to think in centuries.

Canada's failure to recognize the great awakening of China is an example of failure to think in centuries. Here is potentially the greatest nation on earth, 700 million people awakening to the possibilities of the modern age, throwing off the centuries of overlord tyranny and indifference to mass education. Schools, technical institutes and universities, railroads, power plants and industry are springing up throughout the length and breadth of that vast country. Canada maintains an ambassador in the U.S.S.R., why not in China with its greatness and influence potentially exceeding, whether for good or for evil, even the U.S.S.R. in the present century. Let us at the very least have the realism to recognize them for what they are—the great and potentially greater and greater nation which is China.

I believe that every educator should feel some responsibility for seeing that the boys and girls of today become citizens who can see farther than do most of our generation. We want them to be men and women some at least of whom will think in centuries.

How can we develop in young people the habit of taking the long view?

I think one of the most important ways is by replacing a child's idea of a static body of knowledge that has to be

learned, by the exciting dynamic view of knowledge which can be likened to a great river whose origins are mere trickles in a far distant past, growing in volume as little and great tributaries flow into it from many lands in every age, growing and growing with the years and still growing under our very eyes. Let us try to give our students this living, dynamic conception of knowledge and hold before them the privilege of joyously and receptively immersing themselves in this river. Awaken their imaginations to the possibility that after university training they may themselves become searchers after knowledge and with hard work, honesty of purpose, and the luck of the Gods, they may perchance make their own contribution to this great flowing river. I remind you of these words of Einstein who knew whereof he spoke: "He who discovers a line of thought which permits us to penetrate even a little deeper into the eternal mystery of Nature is greatly privileged. He who, in addition, is encouraged by recognition, sympathy and help from the best minds of his time, experiences more happiness than anyone can realize."

In your teaching you point the way to the universities. Encourage your students in their early school years to think of the university as a desirable goal, and as a possible goal, the gateway to a richer and more interesting life. My thoughts go back through the centuries to the great B.C. era of Athens when Plato gathered those who would learn of him in the shade of a tree by the road to Daphni; when Socrates discoursed on the highest values with thoughtful men and fools down by the Piraeus; when Aristotle established his Lyceum hard by the steep northern slopes of the Acropolis. Two summers ago I invested some of my savings in going to Greece where I saw these very places and tried to catch something of the restless spirit of those centuries, the eager quest for truth in philosophic

realms of thought; for beauty in sculpture and in architecture; for understanding of the phenomena of land and sea and air, and of the universe of sun, moon, planets and stars.

My thoughts come down ten centuries to Cordoba, which I visited in 1927, standing in awe and reverence in the Mihrab of the ancient Moorish mosque where prayers were offered to the one true God eleven centuries ago. Cordoba was then the greatest seat of learning in Europe. It was the Mecca of the west to which students made their way from all parts of Europe — and this was two centuries before William of Normandy sailed across the English Channel.

Going now in thought to Bologna I remind you that in the year 1088 this oldest of the still-existing universities of Europe was founded as a school of jurisprudence, afterwards adding medicine and natural philosophy. So rapidly did its fame spread across Europe that in the 12th Century it had more students than has Queen's University at the present time. And not only did they develop powerful student self-government, but they did on occasion call the tune to which the professors had to dance or make good their escape from the city. I recall three statues in Bologna: one of a famous professor, Galvani, whose name is known to every student of electricity; one of Dante to the left of the entrance to the University Auditorium, a student there in 1287; and on the right of the entrance Copernicus of Poland with the inscription "glorious son of this University."

Soon after the founding of Bologna, universities began to spring up over Europe — the University of Paris, Oxford, and a little later Cambridge in 1281. The 14th - 18th centuries saw universities in almost every country of the west. In the city of Lima, Peru, the

Spanish conquerors established the University of San Martin in 1551. In Russia the University of Moscow dates from 1755. The old university lies in the heart of the city near the Kremlin, but the huge new skyscraper university was constructed between 1949-53 on the Lenin Hill on the bank of the Moscow river at the south extension of this great city. The central block is academic, thirty storeys high with a spacious entrance lobby, marble halls and stairways approaching the large Auditorium; numerous class-rooms, offices, reading rooms, and museums at the top. To east and west of the central building are sixteen-storey wings and beyond these, nine-storey wings providing accommodation in single or double rooms with lounges and cafeterias for 6,000 students. These wings terminate in two deep towers which accommodate 400 professors and their families in three and four-room apartments. In this great building the International Astronomical Congress was held in the summer of 1958 when I was privileged to be one of about twenty Canadians, and one of some 600 astronomers from thirty-four countries. Moscow is a wonderful city to visit, and the spirit at the University is very alive with pride in their achievements since the war, and confidence in their plans for the future. But were you to ask me if I would like to be a student there or a member of Faculty my answer would be an emphatic No. No one who values the freedom of speech and thought of our Canadian schools and universities would willingly exchange this freedom for the constraint within the U.S.S.R. where Marx-Lenin doctrines as interpreted by the current party rulers must be taught and learned and must not be questioned; where never a whisper of criticism of their rulers is safely made. If you have read Pasternak's *Dr. Zhivago*, you may recall these words: "the great misfortune is when belief in the value of personal opinion is lost," and, elsewhere, "merely to have personal

opinions is to draw suspicion upon oneself." As educators it behooves us to be alive to and oppose any attempt on the part of church or state, institution, or individual to curtail our right to hold and express personal opinions, within the bounds of good taste and reasonableness — to exceed these limits is to discredit ourselves.

But let us return to my simile of the river of knowledge. As educators we all want to encourage our young people to expand their vision beyond a narrow bigotted nationalism, and intolerance. We know that ignorance breeds intolerance, and intolerance breeds hatred, and hatred breeds strife; and war in the present age is the ultimate in human folly and self-destruction. Let us therefore begin at the foundation and be certain that our students are not ignorant of the immense debt that we all owe to the great thinkers, inventors, artists of many lands through many centuries. This is a game you can play in five minutes in your class-room and with almost any subject of your choosing — you can skim down the river as in a speed boat, through the centuries, drawing attention to this tributary from this country and to that tributary from another country, each and every one augmenting the volume and grandure of the river of knowledge in the particular subject you have selected.

Take electricity, for example: you have static electricity described by the Greeks, you have Galvani and Volta of Italy, Ampère of France, Oersted of Denmark, Ohm, Gauss and Helmholtz of Germany, Faraday of England, James Clerk Maxwell and Lord Kelvin of Scotland, Franklin and Henry and Edison in the United States, Alexander Graham Bell born in Canada, Steinmetz born in Central Europe, Lorentz in the Netherlands. I leave you to augment that list of ten nationalities.

Take my own subject, astronomy: we can name Hipparchus of Greece, and Ptolemy of Alexandria, Naburiannu and Kidinnu of Persia, Copernicus of Poland, Tycho Brahe of Denmark, Kepler of Germany, Galileo of Italy, Sir Isaac Newton and Eddington in England, Le Verrier, in France, Struve in Russia, Hamilton in Ireland, Doppler in Austria, Saha and Chandrasekhar of India, Wolf in Switzerland, Hale and W. S. Adams in the U.S.A., J. S. Plaskett and C. S. Beals in Canada, Rosseland in Norway, Edlén in Sweden, Kapteyn, de Sitter and Oort in the Netherlands, Lemaitre in Belgium, Mills in Australia. I have now mentioned men in twenty countries whose contributions to astronomy, both theoretical and observational, span twenty-two centuries.

Think of the fun you can have with the great lawmakers from Moses and Hamurabi and Solon down the centuries; with poets from Homer and the Hebrew author of Job, and Omar Khayyam and Dante as a start; with artists and musicians, or with the makers of medical science. I am convinced that teachers and parents cannot begin too early to direct children's thoughts to our deep indebtedness to people of other countries. I believe, too, that what children remember best is often the thing that an enthusiastic teacher tossed in out of a blue sky, so to speak, obviously not part of the course on which examinations will be held — just something of so much interest to the teacher that out it comes with a "take it or leave it" attitude, and perhaps for that very reason a not insignificant proportion of the class will remember it.

Thinking in centuries can be a voyage of exploration which carries our thoughts far back beyond recorded history — back with the archaeologists to the city of Mycene overlooking the plain of

Argos in the years of Agamemnon and the Trojan wars; back ten centuries further to the city of Knossos in Crete in the days of King Minos and to Egypt where the temples of the early Pharaohs challenge the imagination; back to 7,000 B.C. to the earliest walls of Jericho; back with the geologist a million years and a hundred times even that, into the remote past when the early forms of life were evolving from the primitive cells of living, self-reproducing forms in ocean, on land and in the air.

An Arab poet thought in centuries only when he wrote:

Men come and men go, but the mountains remain,
Men change but they never.

Tennyson was thinking in units of ten thousand centuries when he wrote of the changing form of the earth's surface:

The hills are shadows and they flow
From form to form and nothing stands,
They melt like mist, the solid lands,
Like clouds they shape themselves and go.

Astronomers look even farther back than do the geologists. As they look farther and farther out into space with great optical telescopes and with giant radio telescopes, they are looking farther back in time. Light from the sun takes just over eight minutes to travel the 93-million miles from sun to earth, and over four years to come to us from the next nearest star. Our knowledge of the remote stars of the Milky Way is of how they were radiating 50-thousand or more years ago. As to other galaxies far out beyond the limits of our own, the nearest are distant about two million light years and the most remote photographed to date are several thousand million light years distant. Even within our galaxy astronomers are now finding criteria for estimating the age of clusters of stars, one of which may be seven thousand million years old.

These figures may mean much to the scientist but the average person is

numbed by their magnitude; and so we turn to the poets one of whom has

Come on that which is and caught
The deep pulsations of the world
Aeonian music, measuring out
The steps of time.

The Canadian poet, Charles Heavysege, has caught the stately drama of the stars thus:

. . . the golden chime
Of those great spheres that sound the years
For the horologue of time;
Millenniums numberless they told,
Millenniums a millionfold
From the ancient hour of prime!

But men do not advance wisely by only looking backward. Alfred North Whitehead has said: "Whatever be the subject which we teach, our main task is to inculcate how to inherit, appreciatively and critically. What our students should learn is how to face the future with the aid of the past." If we have given our students the perspective gained by thinking in centuries past, so too they must realize that for many millions of years to come, literally millions of years, our sun is likely to maintain conditions on this earth favourable to the continued progressive life of mankind. Not in our lifetime, but none the less urgently to be worked for, is the fulfilment of Pasteur's far vision,

"I hold the unconquerable belief that science and peace will triumph over ignorance and war; that nations will come together not to hinder but to construct and that the future belongs to those who accomplish most for humanity."

In a world where there is so much evil, so much suffering, where, in W. B. Yeats' words,

The wrong of unshapely things
Is a wrong too great to be told

let us try to give our students *the* perspective to think in centuries, the zest and faith to believe that though

All things fall, [they] are built again
And they who build them again are gay.

Let us help them to respond to the challenge of Lascelles Abercrombie:

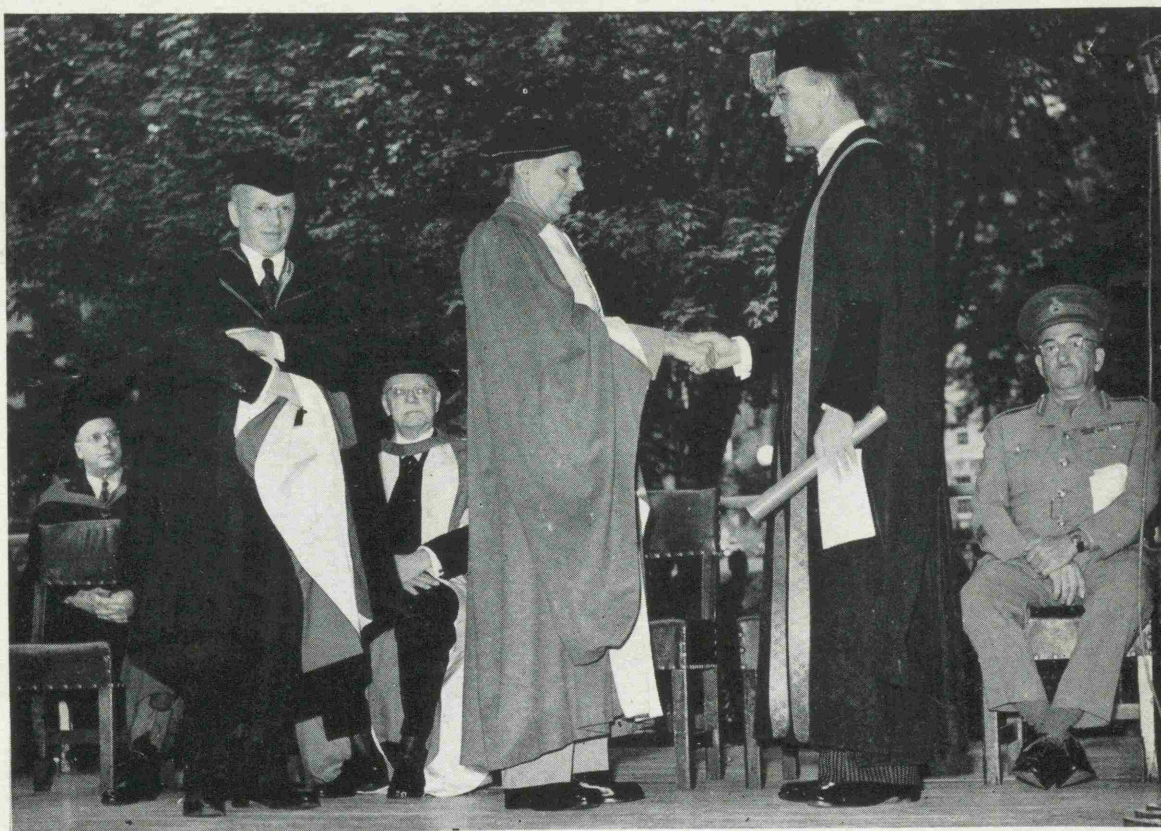
This, then, is yours: to build exultingly
High and yet more high,
The knowledgeable towers above base wars
And shameful surges reaching up to lay
Dishonouring hands upon your work and drag
Down from uprightness your desires, to lag
Among low places with a common gait.
That so Man's mind, not conquered by his clay,
May sit above his fate,
Inhabiting the purpose of the stars
And trade with his Eternity.

THE McGILL NEWS

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Number 1

McGILL GRADUATES' REUNION (OCTOBER 3rd-6th)



Montreal Star Photo

Principal F. Cyril James Conferring Honorary LL.D. degree on Field Marshall Viscount Montgomery of El Alamein, at a special Convocation on August 28.

In This Issue

UNIVERSITY WELCOMES RETURNING GRADUATES

WAR MEMORIAL CAMPAIGN CONTINUES

OVERSEAS FORCES ATTEND EUROPEAN UNIVERSITIES

By F. W. Price

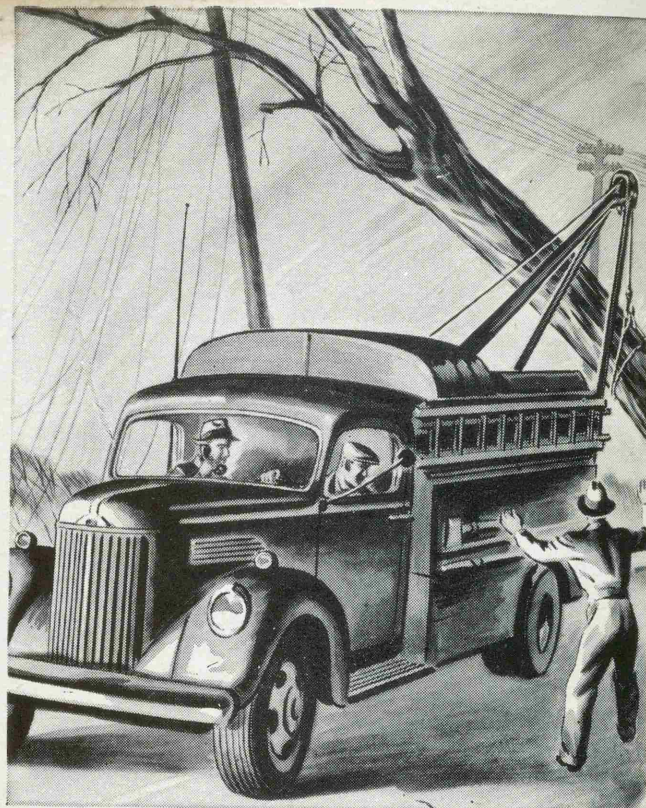
THIRTEENTH CROSSING

By A. Vibert Douglas

10.18

WHEN CONTACT COUNTS

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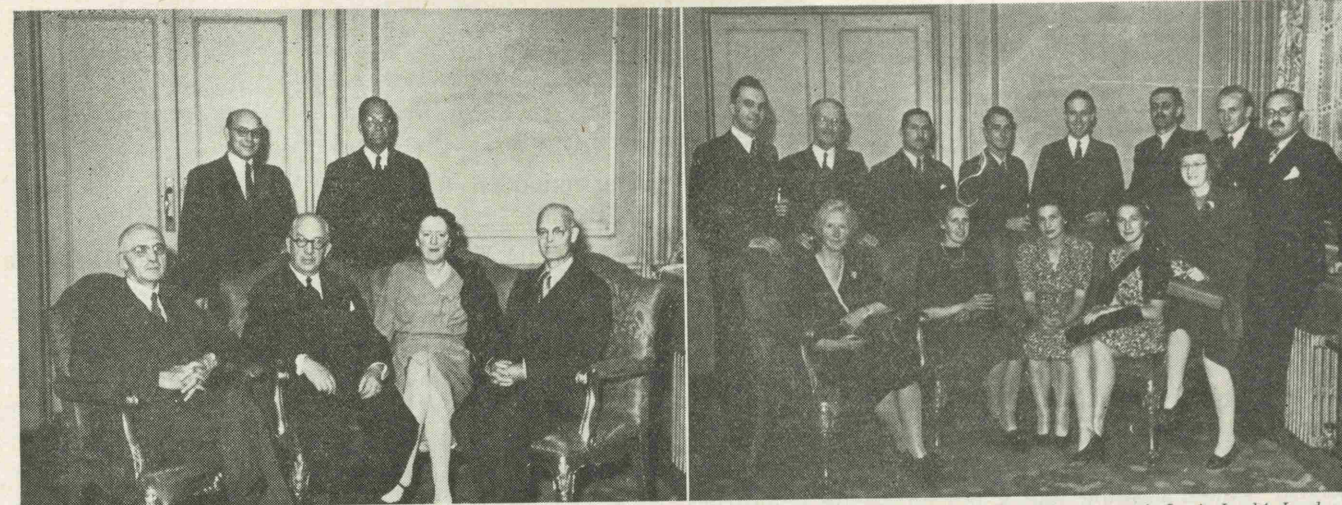


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GROUPS OF GUESTS AT LONDON DINNER FOR PRINCIPAL JAMES

A. Louis Jarché, London

Reading from left to right (Top): Mr. G. J. Staples, Mr. S. D. Parker; (Seated): Dr. A. Harold Levy, Dr. A. L. Johnson, Mrs. A. L. Johnson, Mr. J. G. Archibald.

Reading from left to right (Top): Surg.-Lt. Donald Derrick, Mr. H. T. Logan, Mr. G. E. Foster, Prof. Lancelot Hogben, Mr. Percival T. Molson, Dr. M. Pyke, Mr. Richard Eve, Mr. M. H. Blair-McGuffie; (Seated): Mrs. H. T. Logan, Miss Dorothy S. Stoker, Mrs. R. Eve, Miss Jean A. Clark, Miss Ruth M. Church.

August is the peak holiday month in England. Arrangements for it were carried out by William Baird and G. A. Hobbs, in the absence of the Secretary of the Society, Dr. F. Douglas Derrick, who was attending a dentists' convention in Holland.

Lord Bennett bought a ticket but did not attend as he is rarely present at evening functions now. Sir Harry Brittain expressed regret for his absence.

The Society is trying to organize a series of meetings for the coming winter.

WHO... IS CANADA'S No. 1 CITIZEN?

IT IS YOU... OR SHOULD BE.



If you are a No. 1 citizen, you will be doing your share to ward off the menace of inflation* facing Canada today.

How? . . . By conservation in your personal finances . . . Here are five ways you can fight inflation:

- Hold on to your Victory Bonds
- Buy only those goods which are in fair supply and save your money for the day when goods now in short supply will be readily available
- Avoid black market purchases
- Keep up your insurance
- Build up your savings account

This is conservation—the first re-

quisite for personal security—the first attribute of good citizenship.

If we all help in all five ways, the threat of inflation—rampant in some other countries and now menacing us—can be beaten and stamped out.

Let us all be No. 1 citizens. Remember, if you are a No. 1 citizen, you will look after No. 1 . . . Save for yourself and you save for Canada.

* Inflation, to the citizen, means simply less and less value for his dollar . . . his living costs soar as free and careless spending drives up the price of goods still in short supply. The fight against the menace of inflation is your fight . . . the fight of each of our citizens—12,000,000 strong.



BANK OF MONTREAL
working with Canadians in every walk of life since 1817

Thirteenth Crossing

By
A. VIBERT DOUGLAS

THE SHIP was a 9000 ton freighter with passenger accommodation for twelve persons. She carried a cargo of Canadian timber, huge tree trunks swung aboard one at a time and lowered dexterously into the largest aft hold, also cordwood lengths of barked timber slung aboard a dozen at a time and destined, so said the Captain, for furniture manufacturers in Great Britain. A small hold was filled with partially shaped boot forms roughly turned on a lathe to approximate shape and outsize, huge heaps of them on the wharf, looking like a pile of cream coloured vegetable marrows. Into another hold went crated farm machinery, while the bow holds contained sacks of flour and sugar, and in refrigeration units were eggs.

The twelve ^{passengers} persons formed a collection of people as diversified as was the inanimate cargo. One thing they had in common, the realization of their good fortune in getting the passage, for at this time reasons had to be very sound indeed before the government permit to cross from Canada to Great Britain was granted.

The ship had an honourable record of war service. Taken over by the Royal Navy early in the war, she had been a mine-layer in many waters and had seen service as far east as Madagascar.

Her captain had commanded another vessel of the same line and had sailed dangerous seas with cargoes desperately needed. He told of convoys attacked by submarines from below and by bombers from the air. Sometimes every ship of the convoy would reach its destination; but once, of twenty-six that started eastward, seven only attained port. He told of one skipper who had four ships sunk under him on one eighteen day Atlantic crossing, and made port on a fifth ship which like the three previous ones had picked him out of the sea only to be itself hit by a torpedo. But this ship was able to limp into port.

He told, too, of a bomber attack during which he was injured. He was in hospital without sight for some weeks, then came a return of vision which did not last and left him thinking he was to be permanently blinded. But sight returned again, and some months later he was on the bridge of his ship once more. He is a man of wide interests, he has sailed the seven seas and knows something of the eastern civilizations; he appreciates what is best in music and in literature; he is a philosopher in his own way, and in spite of having seen the horrors of sea warfare his faith in the intrinsic and potential goodness

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of mankind is undimmed. A passenger spoke pessimistically of the German people with that facile superficiality which avers that the only good German is a dead German. The Captain at once took issue with him: there have been and there will again be Germans both great and good; and given a wholesome environment and decent leadership, young Germans can grow into good world citizens.

While believing this faith of the Captain's to be justified, one is appalled at the task of helping Germany to establish a wholesome environment. Talking with any worker with UNRRA in Germany, or other official lately back from that defeated country, one pieces together a grimly black picture. There is no general recognition of national guilt and the hideousness of the sufferings they brought upon neighbouring nations. The tragic lack of any common policy on the part of the four occupying nations, the desolation and near starvation in large parts of Germany, are producing hatred and bitterness resulting in a lust for revenge. The time to act is now and no sacrifice on the part of the prosperous and well-fed nations is too great if it will help to prevent the despairing and desperate will to make a third world war.

The young radio officer on this freighter had been trained as an anti-aircraft gunner early in the war. His convoy was attacked in 1941 off the Severn and he was badly injured in arm and head, and was unconscious for fourteen days. He was in Bristol Hospital for months at the time when raids were sometimes of nightly occurrence and his tribute to the calm self-control and courage of the Matron, Sisters and young nurses was unstinted. Afterwards trained for radio work, he went back to active service. Of his many subsequent experiences, one of the most interesting was being at Montevideo during the *Graf Spee* incident, when excitement ran high in the streets and cafés as rumour followed rumour and the final scene was enacted. Now this young Scotsman, keenly interested in metaphysics and steeped in the history and literature of his native land, is advised for reasons of health to give up the sea and is hoping to gain entrance to Glasgow University.

The steward had vivid memories of dark, cold, stormy, winter days and nights on the Murmansk run, when many a gallant ship was lost and many a brave man too, carrying the munitions of war to Russia. Time after time in Archangel or Murmansk they were heavily straffed from the air while trying to unload their cargo. He was very struck with the poverty of the Russian people at these ports and the contrast

presented by the living quarters and relative luxury enjoyed by the Russian officers. After eighteen months of this run, he was sent to the Mediterranean on a maintenance ship. Near Malta on one trip he saw sixteen ships of his own convoy go down.

At noon on the second day, we learned that we had only done 236 miles and the next day 240 miles. The chief engineer philosophically announced that, although the ship was in drydock several months for reconditioning before being handed back to the Company whose honourable name she bore, her turbine shafts were out of alignment and he dare not drive her at greater speed because of the vibration which would result. So we ambled along at about 10 knots. A little snow and sleet, followed by sunshine and a heavy sou'west swell; radio reports of ice fields in our path and a detour to the south; then fog and fog horn with a few hours rocking gently to and fro—seven seconds to starboard and seven seconds to port; sunshine, a breeze, glorious whitecaps and a record run of 279 miles on our ninth day out; two or three freighters creeping up on our starboard and one far to port, passing us and disappearing; porpoises on several mornings, sporting alongside; a radio signal that the *Queen Mary* was passing us out of sight to the north on a west bound trip carrying Canada's new Governor-General—how we wished we could see her whizz by!

One evening as we drank tea at 10 p.m. in the small friendly dining saloon, the chief engineer told of his affection for a sister ship to ours on which he had sailed for many years in pre-war times and how she came to an honourable grave off the Normandy coast on D-Day. She was one of the ships selected to be scuttled by a skeleton crew to form the protecting breakwater behind which one of the famous beach landings took place.

On the eleventh evening we sighted Fastnet Light flashing once every five seconds. The sun set as a red ball into the Atlantic behind us as we passed this striking rock rising abruptly from the sea with a beautiful slender light-house rising from a ledge on its nor'west side, lifting its head and revolving top high above the summit of the grim, foam-encircled islet.

Then the lights of southern Eire appeared and the coast illuminated by an almost full moon . . . then dawn with lovely soft light and a big pale moon astern, with Jupiter hanging in the sky beneath it . . . the coast of Wexford, carrying thought back more than forty years to a beloved grandparent and the search for an ancestral home from which her family had been driven by religious persecution in the 1830's—herring gulls, wild duck, and small land birds in rapid flight near the Taskar Light which rises gracefully from its low flat island. By noon that day we had made a new record, 282 miles, and were nearing Holyhead with the blue shapes of the Welsh moun-

tains looming up to starboard. Off these mountains came a sudden squall, rain, and a brief gale. That evening we entered the Mersey and passed The Bar, anchored lightship whose warning bell carried memory back to third, fifth and eleventh crossings, when that historic estuary was entered in years of peace and of war.

Passing Liverpool just after midnight, flooded with moonlight, one could just discern with a glass some of its areas of devastation; and then an hour later hard over on the left bank of the river, we slipped silently into the Manchester Ship Canal.

Upon coming on deck again a few hours later, there were the sights, the smells and the sounds of rural England—golden gorse and broom on the canal banks, fragrance that left no doubt but that it was compounded of primroses and English turf, skylarks singing high overhead. Soon we passed into industrial England, old factories and vast new war time factories; wharves, drydocks, ships of Norway, Sweden, Russia, Greece, America; the swing bridge that carries the barge canal across the ship canal; then the harbour in the great grim city of Manchester. And so, at 2 p.m. on the thirteenth day, my thirteenth Atlantic crossing was over—a happy memory in every way.

That night I was in London, five days later in Zurich, then in Geneva; later high in the Alps at student rehabilitation centres; thence to Paris on May Day and back to England. Impressions of people from many countries and of events both tragic and glorious, pictures of devastation and of reconstruction, of suffering and of recuperation, some pictures grim, heart-rending and importunately serious, some full of sunshine and joy and hope for the future—these impressions chase one another in kaleidoscopic fashion across the screen of memory.

Then came the day when the powers that be decreed the fourteenth crossing and named the ship—the *Queen Mary*, 83000 tons, 700 miles a day, 30 knots, two thousand fellow passengers! We cast off from Southampton at 9:30 on a Tuesday morning, we tied up at Halifax at 11 on Saturday morning—four days at sea, and lo! Canada again.

Canada has a proud record but an unfinished task: Canada, where no armies clashed, no bombs fell, no foreign conqueror marched through the streets and maintained his supremacy by firing squad and concentration camp. Would that every Canadian could see Europe today and realize that there is still a fight to be fought on the home front, a fight against waste in a world where there is much hunger, against selfish nationalism and against the eighth deadly sin of apathy. If we want one great positive objective of infinite potential value, let us help to salvage the students of the liberated countries through the channel of International Student Service.

STREET SCENE - 1946



Government cheques come to this street every month. The Fosters, for instance—he was wounded at Vimy. Now his Veteran son is taking technical training on re-establishment grants. Other families receive Family Allowances. It's so easy—and private—to take cheques to the bank around the corner.

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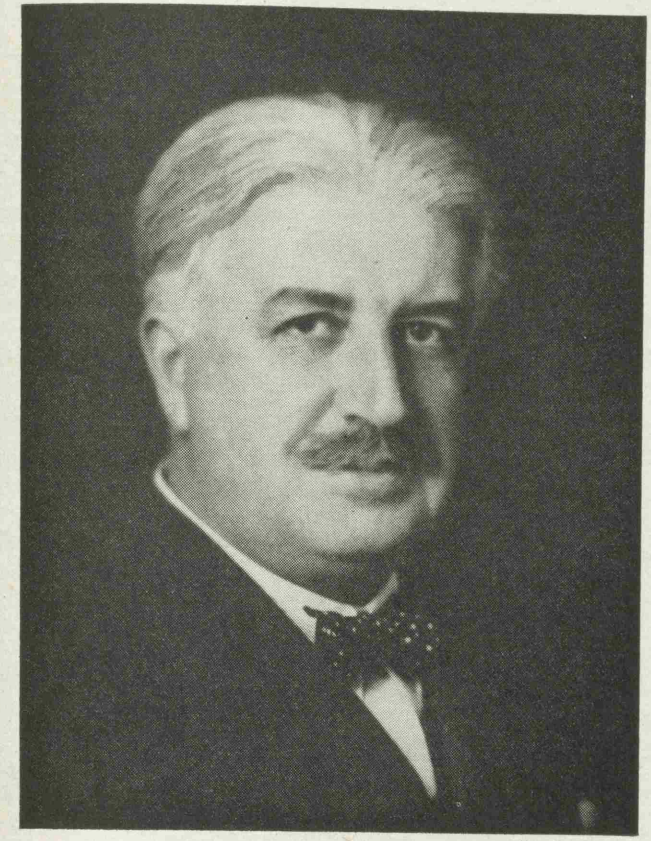
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Owed to John Percival Day*

By
W. D. WOODHEAD



DR. J. P. DAY *Blank & Stoller*

THE TIME has come, alas, when we must say
The curfew tolls the knell of parting Day:
And Day, whose light so long we have enjoyed,
Must join the army of the unemployed.
Be with me, Muse, my tribute to inspire:
Endue me with the true poetic fire:
Prose is no fitting medium to rehearse
His virtues: they must be enshrined in verse.

For many years his friends have viewed with pride
That form august, majestic, dignified,
Pacing with step deliberate and stately,
And greeting all politely and sedately.
That head so leonine, that frame so ample—
Did they not show his colleagues an example
Of what professors should aspire to be—
Perfection's goal, which none attained but he?

*This poem was read by Dr. W. D. WOODHEAD, B.A. (Oxon.), Ph.D. (Chicago), Professor of Classics, at a dinner given in honour of Dr. J. P. Day, B.A., B.Sc. (Lond.), D.Phil. (St. Andrews) former R. B. Angus Professor of Economics, on the occasion of his retirement.

And yet, despite that presence dignified,
Which well might fill him with Satanic pride,
Despite that stately presence, who could find
A man more modest, or a friend more kind?
To students he explained with patient bonhomie
The secrets of political economy—
An expert on gold standards, we are told:
No marvel: for he's built of solid gold.

At meetings we would watch with interest deep
The solemn spectacle of Day asleep,
Oblivious of the tumult and the roar
When some contentious colleague held the floor—
Till suddenly that massive head would drop,
The eyes would blink, th' incipient snore would stop;
A look bewildered o'er his face would break,
And Day, for one brief moment, would awake.

At convocations, all spectators say,
No figure rivalled convocation Day:
Canaries might with jealous envy view
His gown magnificent of saffron hue.

When first the gloomy news assailed us all
That Day at last must fade and night must fall,
We scarcely could believe the tidings grim:
With some we could dispense, but not with him.
Ah, why should he, indignant colleagues snorted,
A model of deportment, be deported?
Why should he leave us, he, a friend so true,
His virtues legion, and his faults so few?
His courage the Atlantic could unfold
On that dread night when mid the waters cold
His turn he calmly waited, and displayed
That, though dishevelled, he was not dismayed.

But 'tis his earnest wish, we understand,
Once more to settle in his native land:
And we who of his parting so complain
Confess that in our loss lies England's gain.
His beaming face no longer shall we view;
His sterling worth will now grace regions new:
But we, who gather at this festal scene
To honour him, will keep his memory green.

Great our affection, feeble though our lays,
When we with hymns of praise our voices raise
To celebrate *this* Day, the Day of Days.

REUNION NOTES

By
D. LORNE GALES

MAKE YOUR RESERVATIONS EARLY AND AVOID THE RUSH

HAVE YOU ever tried to organize a Reunion! It's really quite a job. Ask any of the Old Guard, and I have in mind graduates like General Eric McCuaig, Chairman of the 1921 Reunion Committee—which Reunion, by the way, I find is still very fresh in the memory of many graduates, so it must have been a good one—Dr. C. F. Martin, Dr. A. T. Bazin, Chairman of the 1926 Reunion, H.M. Jaquays, Mr. Justice C. G. McKinnon, John T. Hackett, K.C., Phil. Fisher, Gordon Glassco, E. B. Tilt, who handled the registration for two Reunions, and others who helped to make former Reunions a success.

This year's committee met in March and our first problem was—how many are going to attend? It seemed well nigh impossible to find an answer to this poser so we began looking for a way out of our difficulty. The product of our endeavours is the Reply-O forms which you received in the mail a while ago. There is no point in going into the saga of how long it took to get these letters into final form except perhaps to mention that when the proof eventually went to the printers and was rolling, we decided to change the programme slightly—hence the inked correction which you have already noted. Should you be labouring under any illusions and be tempted to think the addressing, hand correcting and folding of these 16,000 colourful forms were minor items on our agenda—just try it some time! As this goes to press the Reply-O's are coming back in droves. Now we have the problem of sorting and answering them. Many are accompanied by interesting letters and notes from well-wishers and enthusiastic grads.

It is the hope of the Committee that, if you intend to participate in this Reunion, you will *fill in and mail* your Reply-O quickly. Our main ambition is to make this Reunion the best yet. Conscious of all the complications that can arise and the restrictions that are very real these days, we need your fullest co-operation and support. We know that, if you try putting yourself in our position and are as anxious as we are that this 125th Anniversary Reunion be a success, you will answer your Reply-O and mail it *now*—it was designed to make your job easy and to facilitate ours.

* * *

The **Montreal Medico-Chirurgical Society** really played ball with the Reunion Committee, having gone to a great deal of trouble in changing the dates of their Fall Conference to coincide with the Victory Thanksgiving Reunion—this we certainly appreciate.

* * *

Have you noticed Bob Picard, the new Secretary of the Royal Bank, looking a little grayer of late? If so, it is no doubt the result of his earnest endeavours to work out a budget for the Reunion and trying to estimate answers to questions such as these—How many are coming?—What's a Football Rally cost?—

How much will we charge for the formal dinner? etc.—The following, however, is a question that has definitely been answered—"No—there will be no Registration Fee!"—Why? Because we want the graduates to come back to the University to look around, recall old memories and renew old acquaintances—their privilege, and we don't wish to put a price on it. To those of you who wish to attend all the functions, we say this—we have kept the price down to what we consider the bare minimum, in order to break even, and we want all graduates and past students to come back to old McGill.

* * *

The **opening luncheon** should see a lot of class reunions—so—on your toes, Class Secretaries! Names and addresses of the members of your class are yours for the asking. Les Buzzell, President of the Montreal Branch, will be in the chair and the new Chancellor, as well as Dr. James, will say a word of welcome on behalf of the University.

* * *

The **Football Rally** is in the capable hands of Stuart Forbes for the University and "Doc" Paterson for the Graduates' Society.—Are the Champs of 1928 going to be able to take the Champs of 1938?—Come to the Football Rally and see! The programme is being developed to make this first general get-together a memorable one.

* * *

Macdonald College will be visited by the returning graduates on Thursday, the 3rd. The Board of Directors had a thoroughly interesting visit out there recently and we felt that many of our graduates have only a hazy notion of what goes on, and is accomplished within the walls of those red-roofed buildings, and it was with this thought in mind that the Macdonald trip was arranged.

* * *

Dawson College—McGill's latest offspring—is going to put its best foot forward on Friday afternoon, for it has been chosen for the scene of the University reception.

* * *

Making the **Registration** Room in the Union attractive is a job to which Con Harrington is giving a lot of thought these days. Therefore, when one of our scouts located a dozen or so class pictures—Eng. 1900-'12—we lost no time in snaffling them for decorating purposes. Ossie Markham has some other ideas for photographic exhibits, too, that should prove interesting. Before leaving this subject—remember—we want you to register for the Reunion and get your football and other tickets at the same time.

* * *

A **Graduates' Daily** is the suggestion of some ambitious soul, to be put out and edited by ex-Daily men—and to appear on Friday, October 4!—How

A Threefold Challenge

ALICE VIBERT DOUGLAS, M.B.E., PH.D.

"Life is a struggle in which something is eternally gained". It was William James, the philosopher and psychologist of a generation ago, who made this dual statement of fact and of belief. It is a fact that life is a struggle; no one gets very far along the road of life without becoming aware of the truth of this statement. Furthermore it is also a fact that without some form of struggle, some outpouring of effort, life would lose much of its richness and value. *Grandescunt aucta labore* is the motto of one Canadian University; a free translation is this: they who have already attained much, increase their stature only by further effort. It seems to be a universal law of nature that growth and development come only as a result of effort and struggle. The great promises are "to him that overcometh".

When we apply ourselves to the task of training for some particular profession, the goal of our ambitions is not attained without much hard work and weariness of flesh and mind but in the effort there is great reward. I speak to you as one who admires your profession, who looks with respect and admiration upon every trained nurse devoting herself unselfishly and unsparingly to the alleviation of human suffering. It is a noble calling and surely one of the very highest. In moments of self-flattery I sometimes call myself a half-trained nurse. I value tremendously all that I have learned of nursing, most of which came to me incidentally as part of the struggle and discipline of life as years have come and gone in my experience. I have watched nurses in action in the home, in military hospitals in London in the Great War, and during this

last year almost daily as I kept an eye upon the students of one of our Canadian Universities who had to go into hospital for surgical work or illness or accident.

What is the ideal training for a nurse? How much more should she be taught than is at present customary? Within your own ranks, there are those who have been asking what is the ideal and what is the practically possible syllabus of training that the nurses of Canada from coast to coast may rank second to none in the civilized world. I have been studying your Proposed Curriculum, and I pay my tribute to the foresight and wisdom and courage of those who recognize the need for a sound training founded upon a good basic knowledge of chemistry, physics, physiology and bacteriology.

Last winter, I read the autobiography of an American physician who expressed the hope that nurses would remain the glorious helpers that they are and not try "to become half-baked doctors" as he put it. One can see the point of such a remark, but it is very easy to misinterpret and misconstrue such a statement. It does not mean that a nurse should be less intelligent, less aware of the scientific principles underlying the treatment which she administers. It does not mean that you are to repeat the platitudinous remark "a little knowledge is a dangerous thing", and then sit back feeling assured that ignorance on the part of the nurse is bliss for the nurse, for the patient and for the doctor. A little knowledge is a dangerous thing only when the possessor of that small amount of knowledge fails to realize that it is only a small amount, and that the part is never equal to the whole.

Ever since I began to study geometry at a fairly early and very impressionable age, I have had a tremendous admiration for Euclid. I think that great Greek geometer, who lived more than 200 years B.C., is still one of my heroes. He it was who laid down as one of the basic principles of logical thought that "the whole is greater than the part". As long as we remember this and retain a firm grip upon our common sense, and keep our critical faculties and our imaginations alive, so long will a little knowledge be better than none, and the more knowledge you, as nurses possess the better for you and for the community you serve. If nursing is to be not only an ancient art but a modern science, nurses must have the basic knowledge to establish and recognize cause and effect, keen observation and the sympathetic imagination which anticipates not only the big obvious needs but the little things that make all the difference between comfort and discomfort. No mere unthinking cheerfulness and rule-of-thumb efficiency can achieve what intelligent nursing demands.

Do you ever read and smile over the masculine condescension of Ruskin? In one of his essays he discoursed upon the advisability of higher education for women and it is rather interesting to note that he did not debar a woman from classics, literature, history, philosophy or any of the sciences, so long as she did not delve too deeply! Incidentally, one subject of study he most vehemently protested that no woman should be taught and that subject was theology. I do not entirely agree with much that Ruskin wrote in this regard. I remember a quotation that made a great impression upon my mind in my undergraduate days; the author was R. L. Stevenson, and the words were to this effect: he who has wrung forth the secrets of one brand of knowledge knows

more about the others than he who has tepidly circumnavigated all.

Thomas Huxley's essays on education are gloriously inspiring. In 1868 he pleaded for a liberal education for both men and women: "So far from imposing artificial restrictions upon the acquirement of knowledge by women, throw every facility in their way". He urged that education include "knowledge of the great and fundamental truths of Nature and of the laws of her operations"; he believed that every child at school should be taught the fundamentals of physics, chemistry, botany and human physiology. If this be advisable for the average child, how much more urgent is it that every woman training as a nurse, who is to work in the closest association with an essentially scientific profession, should be thoroughly grounded in physics, chemistry, physiology and bacteriology. If your work is to be of professional standard you must wring forth the secrets of the science of nursing.

It is one of the epic stories of mankind, how science has become woven into the very fabric of almost every aspect of our civilization. Read the life of Pasteur, whom Sir William Osler called "the most perfect man who ever entered into the Kingdom of Science", and there you will find a living exemplification of the spirit of seeking and the scientific method. In him we see the trained observer collecting his facts; the active mind and inspired imagination correlating those facts and formulating a theory to cover their relationships; and the honest self-critic and doubter who then tries to disprove his own theory by experimental test and further observation, or by deduction and crucial test to confirm the theory or show how it must be modified. Further deductions, and again the question put to Nature: Is this idea right or

is it wrong? And the answer that Nature gives must never be ignored. This is the core of the scientific method. "Bow down before facts and let them speak to you", said Kepler the astronomer, and a more sublime homage to Nature and the Creator can scarcely be found. This much at least of theology every woman and every man should be taught.

The researches of Pasteur, Lister, and others revolutionised medical and hospital and nursing practice; the recent researches in metabolism and the nature of hormones are having applications and consequences whose end is not yet in sight. Only nurses with a good comprehension of the principles of chemistry can appreciate these advances and follow with intelligence and keen enjoyment the pioneer work that is going on under our eyes, feel something of the thrill of the chase as new ideas are run to earth, old mysteries resolved and new horizons revealed.

In 1917, I heard Sir Joseph Thomson, Cavendish Professor of Physics in the University of Cambridge, lecturing in the Royal Institution in London. He was the man who first investigated the electron, the smallest known particle of matter and fundamental unit charge of electricity. That was in the 1890's and the whole research appeared to be only a matter of laboratory interest with theoretical importance in atomic physics, and of no practical value in everyday life. A few years went by and then it was obvious that these electrons were not a physicist's playthings only, but that there were applications in the medical field and in engineering of great promise. Amplifiers were constructed in which the elusive electrons were harnessed to the task of so magnifying a very minute electrical current that it could be easily recorded. This had tremendously wide and important applications in wireless

telegraphy; and during the Great War many devices utilizing electrons were developed.

In medical work, the first important application was in X-ray tubes where the bombardment of a metal anode by a stream of electrons gives rise to the very penetrating and chemically active X-radiation. The beta rays emitted by radium and other members of the radioactive families of elements were soon found to be streams of electrons ejected from the atoms. In the last few years, a new field of brain diagnosis has opened up by the use of very sensitive amplifying valves to magnify minute electric currents which can be detected by placing two electrodes upon the skull. The changes of voltage reveal certain patterns over a normal skull, but very erratic graphs will result if the brain is anywhere abnormal. Already the applications of this in cases of tumour or of epilepsy are important. Yet another very recent application of this branch of basic physics is the electron microscope which has a magnifying power vastly higher than any optical microscope that can be constructed.

The moral of all this is that no line of research in pure science is to be regarded as obviously and inevitably barren and devoid of practical value, and that of all heresies the worst is the heresy of finality. This is not a static universe, and the end of the growth of knowledge is not in sight. We live in a dynamic universe. We look out upon the world around us and everywhere we see motion, change, development. From stars to atoms it is the same story—motion and change. We look at your curriculum today and think it adequate to the needs of today; but tomorrow medical science will have advanced and the curriculum will have to keep pace. The nurse of today needs more scientific training than

the nurse of forty years ago, or even five years ago, and the nurse of tomorrow will need more still.

Just for this reason, it is obvious that short postgraduate courses are very much needed. The nurse who trained a few years ago should be able to come back and learn the latest methods and advances. The graduate nurse has a choice of special fields today, requiring postgraduate training. Physiotherapy as a specialist's vocation is making its place; so, too, in the field of mental hygiene and psychiatry, in pediatrics, and in the wide fields of public health, health education and medical social work there is need of the nurse with special graduate training.

Having been a teacher of physics for eighteen years, I am perhaps very specially interested in teaching as an art, and therefore it is natural that I should lay emphasis upon the importance of selecting only the best possible instructors in the hospitals and schools where nurses are trained. Select women who approximate as nearly as possible to Bacon's description of the man of science—one whose attributes include "the desire to seek, patience to doubt, fondness to meditate, slowness to assert, readiness to reconsider, carefulness to dispose and set in order—one who hates every kind of imposture". And if these be the high standards we set for the teachers, these too are the standards which we covet for those whom they teach, and for all who have gone out from the schools of nursing to continue their training in the practice of their profession.

Ideals like these are not achieved without struggle—and this brings me back to the quotation from William James with which we started—"Life is a struggle in which something is eternally gained." Something is eternally gained

—do we really believe that? If we do, we can say with Paul, "I glory in tribulation also, knowing that tribulation worketh patience, and patience experience, and experience hope." Hope, one of God's greatest gifts to man, for as Voltaire so earnestly pointed out, in the face of catastrophe, calamity and the mystery of suffering all our finest philosophies fail us utterly, if we have not hope. There are eternal values, and that is why struggle has its intrinsic worth, that is why struggle even in its ultimate, anguished, tortured, apparently hopeless, aspect is not unmitigated tragedy. *Something* is eternally gained—this is a belief not easily attained nor easily held.

In closing I quote a well-loved beatitude: "Blessed are the peacemakers." Blessed are you who bring peace to troubled bodies and ease from pain, you who reduce suffering and help Nature to heal and to restore. But it is not enough that you be scientifically trained, mechanically efficient instruments of bodily healing. You must be what the Bible calls ministering spirits, ministering not to the body only. Twice blessed therefore are you who minister to both body and mind. Do you remember Macbeth's query, "Canst thou not minister to a mind diseased? Pluck from the memory a rooted sorrow? Raze out the written troubles of the brain?" In Shakespeare's day, medical opinion no doubt thought this an impossibility. Today you do not call it a hopeless task and we are very cautious about using the word impossible. Yours is the challenge to keep abreast with developments in the science of the mind, and in this field every nurse may become a research worker.

Blessed, thrice blessed, are you who minister to the body, to the mind, and to the spirit. The service you can render

to mankind lays upon you a challenge that is threefold; to minister to the body—this is the realm of a science which has its roots in far off antiquity; to minister to the mind—the realm of a science still in its infancy; to minister to the spirit—a realm far wider than all science, for the eternal things are the things of the spirit.

If we are to maintain our sanity and balance in a world of discord and strife

and if we would bring peace into the troubled spirits of sick and suffering men and women, we must first be sure that in our own spirit there is joy and fullness of life, and a peace deep as the still depths of the deepest ocean, firmer than the foundations of a great mountain, wide and "spacious as the starry firmament's inescapable infinity of radiant gaze that fadeth only as it outpasseth mortal sight."

This address was delivered by Alice Vibert Douglas, M.B.E., Ph.D., before the Canadian Nurses Association at the Biennial Meeting held in Calgary, Alberta, on June 26, 1940. It was published in full in the September 1940 issue of "The Canadian Nurse".

THOMAS YOUNG, 1773–1829

BY A. VIBERT DOUGLAS
Kingston Centre, R.A.S.C.

Two hundred years ago in June 1773 Thomas Young was born in Somerset. The period can boast of no more brilliant and versatile a scholar.

Although he only completed the residence requirements for his M.D. in Cambridge in 1808, he had begun his medical studies in 1792. While a student at St. Bartholomew's Hospital in London in 1793 he had read a paper before the Royal Society on physiological optics, the accommodation of the eye. This led to his F.R.S. in 1794 at the age of twenty-one. His was the first treatise on astigmatism, its nature and measurement. He proposed the three-colour theory of human vision in his Bakerian Lecture in 1801.

From his early youth, Young was interested in languages, mastering the classics and the oriental languages Hebrew, Persian and Syriac. His interest in art and architecture led him into the archaeological field in Egypt. No key was known to the hieratic inscriptions, but in 1799 the Rosetta Stone had been discovered on which was inscribed the Memphis decree in three languages – Greek, demotic and hieratic Egyptian. Young studied these and inscriptions at Karnak and succeeded in making the first bridge to the interpretation of the hieroglyphic symbols.

But for astronomers Young's fame rests not on these remarkable achievements, but on his pioneer work in physics. Young's Modulus is known to every student but more important is his pathfinding work in optics. His was the first convincing wave theory of light. This brought him at once into a period of criticism and speculation between its announcement in *Philosophical Transactions of the Royal Society* in 1801 and his published lectures in 1807 and Fresnel's impressive support of the wave theory in 1818.

No astronomer is unaware of the application of interference phenomena by twentieth century astronomers both in the optical and in the radio ranges, applications which have led to results of inestimable value. Thomas Young was the first to enunciate the principle of interference of light and to explain the colour of thin plates. In his paper to the Royal Society in 1802 he suggested that the velocity of light is less in a dense medium than it is in a vacuum, and that there is a loss of half a wavelength on reflection at the interface between two media of different densities.

Quicquid nitet notandum is the motto of the Royal Astronomical Society. "Whatever shines is to be noted." It is fitting that astronomers honour the

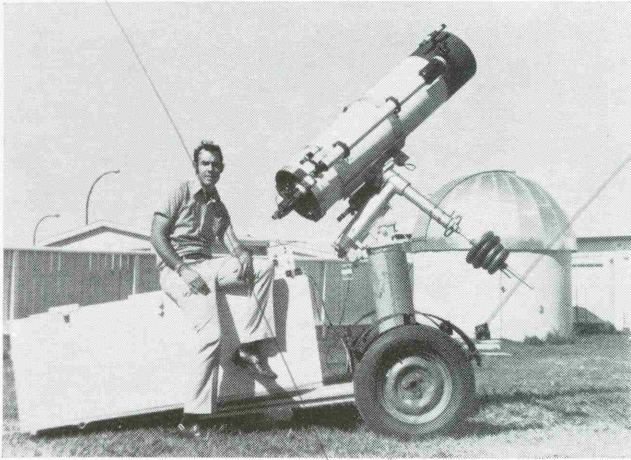


FIG. 1—The author with his 12.5-inch reflector mounted on its trailer.

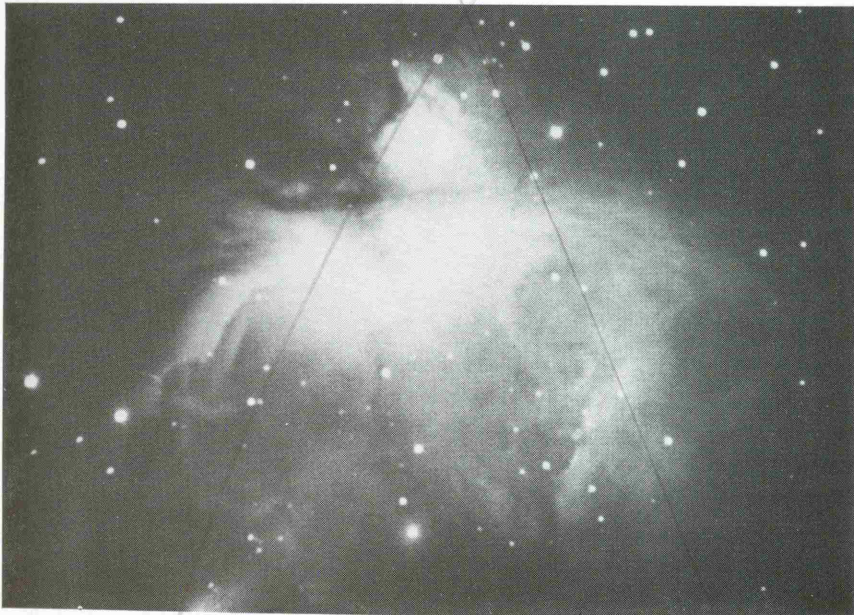


FIG. 2—M42 in Orion photographed with the telescope shown in figure 1 on 7 January, 1973 at a temperature of -35°C . Exposure 10 minutes at the $f/5$ Newtonian focus, development $4\frac{1}{2}$ minutes in D19.

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memory of this great pioneer in the study of light on the two hundredth anniversary of his birth.

Footnote: A fine tribute to Dr. Thomas Young has been paid by John Herval, Head of the Department of History and Philosophy of Science at Queen's University, Belfast in a paper in *Endeavour*, vol. xxxii, no. 115, 1973.

ABOUT OUR AUTHORS

W. IWANOWSKA is one of the few women who heads a scientific institution; she is Director of the Institute of Astronomy, Nicolaus Copernicus University in Torun, Poland. She has just returned to her native Poland from an extended lecture tour in connection with celebrations of the 500th anniversary of the birth of Copernicus. During this tour Dr. Iwanowska lectured to a number of our Centres as well as to Polish communities. She is a graduate of the University of Wilno, Poland and her research includes the chemical evolution of the Galaxy and the differences in chemical composition of stars and interstellar matter, and their interpretation.

PETER M. MILLMAN is reported to be as busy since "retirement" as before. In addition to his many other scientific activities, he is also Secretary of the relatively new Canadian Astronomical Society – organized in 1971.

L. A. HIGGS is with the radio astronomy section of the Astrophysics Branch at the National Research Council, but is currently conducting some research at the Dominion Radio Astrophysical Observatory, Penticton.

JOHN R. PERCY, our OBSERVER'S HANDBOOK Editor, is at present on leave of absence from Erindale College, University of Toronto. He is spending a year at the Institute of Astronomy, Cambridge University, England.

T. A. CLARK and G. IRWIN are co-authors of their first JOURNAL article. Dr. Clark is a graduate of Leeds University, England (B.Sc. and Ph.D.), and is now an Associate Professor at the University of Calgary. Mr. Irwin has a B.Sc. degree in physics and is a Laboratory Instructor, Department of Mathematics, Physics and Engineering at Mount Royal College. His interests are astronomy and solid state physics.

JACK NEWTON is a new contributor to the JOURNAL, but has been an active member of the Winnipeg Centre for many years and is now their President. Astrophotography and eclipse chasing are his hobbies.

A. VIBERT DOUGLAS is one of Canada's most travelled astronomers and is known to the Centres from coast to coast. Readers should consult the February 1973 issue of the JOURNAL for a biographical note about her.

MIRIAM S. BURLAND

TIME: FROM THE ASTRONOMER'S
STANDPOINT

BY

A. VIBERT DOUGLAS

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TIME: FROM THE ASTRONOMER'S STANDPOINT

A. VIBERT DOUGLAS

TIME is one of the most fundamental and common of all conceptions; it is also one of the most illusive. The qualifying words, "from the astronomer's standpoint" have been added in order to warn off all optimistic philosophers who might otherwise be led to expect that what is to follow will contain learned remarks upon abstruse aspects of the subject of time, such as these—What *is* time? Has it an absolute quality, or is it purely relative in the sense in which the theory of relativity regards both it and space? Is time directional? How does the mind of man become conscious of the passing of time? Ought we to regard entropy as "time's arrow" in the physical world, as has been suggested by Sir A. S. Eddington? Are time past and time future equally *real* in the sense in which the passing moment which at a certain critical instant we label the present, is real? These are problems which very few people can discuss to the advantage of others.

From an astronomer's standpoint, however, the question of time is less metaphysical, and it embraces such matters of practical importance as the selection of units of time, of arbitrary cycles of time to form the basis of a calendar, and the precise measurement of time.

The unit of time, which by its very nature has been universally adopted as the basis of time-keeping, is the day. If we take the average time which elapses from sunrise to the next sunrise, averaged throughout an entire year, we get the unit known as the mean solar day. Time

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measured thus, by the rate of rotation of the earth upon its axis, is called astronomical time.

Here, then, is our fundamental unit; but just as in the matter of units of length it is convenient to have large units as well as small, so also we require a larger practical unit than the day for purposes of chronology. You would not think of measuring the distance from Montreal to Vancouver or from earth to moon in feet; neither would you ordinarily wish to measure in days the time from the battle of Hastings to the present. We must cast about then for a larger unit of time. Mankind has for the most part passed over the unit provided by the revolution of the moon with its cycle of phases, the synodic month, and has settled upon a very natural, practical unit, the year.

Now when we come to consider the question of the number of mean solar days in a year, we find that there are three equally logical ways of measuring this, but that each gives a different result.

The earth's orbit being an ellipse, there is one point on it at which the earth is nearer to the sun than at any other point. Shall we, then, define the year as that interval of time between one perihelion passage and the next? This turns out to be 365.25964 days and is called the Anomalistic Year. It is not, however, a useful unit, for the entire orbit is slowly swinging around relative to the sun and stars, and this causes the perihelion point to move eastward eleven seconds of arc per year.

If we measure the year as the time required by the earth to make one complete circuit of its orbit relative to a point in exact alignment between the sun and some selected star, we then have what may be regarded as the true mechanical year. This is called the Sidereal Year because the earth and sun are regarded as a moving system

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within and with reference to the stellar system. Its value is 365.25636 days.

But it so happens that man, struggling to maintain his existence upon the earth, is interested less in the stars than in the earth itself. It can never be questioned that fundamentally man lives by bread, even though it may be added in parenthesis that he does not live by bread alone. Mankind lives upon the face of the earth by bread made from grain grown in the soil of the earth, and so it happens that the two most important events in the cycle of the years are the vernal and the autumn equinoxes—the time for sowing and the time for reaping, the time for the shearing of sheep and for the treading out of the corn. The two most fundamental needs of man, food and raiment, govern his thoughts and actions, and thus the year of chronology is the year of the seasons—the Tropical Year, as the astronomer calls it, measured from one vernal equinox to the next, 365.24220 days.

It seems to have been the great Greek astronomer, Hipparchus, who first pointed out that the Tropical Year was slightly shorter than the Sidereal Year. About 150 B.C. he was comparing the position of the sun against the background of the star groups, or constellations, of the zodiac, at the time of the vernal equinox, with the position as shown in the records of the Chaldeans made several thousand years earlier at Babylon. He found that the point where the ecliptic (the apparent path of the sun throughout the year) crossed the celestial equator had gradually moved westward from the constellation of Aries (the Ram) towards Pisces (the Fishes). No explanation of the advance of this equinoxial point was found until towards the end of the seventeenth century when that master thinker of all time, Sir Isaac Newton, showed that this rotating earth behaves like a gyroscope—the gravi-

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tational pull of sun and moon tends to bring the axis of the earth into a position perpendicular to the plane of the earth's orbit, but due to its rotation, it cannot right itself, but does what every gyroscope must do, it precesses or wobbles. This wobble is very slow, one complete wobble in about 26,000 years, which means that there is a corresponding motion, or precession of the equinoxes, amounting to 50.3 seconds of arc per year—and this is why the Year of the Seasons is always 20 minutes 23.5 seconds shorter than the Sidereal Year.

* * * * *

With no precise instruments for making observations at their disposal, the astronomers of a very remote past nevertheless determined the length of the year as approximately $365\frac{1}{4}$ days. This was done by means of the gnomon, a pointed rod stuck upright in the ground, the length of whose shadow could be measured with fair accuracy. The date when the longest shadow was cast at midday was the summer solstice, and the shortest shadow indicated the winter solstice, while the dates intermediate between these two gave the spring and autumn equinoxes. Observations of this kind made over periods of many years, showed them that the year was not an exact number of days and herein has lain the chief difficulty throughout the ages in the formulation of a completely satisfactory calendar.

At the time of Julius Caesar, the Roman calendar was in a deplorable state of confusion, so much so that the great Roman dictator considered this to be one of the most urgent practical reforms. He therefore appointed an astronomer, Sosigenes of Alexandria, to study the whole matter and draw up a new calendar with a leap year rule that would keep the vernal equinox always towards the end of March, thus ensuring that the civil

CALENDAR

Slide gnomon

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calendar and the astronomical calendar would remain in close agreement. There was at that time a discrepancy of about two months between the two systems. Amongst the last of Caesar's great edicts was the one which brought into effect in 45 B.C. the Julian Calendar. The year was to commence with January 1st instead of with March 1st, as previously in the Roman system. The word calendar comes to us, of course, from the Roman name, Calends, for the first day of every month. As the astronomical year was regarded as $365\frac{1}{4}$ days, an extra day was to be inserted every fourth year. The fifth month, Quintilis, of the old Roman year, Caesar dedicated to himself, and hence it now bears the name July. In similar manner the Emperor Augustus appropriated the next month which therefore was given the name August. The remaining four months still bear the number-names which were theirs in the ancient Roman calendar, being respectively the seventh, eighth, ninth and tenth months counting from March 1st.

As we have seen, however, the tropical year is not exactly 365.25 days but is 365.2422 days. The difference is 11 minutes 14 seconds per year, or somewhat more than three days in four hundred years. Hence as the centuries rolled by, the Julian calendar with its leap day every fourth year, gradually brought the date of the vernal equinox nearer and nearer to the beginning of March.

In the year of the Council of Nice, 325 A.D., the vernal equinox fell on March 21st, but in the year 1582, in the time of Pope Gregory XIII, it had moved forward to March 11th. Clavius, a Roman astronomer, was called upon by the Pontiff to suggest the best modification to the Julian system, with the result that the Gregorian calendar came into force in October 1582, when by decree ten days were dropped completely—the day following

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October 4th being called October 15th. By the same decree, it was specified that only those centuries divisible by 400 would be leap years. Thus the Gregorian leap year rule called for three fewer extra days than the Julian rule over a period of 400 years.

This rule serves the purpose admirably at the present time, keeping the vernal equinox between the dates March 20th to March 22nd; and it will continue to maintain this agreement for approximately a thousand years. After that time, however, the date of the equinox will begin to wander forward in the month once more and hence, sooner or later, a yet more accurate leap year rule will have to be introduced. This subject, together with the suggestion that a fixed calendar be introduced, either a twelve- or thirteen-month calendar, has recently been carefully considered by a representative international committee appointed by the League of Nations. Preliminary reports indicate an overwhelming majority for the reformed twelve-month calendar.

In 1582 all the Catholic countries adopted the Gregorian calendar, but not the Protestant nations nor those countries adhering to the Greek Church. England only faced the problem of calendar reform in 1751. Up to that time the year had been considered as beginning in March, as in Rome before 45 B.C. By act of Parliament 1751, the New Year, 1752, was to begin on January 1st and eleven days were to be dropped from the calendar, September 2nd, 1752, being followed by September 14th. Special acts were framed to cover such matters as taxes, rents, and so forth, but nevertheless there was much public misunderstanding, distrust, and resentment. The feeling spread that in some weird way men were to be robbed of

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eleven days of their lives and there were riots in various parts of the country, particularly in Bristol.

The Julian calendar is now 13 days behind the Gregorian. In Russia it was only discarded in 1918, and in Roumania in 1919.

Two other attempts to reform the calendar may be of interest. The Eastern Churches, which have never adopted the Gregorian calendar, did, however, form a leap year rule to restrict the wanderings of the equinox, namely, the omission of seven leap years in 900 years. In 1079 A.D., the Sultan of Khorássán appointed eight astronomers to reform the calendar. One of these was Omar Khayyám and he devised a very excellent rule to stabilize the date of the equinox—seven quadrennial leap years and then one after five years, that is, eight leap years in thirty-three. The disadvantage of this is that one cannot tell by inspection of a date whether or not it is a leap year.

The fixing of Easter in the ecclesiastical calendar depends upon the Metonic cycle of very ancient origin. In 433 B.C., Meton found that 235 synodic months (revolutions of the moon about the earth) corresponded very closely to nineteen years of $365\frac{1}{4}$ days. Hence it happens that every nineteen years the phases of the moon recur on the same calendar day, with a possible one day difference according to the leap year adjustment. Thus Easter, being set as the first Sunday after the first full moon after the vernal equinox, falls on the same date (or one day before or after) every nineteen years.

Before leaving the subject of calendars, mention should be made of a very useful system of chronology, introduced in 1582 by J. J. Scaliger, a noted Italian scholar. It is simply the sum total of days since an arbitrarily selected starting point—B.C. 4713 January 1.

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Reference to a Julian day calendar tells us that 1932 January 29 is J.D. 2,426,736. For the study of periodicity in the brightness of variable stars and kindred phenomena, this calendar is invaluable.

* * * * *

Thus far we have been regarding the day as a perfect unit of time, ready-made for the use of man. But, it may be asked, where would we be if it were found that the day is not constant, that the rate of rotation of the earth is a variable? The answer to this is that we would be exactly where we are—for it is now known beyond all doubt that the day is not constant, indeed it is not even a regularly changing variable! Astronomers have suspected this for a long time, but only recently, owing largely to the investigations of Professor E. W. Brown, has this been fully established.

Astronomers find in the sky four clocks that can be observed with great precision. Clock A, keeping what we have called *astronomical time*, is the rotating earth, relative to the sun; clock M is the moon in its revolutions about the earth; clock S is provided by the planets Mercury and Venus in relation to the sun, the outer planets being unsuitable as time-pieces due to their very slow angular motion about the sun; clock J is the system of Jupiter and his satellites for which long series of accurate observations are already in existence.

What we find is this: A differs from M, S, J; M differs from S, J; and J differs from S. It is the clock S that appears to keep what we may, if we wish, define as true mathematical time. What then is wrong with A, M and J that they behave as good clocks ought not to do?

Clock J is a very complicated system. Nine satellites revolve about Jupiter in periods from about twelve hours to more than two years. The inner four of these,

League of Nations
Committee.
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discovered by Galileo in 1610, January 7, have been the subject of intensive study by the Cassinis, a "dynasty" of Italian astronomers who directed the researches of Paris Observatory from 1669 until the Revolution, 1793; by Bradley, Wargentin, Delambre; by Lagrange at the instigation of the Paris Academy which offered a prize in 1766 for the best essay applying the principles of celestial mechanics to the problem of the Jovian satellites; and in more recent times, by Sir David Gill at the Cape Observatory, and by Dr. W. de Sitter, whose interest in this subject has extended from 1896 to the present day. The result of all this work has been that the masses of Jupiter and his four major satellites are known with an accuracy unequalled in the case of any other members of the solar system; but the time-keeping of this clock throws no clear light on the vagaries of clocks A and M.

Regarding S as the standard clock, it is found that both A and M lag behind it. These lags can be analysed into a uniform retardation, but to different amounts, A more so than B in the ratio 1:0.77; and in addition to this, both A and M are sometimes gaining slightly and sometimes losing, these changes taking place simultaneously but four times greater for A than for M.

What causes can be at work upon earth or moon or both to produce these results? Many causes rise to mind, but two only will survive the ordeal of critical examination. One of these is *tidal friction* between earth and moon, affecting both clocks; the other is erratic, unpredictable changes in the moment of inertia of the earth altering in either direction its rate of rotation. This latter change can only be brought about if there be deep-seated changes in the distribution of mass within the earth, redistributions which take place sometimes quite suddenly, evidently in the deep semi-viscous inner layers or core.

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We know that no known surface readjustments could have produced, for example, the abrupt shortening of the day in 1918, from $1/650$ of a second longer than the average to $1/540$ less than the average. Dr. de Sitter has stated that if the whole Himalayan range and the entire highlands of Central Asia had suddenly sunk to sea level, the resulting change in the moment of inertia of the earth would produce a change in the day only one-quarter that of the 1918 change. A uniform ten-inch contraction of the diameter of the earth would account for that particular change, but the more favoured hypothesis is that of the deep-seated earth movements. Such abrupt alterations in the earth's rotation took place in 1755, 1786, 1864, 1876, 1897, 1918.

These changes within the earth are immediately balanced by the changes in rate of rotation and have no effect upon the time-keeping of the moon.

Tidal friction, however, both retards the earth and accelerates the moon. The moon's gravitational attraction raises a tidal wave in the ocean, which travels around the earth as the earth rotates. There is very little frictional loss of energy in the deep oceans, but in the shallow seas and channels, and in the Arctic and Antarctic oceans, where ice is lifted, distorted and broken up by the tides, it is evident that the expenditure of energy in friction is considerable. It has been estimated that the rate of dissipation of energy by tidal friction is about two thousand million horsepower. At least one-third of this can be definitely ascribed to certain well-known and carefully investigated places—Irish sea, English channel, Behring sea, straits of Malacca, for example.

One effect of this friction is to retard the earth's rotation. This amounts at the present time to about $1/1000$ sec. per century, but it is not a constant. The

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reaction on the moon must be considered: tidal attraction tends to accelerate the moon, hence it recedes by centrifugal force, and hence by the third law of Kepler its period of revolution is lengthened, or in other words, there is observed a retardation of clock M. Furthermore, this effect is more pronounced at perigee, when the moon and earth are nearest, and thus the retardation varies and, in addition, the eccentricity of the moon's orbit is probably being increased.

* * * * *

The construction of artificial timepieces has been a subject of investigation by many of the most skilful workers and thinkers in times past and at the present day. From the simple hour glass with its trickle of sand and the ancient water clocks of the Chinese to the chronometers and master clocks of to-day there is a very long record of human endeavour, discovery, invention, and delicate craftsmanship.

The "escapement drive" marked a great advance in the construction of accurate clocks, but this has now been superseded in the Shortt clocks working on the "free pendulum" principle. The clock is sealed into a case having careful temperature control and evacuated to a pressure of about 15 mm. mercury. The motive power is supplied electrically by a "slave" clock. Two such clocks are at the Royal Observatory, Greenwich (Shortt Clocks No. 3 and No. 11); two at the Royal Observatory, Edinburgh (No. 0 and No. 4); and three are at the Loomis Institute, Tuxedo Park, N.Y. (Nos. 20, 21, 22).

The constancy of the best of these clocks points to the remarkable conclusion that such a clock may be "depended upon to keep time within a few hundredths of a second for a period measured in years".

For periods of time not exceeding a day, the best clock

ARTIFICIAL
CLOCKS

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is a crystal oscillator. This method of measuring very minute time intervals with extreme precision has been developed at the Bell Telephone laboratories, New York, and the comparison of such an oscillator with the Shortt clocks at the Tuxedo Park has been perfected by Mr. A. L. Loomis, recently. The crystal oscillates 100,000 times a second, and by means of a beautifully designed chronograph, a change in the rate of a clock of one part in a million would be made evident by inspection of the chronograph record after only a few hours run.

Continuous records of the oscillator and three Shortt clocks were made with this chronograph extending over the periods of 55 days and 147 days respectively. These have been analysed by Professor E. W. Brown and Dr. Brouwer in order to trace the causes of the slight variations of the clocks relative to the crystal oscillator. The results are most interesting, pointing to a sensitivity to extraneous influences on the part of the clocks and connections wholly unbelievable by those unfamiliar with scientific precision measurements. They found a semi-diurnal variation amounting sometimes to $3/10,000$ sec., which they ascribed to daily temperature changes affecting the signalling system between their laboratory and the master oscillator in New York.

A further periodic change of about $2/10,000$ sec. was found to be linked with the daily tidal periods, due to the gravitational pull of the moon upon the bob of the pendulum of each clock, augmenting or offsetting to a small extent the earth's gravity which so largely determines the period of swing of a pendulum.

Another periodicity of much greater magnitude than either of these, amounting to $1/50$ sec., was traced to natural oscillation of the piers to which the clocks were

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bolted. By changing the clock positions, this was eliminated.

To quote Professor Brown: "This is the first time that a continuous record has been made of the performance of a clock to a degree of accuracy beyond that of the clock. Four such clocks, under proper conditions of temperature and pressure control, could possibly furnish a control of the annual changes in the rate of rotation of the earth".

* * * * *

Within the last two years a very disconcerting thing has happened. As was stated at the outset, the astronomer embarked upon the sea of time with every intention of so laying his course that he would avoid the dangerous shoals and reefs of metaphysical abstractions. But suddenly and unexpectedly he has found himself in the midst of a whirlpool of seething uncertainty.

In 1924, Sir James Jeans carried out a series of calculations to determine the age of the universe. There were four avenues of approach to this problem: (1) from the known masses of typical stars and their rates of loss of energy by radiation; for example, the number of years which must elapse before a star like Sirius would become like our sun is calculated to be at least a million million years, hence on the current ideas regarding the life-history of stars, the sun must be of an age greater than that figure; (2) from the scattering apart of stars belonging to a moving cluster, such as the Taurus or the Ursa Major cluster, the stars of which undoubtedly have had a common origin and once moved through space in parallel paths with a common velocity but, owing to the haphazard gravitational influences of the other stars, some of the cluster stars deviate from their courses and thus with the passage of time the cluster

*Tell Sir J's
Biogical Pump
Story -*

TIME: FROM THE ASTRONOMER'S STANDPOINT

gradually opens out and loses its compactness; (3) from the sizes and shapes of the orbits of binary stars which must have been the result, likewise, of random gravitational influences of other stars, tending to separate the members of a multiple system and cause their orbits to become elongated; (4) from the degree of equipartition of energy which we find in the stellar system, massive stars moving slowly and less massive stars with greater velocities—again it is a question of mutual gravitational influences which in an infinitely long time would bring about a perfect distribution or partition of energy, a state not yet attained by the stellar universe.

All these considerations led to the belief that the age of the universe was of the order of 10^{14} , or a hundred million million years. This was regarded as a satisfactory result by both astronomers and geologists, and for six years it was unchallenged in any serious way. Then came the Abbé Lemaître's theory of the instability of the Einstein model of the universe, and the consequent interpretation of the observed recessional velocities of the remote spiral galaxies as indicative of an expansion of space. Sir Arthur Eddington was the first to deduce from this new theoretical approach to the problem of the nature of the universe some numerical estimates of the size of the "original" universe at the time when expansion of space began. Likewise from the Einstein relations the total mass of the universe was estimated, and then on the assumption that the radial velocities of the spirals are a measure of the expansion of space now in progress, it was calculated that this expansion cannot have been in progress for an infinite number of years, nor even for a million million years; for ten thousand million, perhaps, or even a hundred thousand million years, but not more.

This then would seem to set an upper limit to the age

of the universe, for stellar evolution could not have been in progress, before the expansion of space began, if Lemaître be correct in his conclusion that the primordial tendency of nebulosity to begin to condense into individual stars leads automatically to a tendency towards spacial expansion.

How are these two time scales to be reconciled? Each is based on a series of logical deductions from apparently justifiable premises with the observed facts of astronomy as the foundation stones.

It is undoubtedly a discouraging outlook. There are, however, those who would have us believe it was inevitable that we should sooner or later find ourselves in this *impasse* with regard to time, just as the physicist, in regard to light, and later still with regard to matter, reached the *impasse* of having two mutually contradictory theories, each of which was essential from certain specific points of view. He regards light as an electromagnetic wave and thereby very satisfactorily explains certain phenomena—reflection, refraction and interference of light. But other phenomena, photoelectricity and the theory of spectra, demand the Quantum theory, which pictures light as being not a continuous wave but a series of discrete, indivisible quantities of energy like a stream of machine-gun bullets. So, too, matter is ordinarily regarded as made up of particles, electrons and protons, but certain experimental results of the last few years force the physicist sometimes to regard the electron or proton as a train of waves. Even space has not remained unambiguous, there being some phenomena which point to the necessity of thinking of each electron as carrying about its space with it—a space into which another particle cannot penetrate. Is it now necessary to regard time in some such metaphysical

Conclusion Here then is a great outstanding mystery, an unsolved problem to challenge the astronomer to further efforts. Just as the beauty & harmony of the Universe inspires us with awe, so its unsolved secrets challenge & encourage us & fill us with unquenchable curiosity.

manner?—to regard these two evolutionary processes as coexistent and equally true because neither has really anything to do with the other?

Dr. de Sitter, speaking last year in London, expressed this attitude of mind, "I do not think it will ever be found possible to reconcile the two time scales".

But need we sit down with this air of patient resignation to the inevitable? It seems too early in the day to accept this as the final dictum. We do not want to obscure our recognition of the inadequacy of our physical knowledge by stupifying our senses in the atmosphere of a semi-mystic metaphysics. We ought to keep in mind this obvious fact, that our units of time and space have been derived by observations and measurements made within this galaxy, that is, in "static" space where gravitation counterbalances the forces tending towards expansion, and it is not inconceivable that an ambiguity arises as soon as we use these units to measure time and space outside the galaxy in the region subjected to spacial expansion. The atomic clocks in the distant spiral galaxies are, like our own clocks, beating time in a "static" space, but their energy messages travel to us for millions of years ("static" space unit of time) through this strangely stretching space, then the messages enter "static" space one again, come to our spectrographs—and we interpret them in the same way as though their paths had never lain outside the "static" regions of space. Perhaps along this line of investigation a ray of light may be found.

Until light from some expected or unexpected source does illuminate the scene, this problem of the time scale of the universe remains as a definite challenge—a gauntlet flung at the feet of the astronomer.

Curiosity, imagination & faith in the order of nature these are the outstanding characteristics of the man of science.

Welsh names of
Days of the Week.

Dydd	Sul	Sol
(day)	Llun	Luna
"	Mawrth	Mart (is) Genitive
"	Mercher	Mercurius.
"	Iau	Jovis) Gen . . . Jupiter
"	Gwener	Vener (is)
		Note: Welsh 'gw' = Latin 'v'.
"	Sadwrn	Saturn.

W. R. Thomas.

THE 1932 TOTAL SOLAR ECLIPSE

By A. VIBERT DOUGLAS

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By A. VIBERT DOUGLAS

A TOTAL eclipse of the sun is a phenomenon of such striking and unforgettable character that no persons who can possibly be within the favoured area at the right time should allow trivial circumstances or apathy to prevent them from making the attempt to see it. The majority of mankind live their lives through and die without ever seeing this solemn and impressive spectacle.

To have the path of totality come to one's very door is an event only likely to happen once in 360 years. Hence those whose span of life brings them onto the doorstep at the right time are extremely fortunate.

The total eclipse of the sun which will take place in the afternoon of August 31st, 1932, will offer just such an opportunity to many thousands of people living within or visiting a strip of the earth's surface about one hundred miles wide running diagonally across part of the Arctic Ocean, the northerly islands of Canada, Hudson Bay, the Province of Quebec, Vermont, New Hampshire and a portion of the western Atlantic Ocean. This track along which the great oval shadow will travel at about 40 miles per minute, crosses the St. Lawrence valley between the Island of Montreal and just beyond Three Rivers. The western edge of the shadow will be probably somewhere in Notre Dame de Grace, the eastern edge about 35 miles below Three Rivers. The following places are thus well within the path of totality—St. Gabriel, Joliette, Louiseville, Shawinigan Falls, Nicolet, Sorel, St. Johns, St. Hyacinthe, Drummondville, Waterloo, Richmond, Sherbrooke, Coaticook.

In explaining the cause of an eclipse to a child the following points should be made clear by simple experiments, diagrams or models.

(1) Every solid body upon which light is shining from one side, casts a shadow. A round body casts a conical shadow, a

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section of which on any flat surface is a circle or an ellipse according to the inclination of the surface.

(2) The earth travels once around the sun in a year, being sometimes a little more and sometimes a little less than 93 million miles away from it. The sun is a million times bigger in volume than the earth and so hot that it radiates light and heat in all directions.

(3) The moon is smaller than the earth and is a cold solid body. It moves around the earth once every $27\frac{1}{3}$ days, being on the average 240 thousand miles away from the earth.

(4) The earth turns round on its axis once every 24 hours.

(5) There is always a large tapering shadow cast by the earth, and there is likewise a smaller tapering shadow cast by the moon. If the moon gets exactly behind the earth from the sun it passes into the earth's shadow and there is a *lunar eclipse*, the surface of the moon becoming gradually darkened until it is all a dull copper brown. When the moon comes round to the sunny side however, it sometimes gets in direct line between earth and sun and then its shadow may fall upon a small portion of the surface of the earth. But both moon and earth are moving and the earth is also rotating, so that the shadow moves rapidly over a part of the earth before the earth has passed right out of the shadow into full sunlight again. This is an *eclipse of the sun*. Observers situated inside the path of the shadow witness a *total eclipse*, if the moon is near enough to the earth to cover up the entire solar disk. Sometimes the moon is at apogee or furthest from the earth in its elliptical orbit and its surface does not entirely blot out the solar surface but leaves a ring or rim of the sun in view; this is not so spectacular and is called an *annular eclipse*. Observers outside the path of totality will see a *partial eclipse* as the moon moves across the face of the sun obscuring a portion of its surface but moving off again without having covered the entire surface. This too, is an interesting but not a spectacular sight.

(6) We do not get an eclipse of the sun and an eclipse of the moon every month because the plane of the moon's orbit is inclined to the plane of the earth's orbit and so the three bodies do not come into exact alignment twice every month.

The last total solar eclipse visible in Canada was in 1925 from

a narrow strip of central Ontario; previous to that was the 1905 eclipse visible in Labrador. In 1927 the path of totality passed across Central England and southern Norway; in 1929, Sumatra and the Philippines; in 1930, the South Pacific and Patagonia; in 1932 we shall have our own special eclipse; in 1934 an eclipse will be visible in Borneo; in 1936, Greece to Central Asia and Japan; in 1937, Peru; 1940, Brazil, South Atlantic and South Africa; 1943, China and Alaska; 1954, Northern Canada, Scandinavia and Russia. These few facts from tables calculated by an astronomer forty-five years ago will serve to indicate the travelling that must be done if one would attempt to observe several successive total eclipses.

There are several things to be noted in observing a total eclipse of the sun.

(1) Provide yourself with dark glasses or a piece of smoked glass or heavily exposed and developed camera film to observe the partial phases, as until the instant that totality begins, even a small exposed rim of the sun's surface gives off too much light to be viewed with the unprotected eye.

(2) Watch for the onrush of the shadow, turning your back upon the sun for the moment. In 1842 Dr. J. D. Forbes went to Italy to see an eclipse and he thus described the approach of darkness: "I perceived a black shadow like that of a storm about to break. It was the lunar shadow coming toward us. I confess it was the most terrifying sight I ever saw!"

(3) Watch for the *shadow bands*. Boy Scouts and Girl Guides and adults can provide valuable observations of the fleeting shadows that race along the ground before and after the main shadow. It is best seen if a white sheet is spread on level ground. A few straight sticks should be at hand to place on the sheet indicating the direction of the shadow bands and the line of their motion. They differ before and after totality and with the position of the observer relative to the central line of totality. There is still much to be explained about these shadowy ripples and all careful observations should be reported (Fuller instructions in next issue).

Dr. A. J. Cannon of Harvard Observatory describes the "dance of the mystical shadow bands" at the 1925 eclipse, "I saw them clearly about one minute before totality, and they almost took my breath away. They were narrow pencils, dark greyish . . ." Other

observers recorded "broken waves or ripples paralleling each other and moving with express-like rapidity towards the sun" for 10 or 15 seconds at the beginning of totality, while at the end of totality (which, under different circumstances, may last from a few seconds to several minutes) the direction was not reversed but at right angles to the original direction. All such details as to time, duration, direction will be of value from every point on the path.

(4) Immediately upon totality, the blinding glare of sunlight being cut off, there becomes visible the *corona* or outer radiance surrounding the sun. This appears all around the dark disk of the moon which is obscuring the face of the sun and is thus described by the late Professor Baily, "I was electrified by the sight of one of the most brilliant and splendid phenomena that can well be imagined. For at that instant the dark body of the moon was suddenly surrounded with a corona, or kind of bright glory similar in shape and relative magnitude to that which painters draw round the heads of saints."

(5) Look specially for *prominences*; red, fiery tongues of light at the inner edge of the corona. These are sometimes very fine, sometimes missing entirely. They are due to cyclonic storms in the atmosphere of the sun, hurling glowing hydrogen gas and hot vapours to immense heights, and their bright radiations stand out in marked contrast to the paler softer glow of the corona. Baily describes the prominences visible in 1842 as "red, tinged with lilac or purple . . . perfectly steady."

(6) Watch for "Baily's beads" or the "diamond ring" effect. The surface of the moon being very mountainous, its outline is in some places irregular and hence it is possible for some light from the intensely bright edge of the sun to shine through a lunar valley at the rim of the lunar disk, and this gives a flood of intense light at some point or points around the rim.

(7) A snapshot of the corona and "beads," if any, may be obtained with an ordinary camera. Time exposures of more than a few seconds are unwise on account of the relative movement of earth and sun. Astronomers take as long exposures as they can by means of a clockwork drive that keeps the image stationary by compensating for the rate of rotation of the earth.

(8) The exact determination of the edge of the path of totality

is very important as a check upon the accuracy of the calculations made in advance. It is therefore of special interest if persons situated along the edge will send in records of their observations as to what road, building, hill or other physical feature was definitely in shadow in contrast to some neighbouring building, crossroads, railway track, river, or other feature which can be accurately located on a map, and which was definitely in the sunlight all the time.

(9) Astronomers are particularly interested in the "flash spectrum" just visible for a brief instant at the beginning and end of totality. The spectrum of sunlight is a rainbow-coloured band of light crossed by the narrow dark Fraunhofer absorption lines, but just at totality these dark lines are reversed, that is, they shine out as bright lines, the more intense background of the light from the surface of the sun having been cut off. A pocket spectroscope will show this flash spectrum.

(10) The change in temperature during the progress of the eclipse may be noted, also the degree of darkness may be roughly estimated by noticing what size of type cannot be read—newspaper print and headlines form a handy scale. An observer, in Australia, of the 1922 eclipse reported that by the above methods of estimation it was found that the amount of illumination during totality was equivalent to the light thrown by one candle three feet behind you in a dark room.

(11) Those who are interested in wireless telegraphy may take note of the fading effects which may accompany the passing of the lunar shadow. Radio experts will study this in detail.

(12) It is interesting to notice the effect upon birds, animals, and insects of the oncoming of darkness and the hush of all nature is commented upon by many observers. Definite observations regarding the behaviour of animals, birds, and insects will be of value.

It is not surprising that primitive people have been terrified by a total eclipse and that rites and rituals and even sacrificial ceremonies have been adopted to stay the supposedly malign influences which appear to cut off the light of day.

Near the centre of totality in the coming eclipse the duration of the total phase will be about one and a half minutes. In this

time and just before and after it, astronomers and physicists will make great efforts to obtain photographs of scientific value. Every total eclipse is a challenge to the astronomer to solve a few more of the many problems that the physical nature of our sun presents. There will be elaborate preparations, instruments will be brought over from England by three scientific parties from London and from Cambridge, and Canadian scientists will likewise make every effort to obtain new information and valuable photographs.

There is one critically important thing which, however, no astronomer can arrange beforehand, namely, a clear sky with no clouds. For the sake of the few professionals and the thousands of amateur sun gazers we can only hope and hope and continue to hope that the day may be fair and the sky clear.

N.B.—The writer will gladly receive from any observers, old or young, any observations made carefully and conscientiously, (Address: A. Vibert Douglas, McGill University, Montreal), stating name, address, exact point where observations were made, time and observations.

March 16, 1932.

Note by the Editor—In the next issue, which will appear about July 1, there will be another article giving more detailed instruction for making some of the observations.

University Women:

The opening doors

by Dr. A. Vibert Douglas, MBE,
BA '20, MSc '21, PhD '26, LLD '60 (Hon).

Much that has happened in education in this century has affected both men and women. Not only in Canada but in most countries the increasing emphasis on science, the amazing growth of knowledge in the pure and applied fields, in medical science, in the social sciences and in the advanced technology of our age, led to a demand for professionally trained people which no country is adequately prepared to meet. For women this has meant the opening of many doors heretofore closed to them, and of a bewildering breadth and variety of choice of training and employment.

When I entered McGill University in 1912, every undergraduate seeking a BA degree had to take one course in mathematics, one in physics, two in English, two (with few exceptions) in Latin, one in a modern language. After that the choice for a general or an honours degree was quite wide. Medicine and engineering at McGill, and at most other Canadian universities, were closed to women.

It needed the national emergency of the first Great War to open medicine to women at McGill, and the even greater emergency of the second Great War to open to them both medicine and engineering at Queens' University. The government called for more and more doctors and scientists for applied and pure research, trained people regardless of sex — and the universities, whether willingly or unwillingly, had to respond. More women have aspired to medicine than to engineering as was to be expected and, women being what they are, this will probably continue to be the case.

Canadian women are more conservative than the women of Great Britain and the older countries of Europe where the proportion of women doctors and engineers is greater, and the tradition behind these professional outlets for women is older. Travelling in Finland in 1954, I was impressed by the number of professional women whom I met at the University of Helsinki, in the city, in the towns of Tampere and Turku. I was told that 80% of the dentists in Finland were women, and that the percentage was steadily growing. In Zurich in 1949, I learned that much of the pharmaceutical work of Switzerland, wholesale, retail and research, was in the hands of women. In the Soviet Union, most of the medical work is performed by women doctors. When visiting six of the great astronomical observatories from Leningrad to Soviet Armenia in 1958, I was struck by the number of staff members who were women — a higher percentage than



*The symbol of another age, Queen Victoria's statue on the steps of RVC, still keeps a watchful eye on the passing generations of McGill women. For many, career opportunities lie behind office doors in the skyscrapers which dominate the city and the campus.
(Photo B. M. Smith)*

Today, this young coed and her boyfriend are carefree students. Tomorrow, she could be your family doctor, or teach your children their ABC's. (Photo Frank Rohland)



increasing numbers of applications from women who realize their careers won't materialize unless they can boast at least a Master's degree.

Dean Stanley B. Frost of the Faculty of Graduate Studies and Research says, "I advise women students that possession of a BA degree alone is of no value in earning a living. And for those who want to teach, particularly at the University level, the PhD is the union ticket." Last year, 40% of the students in Graduate Studies were women, and the addition of courses leading to an MEd in Counselling and a two-year course programme for a Master of Library Science, is expanding the opportunities available to women.

The swelling number of successful female graduate students hasn't made Helen Neilson much happier, however. "What bothers me is that large companies don't hire them as readily as they do men," she says. "The difference between the amount of money a society pays to educate its women and the use it makes of these women is very great. There exists a prejudice in large companies against giving women positions leading to management because of the likelihood of marriage and subsequent retirement. Last year, for example, an interviewer from a large company spent a lot of time here but he said his company wouldn't allow him to interview women."

This attitude is slowly changing, however. Although men have the edge in competing for positions in management, most companies will at least talk to women on campus. "Ten years ago," says Ruth Peltier of McGill's Placement Service, "campus interviewers were very surprised to find themselves confronted with women during their interviews. Today, some graduates are hired without ever using our services! This is particularly true of graduates in fields such as Library Science where the demand is very great."

Problems, Problems

But worries about job opportunities can be saved until after graduation. For many undergraduates there are more basic doubts behind that bubbling enthusiasm for an independent (to a point) life — big doubts that come with big ideas. One first-year student put it this way: "It's a shocking kind of doubt. All of a sudden you realize that your great ideas for the future may never work out. You may be doomed to a life of housework from the moment you graduate. And you're scared."

Anyone who acts as den mother for 500 coeds must have some insight into their basic problems and how they differ now from two decades ago. Helen Reynolds offers this synopsis: "There seem to be many more cases of worry that bring on emotional strain and instability. I don't think there is any one reason for this — usually a number of factors contribute and those that apply in one case don't in another."

"It is almost impossible to separate academic pressure from personal problems because the two become so much involved. If the student is worried because her academic work is not going well, she begins to worry about everything else."

She attributes many of these problems to a lack of communication between parents and their children. "It is part of an age of rebellion although I don't like to describe it that way. Some of the younger people say the status quo must change but they don't really know what they want. They say they want freedom and this has very often caused problems with their parents. Then this builds up. Now add to that academic strain and you have a problem for the psychiatrist."

Dr. J. G. Lohrenz, Clinical Director of the University Mental Health Service, agrees that unhappy students can't study properly but adds, "We have seen some who have great emotional problems and who are doing well academically. It's a matter of adjustment, of growing up in our society in the 20th century. Besides the academic pressure, there are a lot of unwritten social and sexual codes to which these students have to make adjustments."

The true active rebellion, however, seems to be restricted to a small group of girls who call themselves, quite naturally, activists. ("I prefer the term 'beatnik,'" growled one disgruntled father). Participants in this relatively new form of group activity are identified by eccentric clothing, long hair and a readiness to protest at the drop of an anti-war button. Gladys Bean thinks they are fooling themselves and not too many others. "They think they aren't conforming while in reality they are conforming to their own group. If the group does something the individual doesn't agree with, he is afraid to stand up and argue. I hate to see students coming to universities and falling into a pattern just because they think they should. They're not going to be much use to anyone if they can't learn to think for themselves."

Helen Reynolds, while by no means a beat-

nik booster, does give some of them high marks for their intellect, if not for their sartorial taste: "In all fairness, some of them have very good minds. There is one girl to whom I have spoken about her appearance more than anyone else and, when I can forget what she looks like, I enjoy talking to her. In a large number of cases, these girls change from one year to the next and then laugh at themselves for the way they acted before."

1918 And All That

No one, however is laughing at the college-educated, career-chasing woman any more. Since Emeline Pankhurst and her suffragettes hounded the British authorities into letting them vote 48 years ago, woman has fought her way into businesses, educational institutions and laboratories and has managed to stick. She has proven herself a qualified administrator in many cases (and in some cases, superior to her male counterparts) without sacrificing her femininity.

On the campus she is a moving force. She still can't be clearly understood, not by a long shot. But she is infinitely more dynamic than she ever was, with big plans for herself and equally large problems to face. Through her passion for independence she is handling her difficulties more efficiently than ever, certainly not because it is easier, but because she wants to go it alone to a great extent.

Marriage is still very much on the mind but so is that all-important career that she finds so fulfilling. "I want to be more than an addition to my husband," says one senior student.

"I'd like to be principal of McGill University," says another. □

one would be likely to find in comparable institutions on this continent.

In the wake of a great war with its appalling expenditure of young male lives, thousands of young women were left without their fiancé's, without the partner of a hurried war marriage. For many of these, a rich full life could only be achieved by equipping themselves for a professional career. The traditional spheres of teaching, nursing, library work were being rapidly augmented to embrace new specializations for which the Universities broadened their curricula. Schools of physical and health education, of physiotherapy, occupational therapy, and social work were set up across Canada, offering diplomas and degrees. Advanced training for nurses with specialization in teaching and supervision and in public health became degree courses. At McGill two devoted women of great vision and sound professional standards laid enduring foundations for the School of Social Work and the School of Nursing: Miss Dorothy King and Miss Marion Lindeburgh.

Greater and greater specialization has led universities and hospitals to provide training for laboratory technicians and radiologists. With the proliferation of electronic calculating machines has come the need for courses in programming, statistics and actuarial science.

Another expanding field for special training is applied psychology, with courses in mental and aptitude testing for vocational guidance, training for work with retarded children or with the inmates of mental hospitals, reformatories and prisons.

This half century has witnessed more young — and less young — married women seeking full or part-time employment outside their homes. This has placed new demands on educational institutions. "Continued education" has become a slogan not only for young high school and university graduates of both sexes, but for married women. Harvard University pioneered in a major project, planned by Radcliffe College with great imagination. Refresher courses became available to selected women whose professional careers had been interrupted by marriage, homemaking and the rearing of children. When these important years were accomplished, the urge to resume professional work might become increasingly strong. But nothing in this world is static, and a few decades render the older methods, techniques and procedures so out of date that a period of intensive study under skilled super-

vision may be essential. Society needs the skilled service which these women are anxious to give, providing they are brought up to date in their professional knowledge and procedures. In these fields, then, lay a new challenge considered so important by the Canadian Federation of University Women that "Continuing Education" is one of the main study topics in their branches across Canada.

In the newly self-governing countries there is now a strong emphasis on the education of girls and women. The needs in education are immense, but great also in the health services, social work and indeed in all highly skilled professions.

Traditional resistance to the education of the girls of a family is giving place to eager and urgent demands for it, even in the conservative Muslim homes. In Addis Ababa, I was told by an Ethiopian professor of education that the pressure for education of women is coming very largely from the educated young men. This is a healthy sign. In Khartoum, I asked the beautiful wife of a Sudanese professor, the mother of six little children, a graduate and full time secondary school teacher, whether there was pressure upon her to restrict her activities to her home and voluntary community service. On the contrary, she replied, the social pressure is for every woman who has had the privilege of higher education to go outside her home and use her training where the need for it is so desperately great. A survey of the inadequate educational facilities for girls and women in the underdeveloped countries is now one of UNESCO's major projects over the next few years.

One more instance of the changing scene in women's education is the great increase in the numbers of women proceeding to higher degrees and competing with men for research fellowships. Before the first Great War there were no travelling fellowships for women in Canada, as far as I am aware, and very few in Europe. The International Federation of University Women, founded in 1919, early recognized the need for financial aid to enable research scholars to pursue their investigations in countries other than their own. But it was 1928 before funds were available for the first award, made to a Swiss geneticist who continued her researches in Berlin. At the Brisbane Conference of the IFUW in 1965, the convenor could announce that a total of 153 fellowships and 52 grants had been made to scholarly women of 33 nationalities.

In Canada great credit is due to the IOE for its faith and vision in establishing War Memorial Fellowships for research in Great Britain, open equally to men and women. In 1921, the first awards were made and one man and one woman proceeded to Oxford and Cambridge respectively; both are now retired after more than two-score years of academic work in Canadian universities. Also in the nineteen-twenties, the Canadian Federation of University Women established its first travelling Fellowship open to women graduates of Canadian universities for research in some other country. To this they added, ten years ago, an International Fellowship to be awarded annually by the IFUW.

Even more significant is the recognition by men of the research potentialities of women scholars, and the resulting change of policy covering the awarding of National Research Council fellowships and bursaries, and of 1851 Exhibitions, permitting women to compete with men for these awards. Canada Council awards are likewise open to women scholars. It may also be noted that under the Colombo Plan and External Aid programmes, women as well as men are brought to our universities from the developing countries.

The role of education for women today is to provide them with the knowledge and the skills which will enable each one to live a full, rich, disciplined and creative life as a wife and mother, if that finest vocation be hers, as a teacher or other professional woman, a citizen able to take her share in the tasks of home, of community, of nation, internationally — tasks which demand greater knowledge than ever before, understanding, and above all integrity. □

University Women: After College: What?

What is the end result of providing higher education for a woman? Does it make her a better housewife and mother, or is it just a colossal waste of time and money? Can a woman really compete in a man's world and demand equal pay for equal work?

These were some of the questions which *The McGill News* reporter Julie Hull discussed with five outstanding McGill alumnae, whose careers span a period of almost fifty years:

J. Grace Gardner is a former principal of the Girl's High School of Montreal and a former Education Officer with the Protestant School Board of Greater Montreal. A firm advocate of continuing education for women, she lauds the example set by Radcliffe in this field and practises what she preaches by currently taking French lessons twice a week.

Mrs. Saul Hayes is a former delegate to the Permanent Canadian Mission to the United Nations, and a driving force in the establishment of the Centre for Developing Area Studies at McGill. A busy grandmother, she is a former City Councillor of Montreal, and finds time to serve on many national and local committees.

Prof. Helen R. Nielson has been director of the School of Household Science at Macdonald College since 1949. During World War II, she spent three years in Halifax as Commanding Mess Officer at Eastern Command Headquarters, and later did food research at the RCAF Institute of Aviation Medicine.

Dr. Mary Burns, a scientist with McGill's Space Research Institute, specializes in exobiology which she describes as the study of life beyond the earth's atmosphere. She confesses to being an avid science-fiction fan ("because they make everything so simple"), and raises Abyssinian cats. She received her PhD from Cambridge and has been working on the High Altitude Project since 1965. A firm believer in Canada's future, she enjoys working with HARP because "it is a uniquely Canadian project."

Dr. Vita Land is a Junior Resident in paediatrics at the Montreal Children's Hospital. During her student days she was president of the Women's Union, and was involved in public speaking, the Hillel Society and the Conservative Society. Dr. Land also served as a resident assistant at the Royal Victoria College.



J. Grace Gardner, BA '18,
retired high-school principal:

On the role of women:

"The right thing is for women to get married and stay at home until the children are old enough. My mother was educated and she stayed at home — I think she spread her influence beautifully."

Careers for women:

"I don't think the so-called 'marriage gap' matters much; it's a normal part of life to have children. Besides there is no real yardstick by which one can measure the value of a person. I don't think any education is wasted. Furthermore, an educated woman can add to the betterment of the community. Women are, after all, the peace creators of the world."

Adjusting to university:

"Anyone who leaves high school to go to university has a tremendous adjustment to make. One loses one's identity, especially in a big university. You become used to a paternal arrangement which is suddenly withdrawn. I would send my youngsters to a small-town college rather than a big city university."

The value of a BA degree:

"I once went to RVC to speak about jobs. Most people come to college for self-betterment, but you really need some practical training. I suggested the girls learn to type."



Beatrice Hayes, BA '33,
housewife:

On values of education:

"There is an emphasis on the sciences which is out of all proportion to its worth, but we are in an automated age and I suppose this is necessary. But there has to be a change in the attitude towards the value of an individual, in his capacity to fulfill his potential. University graduates are not necessarily members of the intellectual elite in a cultural sense. Many painters, poets, artists and writers have had no formal education, yet they have contributed so much to the enrichment of our lives."

The practical side:

"Theoretically, all professions are open to women, but this is not true in actual fact. Once a woman has her foot in the door, there is still discrimination. Equal pay for equal work has yet to be achieved. But the value of a degree is not always translatable into dollars and cents; women who have been exposed to the university curricula can make more intelligent mothers."

Graduate studies:

"A BA is not a completion in itself, it merely exposes one to temptations to be continued. Post-graduate work is becoming more and more important — as a matter of fact, I don't think it would be a bad idea if all universities became post-graduate institutions."

Wardens of Royal Victoria College

By
A. VIBERT DOUGLAS

THE first Warden brought to the Royal Victoria College—so I am told, for it was not my privilege to know her—a scholarly philosophical mind and an intense and unworldly concentration upon abstract things. Of the second Warden my tribute of appreciation was written in the form of a memorial inscription, modelled on a classical style in an effort to convey something of the stately dignity which she brought to her position. The human side of her character many of us, who were undergraduates in her day, only fully discovered and learned to appreciate after her retirement.

The third Warden we knew both as a professor who opened to us the portals of English literature, and as a valued friend, long before we knew her as Warden, an office which she graced with gifts of mind and heart and practical wisdom. Of my tribute to her I would now change no word save only if by so doing I could intensify the expression of the affection and admiration in which her old students and associates regard her.

The fourth Warden came into our McGill circle and into the life of Royal Victoria College like a strong, fresh, invigorating wind from a wider world. She came to us with a great breadth of knowledge and experience of people and things, a penetrating insight into the realities of situations, and with strong convictions as to the position that women's education should occupy in a great University. She brought to her task a keen understanding of human nature; an immediate recognition of what is false, hypocritical and unworthy in men and in women; and the courage to speak plainly and forcibly when occasion demanded. Her contribution to the College and to the cause of higher education is deeper and wider than is obvious at the moment, and her influence will become more apparent as time goes on. McGill as a whole, the Royal Victoria College in particular, and many of us who came under the spell of her personality and felt the strength of her character owe her a debt that is not readily expressible in words.

And now a fifth Warden comes to Royal Victoria College. Dr. Muriel V. Roscoe brings a new note into the leadership of the College. We are to have as Warden a woman trained in the strict discipline of scientific research—a botanist with a good record as a

teacher and as a research worker in the field and in the laboratory. Let us remind ourselves of a keen statement made years ago by Dean Inge, "The dramatic fancy which creates myths is the raw material of both poetry and science." The new Warden will not be lacking in those essential imaginative qualities without which neither science nor art nor literature nor philosophy nor human relationships can flourish. She is a woman with high ideals of scholarship, and with a capacity for kindly friendliness that will win her a place in the esteem and affection of the students. Her influence will be thoroughly sane and wholesome and always on the side of placing the emphasis upon the things of intrinsic importance.

Muriel Roscoe is a native of Nova Scotia, the Province which gave us our third Warden. From Acadia University she obtained her B.A. in 1918 and seven years later, after four years of high school teaching and a period of graduate study at Radcliffe College, she obtained there her Master of Arts and subsequently the degree of Doctor of Philosophy in Botany. Acadia reopened its doors to her in 1926 and she rapidly passed from Instructor to Assistant Professor, and then to full Professor, which position she has held until McGill University offered her what in the eyes of many educationalists is regarded as the highest academic appointment in Canada available to a woman.



Meyers Studio

DR. MURIEL V. ROSCOE

Nine years ago Dr. Roscoe served a three-year term as a member of the Scholarship Committee of the Canadian Federation of University Women, and during the three years just concluded she has been convener of that Committee. In this capacity she has shown great initiative and grasp of the problems associated with the pursuit of advanced scholastic work by women and their subsequent employment.

In the larger sphere of influence to which Dr. Roscoe now comes we have every confidence that she will give a leadership that will be both constructive and wise. All who have the welfare of the Royal Victoria College at heart will wish her well, and contemplate the future of the College with confidence. Each Warden has built something of herself, something intrinsically valuable, into the invisible, the intangible, the *real* Royal Victoria College. The new Warden inherits all this, and to the edifice she will add her own contribution. We believe that what she builds will be of enduring worth.

A. VIBERT DOUGLAS, M.B.E., B.A. '20, M.Sc. '21, Ph.D. '26, F.R.A.S., is Dean of Women at Queen's University, Kingston, Ont.

THE UNIVERSE AS A WHOLE

By A. S. EVE

WHAT WE KNOW ABOUT STARS

By A. VIBERT DOUGLAS

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THE UNIVERSE AS A WHOLE*

By A. S. EVE

TO speak of the "Universe as a Whole" is at all times difficult; to do so in fifteen minutes is presumptuous! So I hope that my readers will sympathize with me.

We all look at the universe, everything that is, each through our own spectacles. To some it appears to be a magnificent game, to others a terrible battleground. In form and aspect it is varied and wonderful, teeming with perpetual novelty. Sometimes it seems like a place where marvellous and gigantic experiments, of vast importance and extent, are continually in progress.

Many have asked, and are asking still, "What is it all for? What is the object of it"? I am not sure that we can ever answer that question, we are too intimate a part of the universe to be able to describe the whole. "Shall the clay say to the potter—Why hast thou made me thus"?

We might ask too whether the universe had a beginning. What was the origin? Whence did it come?

If we speak of the material universe the consensus of opinion has usually been in favour of a Creator or Author, and many believe in a Sustainer of the Cosmos or ordered whole, and in such sense that the universe is still being created, the new from the old continually.

But if we include under universe both Creator and Created, then we cannot imagine a beginning at all, it is not a thinkable experience. It does appear, however, that the material universe has had a beginning, that now it is middle-aged, and very slowly approaching inevitable decay. That is the present position of most scientific men, judging by the evidence now available; although it is fair to state that there are some men who think that nature runs itself from an infinite past to an infinite future—an idea quite

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difficult to the present speaker. Is it not more reasonable to regard the universe as the great laboratory of an inconceivably great master mind, wherein we can only partly appreciate and understand a fragment of the great plan?

There is one interesting question, however, to which an answer is being attempted with some measure of success—the question of the size or bigness of our universe.

In order to understand this you might imagine yourself back in the days when people thought that the earth was flat, and laughed heartily at the idea that it was round. For how could people on the other side stay on the earth head downwards? And again—would not then all the waters in the wells, say in China, spill out over the ground!

A man standing on that old flat earth would point along the ground and say, "What if I go ever so far in this direction which I now choose?" Well, the answer was that he would come to the sea, and onwards to more and more sea; for if there was a barrier, what was behind the barrier? Yes, the sea must go on for ever!

We know now that this was wrong, and that if you fly north in an aeroplane at 158 miles an hour from Montreal, in 20 hours you would be at the North Pole, and that, going straight on, you would be flying south and reach the equator in 40 hours more. Another 40 hours would take you to the South Pole, and, flying straight on, you would pass the equator going north and be back again at Montreal in less than a week! If you had enough gas and endurance you could fly right round the earth in less than a week!

In just such a way to-day a man can point to the sky and say, "What should I come to if I went on and on for ever in that direction"? Travelling with the velocity of light you would go as far as the moon's distance in a second and a half, the sun's distance in eight minutes, the nearest star's in four years, perhaps past the North Pole Star in 40 years, out through the great group of stars which you see in the Milky Way, forming our group of stars, or galaxy. Thence after millions of years to other groups or galaxies, and after many hundreds of millions of years you would, most probably, and not after an infinite time, mark you, return, yes,

return you would, though always moving straight on, back you would come to this earth, or rather where the earth was when you started! You would have circumnavigated the universe as our airman flew round the earth.

Some men have said that if you could see far enough you would see the back of your head! But that is not true. Rather you might see where the back of your head was a few hundreds of millions of years ago! It would be quite interesting to think where it was then! In any case, just as you can wander continually on the surface of the earth, by boat and coach, because it is of finite size but has no boundaries, so too the universe is probably finite but unbounded.

Recent discovery seems to show that the universe is expanding because the great distant groups of stars, or galaxies, appear to be moving away from us with astonishing speed. If you take a toy balloon, put black marks upon it, and blow it up larger and larger, then the black dots will get further and further away from you, and from one another. Something of the same sort seems to be happening to the great star groups. As they move very fast away from each other this expansion cannot have been happening forever, and indeed their high velocity indicates that the "age of the universe" is much less than was quite recently supposed, although in any case it must run to thousands of millions of years! It is right to explain that the "age of the universe" does not mean the time from a date when there was nothing at all; it means rather the time from when the present order of things first marched in the direction they are now travelling or evolving.

Lest anyone should feel appalled by the immensity of the universe, with its millions of galaxies, each containing hundreds of millions of stars, let him remember that small things are excellently well ordered; that a hair, a fragment of a feather, or leaf, seen under a microscope shows most elaborate organization; and that every atom is a microcosm, that is a little universe in itself, as fresh to-day perhaps as myriads of years ago.

So far we have been thinking of the physical universe of stars and planets, atoms and the space between them. Far more interest-

ing, and probably more important, are living things which get their sustenance from air, earth and water, but are different from these, for after all a stone is different from a tree, and a tree from a lion! There do not seem, among the vast number of stars, many suns like ours which have a planet like the earth kept for long years between the boiling and freezing points of water, a region of temperature probably essential to life. We are at once astounded that life should have originated on, or come to, this planet, and that such infinite variety should have developed on the land and in the water.

Jeans has pointed out that life cannot be a main object in the universe, but rather a side show, because so small a region is set apart for living things. But bigness is not everything, and many men will treasure some small garden of roses, or a precious herbaceous border, more than the long wide sweep of grass or lawn.

It is stranger still that man, with his full consciousness and high reasoning faculties, should so far have transcended the other animals, and that these should culminate in the giant intellects of such men as Shakespeare, Newton and Einstein.

To speak of the universe as a whole without reference to things spiritual and eternal, transcending the finite and material, would surely be misleading. Perhaps this is not the time to enlarge upon this theme nor the place. Yet if there be a Oneship, or Unity, between Creator and Created, there is a link which it is the special privilege and glory of man to be able to appreciate and to understand.

Returning now to the ways of nature it is indeed interesting to note how the same material and the same energy may be used again and again to make and remake the multitudinous forms and varieties of things both living and dead. Those who have gardens know well the use of leaves and leaf-mould to secure vigorous plant growth, and those who have farms realize the importance of fertilizers whether of plant, animal or mineral origin. There must be nitrogenous and phosphate material in the soil to grow good crops and hence to raise good stock.

Nature does this on a vast scale. Take such simple cases as air and water. The oxygen we breathe continually has been a part of innumerable plants and animals down all the past ages of the

earth, since life appeared. Consider again a small particle of water, a single molecule as it is called. If such a water particle could speak of its past history, what a romantic tale of travel it would tell! It has visited every ocean on the earth, it has been lifted time and again by the heat of the sun, it has condensed into cloud, fallen as rain on every continent, and travelled back to the sea by countless rivers. It has been frozen in the Arctic and Antarctic ice, and floated in icebergs, ever moving and circulating. It has been a part of numberless plants and of innumerable animals historic and pre-historic in type.

My hearers themselves are indeed in the same condition as the Archbishop of Canterbury, shall we say, who Sir Arthur Shipley humorously said, is ninety per cent. water! So that many of you must contain water molecules which have not only been great travellers, but have been now in plant, now in animal, and a few peradventure, were once incorporated in Napoleon, or Newton, or Julius Cæsar, or anyone you like to choose.

By this reusage of matter and energy life continually passes through cycle after cycle from spring to winter and back to spring, drawing ever fresh supplies of energy from our great powerhouse, the sun. Similarly it is possible, but not certain, that our present material universe may have had a "beginning," that it is now in middle age, and approaching that old age when energy and radiation, all present, are no longer "available," except by a new "beginning" and a fresh spring. But here we are speaking of things as yet unknown to us, and it is wiser to go on exploring nature in our quest for truth, which alone can make us free, and to discover of the universe that indeed "My lot has fallen on a fair ground, yea! I have a goodly heritage."

WHAT DO WE KNOW ABOUT STARS?*

By A. VIBERT DOUGLAS

WE know a great deal about the outsides of stars, the physical conditions existing in their gaseous atmospheres, but we know very little about the deep interiors of stars. We know a good deal about their numbers, their distribution in clusters and galaxies, their motions, and their course of evolution from infancy to age.

Let us ask and attempt to answer as briefly as possible some specific questions.

What are the stars? Each star is a vast, more or less spherical aggregation of matter, partly if not entirely in the state of incandescent gas. Some astronomers think that deep down beneath the gaseous outer layers the matter may be in liquid form, others think it is gaseous to the very centre. Certainly the outer layers are composed of gases, of this there is no doubt, for the light which comes out of the stars, when studied with a spectroscope, exhibits just those characteristics which are found in the light produced from various gases in the physicist's laboratory when these gases are raised to incandescence by the application of heat or by the excitation of an electric discharge. And this is one of the astounding secrets of the Universe, revealed by spectroscopy within the last century, that almost all the elements—iron, carbon, oxygen, hydrogen, silicon, calcium, and so on,—which go to make up the earth, are found to be the stuff of which the stars are made. There is no perfect, unchanging, unchangeable substance composing sun and stars, as the Greek philosophers maintained,—the whole universe is made up of similar aggregations of the two fundamental entities, the electrons and the protons which are the ultimate negative and positive electrical charges of which all the elements,—all matter,—all things animate and inanimate—are made.

How large and how heavy are the stars? A super-giant star,

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like Antares in the constellation of Scorpio or like Betelgeuse in Orion, is several hundred million miles in diameter. If its centre were coincident with the centre of the sun, half the Solar System would be inside the star. Thus the volume of one of these great stars is several million times that of the sun, and the sun's volume is one million times that of the earth. But the density of such a star is very low, much less than that of the air we breathe, and so its mass, or the amount of matter it contains, is only ten or twenty or perhaps thirty times that of the sun. Very few stars are known to be more massive than this. At the other extreme are the stars about one-tenth as massive as the sun, and so dense, so compacted into very small volume, that one cubic inch of such a star would weigh a ton on our terrestrial scales.

It is just because the stars, even the smallest of them, are so massive that they are able to retain their heat, and hence their ability to radiate light and heat for many millions of years, whereas relatively small aggregations of matter like the planets of the Solar System have cooled off and ceased to radiate.

How hot are the stars? The radiating surface of the coolest star is at just about the highest temperature producible in an electric arc. The light emitted by such stars, like Betelgeuse in Orion, contains a large proportion of red rays. Hotter stars, like our sun, whose surface temperature is about 10,000°F., shine with a yellow or golden light. Still hotter stars like Vega emit that harmonious blend of all the visible rays which we recognize as white light, while the hottest known stars like Rigel in Orion, shine with a steely blue light.

We cannot measure the central temperatures directly, but all theoretical calculations point towards internal temperatures of many millions of degrees. The interior of a star is pictured as a vast storehouse of energy where the material atoms are in some unknown manner being transformed into radiant energy, and this radiation rushes outward like a mighty wind. Four million tons of the sun's mass are being transformed every second into radiation to supply the stream of heat and light and invisible ultra-violet rays pouring out continuously into surrounding space.

How old are the stars? Suppose an observer with no knowledge of the past looked suddenly upon the world of humanity, he would see infants and children, youths with strength and vigour, men whose powers were fully developed, and yet others whose strength was on the wane. Seeing many at every stage from infancy to old age, he might, perhaps, hazard the guess that with the passage of time each individual passed through one stage to the next—an evolution of man from cradle to grave. So, too, the astronomer sees stars in their infancy with latent undeveloped potentialities, stars whose energy output is that of vigorous youth, stars at the peak of their vitality, stars on the wane, on the descending road towards inactivity and darkness. Can he avoid the hypothesis that there is a majestic evolution of the stars? The evolution of a man takes place to the ticking of the seconds hand, hour by hour for four score years, but the evolution of a star requires a different time-scale.

In a vast region of space, sparsely filled with nebulous matter, concentrations begin inevitably to take place and gravitation draws more and more matter towards each centre of concentration,—thus is born a cool, diffuse star. As it grows more massive and more compact its internal temperature of necessity grows greater and it begins to radiate more and more vigorously. It ceases to grow indefinitely more massive when the outward hurricane of radiation blows off the surface layers as fast as gravitational attraction augments them. The star is now of giant proportions, but as it continues to contract and radiate away its energy, it passes in due time into the dwarf stages of its career. Gradually its course of evolution brings it to a stage where its mass is greatly reduced, its energy largely expended, its ability to radiate almost, or perhaps entirely, gone. This evolution takes place to the beat of units of time measured not in seconds but in millions of years.

This is not a sad picture any more than should be the picture of the evolution of a human being from infancy to age, where faith stands firmly on the principle of conservation of spiritual values. The energy of the youthful, giant star is gradually transformed and dissipated and the star becomes old and cold and

outwardly inactive—but its energy is not lost—the Law of the Conservation of Energy is a fundamental bulwark of physical science. We do not know what ultimately will become of this energy. Is it, perhaps, used up in the process of the expansion of space itself? Here is an unsolved problem. The universe of a far remote future may be very different from the universe of to-day. Nature has many secrets as yet hidden from us.

Is the sun a typical star? The answer is both yes and no. The sun is in itself quite an ordinary dwarf star—there must be thousands just like it, and there are many stars somewhat smaller and many that are larger. It is, however, a star with an exceptional history. Some 2,000 million years ago it befell that another star approached very closely to it, perhaps even collided with it, and as a result the sun lost a portion of itself. These disrupted gases gradually condensed to form the system of planets and satellites, comets and swarms of meteors which revolve in their respective orbits about their parent sun. These planets in order of proximity to the sun are Mercury, Venus, the Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto, the recently discovered outermost planet.

This disruption of a star is a catastrophe so improbable in the universe that it is almost certain that very very few stars have thus acquired an attendant retinue of planets. For though the stars are all moving in various ways through space, often with exceedingly high velocities, yet their relative separations are so tremendous that the chance of a collision is extremely small. Imagine four or five little minnows as the sole inhabitants of the Atlantic Ocean into which they have been thrown at various places, from north to south, from Europe to America. Here is a picture of the distribution of stars in our galaxy. The chances of a collision are obviously very small. Theoretical calculations alone are useful in a search for other solar systems, for so distant are even the nearest stars that no telescope could reveal such planets as those surrounding our sun even if these neighbouring stars were to possess such an entourage.

How many stars are there? With the naked eye one can rarely

see more than about 2,000 stars at one time. Altogether there are some 6,000 visible without telescopes. But with powerful telescopes and long exposures, photographs have been obtained of many million stars. Astronomers calculate that around our sun in this great galaxy there are some ten thousand million stars.

Far out in space beyond our great galaxy there are yet other star galaxies, perhaps not quite as large as our own, but large enough to contain star material equivalent to a thousand million suns in each galaxy. Much of this material is as yet in the form of primeval nebulosity, while much of it has already condensed into stars. The vastness of the universe baffles our imaginations.

What is our debt to the stars? Our earth was once a portion of the surface material of the sun, and the sun, as we have seen, is just one star amongst the many millions of stars of a great galaxy. A chance fragment of a star is our planet, and man, as far as his physical framework is concerned, being "of the earth, earthy" is therefore of the stars, starry! Or, rewriting a famous line of the great poet, "We are such stuff as stars are made on."

When we seek the source of the energy which maintains the surface temperature of the earth at a reasonable degree of warmth, the energy which makes possible the existence of life upon the earth, we find that almost all this energy comes from without. It is brought to the earth in the sunlight and in the starlight, but since the term starlight in its strictest sense includes sunlight, we may simply say, and with absolute scientific accuracy,—Of star dust are we made and by starlight we live.

Perhaps you would remind me that man does not live by bread alone. To which the astronomer would make reply that if you are seeking food for the spirit of man, one of the unfailing sources is to be found in the contemplation of the beauty, the harmony, the majesty and the deep mystery of the Universe of Stars.

only Labillardière, who discovered and described the pitcher plant, and Robert Brown (1803), who laid the foundations for Australian botany. This region and that about Perth were the most intensively studied.

It is time to draw to a close. Returning in late November, we stopped again at Melbourne in order to spend a few days in the National Herbarium there. The collections there are chiefly those of F. von Mueller, who after Brown was the Dean of Australian botanists. A tremendous worker and avid medallist, he moved the mountain to Mahomet, if ever one did. To the staff of the Herbarium, I owe thanks for much help, especially Mr. Morris. The building is new and modern in every respect and from it in time will issue great work for Australian botany.

Another month in Sydney, with additional opportunities of collecting and work, and we

sailed, on January 4, 1937, for Auckland. In attendance at the Australasian Association for the Advancement of Science, I met again many I had made acquaintance with during the previous months. Miss Lucy M. Cranwell, of the Auckland Museum, and Miss Lucy B. Moore, of the Department of Zoology of the University, took possession of us, and we spent our last week seeing what was possible in the vicinity of Auckland. We explored the volcanic island, Rangitoto, where grow a wealth of filmy ferns, notably *Trichomenes reniformis*, and had a tramp in the kauri forests fifty miles distant.

I close by saying that all this would have been impossible save for our friends in McGill University. This letter must be regarded as our expression of appreciation. We are now at our home in Carmel, California. If you come this way, we shall hope to give you a proper welcome.

“Within Her Dominions Supreme”

A Tribute to Mrs. Walter Vaughan, Retiring Warden
of the Royal Victoria College

By A. VIBERT DOUGLAS

WITH the class of 1895 there entered the portals of McGill University a student, Susan E. Cameron, who made so distinguished a record that after graduation with the Gold Medal for English Language and Literature and after obtaining the M.A. degree, she was appointed to the staff of the University in the Department of English. She became a resident member of the Royal Victoria College staff under its first Warden, Miss Oakeley. From then onwards into the war years, as class after class entered the College, we all sat at the feet of Miss Cameron.

She taught us many things. She showed us the essential elements of a well balanced sentence. She expounded the art of expressing our thoughts in good, straight-forward, flowing prose. She taught us the importance of having thoughts worthy to be so expressed! We respected her judgment, we profited by her criticism—and what a wonderfully painstaking teacher she was! Writing an essay for Miss Cameron was indeed a discipline—and recalling the great Third Law of Sir Isaac Newton, that every action has its equal and opposite reaction, I pause to consider the enormous amount of discipline that Miss Cameron had to endure in reading our hundreds upon hundreds of immature essays. To many students, both at that time and in recent years,

she has opened the treasuries of literature. Gifted with rare insight and keen discrimination, she has pointed out many a pearl of great price which lay half hidden in poetry or prose. Within this domain of the mind, in the exposition and interpretation of literature, she reigns supreme in our midst.

The war years came, and many McGill people, staff and students, scattered far and wide—three of them to meet again in London under the roof of the old Hotel Windsor on Victoria Street, commandeered for the Ministry of National Service. One of these was Sir Auckland Geddes, another was the writer, and in the early spring of 1918 came the third, Mr. Walter Vaughan. To London that autumn came Miss Cameron and they were married. I well remember how, shortly afterwards, Mrs. Vaughan came into our anxiety-worn home and how she seemed to bring with her a sense of cheer and calm courage. Was it then, perchance, that she quoted from Keats, “The poetry of earth is never dead”?

The years after the war brought changes everywhere and into many lives. . . . There were changes in the Royal Victoria College—the warden’s ill health led to her resignation; and Principal Sir Arthur Currie made no mistake when he appointed Mrs. Vaughan to succeed Miss Hurlbatt.

life, several specimens of the giant *Cordyceps*, a fungus which attacks large caterpillars which burrow in the soil, consumes the body internally, changing the whole to a woody mass, and then sends up its fruit head, a sort of club shaped toadstool. The specimens may now be seen in our Botanical Laboratory. A lecture and a motor car trip to the Tasmanian plateau, where I saw the wonderful huge bolster plants found here and in New Zealand, and then we returned via Melbourne to Adelaide.

On arriving we were met at the station by Dr. A. E. Richardson, Director of the Waite Institute for Agriculture, and by Professor J. G. Wood. Here Mrs. Lloyd, who admits to a degree of hero worship, met Sir Douglas Mawson, explorer of world-wide fame, and Lady Mawson, who entertained her at lunch. Professor Wood did everything for us here, and was generous in preparing reagents for me to use in Perth later. Here I had the pleasure of spending an evening with Dr. R. S. Rogers (M.D.), the most distinguished orchidologist of Australia, and Mrs. Rogers. He showed me a most beautiful collection of coloured drawings of Australian orchids. The first discovered entirely subterranean orchid, discovered in Western Australia by Mr. C. A. Gardner, was described by him. As guest of Mr. Lloyd Dumas, editor and manager of the leading Adelaide paper, I met at a luncheon a group of delightful cronies, who splashed colour with heavy brushes. Since they all addressed Mr. Dumas as "Lloyd," we were in trouble all the time.

Then came the long jump across the Nullabor Plain to Kalgoorlie, thence to Perth. At Kalgoorlie we were met by a friend of Mr. Eric Millar, Mr. G. Spencer Compton, and were driven to see the town and neighborhood by the Principal of the School of Mines, during our three-hour halt.

Next morning, we arrived in Perth and were met by Mrs. Eileen R. Johnson, née Reed, who spent two years in the Department of Botany, Toronto, and whom I had met there, also by Miss Baird, of the Botany Department of the University, who took us to our residence, which was hospitably offered us by Professor J. I. Armstrong. I soon settled in his laboratory and prepared for four months' work. It was just the end of winter (July 20), and I was all set for the coming of the spring flowers. The general region of Western Australia is well known for its rich flora. To a northern botanist, the array of spring flowers is simply astounding, and morphologically intriguingly different from

plants seen elsewhere, though South Africa can say something of the same for itself. In order to get all the species I had come for, I had planned to stay through the whole spring cycle, after which the effect of winter rains wears away. On the day of arrival, Miss Baird took us to find the first of my desiderata, *Utricularia Menziesii*. This species is exceptional for its vividly scarlet flower. Soon I had *Polypompholyx*, and was able experimentally to learn the secret of its trap-behaviour. But the details of four months run to too many words for this letter. You will be glad to know that I got all I came for and then some. This was in no small measure due to the help of Dr. C. A. Gardner, Government Botanist, Dr. and Mrs. Johnson, Mrs. Emily H. Pelloe, Dr. Armstrong and his staff at the University, and Mr. H. Steedman.

In the meantime, we paid a visit to Albany, on the south-western coast. This spot is one of the most famous botanically in the world, for it was the landfall of many of the botanists visiting Australia during its more modern history. Dampier, "the Buccaneer," was the first (1699) whose collections, in small part only, are to be seen at Oxford University. Of the others, I cite



The "Black Boy," a very characteristic member of the Australian flora (*Xanthorrhoea sp.*)

No one can express in words what this College owes to Mrs. Vaughan. The beautiful new wing of the College is largely what it is because of her wisdom, foresight and energy. In the lovely reception rooms where we gather from time to time, her taste, her thought, her judgment are evident everywhere—"si monumentum quaeris, circumspice."

But there is a monument to Mrs. Vaughan intrinsically more enduring than one built of grey stone. It is in the lives of all those who have passed under her influence and gone out richer, truer and more courageous. They have drunk of the richness of her mind, they have felt the impress of her character. Looking at the portrait

that now adorns the College walls the first thought that came into my mind was in the words which head this brief tribute. Mrs. Vaughan has created a splendid spirit and a fine atmosphere that pervade the College and in this her dominion she reigns supreme.

We are not placing a laurel wreath at the base of a finished achievement, rather are we acclaiming a life that is being lived amongst us—a life that is going from strength to strength, from beauty to beauty, from richness to richness—a life that speaks to us of nobility, of loyalty, of devotion to the duty that lies at hand, of understanding and sympathy, of sincerity, of truth, and of great courage.

Farewell to Mrs. Vaughan

By W. S. J.

McGILL has taken a lingering because fond farewell of its Warden of the Royal Victoria College. How deeply, in the passing of nearly fifty years during which she has been connected with McGill, she imprinted her personality upon its life, is told by the homage which students, graduates and friends have sought to pay her. Formal dinners and receptions, the hanging of her portrait, the giving of presents, the founding of a scholarship in her name, the conferring of the University's highest honorary degree—even these seemed not enough to a host of friends in and out of college who still wanted to have Susan (we just must call her so this last time) all to themselves, intimately and informally, away from McGill and in an atmosphere of their choosing.

Mrs. Archie Byers sensed and organized this real but unspoken urge, gathered up the friends, converged them on the evening of May 20 upon the Cercle Universitaire of which some had never heard and where most had never been, and deftly arranged numerous table groups which seemed all part of one big family—Susan's family.

Dean Woodhead (No! Stop, look, and listen), smiling with his whole face, was there, in the Chair—where he should be, he says so little but that with so much gaiety and kindly wit. And Mr. Justice A. Rives Hall, who hath become majestic in the law in spite of himself, and traced Susan's ancestors to those Scots who defied Hadrian across his wall and whose descendants in turn have conquered the world and one of them single-handed the great heart of McGill. And Doctor Allie Douglas, in the accents of Bacon and with the mien of Sainte Geneviève

sounding the deeper note of affection and regret and loyalty and the times that have been and the days that still remain—very touching and very sweet. And Mr. T. H. Matthews, Registrar of the University, keeper of its archives and awful secrets, knowing to the minute the bedtime hour of two a.m. for careful wardens, and the occasions of their comings and goings, and the ceremonial due their departures as they are wardens good, better and best, and much beside. He it is who hath set the fashion of and indites the official ode UPON A WARDEN RETIRING (from office).

Then Susan herself, grey tulle, and amethyst pendant, a little borne down at first by the sincerity of the homage paid her, but rising with the consciousness of all she had to say of her years at McGill and of the future—of what she must say now or forever leave unsaid. The hand of time slipped backward to 1902, when this chronicler sat at her feet and found Keats and Shelley and Browning and listened to the overtones of seventeenth century prose; though now, seeming little if any changed, she spoke with equal conviction of the need that a University is under to grow, to welcome criticism, to inspire and send out new great men and to take satisfaction less out of those who have made their contribution and vanished, to make of the University a home and seat of learning where even professors may have leisure for study and deem it *infra dig.* to attend a committee, and to go out to meet the world hopefully and with banners rather than to stagnate in a complex of pitiless economies and timid retreats.

And so they said *Au revoir.*



Portrait by Kenneth Forbes, R.C.A., courtesy "Old McGill, 1937."

SUSAN CAMERON VAUGHAN, M.A., LL.D.
Warden of the Royal Victoria College, 1928-1937

Women and Research

By

A. VIBERT DOUGLAS

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representative on the Committee on Fellowship Awards of the
International Federation of University Women.*

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Women and Research

By A. VIBERT DOUGLAS

SEVEN years' experience as a member of selection committees for awarding national or international scholarships has left various impressions upon my mind.

It is a liberal education in itself to study these documents. Almost the whole range of human thought is represented at some time or another: arts and letters, languages ancient and modern, history and sociology, government and economics, science pure and applied in all its manifold branches from the most exact to the very inexact. Careful perusal of the papers, records and testimonials of the many applicants intensifies a realization of the importance of giving to the best of these students the opportunity to go abroad and continue their researches and further their training in the most helpful and inspiring environments.

One of the committees on which I have the honour to serve deals with scholarships open equally to men and women. The applications from men far outnumber those from women and the award has more often gone to a man, but the standard of work submitted by the women as qualification for an award is in no sense below the average standard and is frequently above the average. The other committees deal only with fellowships open to women and it is of this work that I am asked to write. But there are some remarks that apply equally to men and women students.

Relatively few students are fitted to proceed to post graduate work if by that term we mean not the mere acquisition of more knowledge and the writing of a thesis, which is little more than a summary of the thoughts and discoveries of others, but actual productive scholarship. One deplors the policy so widespread on this continent of granting the Master's degree for a year spent after graduation absorbing a few more (not infrequently spoonfed) courses and writing an essay of which too much is not expected by the examiner. Students who in this manner prolong their happy, delightful college life for an additional year should be granted nothing more imposing than a Diploma of Postgraduate Study. Degrees should be reserved for serious scholarly work. Creative imagination, the patience and persistence to search, physical and temperamental endurance,

ability to acquire the necessary technique which the subject demands, the urge to explore the unknown—all these elements are not found in every graduate.

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Students who have obtained scholarships, grants or fellowships, which enable them to give undivided attention to their post graduate studies and research, often fail to realize the tremendous advantage which is theirs in contrast to those men and women who earn or partially earn their living or tuition by teaching in classes or laboratories concurrently with the pursuance of their post graduate research work. Only those who have experienced the difficulties of trying to fit research into odd hours during the daytime or into night

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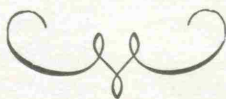
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CANADIAN FEDERATION
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UNIVERSITY WOMEN



CHRONICLE

. . . 1938 . . .



WOMEN AND RESEARCH

By A. Vibert Douglas

Seven years' experience as a member of selection committees for awarding national or international Scholarships has left various impressions upon my mind.

It is a liberal education in itself to study these documents. Almost the whole range of human thought is represented at some time or another: arts and letters, languages ancient and modern, history and sociology, government and economics, science pure and applied in all its manifold branches from the most exact to the very inexact. Careful perusal of the papers, records and testimonials of the many applicants intensifies a realization of the importance of giving to the best of these students the opportunity to go abroad and continue their researches and further their training in the most helpful and inspiring environments.

One of the committees on which I have the honour to serve deals with Scholarships open equally to men and women. The applications from men far outnumber those from women and the award has more often gone to a man, but the standard of work submitted by the women as qualification for an award is in no sense below, and is frequently above the average standard. The other committees deal only with Fellowships open to women and it is of this work that I am asked to write. But there are some remarks that apply equally to men and women students.

Relatively few students are fitted to proceed to postgraduate work if by that term we mean not the mere acquisition of more knowledge and the writing of a thesis, which is little more than a summary of the thoughts and discoveries of others, but actual productive scholarship. One deplores the policy so widespread on this continent of granting the Master's degree for a year spent after graduation absorbing a few more (not infrequently spoon-fed) courses and writing an essay of which too much is not expected by the examiner. Students who in this manner prolong their happy, delightful college life for an additional year should be granted nothing more imposing than a Diploma of Postgraduate Study. Degrees should be reserved for serious scholarly work. Creative imagination, the patience and persistence to search, physical and temperamental endurance, ability to acquire the neces-

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REPORT OF DR. A. VIBERT DOUGLAS Of the I.F.U.W. Fellowship Award Committee

I have delayed sending you a report of my visit to New York for the final meeting of the Fellowships Award Committee of the I.F.U.W. because the publication of the results was not authorized by the Crosby Hall authorities until May 3rd, though the decisions were made on March 26th.

The meeting was held in Barnard College from 10 a.m. to 1 p.m. and from 2 p.m. to 5 p.m. on March 26th, 1938. Of the Committee of ten members, five were not present, but their decisions and remarks had been received by letter or cablegram, viz., Prof. Westerdyk, Holland; Dr. Smedley McLean, Great Britain; Prof. Ramart Lucas, France; Dr. Kilborn, Sweden; Dr. Richter, U.S.A. Those present were Dr. L. Pearce, U.S.A., Chairman; Dr. Patzelt, Austria; Dr. A. Comstock, U.S.A.; Dr. G. Reichard, U.S.A.; Dr. A. Vibert Douglas, Canada.

There were forty applicants for two fellowships. The Crusade Fellowship (\$1,500) was awarded to Dr. K. N. Bhagvat, age 27, graduate of University of Bombay, for research in the chemistry of food stuffs, the proteins of milk and pulses. She will go to Copenhagen and probably later to London. The runner-up was Dr. C. Koomans of Leyden, a petrologist, age 29.

The Junior Fellowship (\$1,250) was awarded to Dr. C. Lutwak-Mann, M.D. of Lwow, Poland, aged 29, for biochemical research on arthritic muscles at Cambridge. Proxime accessit: Miss M. L. Elveback (age 29), M.A., University of Minnesota, statistician.

A special grant of approximately \$750 was available this year for the best applicant from a national federation which has never received an award. This went to Dr. Paraskova, graduate of Sofia and Paris Universities. She will go to Zurich for work in physiological chemistry.

The French Federation offered a Bourse for study in France to be awarded by the I.F.U.W. committee. This was given to Miss M. J. Laboulle, a Belgian scholar now teaching French in University College, Southampton, for work along literary lines.

It was a great privilege to work on this Committee last year and this year, and to get such an insight into

the fine work being done by women in so many different countries. Applications were forwarded this year by nineteen national associations.

I enclose a reprint of an article I wrote some months ago for the McGill News giving details of the research work of the women who applied in 1937. This year's record will be quite as interesting if I ever write it up. I feel that our C.F.U.W. members should hear more of the scholarship work, but it is hard to know how this can best be accomplished.

The C.F.U.W. welcomes the newly-formed club at Wolfville, N.S. It was formed in April, with representation of 13 Canadian and American colleges among its members.

The I.F.U.W. Emergency Fund for exiles is recommended to the generosity of the clubs individually. In honour of Dean Gildersleeve, the Ottawa club voted \$40 to this fund.



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World Student Relief Aids Europe's Youth

By A. VIBERT DOUGLAS

Dr. Douglas, who is Dean of **Women** of Queen's University at Kingston, has recently returned from a visit to a number of the establishments in Europe supported by International Student Service. She finds this to be "one of the most valuable pieces of constructive work" now going on.

Many of those who are now being brought back to health and an active intellectual life are among the starved and harassed victims of the Nazi tyranny. Yet there is no bitterness in their minds. And they are potentially the future leaders of their countries.

THIS autumn in many American universities, in every university in Great Britain and Canada, as well as in universities in many other countries, students are raising money for the organization known as International Student Service. What becomes of this money? Is this effort worth while?

The answer to the latter question is an unqualified affirmative. It is not only worth while, it is one of the most valuable pieces of constructive work going on in the world at the present time.

Being in Switzerland recently at an educational conference, I had the opportunity to discuss university and student problems with several Europeans. Later I went to Geneva for the express purpose of visiting the headquarters of World Student Relief and finding out as much as possible about the work that is being done. To the old Rue Calvin, in a series of unpretentious offices, I found a group of far-seeing hard-working men and women. They represent six or eight countries and most of them are conversant with three or more languages. The world is their parish in very truth. To link the students of the world in mutual friendliness, understanding and helpfulness is one of their aims; to help relieve dire need wherever it exists among students is another. Three international student organizations work together from this headquarters, thus effectively strengthening the work of each and preventing overlapping, duplication of staff, and waste of resources and energy. These three are International Student Service, World Christian Student Federation and Pax Romana.

Around the Globe

Once in three months the entire executive staff meets to review the situation and formulate future policy. As many field secretaries as possible come to Geneva to report in person, but if distances are too great, reports are sent outlining the student situation, the work achieved or in progress, and the suggested plans and requirements for the next three months. It was my good fortune to be in Geneva the day of one such meeting and I was invited to attend. It was as though a geographical globe were being turned over under our eyes. Country after country was passed in review and its student problems were discussed.

In Athens a student foyer had been started. Books and shoes had been shipped from America, books from Britain, and a further crate of books, salvaged from prisoners of war camps in Germany, was being packed in Geneva. With the aid of U.N.R.R.A. some equipment had been obtained for the Technical Institute. A group of Greek students who had succumbed to tuberculosis through hunger and cold was on its way to the student sanatorium in Switzerland.

Three student foyers had been established in Czechoslovakia. Food and books had been sent by student groups in Denmark, clothing and shoes from Sweden, paper from Norway and books from Geneva, Britain and America. A sanatorium for students is operating and the Czech

students have requested that some students from other countries be sent there so that it may have an international atmosphere and influence.

Denmark was given a small grant to enable student centres to begin functioning. They not only became self-supporting by the end of 1945 but they collected in the first six months of the present year the equivalent of \$20,000 for I.S.S. At the Helsingfors International People's College, they have given three-month refresher courses to Dutch, Czech, Belgian, French, English and Norwegian students. They have been sending food parcels to student centres in three or four liberated countries, including Finland.

Self-Help Encouraged

Sweden sent a thousand bicycles as well as raincoats and shoes to the students of Holland. A new sanatorium has been opened near Amsterdam. Soon the work amongst Dutch students will need no further financial support from Geneva—indeed the Dutch organization will begin to assume at least part responsibility for student organization and assistance in Indonesia.

Always the keynotes are to encourage self-help, which will take different forms in different lands at different times, to bring leading students to international conferences where they will learn to understand and respect one another, and to encourage and guide the practical unselfish expression of the great truth that they "are members one of another".

In the defeated enemy countries there are I.S.S. men searching out students who suffered persecution because of their non-participation in their nations' war of conquest—searching too for those who were drawn in but are now ready to be led in other ways, if leadership is strong and immediate. The task of giving help and encouragement to such groups, of making them active centres of straight honest international thinking, is so urgent and so important for the future peace of the world that it cannot be overemphasized. The men who do this work are not maudlin sentimentalists; they are men of vision, faith, courage and a realism based upon wide experience of what a terrific power of darkness fanatically perverted youth can become.

Mention has been made of the sanatorium for students in Switzerland. This famous Sanatorium Universitaire de Suisse owes its very being and its great record of unique service to Dr. Louis C. Vautier. He has envisioned a large International Sanatorium for students and educators who fall victims to tuberculosis in any country. No finer site could be found than that selected at Leysin near the present building. Nearly 5000 feet above sea level and a thousand feet above the upper Rhone, this straggling village on a mountain side faces southward across the valley to the great Dents du Midi. Here, with the aid of physicians and many visiting lecturers and artists, return to health goes hand in hand with the continuation of university studies. To four chalets adjacent to the Sanatorium Universitaire, I.S.S. has brought more than two hundred students from seven countries stricken by the war.

From V-2 Catacombs

Here at Leysin a young Dutch student of Economics told something of his experiences in the resistance movement, how he was hunted by the Germans, caught, deported and forced to work in an underground V2 factory. Privation and undernourishment resulted in tuberculosis. He is there because his chance of complete recovery is good, and his morale is high as he makes progress towards his university degree. A French student in an adjacent hos-

tel was liberated after four years in the infamous Buchenwald prison camp. Slowly he is improving though not yet permitted to be up. He has written four examinations from his bed, and steadily he is advancing towards his University of Paris doctorate in law.

The experiences of some of these men—and in particular I have a young Alsatian professor in mind—would form a record grim and stirring. "This long period of enforced inactivity," said Prof. P., as we chatted on the sunny balcony to which his bed had been rolled, "is not so bad for me because my interests are a continual joy and delight—but the ones I am sorry for are the young men caught in 1940 as boys without the mental discipline of early university years. For five years they have lived under conditions of privation, anxiety and strain, perhaps under cruel and brutal serfdom, and now, broken in health, they are here. They have yet to learn concentration; they are a great problem; their rehabilitation is bound to be slow and difficult".

To help rehabilitate young men and women exhausted by what they have endured, hostels have been established in various places. One is at Ashton Hayes in England, near Chester, where about twenty Dutch students are brought every month; another is at Combloux in the French Alps of Haute Savoie. I visited this latter hostel and was welcomed into the midst of some eighty students, men and women, who had played heroic parts in the resistance movements. Some were just beginning, others nearing the end of their three months stay at this Chalet, beautifully situated high up on the slopes of a wide deep valley northwest of Mont Blanc.

Recreation

Though some of the students were confined to bed, most of them were able to take moderate walks, and before the snow had melted they had enjoyed ski runs on those glorious hills. The spirit pervading the place was one of friendliness and unselfish thoughtfulness one for another. One group with technical electrical skill had installed a broadcasting control room and studio. Another group took responsibility for daily programs: music, plays, skits, interviews, readings and short talks.

The intellectual and recreational life of the Chalet was largely organized by a young Frenchman who was 17 years of age in 1939. He had been permitted to enter the Sorbonne and read for a degree in mediaeval history. Before attaining his degree, however, his participation in the underground resistance brought suspicion upon him and he was hunted down and captured. For eighteen

months he suffered solitary confinement and this, together with the cold and undernourishment of several years, broke his health. After his release he was in hospital for months, then stability and vitality began to return. He was sent to this student hostel and later was able to complete his degree work in Paris. Then he joined the I.S.S. staff and carries encouragement, hope and cheer into the lives of the exhausted students and young professional men who are fortunate enough to be sent there.

One of these students was a Titian-haired young woman by whose bedside I sat for a short time. Some of her relatives and intimate friends had suffered such diabolical treatment at the hands of the Germans that even a year after the liberation of her country, she was still a nervous wreck, awaking at night with a panic nightmare that the Germans were in the room. The solicitous concern of the other students was very touching, their understanding of her overwrought condition, and determination to help her back to health and stability before her three months at Combloux were over.

A medical student from southern France was there. He had finished three years at the University of Lyons when his participation in resistance activities was discovered and he was obliged to go into hiding. Risking capture he made his way

Europe's Youth Carry Moral Scars of War

By A. VIBERT DOUGLAS

Before any Canadian uses the argument of Europe's black markets and frequent lawlessness as reason to cease sending food abroad, he should ponder the explanation given here. In Europe recently the writer discussed with various professional people many of the continent's youth problems. In such matters as black market trading, deception and evasion the years of German occupation induced new concepts of morality. Our sympathy and practical help are necessary to see the people through this hang-over.

IN every country of Europe that was attacked and occupied by the German armies there are problems of readjustment which are inevitably present and call for understanding and great patience. We have had our own problem of juvenile delinquency in Canada and we can place our fingers upon various facts associated with war-time disruption of family life as partially to blame. But contrast our problem with that of countries which were four or five years under ruthless and cruel enemy domination.

Laws, orders and edicts were to be despised, and broken or evaded whenever possible. Buying on the black market, getting the necessities of life surreptitiously and stealthily, was patriotic. Food procured in that way never came to the knowledge of the enemy authorities and therefore was not subject to the deduction of that large proportion of all produce commandeered for export to Germany. And such food might make all the difference between hunger and actual starvation. In all these countries the vitality of the people reached so low an ebb that it is estimated that in some of them 40 per cent, and in Poland even higher, of all the students have tuberculosis in the advanced or incipient form. Small wonder that evasion and deception became virtues, for they were frequently the means of survival.

Patriotic Deception

In another way, too, deception was a highly prized art. Perhaps a member of the family or of a neighboring community was sought by the enemy officials, charged, justly or unjustly, with some act of sabotage or resistance to the German authorities. To be caught meant death or deportation to a German labor camp. Deportation might mean worse than death and at best offered but a small chance of survival. (A French student in a sanatorium in Switzerland told the writer that he was one of seventeen survivors of a camp of 600 deportees.) Many a loved one was saved from capture only because an adult or a child was quick and ready with an

effective lie and could carry dissimulation through with an apparent and convincing nonchalance.

Picture a child of eight or ten or twelve years living the next five years of his life under the circumstances just outlined. When suddenly the liberation came, imagine these young people being told that now to be good citizens they must respect the law and live within it, that truth and integrity are the ideals to be followed, that lying and deception are wrong,

that buying on the black market is no longer respectable even though there is not enough food obtainable by legitimate means.

Such a readjustment cannot be accomplished overnight. It is not easy for adults; it is too much to expect of children. Patient, sympathetic and wise guidance from parents, teachers, social workers and civil authorities is needed; and it will take time.

So long as people are hungry and cold, so long as they lack many of the simplest necessities of life, there will be black markets. As long as these markets exist, the temptation to deal with them will be too strong for many people. There are those who would resist the black market for their own needs, but to whom a sick and hungry infant or a beloved parent, elderly and ailing, poses an ethical problem of another category.

We who have never gone hungry, we who have never seen enemy soldiers marching victoriously in our streets, whose homes have been unshattered by enemy bombs, and whose loved ones have never been dragged

from us by brutal gestapo—we must try to understand the postwar problems facing the liberated countries. We shall then be slow to criticize or condemn, and quick to sympathize and to render help in any and every way within our power.

November 30, 1946

across country and eventually joined the Free French forces. They fitted him out in an American uniform and put him in the Tank Corps. In one skirmish he was wounded and taken prisoner. He was sent to Germany and made to work in a factory until illness led to his transfer to the prison hospital where he was found at the time of liberation. Slowly his health has improved and three months at Combloux were bringing him to the condition which made return to the medical school seem possible—but the doctors had warned him that he could never expect to be robust again. What a doctor this young man will make!—gentle, kindly, cultured, his very presence by a sick bed will bring assurance to the sufferer and that strength which comes from confidence.

Two young women who were there, one a graduate of the Agricultural College at Toulouse, the other a student of philology, had aided children of families marked down for deportation to Germany. These children were hidden by day and conducted by night from village to vil-

lage, then through the forests and over the foothills to the masses of barbed wire which the Germans had placed along the French-Swiss frontier. Many a child was safely passed through this barrier to friendly hands in Switzerland, but many a French youth ran the gauntlet once too often, was caught in the act, imprisoned and then deported to a German labor camp.

One might expect words of bitterness from young men and women who have suffered so greatly by German aggression and cruelty, but their spirits have been purged in a fiery furnace and their outlook is far more forward than backward. These young people are worth saving. Potentially they are the future leaders in their several countries and the moulders of public opinion. If helped now to regain their health and complete their studies, if encouraged by such expression of international interest and goodwill, no limit can be set to the influence they may exert towards saner, more tolerant international thinking and cooperation.

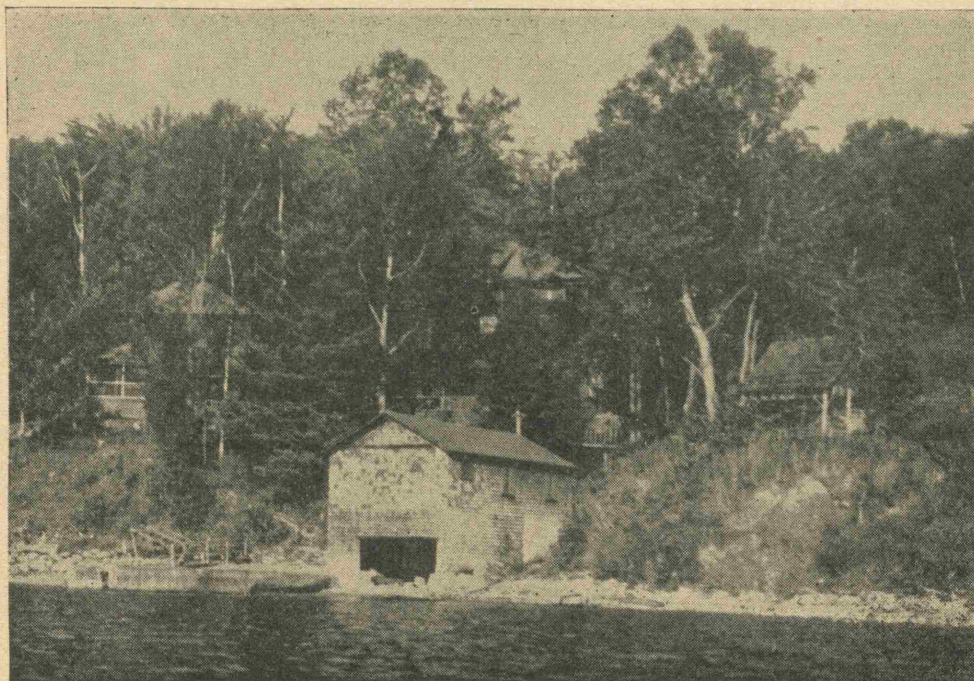
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THE G. A. CLARION

Vol. 1, No. 1

QUARTERLY

MAY, 1947



Quebec Lodge—Lake Massawippi, North Halley, P.Q.

This is a photograph of the Quebec Diocesan Camp. Quebec, as you may remember, had the G.A. Banner last year. Camps for girls of the Quebec Diocese will be held here at Quebec Lodge in July, and in August the Montreal Diocesan Board of the W.A. is renting the property for the girls of the Montreal Diocese. There is a fully equipped Chapel, made from a converted boat-house, a handicraft room in the garage, and accommodation for 52 girls and staff.

CAMP PHOTOGRAPHS

Are you interested in photography? Your Editor would like good photographs for The Clarion, and so here is our first competition. For the **THREE BEST CAMP SHOTS** this summer we will give three one year subscriptions to The Clarion. Send in your entry as soon as camp is over. Don't forget.

The G. A. CLARION

Published Quarterly

Church House, 604 Jarvis Street, Toronto

Greetings

This, the first issue of The G. A. Clarion to reach all members, is your G.A. quarterly. We hope to make it fully yours, to keep you informed, to express your ideas, to report your activities, — and yours in that it is ultimately financed completely by you.

A newspaper or magazine flourishes when it has something to say, when it can bring to its readers news or articles that catch their attention, or when it expresses their thoughts or answers their questions. We shall try to catch your attention, and we want to have your ideas and your questions. We should like to know what topics interest you, and we shall welcome your questions on any subject. Bravely we shall try to answer them, and if we fail, shall throw them open to our readers for discussion. Try out your talent as a writer — drama, fiction, reporting. The space is limited as you can see, but your editors would like to have a Readers' Page or a Readers' Column contributed by you in each issue. Who knows but what we have a future "lion" in our midst!

The new dress of The G.A. Clarion and its increased circulation is in response to numerous requests from G.A.s across Canada. The Joint Committee on Work amongst Teen Age Girls is sponsoring this first extended issue. Let us have concrete proof of the sincerity of your requests for your "own Magazine" by your contributions, by your suggestions, by your criticism and by your subscriptions.

Mail should be addressed to The G.A. Clarion Editor, Church House, 604 Jarvis St., Toronto 5, Ontario.

A MESSAGE FROM THE GENERAL SECRETARY OF THE GENERAL BOARD OF RELIGIOUS EDUCATION

It is with great pleasure that, in this, the first number of "The Clarion" in its new format, I respond to the invitation of the Editor to express, in behalf of the G.B.R.E., as a partner in this undertaking, our very best wishes for its success.

Now that the two Boards of the Church, most concerned with the Church's work amongst girls, have adopted a common policy in this field, we are able to present a unified programme for the girls of our Church. This Magazine will, in a very real sense, be the organ through which this joint effort will speak to you.

It is the hope of our Dominion Supervisor, and of the Joint Committee which she represents, that the Clarion will bring to our Anglican Teen-age Girls such help and inspiration as will enable them to respond to the wonderful challenge which these days are sounding.

So much depends upon how Youth today meets the challenge of the hour as to what the future may bring in the way of realizing those ideals for which so many of those, near and dear to us, have suffered and died.

It is our hope that this Quarterly will help you to get a clear vision of the part you must play in this great task. May you all respond eagerly and enthusiastically to the clarion call of this your CLARION.

R. A. HILTZ,
General Secretary.

THE OSLO CONFERENCE

The second World Conference of Christian Youth will be held in Oslo, Norway, in July, 1947. The first conference of this type was held in Amsterdam in 1939. At that conference, 1,338 delegates were present, representing 71 countries and over 200 separately organized religious groups. This summer, 1,170 delegates, between the ages of 18 and 30, will meet together in worship, sit down in Bible Study and discussion groups, and in the light of their varied experience express the opinion of youth today on topics of world-wide interest. The article on International Student Relief by Dr. Douglas, who is Dean of Women at Queen's University, has been published in this issue to give you some idea of what many of the people of the European countries to be represented at the Oslo Conference, have lived through in the years since Amsterdam — six years which are bound to have influenced their thinking, and which will make the contribution of their delegates at Oslo so very vital.

Canada is sending 40 delegates, of whom six will represent the Church of England. In the January "Living Message" you will have seen that three G.A. names were submitted for consideration as delegates, Florence Lamb, Peggy Anne McFarlane and Patricia Stroyan. Now we know that Florence Lamb, who is from St. John, N.B., has been selected as one of the six delegates of the Church of England, YOUR delegate to Oslo. Now, more than ever, your intelligent interest in, and prayers for, the success of the Conference are needed. It should be possible, if you are interested, to have one of the delegates visit your group on his return to Canada.

Where Are You Going?

REV. A. HARDING PRIEST, B.A., D.D.,
Associate Secretary G.B.R.E.

On May 12th, 1937, some two hundred school boys and girls from all parts of the British Empire took their places in a special stand not far from Buckingham Palace, London, to watch the King and Queen drive by on their way to Westminster Abbey for the Coronation. The Canadians had been chosen by popular vote in collegiates and high schools as the best all-round representatives who could be found. They included two boys and two girls from our Indian Residential Schools. This great event and all that followed it for the next month in England was a memorable experience for youth who shared in its glamour and beauty. And out of it came the establishment of Empire Youth Sunday through the vision of him who had planned this journey for these boys and girls, Major F. J. Ney of the National Education Association. Each year since there have been great services of youth all over the British Commonwealth of Nations. Two years ago in South Africa for the first time in any such service, the color bar was broken and white and black youth worshipped together. Last year some ten Canadians took part in the service in Westminster Abbey. This year the Sunday after Ascension Day, May 18th, was kept as Empire Youth Sunday and from Toronto to Torquay, from Dunedin to Durban, from Ulladulla to Ucluelet, some boys and girls marked the day with special worship.

What does it mean? Not swank and swagger, not boasting and bombast, not pride and prejudice of race, but service and sacrifice in the spirit of those who down the long centuries of our history as freedom-loving Britishers have given their full measure of devotion for God and goodness. It is a call and challenge to make the most of your lives. God has a purpose and plan for each of you, and with hundreds of callings open there is a place in the Great Master Plan of the Universe you are meant to fill. The tragedy of life is that so many miss their share and part therein. The happiness of life consists in finding it. I do you the honor of thinking you want to find it, if you have a backbone instead of a wishbone. "Where can I invest my life with the expectation of the greatest and most lasting influence?" The answer is not an easy one, in fact it is desperately hard, and yet it is about the biggest question any girl has to answer. May I suggest four factors that may help you.

The first is an ABSOLUTE STANDARD OF VALUES. True values are not easy to discover and yet part of the great game of life is finding them. The question is not who is right, but what is right,

when the movies and the radio and the comic strips and the magazines are shouting at you that there is no difference between right and wrong. "It's really a matter of expediency. What I want to do is right, and what I don't want to do is wrong. Why should I do right, when it's so much fun not to?" Well, if you can't answer that one, you'd better quit the G.A. right now and admit you're a low class moron. Yes, get your values straight.

But how in the world can I do that? Again the answer is not easy, and yet a lot of folks from St. Paul down to Gen. Montgomery have found at least part of the answer in DISCIPLINE. That's not a popular word, as my own heart tells me, as the Collect for one of the recent Sundays recognizes when it speaks of the unruly wills and affections of sinful men, yet we do see the value of discipline in many quarters. There were sixty units of the Empire Air Training Scheme in sunny Alberta, where I lived during most of the wxr, and only a couple of miles from my home in Calgary was a Service Flying Training School. Day after day one would hear and see the Avro Ansons and the Crane Cessnas droning over head, turning boys, who a year before had hardly seen a plane into as fine airmen as the world has ever known. Skill and courage, yes in plenty, but discipline, too. And every one of you who has played any kind of game, knows you won't get far in it without discipline. Now God calls you to discipline for a greater end—your life's calling. There is a spiritual discipline, a routine of prayer and worship, holy communion, Bible reading for you to follow over and over again, finding them ever more and more meaningful. That's certainly one way you can strengthen your hold on God and let God strengthen his hold on you. And through discipline your vision will clear concerning your vocation.

Next there comes a SENSE OF DIRECTION. Have you ever pitched for your ball team at school and had the misfortune to throw ball after ball instead of strike after strike? You just couldn't locate the plate because somehow your sense of direction was bad. I saw an Allan Cup final the other night in Maple Leaf Gardens and time after time the forward line of the team, which I hoped would win and didn't, instead of driving right in on the goal would fan out when they crossed the blue line and end up in the corners! Yes, an aim has a great place in sports. And in the bigger game of life it is fascinating to see how all the great leaders in the history of mankind, those who have counted most for humanity, through all the tough going,

all the noise and distractions somehow kept their eyes on the goal. They maintained their sense of direction. "This one thing I do—I press forward toward the mark." Give a girl a purpose and she is no longer a problem.

Last and most important, you must be sure of your Guide. There is after all, only one for the Christian, our Lord and Saviour Jesus Christ. That does not mean wearing your religion on your sleeve. It does mean knowing that he who has started you on your way of life will be there alongside you all the way, Unseen Friend, Comrade, Saviour, and there at the end, if you stick it to the end, with his "Well done, good and faithful servant" no haloed sentimental Christ, but the Strong Son of God, the Hero of Heroes.

And where will it lead you, if you do find God's purpose and plan for your life? I've not the foggiest idea. It may mean that you will stay right in the place where you are now and there become one of the best wives and mothers that your community has ever known. It may take you to the geographical frontiers of our vast Dominion or to a crowded city as nurse or teacher or social worker. It may mean witnessing among pagan surroundings in a store or an office. It may land you in Kangra or Honan or an Indian School. Of one thing only I am sure — that if you will let God have his way with you, your life and your future will be big with possibilities. "Also I heard the voice of the Lord saying, 'Whom shall I send and who will go for us?' Then said I, 'Here am I, send me.'"

We are very much indebted to Dr. Harding Priest, who, in spite of the many calls upon his time, wrote this challenging article for us, when Mrs. Fleming, who will in future conduct a Devotional Page, was unable to make the first issue, due to the Bishop's serious illness.

SONGS FOR G. A.

(From the Diocese of Ottawa)

Let's all learn these . . . be ready to sing them at Camp or Festival.

ALL THE NICE GIRLS LOVE THE G.A.

(Tune: All the Nice Girls Love a Sailor)

All the nice girls love the G.A.
All the nice girls just like you,
For there's something about the G.A.
Where we have grand things to do.
With our craft work, and our worship,
Drama, songs and badge work, too.
There's so much variety,
Just planned for you and me,
G. ee A. G. ee A.

Have You Heard? . . .

That New York is trying to wean you from your favourite Sloppy Joe sweaters by designing clothes especially for you in the more elaborate "high style" manner? Colours run rampant, and all the new style features are included, such as the longer skirt, the bolero, suits with weskits, and dress-up date frocks.

That flatties are still "tops" in shoes? — flatties in all their varying versions. Saddle shoes are coming back, and are running loafers a close second for general wear. Brown loafers top the list, with red coming next. Black suede ballet slippers and sandals follow right behind, and we hear that ballet slippers will be more plentiful in pastel shades by the summer.

That straight backs are the style again? It must be the influence of that military training your older sisters had. "Don't be a droop" is the slogan.

That Dad's key chain is the thing for your sweaters and high neck jersey blouses? Attach your locker or bicycle key to the ring.

That the page-boy is still the smartest hair-do. Arrange the front to suit your fancy, but keep the back neat and smooth. Shagginess is out.

SONGS FOR G. A.

O LA HI LA HO!

(Tune: The Chilean Hike Song, or Holla Hi, Holla Ho . . . found in "Sing Along the Way")

Join us in a hike for fun, O la hi, O la ho,
To enjoy the lovely sun, O la hi la ho.
From the city we depart, O la hi, O la ho,
No regret is in our heart, O la hi la ho.

(G.A. version)—

We have come from far and near, O la hi, O la ho,
Let's give the G.A. a cheer, O la hi la ho.
For we're with new friends and old, O la hi O la ho,
Happy hearts make us feel bold, O la hi la ho.

(add your own verses).

GRACE

(Tune: The Dutch Hymn of Thanksgiving . . . found on sheet music or United Church Hymnary)

We thank Thee, O Father, for all thou providest,
For Winter, for Springtime, for Summer, for Fall;
For rain and for sunshine, the gifts of thy goodness,
We sing in adoration, and praise Thee for all.

World Student Relief Aids Europe's Youth

By A. WILBERT DOUGLAS

Dr. Douglas, who is Dean of Women at Queen's University, Kingston, has recently returned from a visit to a number of the establishments in Europe supported by International Student Service. She finds this to be "one of the most valuable pieces of constructive work" now going on.

Many of those who are now being brought back to health and an active intellectual life are among the starved and harassed victims of the Nazi tyranny. Yet their is no bitterness in their minds. And they are potentially the future leaders of their countries.

This autumn in many American universities, in every university in Great Britain and Canada, as well as in universities in many other countries, students are raising money for the organization known as International Student Service. What becomes of this money? Is this effort worth while?

The answer to the latter question is an unqualified affirmative. It is not only worth while, it is one of the most valuable pieces of constructive work going on in the world at the present time.

Being in Switzerland recently at an educational conference, I had the opportunity to discuss university and student problems with several Europeans. Later I went to Geneva for the express purpose of visiting the headquarters of World Student Relief and finding out as much as possible about the work that is being done. In the old Rue Calvin, in a series of unpretentious offices, I found a group of far-visioned hard-working men and women. They represent six or eight countries and most of them are conversant with three or more languages. The world is their parish in very truth. To link the students of the world in mutual friendliness, understanding and helpfulness is one of their aims; to help relieve dire need wherever it exists among students is another. Three international student organizations work together from this headquarters, thus effectively strengthening the work of each and preventing overlapping, duplication of staff, and waste of resources and energy. These three are International Student Service, World Christian Student Federation and Pax Romana.

Around the Globe

Once in three months the entire executive staff meets to review the situation and formulate future policy. As many field secretaries as possible come to Geneva to report in person, but if distances are

too great, reports are sent outlining the student situation, the work achieved or in progress, and the suggested plans and requirements for the next three months. It was my good fortune to be in Geneva the day of one such meeting and I was invited to attend. It was as though a geographical globe were being turned over under our eyes. Country after country was passed in review and its student problems were discussed.

In Athens a student foyer had been started. Books and shoes had been shipped from America, books from Britain, and a further crate of books, salvaged from prisoners of war camps in Germany, was being packed in Geneva. With the aid of U.N.R.R.A. some equipment had been obtained for the Technical Institute. A group of Greek students who had succumbed to tuberculosis through hunger and cold was on its way to the student sanatorium in Switzerland.

Three student foyers had been established in Czechoslovakia. Food and books had been sent by student groups in Denmark, clothing and shoes from Sweden, paper from Norway and books from Geneva, Britain and America. A sanatorium for students is operating and the Czech students have requested that some students from other countries be sent there so that it may have an international atmosphere and influence.

Denmark was given a small grant to enable student centres to begin functioning. They not only became self-supporting by the end of 1945 but they collected in the first six months of the present year the equivalent of \$20,000 for I.S.S. At the Helsingfors International People's College, they have given three-month refresher courses to Dutch, Czech, Belgian, French, English and Norwegian students. They have been sending food parcels to student centres in three or four liberated countries, including Finland.

Self-Help Encouraged

Sweden sent a thousand bicycles as well as rain-coats and shoes to the students of Holland. A new sanatorium has been opened near Amsterdam. Soon the work amongst Dutch students will need no further financial support from Geneva — indeed, the Dutch organization will begin to assume at least part responsibility for student organization and assistance in Indonesia.

Always the keynotes are to encourage self-help, which will take different forms in different lands at different times, to bring leading students to inter-

national conferences where they will learn to understand and respect one another, and to encourage and guide the practical unselfish expression of the great truth that they "are members one of another."

In the defeated enemy countries there are I.S.S. men searching out students who suffered persecution because of their non-participation in their nations' war of conquest—searching too for those who were drawn in but are now ready to be led in other ways, if leadership is strong and immediate. The task of giving help and encouragement to such groups, of making them active centres of straight honest international thinking, is so urgent and so important for the future peace of the world that it cannot be over-emphasized. The men who do this work are not maudlin sentimentalists; they are men of vision, faith, courage and a realism based upon wide experience of what a terrific power of darkness fanatically perverted youth can become.

Mention has been made of the sanatorium for students in Switzerland. This famous Sanatorium Universitaire de Suisse owes its very being and its great record of unique service to Dr. Louis C. Vautier. He has envisioned a large International Sanatorium for students and educators who fall victims to tuberculosis in any country. No finer site could be found than that selected at Leysin near the present building. Nearly 5000 feet above sea level and a thousand feet above the upper Rhone, this straggling village on a mountain side faces southward across the valley to the great Dents du Midi. Here, with the aid of physicians and many visiting lecturers and artists, return to health goes hand in hand with the continuation of university studies. To four chalets adjacent to the Sanatorium Universitaire, I.S.S. has brought more than two hundred students from seven countries stricken by the war.

From V-2 Catacombs

Here at Leysin, a young Dutch student of Economics told something of his experiences in the resistance movement, how he was hunted by the Germans, caught, deported and forced to work in an underground V2 factory. Privation and undernourishment resulted in tuberculosis. He is there because his chance of complete recovery is good, and his morale is high as he makes progress towards his university degree. A French student in an adjacent hostel was liberated after four years in the infamous Buchenwald prison camp. Slowly he is improving though not yet permitted to be up. He has written four examinations from his bed, and steadily he is advancing towards his University of Paris doctorate in law.

The experiences of some of these men—and in particular I have a young Alsatian professor in mind—would form a record grim and stirring. "This long period of enforced inactivity," said Prof P.—, as we chatted on the sunny balcony to

which his bed had been rolled, "is not so bad for me because my interests are a continual joy and delight—but the ones I am sorry for are the young men caught in 1940 as boys without the mental discipline of early university years. For five years they have lived under conditions of privation, anxiety and strain, perhaps under cruel and brutal serfdom, and now, broken in health, they are here. They have yet to learn concentration; they are a great problem; their rehabilitation is bound to be slow and difficult."

To help rehabilitate young men and women exhausted by what they have endured, hostels have been established in various places. One is at Ashton Hayes in England, near Chester, where about twenty Dutch students are brought every month; another is at Combleux in the French Alps of Haute Savoie. I visited this latter hostel and was welcomed into the midst of some eighty students, men and women, who had played heroic parts in the resistance movements. Some were just beginning, others nearing the end of their three months stay at this Chalet, beautifully situated high up on the slopes of a wide deep valley northwest of Mont Blanc.

Recreation

Though some of the students were confined to bed, most of them were able to take moderate walks, and before the snow had melted they had enjoyed ski runs on those glorious hills. The spirit pervading the place was one of friendliness and unselfish thoughtfulness one for another. One group with technical electrical skill had installed a broadcasting control room and studio. Another group took responsibility for daily programs: music, plays, skits, interviews, readings and short talks.

The intellectual and recreational life of the Chalet was largely organized by a young Frenchman who was 17 years of age in 1939. He had been permitted to enter the Sorbonne and read for a degree in mediaeval history. Before attaining his degree, however, his participation in the underground resistance brought suspicion upon him and he was hunted down and captured. For eighteen months he suffered solitary confinement and this, together with the cold and undernourishment of several years, broke his health. After his release he was in hospital for months, then stability and vitality began to return. He was sent to this student hostel and later was able to complete his degree work in Paris. Then he joined the I.S.S. staff and carries encouragement, hope and cheer into the lives of the exhausted students and young professional men who are fortunate enough to be sent there.

One of these students was a Titian-haired young woman by whose bedside I sat for a short time. Some of her relatives and intimate friends had suffered such diabolical treatment at the hands of

the Germans that even a year after the liberation of her country, she was still a nervous wreck, awaking at night with a panic nightmare that the Germans were in the room. The solicitous concern of the other students was very touching, their understanding of her overwrought condition, and determination to help her back to health and stability before her three months at Combloux were over.

A medical student from southern France was there. He had finished three years at the University of Lyons when his participation in resistance activities was discovered and he was obliged to go into hiding. Risking capture he made his way across country and eventually joined the Free French forces. They fitted him out in an American uniform and put him in the Tank Corps. In one skirmish he was wounded and taken prisoner. He was sent to Germany and made to work in a factory until illness led to his transfer to the prison hospital where he was found at the time of liberation. Slowly his health has improved and three months at Combloux were bringing him to the condition which made return to the medical school seem possible—but the doctors had warned him that he could never expect to be robust again. What a doctor this young man will make!—gentle, kindly, cultured, his very presence by a sick bed will bring assurance to the sufferer and that strength which comes from confidence.

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—Courtesy "Saturday Night."

Are You Going to G. A. Camp This Year?



Saskatoon G. A. Annual Meeting

The Girls' Auxiliary of the Diocese of Saskatoon held their annual meeting in Saskatoon on October 4th, 5th and 6th, 1946. A Vesper service in Christ Church preceded the business, with Eileen Yaxley and Pearl Alexander of the Paynton G.A. in charge. The special speaker was Miss Ruth Wigmore, recently appointed regional supervisor for Girls' Work in the Dioceses of Rupert's Land, Brandon, Saskatoon and Saskatchewan. She took as her topic the conference theme, "Friendship," speaking particularly as it concerned the home, community, boy-girl relationships and the Church. She referred especially to the Anglican Youth movement, the Girls' Auxiliary, one of the purposes of which is to train young people to become intelligent Christian citizens. The singing was led by the Junior Choir of Christ Church.

Delegates then adjourned to the Parish Hall for the business session, at which the Diocesan Secretary reported 19 branches and one being re-organized. Membership for 1945 was 140 and a lone group was reported from Lloydminster Deanery. There had been four rallies during the year and a Diocesan camp had been held at Pike Lake with an attendance of 37 girls and 8 leaders. Reports of branch work were given, after which Bishop Hallam addressed the delegates on the importance of Missions, speaking particularly of India. June Cowley of St. James, Saskatoon, welcomed the visitors and Evadne Hives of Battleford replied. Mrs. R. K. Sampson, W.A. Diocesan President, introduced the special guests, Miss Jean Marindin, Miss Ruth Wigmore and Miss Elsie McGee. Kitty Wood of Christ Church presided over the meeting and Miss Mabel Colebank acted as Secretary.

On Saturday, the leaders met for lunch in All Saints' Hall when a conference took place with Miss Mills, Miss Marindin and Miss Wigmore. The remainder of the afternoon was spent with the delegates in a programme which included a talk on handicraft, displays of badge work, games, a sing-song and folk dancing. At six o'clock the delegates

were guests of the city branches at a banquet in Christ Church Hall. The long tables were gaily decorated with garden flowers and ingenious centre-pieces, made by the girls, depicting scenes from their mission study book on Africa. Such prosaic materials as paper, plasticene, sawdust pipe cleaners and Saskatchewan clay had been used to make model villages found in Africa, an American Mission hospital and a tiny mud school house. Centreing the head table was the model made by the Marshall Branch, illustrating the forward movement for Christ. It included a small globe lighted by flashlight bulbs and surrounded by tiny flags of every nation. At the side were two tall books, the Bible and the New Testament and perched on top was an accurate counterpart of the Marshall Church. Place cards for each group carried out the mission theme.

Highlight of the evening was the presentation of banners by the Diocesan President, Mrs. Sampson, the branches awarded the greatest number of badges during the year ending May 31st, 1946. Christ Church group was the winner for those with a membership of ten or more, and Luitlan received the honour for smaller branches. The special speaker on the occasion was Miss Elsie McGee, who spoke of the need for girls to enter the full time service of the Church and of the training given at the Anglican Women's Training College in Toronto. Guests included Mrs. W. T. Hallam, patroness of the W.A., Mrs. J. W. A. Jarvis, Honorary President, and the examiners for the various badges. Musical numbers were contributed by Gloria Winegarden and Audrey Smith, after which camp memories were revived in a sing-song led by Mrs. L. Spark.

All members paraded to Christ Church on Sunday morning to attend the eleven o'clock celebration of Holy Communion when the sermon on "Friendship" preached by Canon Bowles was much appreciated.

Editor's Note: It was hoped to have more recent Diocesan news for you, but this is the latest received at press time.

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