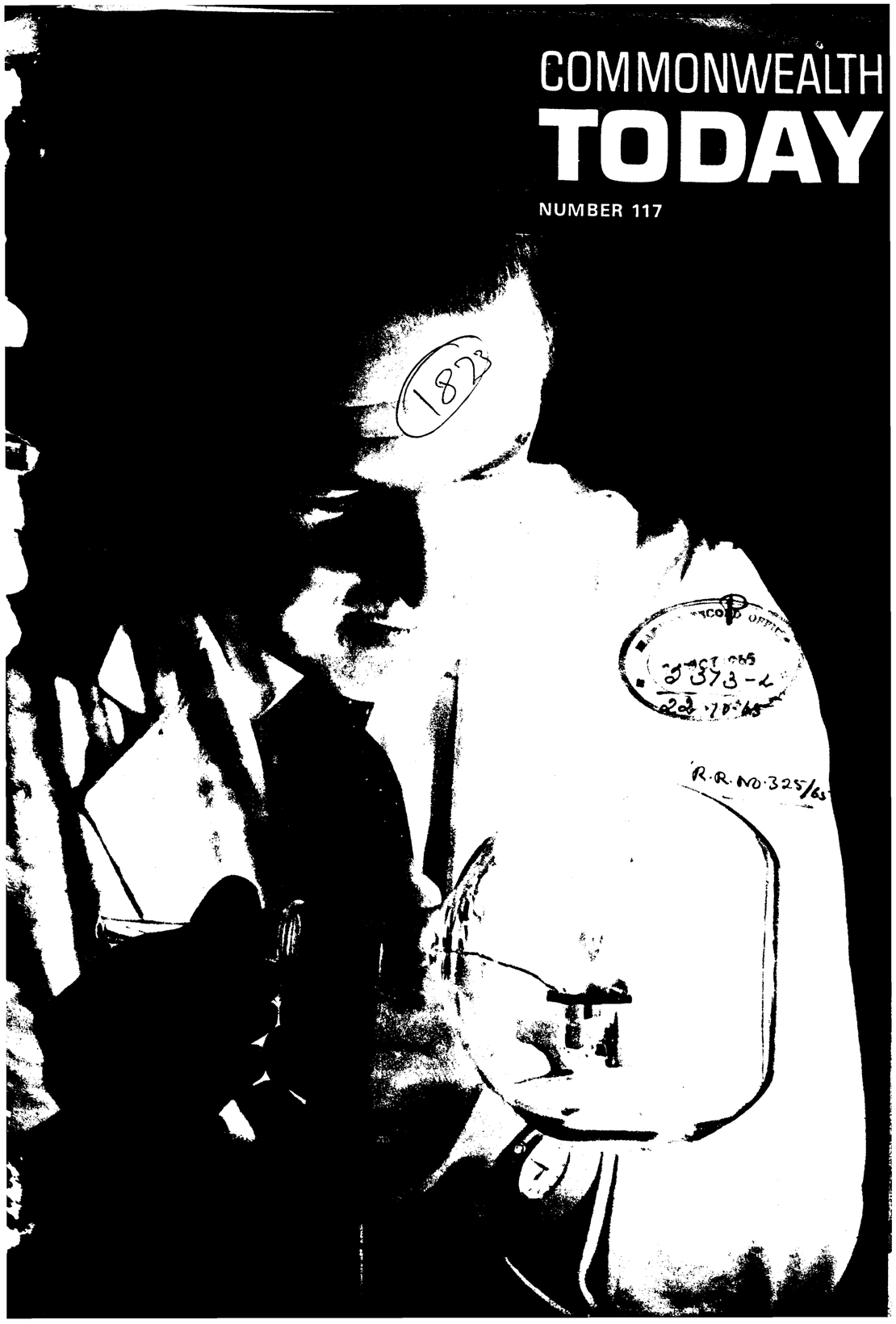
COMMONWEALTH TODAY

NUMBER 117



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NUMBER 117

Presenting the Commonwealth to the Commonwealth

VIEWPOINT

Dependent Territories

No two of our thirty-one dependent territories are alike and there is no tailor-made solution we can apply to them all. Some will go into independence on their own. Others may join with their neighbours as the next step towards independence. And others may want to remain in some permanent form of free association with ourselves. I am sure, in this whole field, we have to be infinitely flexible and infinitely understanding in our approach to them all.

While our territories are searching for their particular way to fulfil their national aspirations, they cannot be pushed; *they* must set the pace and we must help. That is absolutely fundamental to our approach to the discharge of our Colonial responsibilities.

It is, regrettably, sometimes misrepresented or misunderstood. Thus the famous United Nations General Assembly Resolution 1514, which talks of independence for Colonial territories, says that "inadequacy of political, economic, social or educational preparedness should never serve as a pretext for delaying independence".

In any particular case, such inadequacies —and they exist—may well be *deterrents*, both for us and for the people of the territory in question. But I entirely agree that these very real factors should not be used as a *pretext* or an *excuse* for delaying independence. For us, however, the question does not arise. For our territories, independence is not something which can be conferred like an honorary degree. Indeed, the statement has little relevance to the way in which British territories actually advance. Those who really want independence, get it. The real point is that the pace of political progress is, in the last analysis, a matter for the people themselves. *We* are there to help them to overcome those very obstacles to which the United Nations Resolution refers.

There is, of course, more than one way in which a territory can reach, to use the language of the Charter, "a full measure of self-government". They can do so, for example, by forming a free association with an independent State. Some such form of independence might well be considered by various British territories as they make up their minds. But I think we must be awfully careful about simple solutions which are thought to be valid for all territories, because there is in fact no one single solution for all the problems which face the remaining British territories, nor indeed are they comparable one with another, and few even have the same idea of what they want to do or how they want to set about it.

There may be a good deal we can learn from the experience of other countries with similar problems. New Zealand, for example, has worked out interesting arrangements intended to meet the particular needs of the Cook Islands, and, in a different way, Western Samoa. We ourselves are studying the whole question, territory by territory, trying to decide the best solution for each of them.

But I am very anxious indeed not to lay down rigidly what course should be followed by each territory; the less hard and fast we are in our approach, the easier it will be to solve individual problems. Above all, I think we must always remember that we are not working our way arbitrarily through a typed list of territories; we are dealing with people—and with peoples.

From a speech by Mr. Anthony Greenwood, Secretary of State for the Colonies

Contents

FRONT COVER
Analysing a tritium compound in the laboratories of the United Kingdom Atomic Energy Authority's Radiochemical Centre at Amersham, Buckinghamshire. Tritium is a radio-active variant of hydrogen which is extensively used in medical and biological research. The Radio-chemical Centre produces the widest range of radioactive products in the world ("Radioisotopes—They Signal Progress", pages 8-9)

PHOTO CREDITS: Front cover, U.K.A.E.A.; pp. 6-7, Brian Worth; pp. 8-9, U.K.A.E.A.; p. 21, New Zealand official; pp. 22-23, Henry Grant

The New Shakespeare Company donated the proceeds from two performances to the Relief Fund. Here, the Governor-General, Mr. William Gopallawa, right, with Mr. R. K. Brady, British Council representative, after receiving the cheques

The General Manager of Messrs. Walker Sons & Co., Ltd., Mr. A. C. Walker, left, shows the British High Commissioner, Sir Michael Walker, the damage caused by the cyclone to a fibre glass fishing boat

Sir Michael Walker hands over medical supplies rushed out by the R.A.F. to the Deputy Director of Social Services, Dr. R. L. Tiruchelvam, left

IN THE WAKE OF THE CYCLONE

Britain's immediate response to Ceylon's urgent appeal for help

A group of villagers gather round a volunteer medical team who worked in a hut partially destroyed by the cyclone near Horowapatana to give much-needed help

THE BRITISH GOVERNMENT, voluntary organisations and individual members of the British public were quick to respond to Ceylon's appeal for help after a cyclone caused extensive damage on the island.

Within forty-eight hours two R.A.F. Britannias left for Katunayake airport with £30,000 worth of medical supplies.

Oxfam sent a cheque for £1,000 for relief work. The Hilden Charitable Fund in England sent £1,000. An anonymous donor sent £500 and other contributions from a few shillings to large cheques came from sympathisers all over Britain. Service men who had been stationed in Trincomalee during the war were quick to send their contributions.

In Ceylon, the New Shakespeare Company, who were on a three-week tour, gave the entire proceeds from two performances to the Cyclone Relief Fund.

A volunteer Ceylon labour force worked late into the night to unload the medical supplies and tents that arrived on the Britannias and another R.A.F. plane was diverted to help out the Ceylon postal authorities by delivering 125 mail bags to India. The British High Commissioner in Ceylon, Sir Michael Walker, said, "This is an opportunity for Britain to help two Commonwealth countries—Ceylon and India—when communications between them have been disrupted by this tragic disaster."

Every orderly, nurse and doctor played a part as Ceylon medical teams moved from one village to the next in the stricken areas: here, a nurse offers vitamin pills to the children

Members of the New Shakespeare Company photographed on their arrival at Ratmalana airport for their three-week tour of Ceylon under the auspices of the British Council. The company presented "The Tempest", "The Taming of the Shrew" and "King Richard II"

Volunteers from a Ceylon medical aid movement moved into the stricken areas: here, a young nurse takes a mother's temperature

With care and treatment millions can be saved from blindness

Braille writing practice at the farm training centre for the blind at Kambowa in Zambia. Centres such as this aim to give the students instruction in a variety of subjects

The affliction is world-wide, it can strike at any age, and the problem is vast. If three million or more people were to be overcome by a natural catastrophe every nation would join in offering help. Yet that is the number of persons in the Commonwealth who are suffering from one of nature's severest handicaps—blindness. And throughout the rest of the world there are probably another ten million who cannot see.

In many countries, until recent years, the public's attitude towards blindness had remained unchanged for centuries: it was a stroke of fate, unavoidable and incurable. Supported by relatives, often grudgingly, the afflicted remained at home doing simple household tasks, with perhaps a little begging on the side.

Some learned a handicraft such as rope-making or basket-weaving. Little more was expected of them, for even this was thought an achievement. Others became destitute, eking out a lonely existence. A feature of the local roadside scene was the blind beggar, dressed in rags and intoning a plea for alms. Even the pathos of the children with unseeing eyes aroused little concern. It was fate, however great the despair.

The causes of their tragedy were generally unknown or ignored in the preliminary stages. Poverty and malnutrition, ignorance and neglect barred the means of staving off the disaster or obtaining treatment which could have saved their sight.

Today the numbers of the blind throughout the Commonwealth still tell a sombre tale. In India, Pakistan and Ceylon there are probably more than two million—two-thirds from the virus trachoma—mostly in rural areas. In the newly independent countries and the dependencies in Africa, the Near and Far East, the Caribbean and the Pacific, there are another 700,000 or more; in the older Commonwealth countries—Australia, Britain, Canada and New Zealand, where medical resources are greater and treatment more readily available—there are 145,000 blind.

The young have suffered a heavy toll. In India, for example, more than a third of the blind lost their sight before reaching the age of 21, the majority in the first five years of life. Recent surveys have shown that in some cases where trachoma—the oldest known blinding disease—is prevalent, four out of every ten children under two years of age were infected. Eight out of ten were suffering from bacterial conjunctivitis.

In Africa—in parts of Kenya, for example—nine persons out of ten were found to be suffering from eye diseases of one sort or another, and three in every hundred were blind. In parts of West Africa, where onchocerciasis is endemic, blindness was equally prevalent.

Yet two out of three in this multitude of blind could have saved their sight. They needed merely to have taken proper care of their eyes, or to have obtained the correct treatment at an early stage to cure the diseases which cause blindness. But they failed to do so. They lacked the knowledge and the means. There was a lack of sufficiently trained and available medical services, of sufficient food and care.

Today the situation is a challenge to the modern world's medical skill and to the public conscience. As a result, a growing campaign is being fought in many countries against blindness by groups of dedicated men and women, many of whom have themselves lost their sight.

Prominent among them is the Royal Commonwealth Society for the Blind, a voluntary organisation supported by public contributions. The Society, based in London with a staff of 14, has links in 27 countries with other organisations also devoted to the care of the blind. Its inspired work has saved the sight of countless thousands across the globe, and given others who have irretrievably lost theirs a new faith in their abilities to take part in a useful creative life.

Set up in 1950 and known until 1958 as the Royal Empire Society for the Blind, the Society's main areas of operation are in the Commonwealth's newly independent countries and dependencies. Its aims are to prevent avoidable blindness; to promote the welfare, education and employment of the blind; and to foster collaboration between all organisations within the Commonwealth for the blind and for preventing blindness. With this, it draws world-wide attention to the causes of blindness, the suffering it inflicts, and the measures which in many cases can be taken to prevent or cure it.

The Society is *not* a central organisation with overall responsibility for the care of the blind. What it aims to do is to initiate work for them and, if needed, to supplement the work of the various organisations which are affiliated to it.

Some of these organisations have existed for many years; others have been founded more recently with the Society's encouragement and help. They receive from it support and technical advice; in return they make available their own experiences and knowledge.

In the past 15 years of its life the Society's staff have carried their knowledge and skills to most Commonwealth countries. They have helped to establish 47 overseas schools and training centres—including 22 farms for the blind—and supplied a wide variety of special equipment. Their mobile clinics have traversed the globe, penetrating to villages deep in the jungle and to hutments clinging high up mountain-sides; to tented desert camps where the eyes of every child were inflamed by trachoma and to remote riverside settlements scourged by river blindness.

The Society has also organised special training courses in Britain and Canada for teachers and blind welfare workers from 20 Commonwealth countries. As its energetic, quick-thinking director, Mr. John Wilson, who is himself blind, has put it, the Society's all-out battle against blindness is an "exciting story of the Commonwealth in action". For only in the Commonwealth setting, with its background of co-operation and understanding, could such a campaign have been carried out with such success.

Already the Society's training centres for blind farmers and village craftsmen, established in 12 Commonwealth countries, have gained world renown for their inspiring work—and this work will continue with the establishment of other centres as staff and funds become available. For they have demonstrated their success in restoring the faith of the blind in themselves and their ability to overcome their handicap sufficiently to do a variety of jobs and to take part in the community's life.

The Society has also been active in helping to establish pilot schemes for "open education"—a project which enables blind children to attend ordinary primary schools with the help of trained visiting teachers who understand their special needs.

As part of their fight to forestall blindness before it can overcome its victims, the Society's staff have discussed possible actions with ministers of interested governments and representatives of international organisations.

Trachoma can be cured with antibiotics or sulpha drugs, and the Society plans to have more working parties in the afflicted areas to treat the suffering.

Cataract can be cured with a 20-minute operation—so the Society is trying to find more doctors who could make themselves available for the work.

Blindness resulting from protein and vitamin deficiency in the first few vital years of life can be rendered far less likely by large doses of Vitamin A at the time of weaning. (Keratomalacia, largest single cause of child blindness in some Far East countries, is directly caused by Vitamin A deficiency.) While an improvement of the diet is the natural remedy, this will take a long time to achieve. So the Society, with other organisations, is investigating the use of Vitamin A injections, and a pilot project starts this year.

Altogether the Society plans to spend £121,045 in 27 countries during the current year. Compared with the results gained from its past work, the sum is pitifully small; the Society could usefully employ many times that figure.

Even a small selection of the Society's numerous projects, past and present, emphasises the world-wide nature of the work and highlights its achievements.

In Nigeria, the farm centre for training the blind at Ikeja has set a pattern for the 21 successors now operating in 12 Commonwealth countries. The experiment at Katsina, also in Nigeria, to teach blind children with sighted ones has been outstandingly encouraging and has set a pattern for other such schools in Africa. (Katsina's success has largely been due to the untiring work and devotion of the Nigerian teachers and others concerned.)

A Mobile Eye Unit operating in the Narok area of Kenya. The patients shown are all Masai. The team consists of a medical officer, medical assistant, driver and cook

In Rhodesia, the Society has been asked to help with a prevention of blindness campaign which aims to rid thousands of children of trachoma.

In Pakistan it has been asked to finance a centre where a surgical team from Karachi will carry out up to 1,000 cataract operations.

India has requested help in arranging to educate an additional 9,000 of her blind children in its ordinary schools—an unprecedented move in Indian education, which follows the technique of open education pioneered by the Society in Africa.

In Malaysia a London specialist is grafting corneas on the eyes of those blinded by leprosy—an operation which, if successful, would bring new hope to thousands of sufferers in Asia and elsewhere.

In Sierra Leone, Kenya, Rhodesia and Malawi another specialist, on a fact-finding tour for the Society, has carried out corneal grafts on blind persons.

In Ghana, the Society is meeting the capital cost of a mobile ophthalmic clinic—the first of its kind in the country. (There are some 65,000 blind in Ghana; more than half the blindness was preventable.)

The results of the various training centres established by the Society, or set up according to its proposals, have been striking. Some of the farm training centres in Africa and Asia, for example, have become impressive agricultural enterprises.

The 1,000-acre centre at Kambowa, in Zambia, last year produced 30,000 gallons of milk, 100 lambs and 25 tons of vegetables, as well as 50 tons of tomatoes and small quantities of maize, tobacco and citrus. It also produced 500 tons of hay and silage. Yet, of the permanent staff of 39 agricultural workers, 27 are blind. These are in addition to the 80 blind student farmers now on a two-year course which will fit them either for subsequent employment at Kambowa or at similar settlements elsewhere, or to take up work on their own farms. As at the other farm training centres, the students learn to make agricultural implements and tools, mould building blocks, build huts and cowsheds in mud, sun-dried brick or concrete and wood, and construct simple drainage systems and roads. They learn, too, to make baskets and they take a basic course in carpentry and metal work.

At the Ikeja Farmcraft Centre in Nigeria, the blind farmers grow crops including bananas, beans, cassava, groundnuts, maize, paw-paw, peppers, pineapples, sun hemp, urena, and many kinds of vegetables.

Centres for teaching the blind various rural trades have proved equally encouraging. For example, in Kenya two rural tanneries staffed by blind persons have been set up following the success of a pilot project at Machakos. A brick-making works, also in Kenya, is staffed by blind people.

In British Guiana blind persons are employed in a factory producing plant pots.

In Malaysia they are producing chain link fencing, among other things.

In Hong Kong, at the Kowloon Workshop for the Blind, their varied products include crates and boxes, padlock parts and keys, and rattan core assembled for the manufacture of polystyrene vinyl-coated strand. There are 190 people working in the factory and another 40 in subsidiary workshops, and they have learned to operate power-driven lathes, plastic presses, and machinery for cutting wood and metal. Their products are traded on a strictly commercial basis, relying on good quality and fine workmanship for their ready sale. Run by the Hong Kong Society for the Blind, the factory was designed according to proposals of the Royal Commonwealth Society for the Blind.

H.R.H. Princess Alexandra, President of the Royal Commonwealth Society for the Blind, listens to a boy playing the recorder during her visit to Aden's Reilly Centre for the Blind

In the West Indies workshops have been established with the aid of the Society, and blind workers produce goods which sell readily not only to tourists but also to local householders.

The Society is expanding its activities in other fields, too. Following the success of the centres established in India and Rhodesia for producing tape-recorded books, five other similar centres are to be set up in different parts of the Commonwealth, the first in Ceylon.

The tapes, specially designed by British technicians, are multi-track and have a playing time of about 20 hours. They will bring to blind persons any information they want: books, newspaper articles, magazine stories and features or educational training. The first tapes, however, are likely to be for blind schoolchildren.

Of valuable aid, also, is the Society's Scholarship Fund. During last year £5,120 was spent on scholarship awards to students from 14 Commonwealth countries. The fund, which is supported by the Royal National Institute for the Blind and its counterpart in Canada, finances training courses for overseas eye-specialists, blind welfare workers and teachers.

And so the Society's work expands. With each new project it draws attention to the urgent needs of the blind—needs which the world's conscience is increasingly recognising. For the work not only gives the blind a new faith in themselves, but also benefits the whole community as the blind find themselves progressively capable of joining in everyday life.

Above: **A white rhinoceros inspects his new living quarters**
Right: **Donkeys are always popular with visitors to the Children's Zoo. Another attraction is the chimpanzee den, where chimpanzees compete in intelligence tests which keep them alert, and the children amused**

LONDON'S ZOO LEADS THE WORLD

THE Zoological Society of London, founded in 1826, has always been progressive and is today the most influential society of its kind. The collection of nearly 6,000 living animals of more than 1,500 species which the Society maintains at its 36-acre site in Regent's Park is the world's largest.

At present the London Zoo is halfway through an estimated £5 million redevelopment scheme. The first stage, consisting of a new animal hospital, stores, workshops and supply buildings was completed in 1961. Next, the Giraffe House was modernised and new houses for cattle, camels, zebras and antelopes were built. Outside the houses sanded paddocks have replaced old yards, and the animals are separated from the public by dry ditches or attractive tree-lined moats instead of bars.

A new elephant and rhinoceros pavilion designed by Sir Hugh Casson, consulting architect for the rebuilding scheme, was opened in March this year, and the new aviary, designed by Lord Snowdon in conjunction with Cedric Price and Frank Newby, was opened in May. This is one of the few outdoor aviaries in which visitors can walk among the birds. From an elevated path they look down on a landscaped garden with small cliffs, pools, waterfalls, shrubs and trees.

Work is about to begin on a new Small Mammal House, designed by Professor Misha Black of the Royal College of Art. This will include a special section for nocturnal animals, in which there will be artificial sunshine during the actual night to send these dark-loving animals to sleep, and artificial moonlight in the day to persuade them to show themselves.

The final stage of the redevelopment programme will include new houses for apes and monkeys, new aviaries for small birds, parrots and birds of prey, a new house for lions, tigers and other carnivores, and a new Children's Zoo.

Below: **The giraffes are among the finest in any zoo.** *Below centre:* **The new Elephant and Rhinoceros Pavilion cost £200,000. Inside, the animals stand slightly above the level of the darkened public area. The contrast between this dark central area and the brightly lit walls behind the animals produces the effect of animals standing in forest clearings. The elephants have a heated indoor pool in which to enjoy a daily bath**

Below: **The European bison is one animal which zoos have saved from extinction. It was once common in the forests of Central Europe, but by 1939 only a few remained, and by the end of the war there were none left in the wild. Since then it has been bred so successfully in zoos, particularly at Warsaw, that it has been possible to put them back into the forests, where they now live and breed again**

Left: **A corner of the Northern Aviary. It is a "fly through" flight aviary 150 ft. long, 53 ft. wide, and 80 ft. at the highest point. The vicunas in the moated paddock in the foreground come from South America.** *Below left:* **A sketch of the interior of the proposed Small Mammal House. More than 100 species of flying, jumping, aquatic, nocturnal and other small mammals will be housed here in conditions suited to their specialised needs**

"But to embellish the Zoo with fine buildings is not enough," says Professor Sir Solly Zuckerman, secretary of the Zoological Society of London. "Today's zoos cannot be justified if they are only exhibitions of the world's remaining fauna, to be gaped at by the curious and studied more closely by the scientifically interested. They must face the problems presented by the need to conserve the world's animal resources."

Conservation is much more than a noble idea. There are strong aesthetic, scientific and economic reasons behind it. The economic reasons are of particular concern to some Commonwealth countries. Many tourists go to Africa, India and Pakistan who would not go, if it were not for the wildlife. Tourism is already the third largest source of revenue in Tanzania, and its value is rapidly increasing in many other African countries. Unlike minerals, wildlife has the advantage of being a renewable asset. With a proper balance between conservation and game cropping large amounts of protein can be added to a nation's diet.

The scientific reasons for conservation are equally significant. There are many animals about which very little is known. No one can say how much or how little may be learned from such animals, but it is the duty and purpose of Science to find out. It is already known that the study of animals can help solve problems of heredity, environment, biology and medicine. An extinct species can contribute nothing to the economy of a country and little to Science.

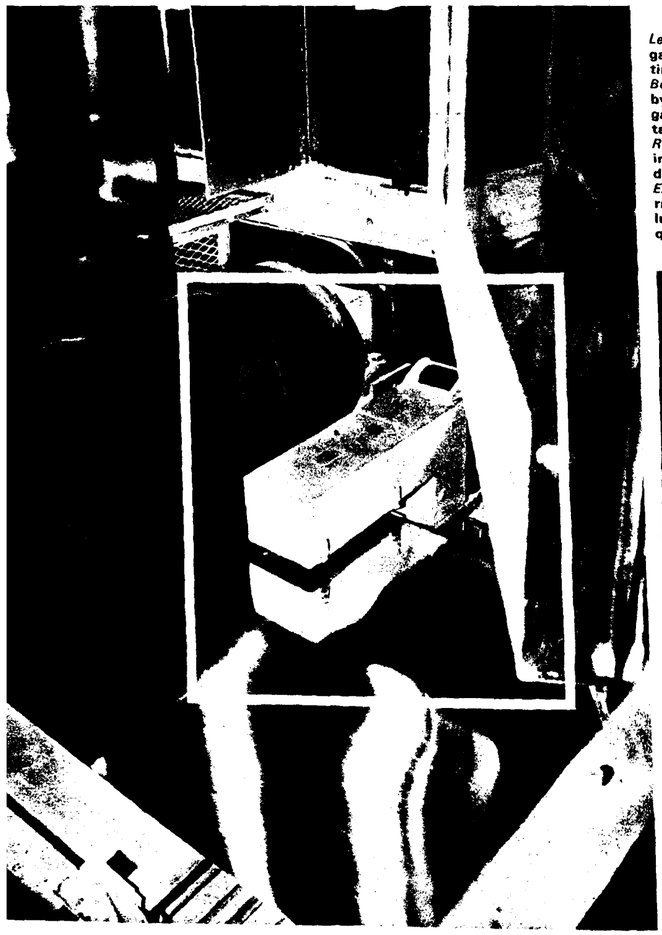
Realising the increasing importance of conservation the London Zoo formulated a new policy some years ago, and hopes other zoos will follow it. This new policy discourages the collection of rare animals which do not thrive in captivity, as this would only accelerate their extinction. It encourages all zoos to co-operate in bringing together, in the most suitable places, pairs of rare creatures for breeding. As numbers are built up some of these animals can be returned to natural habitats outside zoos. The London Zoo sent its female Arabian Oryx, a survivor of a species which now numbers less than 200, to a breeding herd in Arizona, where a calf was born last year.

The treatment of sick animals has advanced a long way since 1842 when the Zoological Society appointed a veterinary officer "to look after the animals and the keepers". The animal hospital at the London Zoo has its own operating theatre, X-ray department, pharmacy and pathology section. In the operating theatre delicate operations have been performed on many animals, including tigers, giraffes, leopards and a puma. As a result of the work done in the hospital the percentage of animals who recover from sickness has risen from 55 to 90.

On the scientific side the Zoo has a new Institute of Comparative Physiology and a new Institute of Comparative Medicine which is the only one in Europe to combine veterinary, zoological and human medical studies. It will specialise in research into those diseases which are common to men and animals. This could lead to new and perhaps life-saving knowledge of diseases such as coronary thrombosis, cancer and arthritis.

There are now 300 zoos in the world, spread over 70 countries, and attracting an annual attendance of 140 million. To promote a greater understanding of zoo management the Council of the Zoological Society publishes International Zoo Yearbook. Each volume contains information gathered from zoos all over the world on problems such as building, nutrition and veterinary medicine, with which zoo directors have to contend. The London Zoo is in constant communication with zoos throughout the Commonwealth for the exchange of information and animals, and to arrange fact-finding visits for zoologists. Among Commonwealth zoologists who have been to the London Zoo on training courses are Mr. W. L. E. de Alwis, director of the Colombo Zoo, and Austin Knight, curator of Hope Zoo, Kingston, Jamaica.

The London Zoo is taking the lead in helping zoos all over the world to make people care about the survival of wildlife, not out of sentiment, nor even for the educational value, but because animals are part of mankind's natural environment. They help to support us, and there is much of value to be learned from them. We need them more than they need us. ◻



Left: **Radioisotopes, incorporated in this gauge (in square), check the thickness of the tin coating on tinplate as it passes by**
Below: **Testing the soundness of a metal casting by means of radioisotopes. A source of gamma rays is being placed in position to take a radiograph which will show any flaws**
Right: **Applying a drop of a radioactive insecticide to the leaf of a tomato plant to determine the insecticide's effectiveness**
Extreme right: **Administering air containing radioactive oxygen for studying heart and lung function. The radioactivity diminishes quickly to negligible strength**

THE world is composed of 92 elements—in addition to which the scientists have produced another dozen artificial ones in the laboratory. Most of the elements found naturally do not change: their atoms have nuclei that are stable. On the other hand, some have atoms that are unstable: they change at a given rate into other elements or forms which are stable, emitting radiations as they do so. In other words, they are radioactive.

The radioactive versions are commonly known as radioisotopes, and the time taken for the bulk of their atoms to change ranges, according to the element, from fractions of a second to millions of years.

However, all the stable substances of everyday life such as iron or carbon, sulphur or oxygen can also be made radioactive by the scientists nowadays, so greatly adding to the list of available radioisotopes.

Of the countless new materials produced by modern technology, these radioactive substances are among the most useful. They can be employed with absolute safety—and with increasing efficiency, too—for numerous purposes in many fields, and the list of their uses grows daily. In this age of increasing production and improved methods they have made possible the development of more accurate and effective techniques, both in industry and agriculture, medicine and research.

Radioisotopes emit three main types of radiation: alpha particles, beta particles, and gamma radiation. Each of the three types, in that order, can penetrate increasing thicknesses of material, and their different strengths can be utilised for different jobs. So, with the numerous radioisotopes now available, the scientists can almost certainly find one that is suitable for any particular purpose.

The key to their use is that they continue to emit their radiations—and at a given rate—whether they are encased in industrial plant or machinery, whether assimilated by the body or in plant growth, whether hot or cold, pure or chemically combined.

In doing so, they signal their presence and position—although for all other practical purposes they are just the same as the ordinary, stable versions of the same elements. The signals can be detected, registered and measured at a distance by electronic instruments or on photographic film, and this is possible even when the radioisotopes are in the most minute quantities. Indeed, the amount of radioisotopes in a substance can be measured far more accurately with instruments than with even the most sensitive methods of chemical analysis.

Incorporated in the appropriate instruments, which are usually small, compact, and relatively cheap and easy to use, they can be employed in the widest range of processes to detect and to trace, to measure and control. Nor is this all. They can also form an intense and convenient source of radiation, and so dispense for many purposes with the need for cumbersome X-ray machines.

Industry. Many branches of industry have increased the speed of production, improved the quality of goods, and gained knowledge of industrial processes through their use. Their employment is currently saving industry more than £4 million annually.

Radioisotope gauges can measure and control the thickness of sheet materials produced in continuous processes, determining thicknesses ranging from a few thousandths of an inch up to inches. With equal accuracy they can measure the thickness of a coating of tin, zinc or paint, say, on the surface of a material, or they can detect corrosion inside pipes and industrial plant components. They can monitor, on production lines, the contents of sealed packages and activate machinery that discards faulty ones.

They can quickly locate blockages and leaks in pipes, and establish the level of fluids in closed vessels and containers.

Very small quantities of radioisotopes can be used as "tracers" to measure the wear in machine parts; to study the consistency of mixtures—for example, of animal foodstuffs—in bulk consignments; in fact, to study the movement and distribution of any sort of material in almost any manufacturing industry.

They can do the job of an X-ray machine in taking radiographs of metal castings and welds to reveal possible faults.

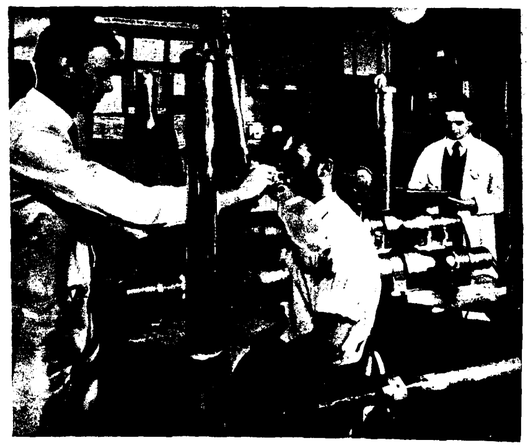
They are used in some cases to overcome static electricity which can attract dirt and so be a nuisance in weaving certain fibres.

Used for irradiation purposes, they can be employed, for example, to sterilise materials. A factory in Australia uses a cobalt-60 source to sterilise imported animal hair—still in its bales—to eradicate anthrax bacteria, before the hair is made into carpets.

Industrial Chemistry. Employed as a source of radiation, they can alter the quality of certain plastics and so increase the range of their uses. Some types of polyethylene tubing and sheet, for example, are processed by gamma radiation, for this raises the temperature at which the material starts to soften and

RADIOISOTOPES

They Signal Progress



deform. On the other hand, gamma radiation reduces the temperature and pressure required for many chemical reactions, and this cuts costs in a number of processes. They can be employed to measure certain impurities found in very small quantities in some substances—down to a proportion of only one part in 1,000 million. They are also used to determine rapidly the proportion of the elements in certain materials.

Civil Engineering. The volume of flow in pipes, channels and rivers can be quickly measured by the use of radioisotopes. They can also trace the underwater movement of silt, sand and pebbles due to tides and currents. Samples of the substances from the sea bed or river bed are "labelled" with radioisotopes and put back in place. Their subsequent movement can be followed by underwater detectors, providing information which is valuable when planning dredging operations.)

Leakages from oil and water pipelines are revealed by adding a small quantity of a radioisotope to the liquid in the pipe. The position of the leak is detected by the concentration of the radioisotope that has seeped into the surrounding soil. In the petroleum industry they can mark the arrival of different grades of oil at any particular point in the pipeline by means of the appropriate instruments set alongside.

Agriculture. In agricultural research radioisotopes can reveal the amount of a fertiliser taken up by crops, and determine the importance of the different soil components to the crop's growth. In the study of insect pests, certain of the insects can be "labelled" with a microscopic amount of a radioisotope which enables their movements underground or in stored foodstuffs, timber, or other materials, to be easily followed. Again, radioisotopes help in the development of selective weedkillers, insecticides and fertilisers by increasing our knowledge of how these work.

They have aided the study of animal nutrition, and this has led to improved methods of feeding for increased production of meat or milk. They have shown also how much calcium and phosphorus a hen needs for egg production.

Stored foodstuffs, such as grain, can be protected from the ravages of insect pests by irradiation which renders the pests and their eggs infertile.

Irradiation has also produced new strains of crops that have particularly useful characteristics: strains, for example, that resist certain diseases or thrive in particular climates.

Medicine. As radioisotopes are chemically similar to the respective stable varieties, the body assimilates them in the same way. However, by using a radioactive variety, the movement or concentration of the particular substance within the body can be detected and measured. This can be done from outside the body with the appropriate instruments.

In certain cases this tells the doctor what he wants to know about a patient's bodily functions and ailments more easily than other techniques. The rate of uptake of a particular element in an organ, for example, is directly reflected by the rise of radioactivity in it. As a result, the doctor can diagnose, say, illnesses to which the thyroid gland is prone by administering radioactive iodine and then applying a detector to the thyroid gland itself.

Again, the penetrating radiations of some isotopes can be used in place of radium or X-ray tubes for treating benign or malignant growths. Cobalt-60, which emits penetrating gamma rays and is relatively cheap to produce, is used for deep therapy. Caesium-137 is used for less penetrating treatment.

Other radioisotopes, with rays of limited penetration, are made up in the form of tiny seeds and are placed in the body in the exact position where the rays will be of most benefit. Here use is made of an isotope whose rays will have diminished to negligible strength after it has done its particular job.

Again, radioisotopes (cobalt-60, for example) have proved a valuable source of radiation for sterilising medical instruments and supplies such as dressings and sutures within their sealed containers. The rays not only kill bacteria but also do so in a cold process. This avoids the risk of damage to the contents which can be incurred if heat is used. The contents do not in any way become radioactive, and they remain sterile until the containers are opened.

The uses of radioisotopes for research purposes are countless. Even the archaeologist makes use of natural radioactivity. He can determine the age of, say, bones, buildings or documents by measuring the amount of radioactivity in the carbon in them.

Radioisotopes can be produced in various ways: by irradiating the appropriate stable elements in nuclear reactors; by bombarding these elements with atomic particles in machines such as cyclotrons, popularly known as atom smashers; by extracting them directly from fission products, the residue from nuclear fuel consumed in reactors; or from natural radioactive substances. (Fission products include some 250 radioisotopes of 30 elements, two of the most useful being strontium-90 and caesium-137.)

Britain has led the world in producing these versatile and valuable materials, discovering new uses for them, and developing the appropriate instruments.

Since 1948, when radioisotopes first became available on an appreciable scale, the business of marketing them has spread across the globe. Last year some 56,000 consignments, worth nearly £2 million, were dispatched from the Atomic Energy Authority's Radiochemical Centre at Amersham and from nearby Harwell to hospitals, universities and research centres, to factories and laboratories in 85 countries.

Currently the Centre lists no fewer than 2,000 available compounds containing radioisotopes, and 180 different pure isotopes against 100 five years ago.

Moreover, Harwell's Isotope School had by mid-1965 given instruction in the various aspects of radioisotopes and their production and use to 3,702 students, including 1,222 from overseas, since it opened in 1951. □

Water is Power in Pakistan

THE Mangla dam project, the largest of its kind in the world, will make its two great assets—power and water—available to West Pakistan a year ahead of the scheduled date of July 1968.

It will be the biggest earth dam in the world with the largest capacity spillway in the world—three times the size of Niagara Falls.

It is the biggest single construction contract of any kind ever made, in terms of value at £126 million: the eventual cost is estimated at £150 million. As an example of international co-operation it is outstanding; fourteen countries are concerned with its construction and finance and six of the major contributors are Commonwealth countries.

The completed dam will be capable of irrigating three million new acres of land, and the initial hydro-electric capacity at 300,000 kilowatts is almost equal to the total hydel capacity of the whole of East and West Pakistan combined in 1962.

In forming the man-made Mangla lake some 100 square miles of low ground will be submerged; this means rehabilitating over 80,000 people—30,000 of them in the new village of Mirpur being built on the shores of Mangla lake. Evacuation of the entire reservoir area is expected by September 1966. Thousands of people have been allotted land in West Pakistan or given cash compensation.

Before the building of the dam 75 per cent of the precious water of the River Jhelum flowed to waste in the Arabian Sea. Now the waters can be regulated and conserved in times of drought and controlled in times of flood.

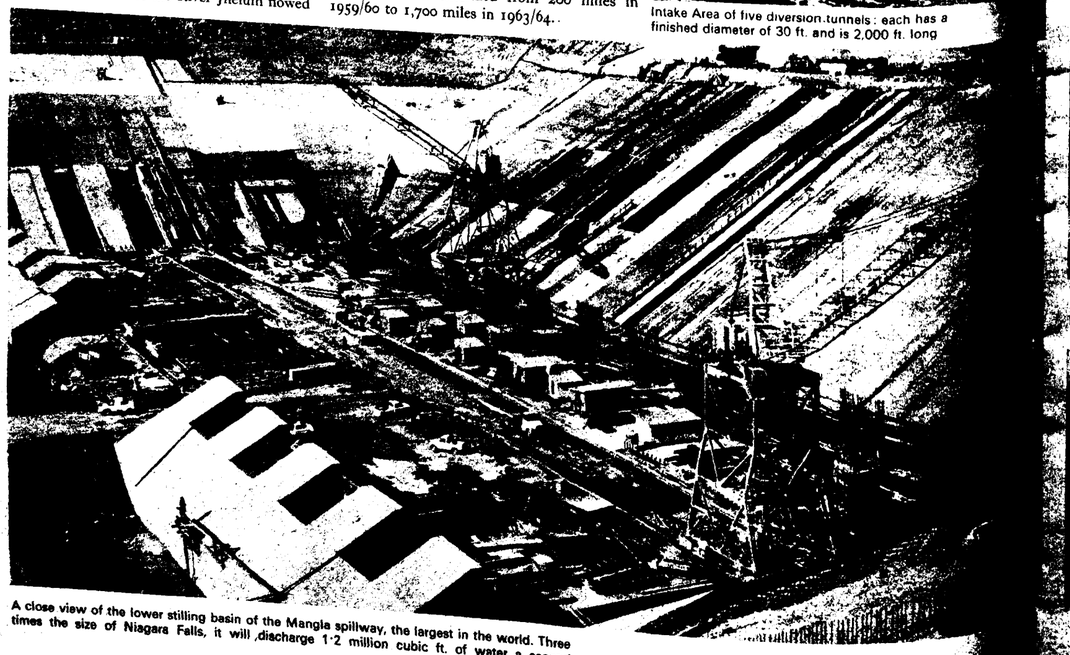
The British firm of Messrs. Binnie & Partners of London has designed and planned the dam and supervised construction. Long before construction began in February 1962, as the main consulting engineers to WAPDA (Water and Power Development Authority), they were busy formulating the massive and detailed blueprint required to make the proposal feasible. They have employed nearly a hundred Pakistani engineers and the whole project has given some of the younger engineers a wonderful opportunity of gaining experience. There are also over 11,000 workers at Mangla, the majority of whom are becoming highly skilled craftsmen. The full-time training programme is producing for Pakistan a vast reserve of skilled and technical manpower in addition to providing the country with the water and power she so badly needs if her plans for progress are to be fully developed.

In 1960 the East Pakistan Water and Power Development Authority undertook the provision of hydro-electric and thermal power for industrialisation as a basis for development of agricultural and industrial economy. Some of the Authority's important achievements are pictured on the opposite page. The total length of transmission and high-tension distribution lines has been extended from 200 miles in 1959/60 to 1,700 miles in 1963/64..

During his recent visit to Pakistan, H.R.H. the Duke of Edinburgh, centre, visited the Mangla Dam. In Punjabi, "Mang" means "ask" and "lai" means "have it"

Intake Area of five diversion tunnels: each has a finished diameter of 30 ft. and is 2,000 ft. long

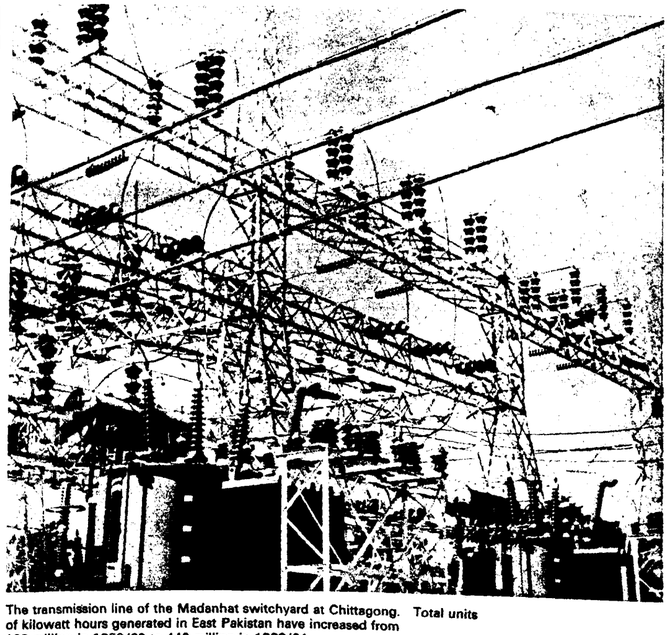
A spillway of the Karnafuli hydro-electric project at Kaptai, first and biggest hydel power project in East Pakistan



A close view of the lower stilling basin of the Mangla spillway, the largest in the world. Three times the size of Niagara Falls, it will discharge 1·2 million cubic ft. of water a second

The low lift pumping station at Rangpur in East Pakistan where land improvement schemes completed to date have provided an annual increased production of food crops of more than 400,000 tons

Main canal of the Ganges-Kobadak project. In four years flood protection and drainage benefits have been given to over 1¼ million acres in East Pakistan



The transmission line of the Madanhat switchyard at Chittagong. Total units of kilowatt hours generated in East Pakistan have increased from 199 million in 1959/60 to 440 million in 1963/64

PLANNING THEIR IDEAL HOME

Every young couple planning to get married, dreams of the ideal home. Not many are lucky enough to achieve this immediately, for the simple reason that ideal homes are not built on dreams but on hard cash–something young couples invariably lack. Nevertheless, there is no harm in planning optimistically for the future and that is exactly what Elizabeth and Charles were doing when our cameraman ran across them at the 1965 Daily Mail Ideal Home Exhibition in London

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1 Admiring an eye-level electric oven with automatic spit-roaster and non-fog glass window in the steel-frame house kitchen

2 Elizabeth relaxes in one of the show bedrooms while Charles carefully examines the furniture

3 Delighted by the contemporary living room furniture, Elizabeth persuades Charles to test the comfort of a modern chair

4 Remembering his own youth, Charles tests the strength of the bedsprings in the boy's bedroom of one of the houses

Elizabeth and Charles visit one of the two-bedroomed houses at the exhibition to collect ideas for their own future home

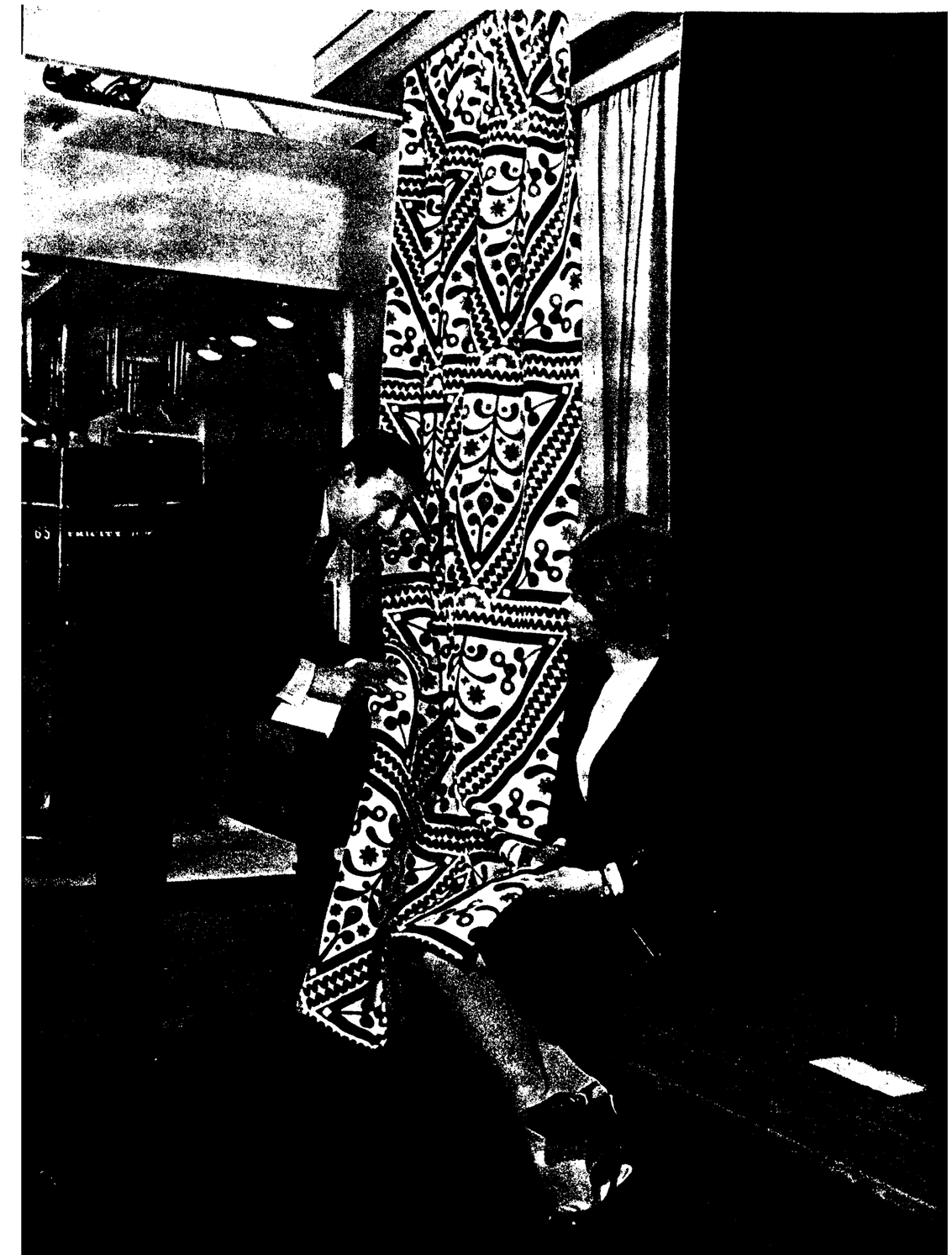
Charles, an up-and-coming engineer, and Elizabeth, a teacher, had saved enough between them for a down-payment on a house, plus a little extra for legal fees. With reasonable expectations of raising a mortgage on the strength of Charles' salary, and a double income—at least until the first baby arrived—they were busy collecting ideas from the selection of houses on show at the exhibition.

Elizabeth and Charles concentrated on the two-bedroomed bungalows and chalets which were within their price range. They were delighted by the low contemporary furniture chosen for the rooms and by the simple elegance of the bedrooms with their space-saving, built-in cupboards.

Elizabeth stood dreamy-eyed before a 6-foot-long breakfast-bar with built-in hotplate at one end, which divided one dining room from its kitchen. She threw a practical eye over cupboard space and ample worktops in the modern kitchens, cleverly designed to save stooping and unnecessary steps. The more expensive had built-in dish-washers, wall ovens, refrigerators, and slim-line washing machines which needed no plumbing. Others had sinks fitted with multi-purpose, plug-in attachments which coped with food mixing, potato-peeling, saucepan scouring, dish-washing and waste disposal. One sink could even be turned into a powered washtub at the flick of a switch, thus saving kitchen space and the expense of a separate washing-machine.

But the object she admired most was a combined gas and electric cooker with four-burner gas hotplate for instant heat, interior-lit electric wall oven with non-fog glass window, fold-away, eye-level electric spit, and gas or electric grill.

Both of them commented on the sensible way the children's bedrooms had been designed as bed-sitters in which they could sleep, study, and entertain their friends as the need arose. Two other ideas, designed to cope with the needs of a growing family, took their fancy. One was an extra carport by the garage, enabling the children to use the garage as a playroom. The other was a special package-deal room which could be added to a house at a later date at half the cost of building one. "After all", said Charles with a twinkle in his eye, "there won't always just be the two of us".



With thoughts in mind of a home of their own, Elizabeth and Charles pause to admire a colourful display of furnishing fabrics

Busy in Britain

Schoolchildren, students, graduates from all over Asia come to Britain to learn more

1. Indian schoolgirl learns to read

6. Dr. Sen in London

1. A new text-book for teaching children English has been prepared at Montgomery Primary School, Sparkbrook, in England. The book is full of pictures of children—real children, like ten-year-old Rani Sethi from India (called Bimbla in the book), seven-year-old Shahid Hussein from Pakistan (called Abdul) and Trevor Martin from West India (called Winston). Our photograph shows Rani Sethi holding up the book showing her picture.

2. Hong Kong students James Hui, left, and Michael Pang, in the control tower of Hurn Airport, Bournemouth, where they are training under the auspices of Britain's Overseas Development Ministry.

3. Miss Phulporn Phya-anant, lecturer at Chulalongkorn University, Bangkok, is the first woman mechanical engineer from Thailand to study in Britain. Here she talks to a British Railways engine driver; she is studying under the Colombo Plan scholarship with R. A. Lister & Co., Ltd., of Dursley.

4. Miss Pramila Desai may soon be India's first woman chemical engineer. She is shown here working on a soda experiment at the Bradford Institute of Technology where she is taking a postgraduate course.

5. The first ever Pakistani student to be President of the Oxford Union Society is Tariq Ali, pictured here on the steps of the Fellows Garden at Exeter College, where he is studying.

ong Kong students

woman engineer

4. Indian student

5. Pakistani president of the Oxford Union

7. The Queen meets Indian students

8. Indian editor in London

9. CENTO student from Karachi

10. Thailand trainee

6. Dr. Binay Rajan Sen, Director General of the United Nations Food and Agriculture Organisation, left, talks to Mrs. Barbara Castle and Mr. Harold Wilson, British Prime Minister, at No. 10 Downing Street, London. Mr. Sen was in Britain at the invitation of Mrs. Castle, Minister of Overseas Development.

7. H.M. the Queen talks to students during her visit to the Y.M.C.A. Indian Students Union and Hostel at Fitzroy Square in London.

8. Mr. S. N. Ghosh, editor of *The Pioneer*, Lucknow, in India, meets Mrs. Barbara Castle during his visit to the Houses of Parliament in London.

9. Mr. M. A. Sami-Khan, a Central Treaty Organisation student from Pakistan, at work in the Chemistry Department of the Strathclyde University in Glasgow, Scotland. Mr. Khan, a chemist from the Central Drugs Laboratory in Karachi, is doing a postgraduate course in chemical analysis.

10. Mr. Chaya Jivacate from Thailand, a B.Sc. in electrical engineering of Bangkok University, is doing a two-year course in telecommunications engineering as a Federation of British Industries scholar. He is shown here working in a development laboratory at the plant of Standard Telephones & Cables Ltd.

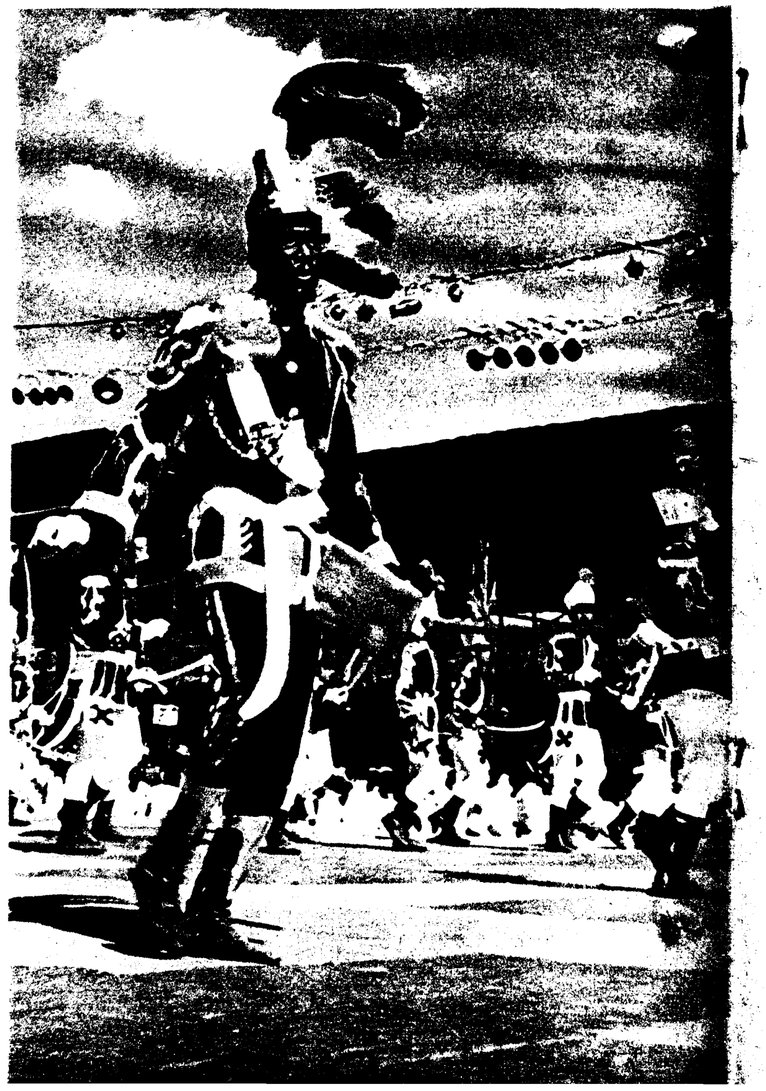
CARNIVAL IN TRINIDAD

All the long months of work on the finery of traditional costumes and the construction of ingenious floats seem worthwhile when carnival comes again. The two-day gaiety is the expression of a year of dreams of splendour

Costumes take on fresh splendour when night falls. Rich fabrics, embroidered with gold and silver, shimmer in the bright lights as this figure of solitary magnificence crosses the arena

Small children help to make new costumes. Designs are so elaborate that the work begins as soon as one carnival is over and continues until shortly before the next

Maskers go to great expense to satisfy their costume ambitions. This shop carries a much larger stock of ribbons, beads, braid and luxury materials than normal trade requires



The origins of carnival in Trinidad probably go back to the spectacles associated with the ceremonies of the Roman Catholic Church in the days when the island was a Spanish colony. But the many French settlers who came to Trinidad at the time of the French Revolution have left the strongest impression. Even today many of the words used in the calypsos, and to describe the dances and special events of carnival, derive from French.

For example, carnival begins on Jouvert (jour ouvert), the day before Shrove Tuesday. It continues energetically until the stroke of twelve midnight on Shrove Tuesday, when the steel bands fall silent and the revellers wearily make for home, their heads already full of plans for next year's carnival.

Among all the traditional masques and dances, the rhythm of the steel bands and the singing of the calypsos, nothing is more impressive than the fabulous carnival costumes.

Sailors, Red Indians, Bats, Clowns, Stokers, Thieves, Beggars and Dragons roam the streets in huge bands, wearing "ordinary" or "fancy" costumes. "Ordinary" sailors are sometimes 200-strong, and they walk with an exaggerated rolling gait. "Thieves" and "Beggars" have a traditional way of dancing which they accompany with a curious jargon spoken with zest to all and sundry throughout the festival. Then there are the "Dragons". They have to wriggle along the ground, their progress hampered by chains. The "Bats" are sewn into skin-tight costumes, their 15-foot wings attached by zippers. They have a visor mask which they can lift when they need a breath of fresh air.

Each year maskers find new ways to make their costumes more elaborate. In the old days it was only the rich who went in for splendour, while the ordinary citizen contented himself with traditional dress—as a red, blue or white Indian, a soldier or a clown. Nowadays people may spend from 300 to 1,000 dollars on a carnival suit which may take most of the year to design and make.

"Fancy" dress has become very popular. "Fancy" Red Indians often have head-pieces between ten and fifteen feet high, richly decorated with plumes and beads mounted on an ingenious cane and wire frame. In spite of the lightweight structure these head-dresses are too awkward to be worn continuously. The wearers have to come out for a rest and to cool down. "Fancy" sailors are even more bizarre. Above their white ducks and regulation shirts they go in for the weirdest confections. A "fancy" sailor might have a branch of a tree strapped to his head, and on the branch a colourful toy woodpecker operated by a string held in the hand.

In one sense carnival today is a contest between the traditions of yesteryear and the advance of modern fads and fashions. Such rivalry does not matter, for nothing can subdue the lively spirit of Port of Spain's carnival.

This September, the fantastic finery of the carnival can be seen on exhibition at the Commonwealth Institute in London, as Trinidad's contribution to the great Commonwealth Arts Festival.

Left: Soldiers are traditional carnival figures. Their costumes are often as expensive as any worn in a regular Army. Colourful exaggeration, as in the plumes of the helmet, is usual

Right: Much hard work and artistry goes into the building of symbolic carnival floats. But after a day or two of revelry they become no more than a memory

Happy couples thread their way through the carnival crowds. The "Bands" have plenty of room in which to manoeuvre, but those who just watch the fun are elbow to elbow

Carnival is tiring. The man in the sombrero shuffles along. It has been a long day, and the crowd is too dense for him to hurry, even if he had the strength left

Carnival Red Indians were originally fairly simple in appearance, but the new vogue for "fancy" Indians has meant that each successive year their costumes have become more lavish. Here, a Red Indian displays the full panoply of his ornate head-dress

MASTER OF BATIK

In the past ten years, and especially since Malaya became an independent member of the Commonwealth in 1957, there has been an energetic development of the visual arts throughout Malaysia.

Chuah Thean Teng has been one of the most consistent and stimulating influences in this outburst of creative activity. What Teng (as he is known everywhere in the East) has done is to unite the ancient batik process of dyeing cloth and the art of painting.

Gaily patterned cloths produced by the batik process have been used for centuries throughout South-East Asia for making the simple wrap-around garment known to the western world as the sarong. The patterns are produced by drawing in molten wax on a specially prepared cotton or silk cloth, leaving parts of the cloth untouched by wax. When the wax has set, the cloth is dipped into a bath of dye. The wax repels the dye, and only the parts of the cloth untouched by the wax become coloured. By a succession of dyeing operations, each with different parts of the design waxed, intricate patterns can be made.

In spite of the high degree of skill reached in producing traditional patterns, no one before Teng ever thought of raising this age-old craft to the level of a fine art.

Teng was already forty years old and had been a conventional artist, in oil and water colours, all his life before he began to experiment with the technique of batik-painting. He came to Malaya from China in 1932, and has worked there ever since, mainly in Penang. Since his first one-man show in Penang in 1955, Teng has established himself as one of Malaya's foremost artists. He has had one-man shows in Singapore (1956), Kuala Lumpur (1957), London (1959), Kuala Lumpur (1963), San Francisco (1964), and at the Commonwealth Institute in London this spring, with others to come in Dublin and Hamburg later in the year.

Teng's batik-painting is sometimes impressionist, sometimes realist, and sometimes abstract in style, but it is always characterised by glowing, vital colours and strong, sweeping draughtsmanship.

Throughout his early years as an artist Teng had to do other jobs to support himself and his family. He has been a baker, an umbrella maker, a cook, a stallholder, a schoolteacher, and a maker of batik sarongs. It is not surprising that now he has perfected the technique of batik-painting, Teng regularly chooses as his subjects the scenes of the market and the kampong, traditional crafts, and everyday family tasks. In so doing he shows the world all the colourful variety of Malayan life.

Above left: **One of the most important tools in batik-painting is the pen or jentin, used for drawing the wax patterns on the cloth. It is made of copper, with handle at one end, a bowl in the middle to hold the liquid wax, leading to a curved hollow pipe at the other end from which the wax flows on to the cloth.** *Above right:* **The artist in his studio.** *Below:* **With some of his materials. The solid wax is melted in a small pot on a tripod over a spirit stove**

SURROUNDED by stormy seas, fringed by a wide belt of pack ice, and almost totally covered by an ice sheet, Antarctica lies at the foot of the world. Its 5½ million square miles can support no land animals. Devoid of rain, it has no vegetation except for a few patches of moss and lichen that cling to outcrops of rock. Its white wastes are periodically swept by raging snow-laden blizzards and bitter, searing winds.

The whole continent is a great reservoir of cold, with temperatures ranging down to minus 50 degrees Centigrade below the ice surface. Ninety per cent of the world's ice lies there; if it all melted the level of the oceans would rise by 200 feet, engulfing coastal cities and towns everywhere and changing the map of the globe. But for the surrounding sea life, with its whales and sharks, seals and seabirds, the continent would present a picture of utter desolation.

Antarctica, however, serves as a base for a host of scientific studies extending from the earth's core to outer space. Groups of scientists of a number of nations, including Australia, Britain and New Zealand, have for some years been engaged in major programmes of basic research. The information they gather can be both of immediate practical benefit and add much to our knowledge of the universe.

This remote region is valuable for such work, first because of its position around the South Pole which makes possible, for example, comparative studies of simultaneous observations in the Arctic in the field of geomagnetics which has important implications for telecommunications; because of its local geographic conditions, such as the 24-hour night in winter which makes possible round-the-clock observations of auroral phenomena; and because of the special biological and geological conditions there.

The New Zealanders have a natural laboratory almost on their doorstep in the McMurdo ice-shelf, 1,200 square miles in extent and covered by ice ranging from 100 to 1,000 feet in depth. It has a great range of ice and snow characteristics, and many changes of climate. So they took up work at Scott Base, New Zealand's southernmost scientific station, in the Ross Dependency, during the International Geophysical Year of 1957/58.

Since then, New Zealand's studies, some of which are part of large international programmes, have been carried out continually by small groups whose members were periodically changed, and by larger parties who have arrived each summer season after the months-long winter darkness has lifted and the blizzards have abated. During most of the Antarctic summer, with its chill, crystal-clear air, they have been making detailed observations related to such subjects as seismology, geology and glaciation, surveying, mapping and soil investigations, biology and nuclear science.

As part of the work in seismology—the study of earthquakes—they use instruments which record even the low rumbles from all over the world. The information is sent to Washington in the United States where similar data from other countries is fed into computers which determine the locality of each earthquake. This information, the scientists hope, may eventually help to predict the time, place and extent of major shocks. Such warnings would help to reduce loss of life and damage to property.

Seismology has also provided information about the earth's structure, showing, for example, that the core is molten and not solid. Again, it has been used to measure the thickness of the ice cap—a method which enabled Sir Vivian Fuchs, during his crossing of the Antarctic in 1957/58, to establish that it is up to 10,000 feet thick in places.

At ground level, the New Zealanders—who have been working on some projects in association with a United States group—have gained valuable information about the movement of the Antarctic ice. First measurements show a general westward shift of from 250 to 500 feet annually, caused by the flow of the Aurora and Terror glaciers from Ross Island. Other work aims to discover whether the amount of ice in Antarctica is increasing or diminishing. This involves a study of the build-up of the ice, the melting caused by the sun, and the northward drift of the bergs. However, because of the vast extent of the ice, this work may take a very long time—up to 100 years, perhaps—before a definite trend can be established.

In contrast to the previous, more general, programmes, much detailed research was also done by the 45 New Zealand scientists and field assistants who arrived to work on specific projects at different places throughout the past summer season. While some groups were surveying and mapping the ground, others were studying the rock formations and general geological conditions. Others collected soil samples along an 800-mile line to link with similar work done far to the north in New Zealand and the Pacific Islands so as to provide a soil survey stretching almost across the width of the Southern Hemisphere. Other parties investigated the physics of frozen lakes. Again, studies were made of the nature and habits of the penguins, skua gulls and seals.

Snow samples were collected at the South Pole, and at various other places by all parties in the field. These samples were for analysis to show the amount of tritium—a super-heavy hydrogen—in Antarctica so as to gain information about nuclear products occurring both naturally and as a result of nuclear tests.

Other projects have included magnetic measurement and a study of the upper layers of the atmosphere. The lowest region of the ionosphere, for example, yields valuable information on the absorption of radio signals. From a study of the higher layers more can be learned of the best frequencies for radio transmission. The New Zealanders are continuously probing these layers by means of two vertical sounding radar installations at Scott Base.

They are also studying the aurora, with its spectacular displays of shifting colours thrown like a giant screen across the night skies. Special cameras, developed by the New Zealanders for the purpose, automatically photograph these phenomena during the long darkness of the Antarctic winter. Nearby, an automatic auroral radar station records echoes caused by disturbances in the ionospheric current system, which helps to determine the type and quantity of radiation received by the earth from space. Further work aims to determine electron densities many thousands of miles out in space to learn more about space structure even beyond the ionosphere.

Originally New Zealand's McMurdo ice-shelf programme was designed to cover five years. However, the information already gained has been so interesting and rewarding that the project may be extended.

These men extract nature's secrets from

THE FOOT OF THE WORLD

Top: **A meteorologist takes one of his periodic readings at Scott Base, headquarters of the New Zealand Antarctic research programme** *Centre:* **Aerial view of Scott Base, giving a striking impression of the little group of buildings set in the white wastes of Antarctica** *Right:* **Sea ice in McMurdo Sound. Much of the New Zealand research into the ice-shelf's movement is being done in the area around here**

In every four- to five-year-old's life there comes the inevitable moment when he or she must go to school. In most cases it is the child's first major encounter with the outside world and to some it can be a terrifying experience, however well mother may have prepared her offspring in advance. At first, buoyed up by prospects of picture books, coloured crayons, sticks of "Plasticine", and fun and games with other playmates of similar age, the child may even look forward to school. On the actual day it may trot quite happily beside mother into the playground, up the stairs to the Principal's study, and down again through what must seem endless passages to the classroom itself. But nothing can quite prepare it for the moment when, introductions over, mother releases her reassuring grip and walks towards the door—leaving her child behind with a strange teacher and a roomful of curious faces. Then, and only then, does the child grasp the appalling truth—that school is a place from which mother is excluded.

Photographer Henry Grant took his camera into a London Primary School to capture some of the children's reactions to such a situation. As we can see from his pictures, some five-year-olds took the whole thing in their stride with astonishing aplomb—while others needed all the patience and understanding of a friendly teacher to help them adjust themselves to their new surroundings.

Moment of introduction: a new pupil conjures up a tentative smile as his mother presents him to the headmistress

Moment of parting: tears from a small girl as her mother attempts to remove her co and leave her with the teacher

Moment of despair: (*left*) a small girl still clings tightly to her mother; (*below*) all hope abandoned, a small boy lies face down on the floor

Moment of acceptance: (*above and right*) three small ls, their attention taken up by other things, forget ir tears and begin to settle down

READERS PICTURES

Readers are invited to send photographs which they have taken themselves. Address and description of the picture should be marked on the back. A guinea will be paid for each photograph published. Photographs, which should be addressed to the Editor, COMMONWEALTH TODAY, Hercules House, Hercules Road, London, S.E.1, will not be returned unless requested.

1 Bridge of boats
Syed Ameer Hasan, 2/1-K-P.E.C.H.S., Karachi, Pakistan

2 Boats in the backwaters
P. V. Subramaniam, 10 Chinnakadai Street, Tiruchy-2, South India

3 Wood carver
Evans Kariuki, P.O. Box 468, Nakuru, Kenya

4 Ghanaian fisherman
E. A. Aryeetey, P.O. Box 1633, Television Section, Accra, Ghana

5 Drying the nets
Yap Eng Kooi, 69 China Street, Penang, Malaysia

6 Feeding the manatees
W. A. H. Knight, 50 Public Road and Pere Street, Kitty, E. C. Demerara, British Guiana

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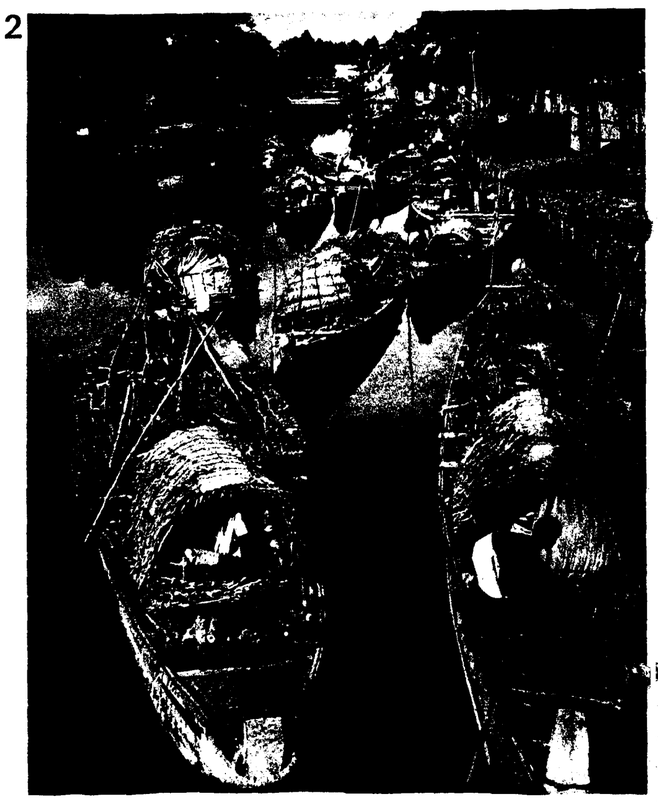

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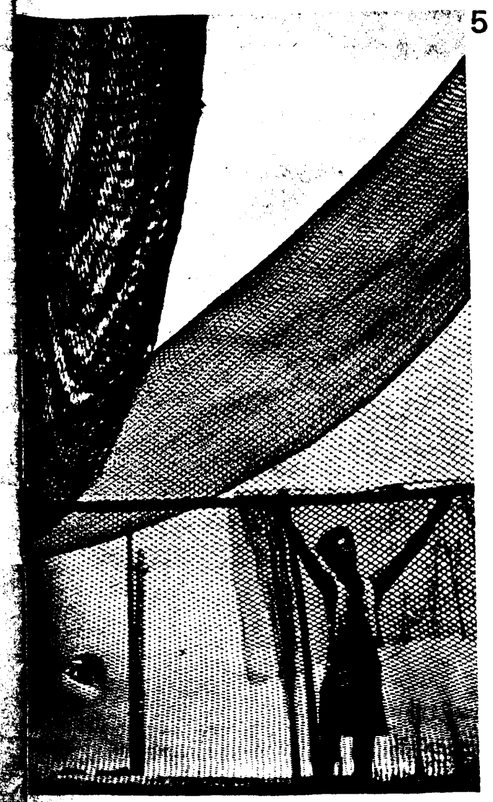
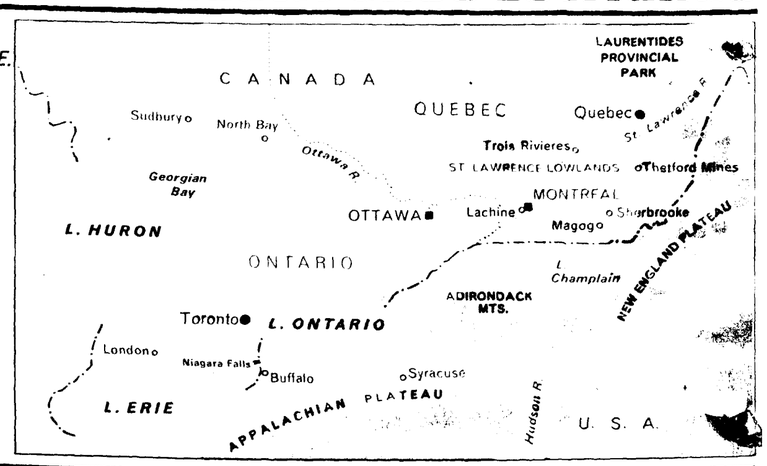


5

The St. Lawrence Lowlands

Geography Study
by Sir Dudley Stamp, C.B.E.



Although the St. Lawrence River of North America cannot claim to be one of the world's longest rivers—from the headwaters, some 1,800 miles long—it is certainly one of the greatest rivers of the world, for it drains the whole Great Lakes' system. Lake Superior is the world's largest fresh water lake and Michigan, Huron, Erie and Ontario are all among the world's giants.

There is little difference in the surface level of water in the first four, but between Lake Erie and Lake Ontario the waters plunge over Niagara Falls and the water level of 572 feet above sea level in Lake Erie becomes 245 feet in Lake Ontario. So, from where the St. Lawrence drains out of Lake Ontario, it passes through five sections in its 180-mile course to Montreal.

There is, first, the course through the "Thousand Islands", then the 48 miles of rapids in what is known as the International Rapids Section, because here the river is the Canadian-United States boundary. These rapids are found where a spur from the great Canadian Shield extends southwards as the Frontenac axis to form the hill mass of the American Adirondacks. Below the rapids the river flows quietly into tranquil Lake St. Francis (151 feet above sea level), then the Loulanges section, and finally the Lachine rapids, which are just above Montreal. The great estuary is tidal as far as Montreal, the normal head of ocean navigation, but the St. Lawrence Seaway now makes it possible for ocean-going vessels to pass direct into the Great Lakes.

The St. Lawrence Lowlands may be described as the lowlands on either side of the St. Lawrence, which lie below, that is to the east of, the Frontenac axis. The boundary to the north is clearly defined by the edge of the Laurentian Shield—the Laurentides never very far away and, near and below Quebec, approaching close to the river. To the south of the river, between Montreal and Quebec, the lowlands reach their greatest extent, and this part is known as the Montreal Plain. After the Great Ice Age a vast lake occupied this area, and Lake Champlain of today is but a remnant.

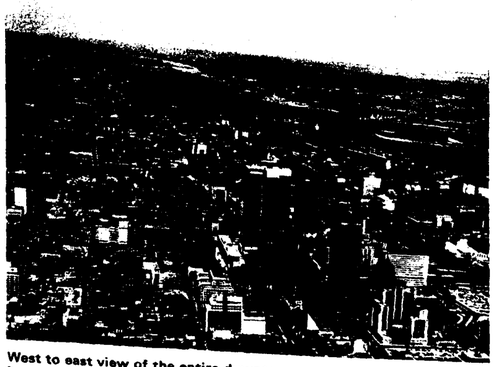
Much of the plain is floored by lake silts and fine alluvium and is very fertile. In places there are great bogs, and some of these, when drained, give excellent soil, rich in natural organic matter, which grows vegetables for the Montreal margin. Sometimes, in dry seasons, the peat catches fire and may burn or smoulder for weeks or even months. Scattered over the plain are fascinating hills, formerly islands in the lake (the Monteregian Hills), now partly wooded, but often with apple orchards on the slopes.

The lowlands to the south of the river narrow when traced towards Quebec, and below Quebec the lowlands become very narrow. But the boundary of the lowlands is not so sharply marked, and the tongues of valley land penetrate into the tumbled hills in the region known as the Eastern Townships of Quebec.

Most of the St. Lawrence Lowlands form essentially part of French Canada. Each village is dominated by its Catholic church, usually with a tall spire and roofed with aluminium, glinting in the sun. The bulk of the people are the French-speaking *habitants*, for the most part small farmers who reclaimed their land in long strips, stretching from a roadway into the forest. In some areas—notably the margins of the Eastern Townships with their very attractive lakes, having such lovely names as Memphremagog and Massawippi—French farming has given place to tourism with many small lakeside resorts; and quarrying for asbestos has given rise to such settlements as Thetford Mines and Black Lake. But the St. Lawrence Lowlands below Montreal are still the real core of French Canada, the thickly peopled part of the Province de Quebec.

Apart from the vast metropolis of Montreal, still three-quarters French-speaking and dominated by the enormous illuminated cross of the Mont Réal, with more than a million inhabitants, and the large city of Quebec itself, with its upper city leading up to the Heights of Abraham, as well as its modern commercial dockland, there are other considerable urban settlements. These include notably Trois Rivières, north of the river, and Levis, opposite Quebec. Farther south, however, Sherbrooke is essentially English-speaking, and so are many of the small towns of the Eastern Townships.

The climate does not make life easy in this part of Canada. The eight months' winter breaks suddenly into spring, but by the end of September winter may come back with a sudden blizzard. But the Canadian maples are glorious in their Fall tints, and there is excellent skiing and winter sports in the Laurentians just to the north, in and outside the national parks.



West to east view of the entire downtown area of Montreal with (in background) the Jacques-Cartier bridge

Typical rural landscape along the lower St. Lawrence. Most of the people are French-speaking small farmers

OOKS FOR TROPICAL AREAS

annual exhibition "Books for Tropical Areas" held this year in the assembly hall of the versity of London Institute of Education.
ne exhibition was organised by the Publishers ociation in conjunction with the Institute.
ne exhibition, which was opened by Mr. G. M. mson, M.P., Minister of State for Foreign irs, brought together a representative display of -books and educational literature in a wide range ubjects, specially designed for the use of people he developing countries of the tropics. It also uded examples of the visual and mechanical —atlases, wall-charts and audio and visual ching equipment—which have been produced African and Asian schools where English is the ond language.
1964 British publishers exported more than million worth of books to over 130 countries in different languages. In addition, many publers have overseas branches and printing works, local managers and staff.

Manning stands at the exhibition were students from all parts of the Commonwealth

Two Nigerian visitors follow the text-book as they listen to "Living English Speech"

fter opening the exhibition, Mr. G. M. homson, Minister of State for Foreign ffairs, chats with overseas students

The stand of Pergamon Press Ltd. This publishing house has recently issued the 200th title—"Techniques of Teaching"—in its series "The Commonwealth and International Library of Science, Technology, Engineering and Liberal Studies"

STAMPS *BRITISH VIRGIN ISLANDS*

Collectors in the colder and more industrialised countries of the Commonwealth will view with envy the new definitive stamps issued in the British Virgin Islands, for their designs have many scenes among the hills and harbours of these pleasant, sub-tropical islands set in the blue waters of the sunny Caribbean.

The British Virgin Islands comprise over forty islands, islets and rocks in the Virgin Archipelago, the other parts of which belong to the United States. The four main British islands are Tortola, Anegada, Virgin Gorda and Jost van Dyke, and they are marked on the map which forms the design of the new 10-cents stamp. The capital, Roadtown, is on Tortola, where most of the colony's 8,000 people live. One of the most impressive views in Tortola is that from the Towers, the coastal fortifications built centuries ago, towards the western end of the island, with a long line of hills falling almost to the sea. This view is shown on the 16-cents stamp.

The pirates in Robert Louis Stevenson's famous adventure story, *Treasure Island*, have a favourite song whose refrain runs:

"Fifteen men on the Dead Man's Chest—
Yo-ho-ho, and a bottle of rum!"

Drink and the Devil had done for the rest—
Yo-ho-ho, and a bottle of rum!"

The Dead Man's Chest is an islet in the Virgins group and is thought to owe its macabre name to its long, flat shape, resembling a coffin. A view of the Dead Man's Chest forms the design of the 4-cents stamp. Another islet with a strange name, Fallen Jerusalem, is pictured on the 6-cents stamp. This islet has piles of rocks and boulders which, when seen from a distance, seem like the stones of a ruined city, and it is from this that the islet gets its name.

Two creatures familiar to Virgin Islanders are featured on the 1-cent and 3-cents stamps. They are the bonito, a handsome fish which grows to 3 feet in length, and the brown pelican, the colony's commonest bird. The stamp shows the pelican diving for the fish on which it lives.

Views of Virgin Gorda and Beef Island appear on other stamps and the top value depicts the colony's badge, the figure of Saint Ursula surrounded by twelve oil-lamps. It was on Saint Ursula's Day, 21st October, 1493, that the Virgin Islands were discovered and named by Christopher Columbus during his second voyage to the Americas.

C. W. HILL

PICTURESCOPE

English cricketer coaches in Ceylon ● British Hovercraft in Singapore ● Indian dancers' debut ● British scientific instruments for Pakistan ● Buddhist art exhibition in Ceylon

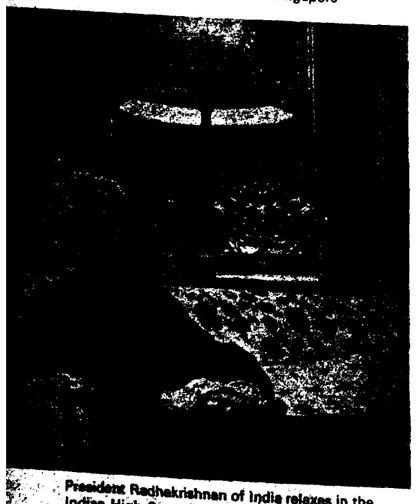
Brian Close, the Yorkshire Captain and England Test cricketer, spent a month in Ceylon coaching and lecturing. Here, he demonstrates to a schoolboy how not to hold a bat

Heads of the British Diplomatic mission in South-East Asia who met in Kuala Lumpur recently: from left, front row, Sir Ian Maclennan, Lieut.-General Sir William Oliver, Lord Head, Sir Andrew Gilchrist, Sir Arthur Rumbold. Back row, Mr. G. F. Hiller, Mr. A. A. Golds, Mr. E. H. Peck, Mr. Etherington-Smith and Mr. J. M. Addis

Earl Mountbatten, as Britain's Chief of Defence Staff, right, talks to members of the Far East Hovercraft Unit at their base in Singapore

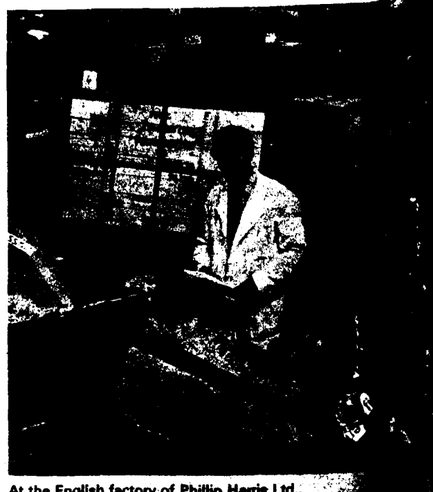
Testing a Westland hovercraft on Singapore waters: two British hovercraft were put through their paces by men of the Army, Navy and Royal Marines in the Far East Hovercraft Unit. Westland Aircraft Co., announce that three of their new 38-passenger hovercraft, the world's largest, will be delivered in Europe this summer

H.R.H. the Duke of Edinburgh talks to two Royal Malaysian Air Force pilots at Labuan air base during his visit to Sabah



President Radhakrishnan of India relaxes in the Indian High Commissioner's home: he came to London for treatment under the care of Sir Stewart Duke-Elder, surgeon-oculist to the Queen

Mr. J. H. Angaine, Kenya Minister of Lands and Settlement, arrives at Palam Airport, New Delhi, and is greeted by the Deputy Minister of External Affairs, Shri Dinesh Singh, right



At the English factory of Phillip Harris Ltd., scientific instruments, worth £2,000, are crated ready for shipment to Pakistan under the Colombo Plan Technical Co-operation Scheme

...ncers, Bashkar and Surya Kumari, rehearsing in London for "Kindly Monkeys", a play in which they take the parts of gods. Bashkar plays Shiva ... Miss Kumari, Kali. Both made their debut in Britain in this play

...Freeman, the new British High Commissioner in India, shakes hands ...Canadian High Commissioner, Mr. Roland Michener, at Palam Airport. ... Also pictured are Mr. Adedokun Haastrup, Mr. H. S. Amerasinghe ... Husain, High Commissioners of Nigeria, Ceylon and Pakistan

Mr. B. D. Brown, Director of the British Information Services in Ceylon, lights the traditional oil lamp to open a Buddhist Art Exhibition at the Asia Buddhist Art Research Institute, Battaramulla. Pictured with Mr. Brown is his wife and Mrs. Janaki Wijewardana, right

Commonwealth Today

Commonwealth Today

Presenting the Commonwealth to the Commonwealth

VIEWPOINT

From a speech by the Secretary of State for Commonwealth Relations, the Rt. Hon. Arthur Bottomley, to the Nigerian Institute of International Affairs

"Feet on the ground, eyes on the stars"

The Commonwealth—a quarter of the world's population occupying a quarter of the world's surface—is one of the boldest political experiments in the history of civilisation. Nothing like it has ever been attempted before. It is a unique political, social and economic bridge straddling the divisions of the world—divisions between the aligned and the non-aligned, divisions, or at any rate differences, of race and colour, divisions between rich and poor.

Inevitably, any great experiment brings with it not only triumphs but trials and immense problems. Yet, when one looks back on the record, the magnitude of the achievement is startling. There are now over 20 independent Commonwealth countries, nine of them in Africa.

Seventeen successful births in 18 years is not a bad record for a reformed imperialist mother no longer in the first flush of youth! But no birth is without its pangs and perils, and if the problems of the transition from an Empire into a Commonwealth grow fewer in number, some of them grow greater in intensity.

There are some small territories which, contrary to what some of the critics say, are not at all anxious to become independent: I am thinking here of some of those small islands dotted about the world, which have never been economically viable and can scarcely hope to be able to stand on their own feet unaided. These are a special problem to which there is no easy solution.

There are other countries that want independence on terms which we may not always think right and just for all their peoples. Our experience—it is considerable and in some respects unique—teaches us that wise and just solutions can only come from unremitting patience and the closest consultation.

We accept our responsibilities. We claim the rights that go with responsibilities.

One of those rights, indeed one of those duties, is this. It is to seek to leave behind when we go not a desert but an oasis; not a battlefield but nations viable, confident, and, above all, united.

We may not always succeed; but, as that great statesman, the late Sir Winston Churchill, once said: "Jaw, jaw is better than war, war".

The Commonwealth has its critics, some within it, some outside it. We do not complain of this. On the contrary, we welcome it. For, in the best sense of the word, it is a political concept. Politics is about people, their needs, their hopes, and their fears. Politics is about disagreements, too. And, in democratic societies, out of disagreements should flow argument and discussion . . . and knowledge and wisdom . . . perhaps even in the end agreement, or at least agreement to disagree.

Other than the Commonwealth there is at present no single organisation which provides not merely for annual conferences of like-minded people but opportunities daily and hourly all over the world for men and women to meet together on common ground . . . on Commonwealth ground. It seeks not the advancement of one nation at the expense of others, but the progress of all.

If I were asked to choose a motto for the Commonwealth, I would choose this: "Keep your feet on the ground, but your eyes on the stars". I believe that is what the Commonwealth seeks to do. Believing that, I accept that it may stumble but I think it will never lose its way.

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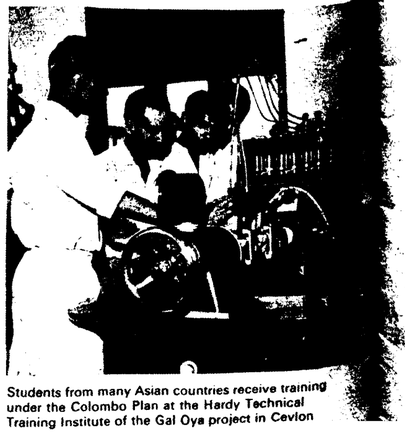
FRONT COVER
Eskimo children from the world's most northerly school at Resolute Bay in Canada's North-West Territories

BACK COVER
Ordination ceremony at Independence Hall, Colombo, Ceylon, shows young boys being admitted as novices or "Samaneras" into the order of Buddhist monks

PHOTO CREDITS: pp. 8-9, Weir Westgarth Ltd.; pp. 12-13, Mauritius Official; pp. 18-19, Mavis Ronson; pp. 20-22, Adam Woolfitt; p. 29, Remploy Ltd.

Officers from Thailand and Sabah studied engineering under the Colombo Plan at the Singapore Polytechnic

Mr. Saw Hylton Chaw, from Burma, rabbeting on a circular saw in the woodwork section of the Central Institute of Technology, Petone, New Zealand. Mr. Chaw, a Colombo Plan trainee, is a trade school teacher



Students from many Asian countries receive training under the Colombo Plan at the Hardy Technical Training Institute of the Gal Oya project in Ceylon

THE COLOMBO PLAN'S NEW LOOK

Miss Srisakul Chareonsiri from Bangkok feeds a young deer at the Glenfalloch Gardens at Dunedin in New Zealand. Srisakul spent two years at Victoria University, Wellington, and then transferred to Otago University, Dunedin, to study microbiology

IN the early days of the Colombo Plan, the distinction between donor and recipient countries was clear. Recently this distinction has become more indefinite: today more than half of the countries of the region are donors.

There is, too, a new spirit; new techniques are being tried out, new ways of living are being shaped.

These developments illustrate the cardinal principle of the Colombo Plan: **self-help as the basis for economic and social progress.** This developing spirit of self-help is, in fact, the Colombo Plan's "new look".

From the inception of the Plan to March 1965, the countries of South and South-East Asia have provided training for 3,287 people from neighbouring countries—or over 9% of the total number of training places (36,156). Since 1951 the British Government has committed more than £405 million to aid in the region. British private investment between 1958 and 1962 is estimated at £129 million.

India, the major recipient of aid from outside the region is now also a major donor. Other major donors are Pakistan and Malaysia.

Here are just a few examples of Colombo Plan projects that are taking place all the time:

NEW ZEALAND gave 500 Jersey cattle and a number of milking machines to Ceylon: total value £53,000. New Zealand also provided plant and equipment to the value of £100,000 for the establishment of a milk condensery.

CEYLON provided the services of an expert in coconut cultivation to Pakistan.

INDIA's financial and technical assistance to Nepal during 1963/64 amounted to Rs. 37 million: over 200 Indian experts have given help in road construction, maintenance, irrigation, power, forestry education and building.

PAKISTAN offered 1614 training places during 1964/65 to Burma, Malaysia, the Philippines, Ceylon, Thailand, etc. Pakistan also supplied equipment worth over Rs. 11,000 to Australia.

BRITAIN spent over £47 million on capital aid and technical assistance for development in South and South-East Asia during 1963/64.

SABAH, BRUNEI and SARAWAK students were among those who graduated at Australian universities this year.

AUSTRALIAN expenditure on direct economic aid within the Colombo Plan area amounted to £A16½ million in 1963/64.

Machine-shop students at the Rangoon Technical High School in Burma operate lathes donated by Britain under the Colombo Plan

Ceylonese Accounts Officers who completed a training course in India under the Colombo Plan at a conference with the Manager of the Bhilai Steel Plant in India

Commonwealth's First Secretary-General

By Blair Fraser, Ottawa Editor, *Maclean's Magazine*

ARNOLD SMITH is rather tired of being asked, with varying degrees of courtesy and of candour, why he of all people should have been chosen for the new post of Secretary-General of the Commonwealth. His distinguished diplomatic career has not included any special experience in Commonwealth affairs. His expertise, in so far as it is specialised at all, is more in the Soviet and Middle European sphere, though he has also done a lot of work with various agencies of the United Nations. He has never been in Africa south of the Sahara, and his contacts with the Commonwealth countries of Asia have been few and fleeting, mostly during his year of service with the International Truce Commission in Indo-China.

Another question, which usually follows the personal one, is why Canada should have been asked even to name a candidate for the office of Secretary-General. It was Canada, after all, that repeatedly and implacably vetoed the idea of a Commonwealth Secretariat whenever it cropped up, as it often did, between the Imperial Conference of 1923 and the Commonwealth Prime Ministers Conference in London just before D-Day, 1944. How can Canadian policy have changed so diametrically, that Canada has become the pillar of a structure that it used to forbid?

Mr. Smith finds the second question easier to answer than the first. The Commonwealth Secretariat of today, he points out, is entirely different from the old idea of an Imperial Secretariat as proposed forty, thirty and twenty years ago. The old proposal was really a device to unify the Commonwealth-and-Empire and make it a Single Voice (that now-forgotten but once-familiar phrase) in the councils of the world. The Single Voice might have been a chord, but its keynote would certainly have been sounded in London. It was, in fact, a variant of Lionel Curtis's dream of an Imperial Cabinet which, sitting in Britain, would direct the affairs of a far-flung Empire.

The aims of the new Commonwealth Secretariat, as Arnold Smith conceives them, are so different as to be almost opposite. It was advocated by Ghana, and other new members of the Commonwealth enthusiastically agreed. Quite evidently their purpose was to put Commonwealth affairs not in, but out of, the hands of Downing Street—to transfer some of the functions of the Commonwealth Relations Office to a new, independent, multi-national administrative machine. Support for such an innovation is in no way inconsistent with Canada's Commonwealth policy, present or past. When Canada was invited to put up a candidate for Secretary-General, it seemed almost impossible to refuse.

Arnold Smith himself had no particular ambition for the job. When the Canadian Prime Minister, Mr. Lester Pearson, first asked him, about a year ago, to let his name go forward, Mr. Smith declined and the Prime Minister, for the moment, accepted the refusal. But he raised the matter again in the early spring of 1965, and this time Mr. Smith was moved to accept by the same considerations that had moved the Canadian Government—in the circumstances, he felt it was a challenge and a task that he could not refuse.

The new post will add further variety to a career that is unusually varied already. Born in Toronto in 1915 and educated first at Upper Canada College there, Mr. Smith completed his schooling with three years at the Lycee Champoleon, Grenoble. He then returned to Canada to become an undergraduate at the University of Toronto, became an Ontario Rhodes Scholar in 1935 and went on to read law at Christ Church, Oxford.

When he took his degree in jurisprudence at Oxford it was 1938, and World War II was plainly imminent. Feeling disinclined to go back to Canada and practise law, he looked about for something to do in Europe. He saw an advertisement in *The Times* for someone to be editor of an English-language newspaper in Estonia; he applied for the job, got it, and arrived in Tallinn in time to be well established when the Soviet Union took over Estonia in 1940. Meanwhile he had become the representative in Estonia of the British Council, and press attache at the British Legation in Tallinn. When British officials and nationals were finally released from the Baltic countries by the Soviet authorities, Mr. Smith remained with the British foreign service and was posted to Cairo, where he remained until 1943.

When Canada exchanged diplomatic representatives with the Soviet Union in 1943 he transferred to the Canadian diplomatic service and became secretary of the Canadian Legation at the war-time Soviet capital of Kuibyshev, later moving to the same post at the Canadian Embassy, Moscow. It was during this period that he became fluent in Russian. Posted home at the end of World War II he held a succession of posts at home and abroad, attaining the status of ambassador when he went to the International Truce Commission in Indo-China in 1956, and serving after that as Canadian Minister to the United Kingdom, Ambassador to the United Arab Republic, and Ambassador to the USSR. Most recently he has been Assistant Under-Secretary of State for External Affairs, Ottawa.

In the last-named capacity he was a senior adviser to Prime Minister Pearson at the Prime Ministers Meeting in London, 1964 and 1965. At both meetings, but especially in 1964, Canada took an active part in discussion of African affairs. This, undoubtedly, may have made Canada seem a logical place to seek a Commonwealth Secretary-General and Arnold Smith, who was actively associated with the events of 1964, a logical man for the job.

In his new post Mr. Smith has no illusions about the difficulty of the problems his Secretariat will encounter, nor about the strength it can command to deal with them. He has neither hope nor wish to make an executive body of his administrative machine, nor indeed of the Commonwealth itself. On the contrary, he is happy to see the Commonwealth continue to be what it has become, a flexible association of wholly independent nations whose policies habitually differ, but whose numerous ties of custom and tradition can be used and developed to the general advantage. It is his hope that the Secretariat, with a small multi-national staff, can help to make this process more effective.

Far left: **The Commonwealth's first Secretary-General talks to journalists outside Marlborough House**

Left centre: **In his Ottawa office, Department of External Affairs**

Left: **Marlborough House, seat of the Commonwealth Secretariat, was a royal residence from 1816 to 1959. It was then transferred by Queen Elizabeth II to the British government so that it could be used as a Commonwealth centre in London**

'It helps you to understand a country in a way that a teacher cannot do in an ordinary lesson'

Above: An Indian delegate leads a lively discussion group. *Below:* Children listen to one of the Commonwealth speakers at Hassocks School.

CLASSROOM COMMONWEALTH CONFERENCE

When children from seven different schools in East Sussex and Kent gathered at Hassocks County Secondary School for a Commonwealth Conference, they were taking part in the first venture of its kind in British schools. There had been one-day conferences for sixth-form students and Teachers' Training Colleges before, but this was the first time that a three-day conference for younger children had been held.

On each of the three days about 250 children between the ages of 14 and 16 watched films about different Commonwealth countries, listened to lectures (illustrated by coloured slides) by Commonwealth visitors, and held discussions with the many Commonwealth students who attended the conference.

Hassocks is a small, modern town about 45 miles south of London, in the pleasant green countryside of Sussex. It is a quiet residential and farming district with very little industry. To the children who live there the countries of the Commonwealth seem *very far away*. Michael Pybus, the headmaster of Hassocks County Secondary School, felt that many of the children in his school did not know enough about the Commonwealth, and that the best way to help them realise its importance in the world was to hold talks and discussions about it within the framework of a proper conference. Mr. Pybus and the Commonwealth Institute in London considered a suitable conference programme and details were agreed between the Institute and the Heads of the schools concerned. The Local Education Authority in East Sussex was then persuaded to give its approval to the idea and to share the expenses.

With the help of officials at the Commonwealth Institute a programme was drawn up. It was decided to cover Africa on the first day, Asia and Australasia on the second day, and Canada and the Caribbean on the third day. Speakers invited to take part by the Commonwealth Institute included Miss Margaret Lim, of Malaysia; Mr. Nasim Ahmed, the London correspondent of the Pakistan newspaper *Dawn*; Mr. Ramsey Blackwood, of Jamaica; Dr. J. J. Denholm, of Vancouver; and Mr. F. J. Waldron, who lectured on "Australia New Zealand and the Near North". Students working in Britain from the following Commonwealth countries took part in informal discussions with the children: Uganda, Kenya, Nigeria, Ghana, India, Pakistan, Ceylon, *Trinidad*, and *Australia*.

Hassocks is a new school, built only six years ago. It has 450 boys and girls between the ages of 12 and 16. Only children in their 4th and 5th years took part in the conference, while the rest of the children carried on with the normal school routine. The Hassocks children acted as hosts to children from the following schools: Oakmeeds County Secondary School from Burgess Hill; Ramsden School from Orpington, Kent; St. Paul's Roman Catholic School from Haywards Heath; and the County Secondary Schools of Haywards Heath, Chailey, and Cuckfield.

The children and everyone concerned with the Conference voted it a great success, and the Commonwealth Institute intend to hold more conferences at the same school [illegible]

Carolynne Dean, Haywards Heath County Secondary School, Haywards Heath, Sussex. Carolynne likes history and English literature and hopes to be a teacher. She is fifteen.

"I didn't realise what the Commonwealth was, and I was surprised to find how widespread it is and how important it is in the world. . . . I was very impressed with the talk on Malaysia, because the speaker made it very clear, and the future of Malaysia could affect world peace. . . . I also liked the talk on the West Indies, though some of the quotations were lost on me, but I enjoyed it because he was so interested in telling us that it made us interested in him and the subject. . . . I have never really thought about the colour question because there are hardly any coloured people in this part of Sussex, but I think there should be racial tolerance. . . I didn't like the cartoon film on the Colombo Plan, I think it left us in the air a bit."

Rodney Grout, Haywards Heath County Secondary School, Haywards Heath, Sussex. Rodney is sixteen. His chief interest is science, and he would like a career in the Royal Navy, as a navigation officer.

"I think the time spent on this conference has been very well worth while. Everybody has enjoyed it and has learned more about the countries in the Commonwealth, and I think it has broadened the outlook of everyone who has been here. . . . I didn't realise there were so many modern and developed areas in Africa as we saw in the films and were told about. . . . I liked the Australian lecturer. He was a good speaker and not too political, which some of the others were. He told us how the people lived, including the aborigines, whereas the man from Canada never said a word about the Eskimos and Red Indians who still live there. . . . I think racial discrimination is silly. . . . People are born just the same way and should have just the same status in life. . . . I don't think people should worry about whether they are working with black men or white men. . . ."

John Carter, Oakmeeds County Secondary School, Burgess Hill, Sussex. John is sixteen. He likes mathematics and hopes to become an engineer.

"Several speakers have mentioned what might happen if the Commonwealth disintegrated. This possibility had never occurred to me, and I think it would be a very bad thing, because the Commonwealth strikes a balance between the Communist countries and America. . . . I had never realised the importance of water as a source of power in developing countries and this is certainly one thing which the films and talks made clear. . . . I had not heard of the Colombo Plan before. It seems to be a mutual exchange of teachers and technologists which benefits lesser developed countries and I think it is a very good idea. . . . I would like to go to the West Indies because there is so much colour there and the people seem very cheerful. . . ."

Janice Turner, Oakmeeds County Secondary School, Burgess Hill, Sussex. Janice is fifteen. Her favourite subject is biology, and when she leaves school she hopes to travel and work with animals.

"I liked Mr. Blackwood's talk on Jamaica, though I thought he spoke rather too much about history, which we could find out from books. I would rather know what the people are really like, and what they really think of the British. . . . I would like to go to the West Indies and perhaps work there, though I like Sussex so much I don't think I would want to stay in the West Indies for always. . . . I like people, and I think you should judge coloured people just the same as white people. If they are nice you like them, and if not, you don't. . . . I didn't know it was so modern in West Indian towns, and I didn't expect to see the schoolgirls wearing school uniforms just like ours in Britain. I haven't any criticism of the conference. I think this sort of thing enables you to understand a country in a way that a teacher cannot do in an ordinary lesson."

Edmund O'Connor, Conference Organiser for the Commonwealth Institute.

"An important aspect of the conference was that each of the schools taking part made a special study of one region of the Commonwealth, in co-operation with the Institute, and this produced a considerable amount of written work from the children, much of it displayed at the conference. . . . We also feel that the conference was important from a social point of view, enabling pupils from different schools to meet together, and to meet Commonwealth visitors and students. We wanted to impress on the children that there is a world outside this country and that the Commonwealth forms an important part of it. . . . The whole thing was carried out very efficiently by the host school."

Michael Pybus, headmaster of Hassocks County Secondary School, Hassocks, East Sussex.

"The conference was an extension of the 'bridge courses' which we have been giving to children in the final year at school to bridge the gap which occurs after their final examinations and before they leave to start adult life. Usually the 'bridge course' has been used to introduce the children to some specific aspect of adult life, and talks have been given on subjects such as 'Design in Everyday Life', 'How to find your way through the Advertising Jungle', and 'The Commonwealth and You'. This last talk aroused so much interest among the children that I decided to try to hold a proper Commonwealth conference as part of the next bridge course. . . ."

Ramsey Blackwood is a Jamaican. He was educated at the University of the West Indies, and at the Royal Academy of Dramatic Art London. He lectures regularly for the Commonwealth Institute.

"I think it was a very fine idea to have this conference because it has introduced the Commonwealth to children of an impressionable age. It is a great help for them to see and speak to people from outside Britain. It helps to make the Commonwealth a reality rather than a notion used in politicians' speeches. . . . I didn't evade the question of colour prejudice because it is no use sweeping unpleasant things under the carpet. It's the same as in any family. When something nasty happens you've got to bring it out into the open. No problem was ever solved by pretending it didn't exist. . . ."

Commonwealth schools who would like advice on organising a similar conference are invited to write to: The Conference Organiser, Commonwealth Institute, Kensington High Street, London, W.8.

Salt Water into Fresh

scientists are finding better methods of turning

WATER covers nearly three-quarters of the earth's surface. There are about 330 million cubic miles of it, and every second the sun's heat evaporates and draws up 16 million tons into the atmosphere. There the vapour is cooled and condensed and continuously returned to earth in the form of rain, hail or snow. This replenishes the available supplies of fresh water, and so the water cycle is maintained.

Ninety-seven per cent of the world's water is salty—in the oceans and the seas. Two per cent is in ice, mostly in Antarctica. Only one per cent is fresh water, in lakes, rivers and in natural reservoirs underground.

Without fresh water life on land cannot exist. Deprived of it, people can survive for only a few days, and only a few animals can live for much longer. Even the plants which have adapted themselves to sun-scorched deserts must occasionally have moisture.

Although water is one of the earth's most abundant commodities, the distribution of fresh water is uneven and more than half of the world's land surface is arid.

Today shortages of fresh water are becoming increasingly apparent throughout the world. Insufficient supplies are a hindrance to the development of several of the younger nations and also a bar to progress in parts of the older industrialised countries. In the older countries, for example, supplies in certain heavily populated and industrialised areas are being consumed faster than they can be replenished naturally, and water tables are sinking.

There are three main reasons for these growing shortages.

First, not only are populations expanding rapidly but households are also using more water with the advance of ideas on personal hygiene, on the preparation of food, and on washing clothing.

Next, industry's consumption is soaring with the rising standards of living everywhere. The production of a ton of steel, for example, requires 65,000 gallons; a ton of aluminium, 120,000 gallons; a ton of synthetic rubber, up to 600,000 gallons. The oil and chemical industries alone consume vast quantities.

Again, irrigation projects are drawing off huge amounts—and more and more schemes will need to be put in hand to feed the world's growing populations.

There is limitless water at hand in the case of islands and coastal regions—but sea water is useless for household purposes, for agriculture and most industrial uses. Inland there may be ample supplies of water underground—but it may be saline or brackish.

The vital problem of supply in these cases could be solved if the salt or brackish water could be converted into fresh water at costs sufficiently low for general use. Vast districts now arid could be made to support communities with their industries and agricultural projects.

In the specialised field of supply and irrigation British engineers have been active for decades. They have brought water to parched areas across the world by building dams and barrages, by diverting rivers and streams and cutting new waterways, and by locating underground reservoirs and sinking wells.

Over more recent years they have led the world in designing desalination plants which convert sea or brackish water into fresh water; three-quarters of the commercial distillation plants installed in different countries across the world have been constructed by British firms.

These plants are of different types, and designed to meet the needs of particular areas. They include installations on the island of Aruba, in the Netherlands Antilles, with a peak output of 2,240 gallons daily; three in Curaçao, two with outputs of 1,430,000 gallons each, and one with 1,320,000 gallons; two in Kuwait, with 1,000,000 gallons each, as well as a newly completed complex of five units producing a total of 5,000,000 gallons—the biggest desalination installation in the world.

They also include several others in the Persian Gulf including one which floats on its own pontoon off Abu Dhabi; and one in the island of Guernsey in the English Channel which produces 500,000 gallons daily to supplement natural supplies for key horticultural industries.

The cost of fresh water from the best of these plants is from 7s. to 10s. per thousand gallons, or more than three to four times that of water where natural supplies are abundant. What is important, however, is that it is below the cost of importing fresh water. In other words, such installations are both vital and economic where natural supplies are limited and growing populations and their industries need to be provided with water.

Further, the cost can be economic in the case of certain types of market gardening or greenhouse production, although it is not yet profitable for general irrigation purposes where a figure of about one shilling per 1,000 gallons is acceptable.

In itself, there is nothing new about obtaining fresh water from sea water. The ancient Greeks knew about distillation. Two thousand years ago Julius Caesar and his Roman legionaries knew that drinking water could be obtained in limited quantities in this way. Nearly four hundred years ago an English sea captain, Sir Richard Hawkins, left a record of how he had distilled sea water in a heat-operated still to keep his crew alive after his ship's supply of drinking water had failed.

What is new is the size of the plants now in view, the variety of methods either developed or under investigation, and the steady reduction in the costs of desalination by the introduction of improved techniques.

Now the work of British scientists has been given new impetus by the inauguration, this year, of the International Hydrological Decade, during which scientists of many nations will investigate ways of using the world's supplies of water more efficiently and exchange information about their progress and problems.

British engineers believe that they can achieve a major break-through in cutting costs by the use of nuclear power to operate the desalination plants. For the purpose they have in mind Britain's new Advanced Gas-Cooled Reactor, which can produce power more cheaply than can conventional coal- or oil-fired stations.

Already a desalination plant—to be coupled with a 600-megawatt A.G.R. station—to supply no less than 60 million gallons of fresh water daily has been designed by the Atomic Energy Authority and Weir Westgarth Ltd., a Glasgow firm which has, with its parent companies, constructed 60 per cent of the world's commercial distillation equipment.

The designed output of 60 million gallons represents 12 times the capacity of the biggest plant of its kind yet operating. It could supply the domestic and industrial needs, both for water and electricity, of a city of 600,000. And the cost of the water would be about four shillings a thousand gallons.

A nuclear station's power could be used in varying proportions, part for operating the desalination plant, part for producing electricity. The 600-megawatt A.G.R., for example, would divert 200 megawatts for operating the 60 million gallon plant and still supply 400 megawatts of electric power.

Present capital costs of such joint electricity/water projects would inevitably be high. The 600-megawatt installation, for example, would require some £40 million for the nuclear station and up to £10 million for the desalination plant. A bigger installation would naturally cost more, but operating costs would be less. A 1,200-megawatt A.G.R., for example, operating a 30 million gallon plant, could supply fresh water at under four shillings a thousand gallons. With experience in building and operating such combined installations these figures could certainly be further reduced.

The long-term possibilities, accordingly, are impressive. The British Government is making available £1,500,000 over three years to co-ordinate and support the extensive industrial experience and research, and a number of countries have shown interest in the initial projects. They include Brazil, Greece, Israel, Italy, Japan, Mexico, the United Arab Republic, the United States, Tunisia and Turkey.

The initial demand could be to supply water and electricity to districts which have become heavily populated and industrialised and where natural water supplies are limited. The supply of water for the arid regions could be a later development. Here a decisive factor is that the local demand for electricity is relatively small so that for the present there is no call for really big power stations.

The choice of a particular type of desalination plant for an area—irrespective of the source of power operating it—naturally depends on local conditions and needs. Each type of plant has its advantages and disadvantages.

Broadly speaking, the operation of all of them is based either on temperature changes which desalinate water by causing it to vaporise or solidify; or by separating the salt from the water by means of permeable or semi-permeable membranes.

In practice the process of distillation—which vaporises the water—is by far the most widely used in land-based plants.

Distillation process. The oldest way of obtaining fresh water from the sea (which contains upwards of 3.5 per cent of salt) is by boiling it and collecting the pure water from the condensed steam. Doing this in one operation is wasteful of heat and therefore costly, so the engineers have devised ways of recirculating the heat, using it in successive stages so as to make the most of it.

A more efficient way of doing this is known as *multiflash distillation*. By this method, heated salt water is sprayed into a series of "flash" chambers—there may be as many as forty of these—in which the pressure is successively reduced to a low vacuum. As the pressure is reduced, so is the temperature at which sea water vaporises so that in each chamber a little more of it becomes vapour which condenses into fresh water.

Electrodialysis. This process is of most value for desalinating brackish water which contains about one per cent of salt or less. It utilises the fact that when salt dissolves in water it breaks into its electrically charged components—negative chloride ions and positive sodium ions. These ions are in effect filtered out of the water through plastic membranes by means of an electric current, leaving pure water behind.

Other methods used for brackish water include:

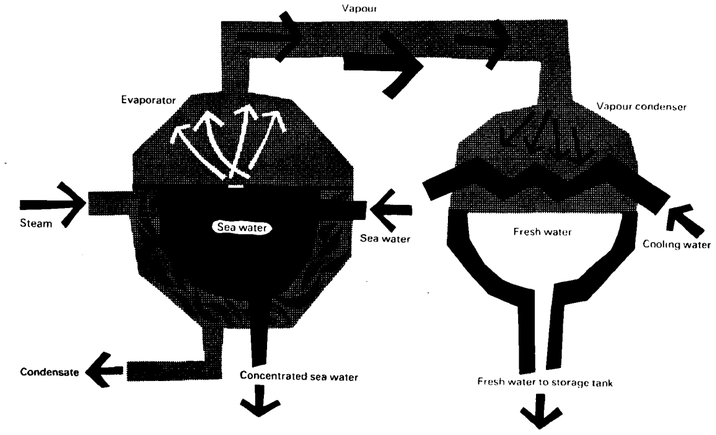
Vapour Compression Process. A variation of the multiflash method, this involves the use of pressure for heating the vapour produced when the brackish water is passed into a vacuum chamber.

Reverse Osmosis. Here the water is caused to flow through specially designed membranes, leaving the salt behind.

Freeze Separation. In this process the brackish water is frozen, then the ice crystals, which are pure water in solid form, are separated from the brine.

Meantime research continues. More knowledge is continually being gained and techniques are being perfected. One thing is certain: costs will fall, and an increasing number of communities and their industries will be able to develop in what are now water-starved regions.

The simplest form of distillation is by means of the one-stage or single-effect evaporator. In this diagram, the principle of its operation is shown in its essentials. For greater efficiency, however, further stages can be added and certain refinements incorporated. In these "multiple effect" plants, the hot vapour given off by the first stage is used to heat the sea water in a second vessel and send off more hot vapour which heats the sea water in a third stage, and this continues for as many stages as there are. At the same time, the hot condensate passes from stage to stage, helping in the evaporation process. Batteries of vapour-raising units may thus be built up, vapour and condensate from the final stage passing to the condenser from which the fresh water is run off to a storage tank.



Two British-designed evaporator plants in the Bahamas, each producing 600,000 gallons per day

CONQUERING THE DARK

More than £600,000 is being spent on behalf of blind people in Commonwealth countries outside Britain by the Royal Commonwealth Society for the Blind and other organisations.

Work on the prevention and cure of blindness and care of blind people is being carried out in twenty-nine territories. Some 200,000 patients are treated annually and twelve mobile eye clinics are operated in Asia and Africa. Five more will be established as soon as funds are available.

The Society's immediate aim is to combat blindness in Asia and Africa by educating people in simple preventive hygiene of the eyes and by using more mobile clinics in rural areas.

Two-thirds of the blindness results from diseases which, in the Society's view, can be cured if treatment is given in time, or could have been prevented by proper care of the eyes.

Education, training and rehabilitation is given at the twenty-two rural centres—chiefly in Asia and Africa—which are run by the Society.

Some blind children are being taught alongside normal children in ordinary primary schools and teachers are being trained by the Society for this programme.

The Director of the Royal Commonwealth Society for the Blind, Mr. John Wilson, says, "Work for the blind is a striking example of the modern Commonwealth in action; in twenty-nine countries our Society and associated organisations are saving sight, bringing education to blind children, and helping blind destitutes to become useful citizens."

In the past fifteen years, the Society's mobile teams have examined twenty-five million men, women and children and formulated plans for controlling eye diseases. Training centres for blind farmers and village craftsmen have been set up in thirteen countries and teachers from thirty countries have been trained in Britain and Canada to staff them.

The Society has also sponsored visits of special British surgical teams to carry out operative and teaching work in Asian and African Commonwealth countries.

Income of the Society rose by £18,000 during 1964/65 and a five-year plan has been launched which aims at expanding work outside Britain and increasing revenue to around £260,000 by 1970.

TRAINING

In Ceylon the Society is to establish a Talking Book Library. The scheme—developed by the Royal National Institute for the Blind—provides half-inch tapes with eighteen tracks which give twenty-one hours' reading time. Books will be recorded in English, Sinhalese and Tamil.

In Sabah, blind men and women are being trained in village farming and handicrafts at the Wallace Training Centre which was opened at Tuaran in 1962. The Principal of the centre, seconded from the Royal Commonwealth Society for the Blind, is Mr. Ronnie Babonau who was himself blind for many years.

In Hong Kong, blind children are taught to lead a new life at the Ebenezer School and Home for the Blind. Here, 140 children and young people up to the age of twenty, are accommodated, and all but three are boarders. Ebenezer is also home to thirty elderly blind women who have their own building adjacent to the school.

Apart from being taught to read and write English and Chinese in simple braille, the children learn a wide range of handicrafts so that they can take a useful part in outside life. Their favourite subject is music and they are often taken to concerts in Hong Kong's City Hall. Friends of the school take the children to beaches where they learn to swim.

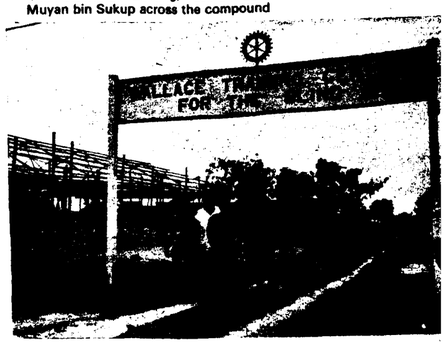
Most of the children at the Ebenezer Home get everything free for although there are no adoptions, Ebenezer children are found foster parents in all parts of the world who send small sums of money to pay for their tuition and gifts as well.

From these gifts the school has been able to provide sports and playground equipment, for children need to play, and the time they spend in the gymnasium, and their own small gardens is as important as attending classes.

Apart from donations from local and overseas organisations and individuals the school is assisted by an annual Hong Kong Government grant of over £12,500 to meet running costs.

The band of the Wallace Training Centre in Sabah. Although not yet up to Beatles' standard it is a source of great pleasure as well as good training for them

Ronnie Babonau, Principal of the Wallace Centre, leads Stawin bin Lukang, Yasir bin Laboh and Muyan bin Sukup across the compound



Ronnie Babonau with three of the trainees at the entrance to the Centre

Kindergarten students at the Ebenezer Home in Hong Kong form single file to go to the dining hall for their midday meal

Children of the Ebenezer Home practising exercises in the gymnasium. In Hong Kong there are 500 blind children and the Ebenezer School accommodates nearly 150

Play time for Ebenezer children. In quiet surroundings on the outskirts of the business centre of Hong Kong Island the children receive a good basic education and are taught a wide range of handicrafts

Mauritius

A constitutional conference on the future status of Mauritius was held in London in September. The island was represented by delegates from the political parties which have Members in the Legislative Assembly

THE Island lies in the Indian Ocean, 550 miles east of Madagascar. It has a total area of only 720 square miles.

Already hundreds of years ago its presence was known to Arab navigators. The Portuguese, at the beginning of the 16th century, recorded that it was completely clothed in forest and uninhabited. There were no animals either, except for some lizards and geckos, and no snakes. But there were numerous types of birds, including an immense, flightless pigeon which they called the Dodo. The Portuguese made no attempt to settle.

Next, in 1598, came the Dutch, who named the island Mauritius, after their own Prince Maurice of Nassau. They did not occupy it until 40 years later, and after 72 years they left.

Their occupation saw the extinction of the Dodo—but it also resulted in the introduction of the sugar cane from Java.

After the Dutch came the French. They took possession in 1715, and renamed the island Ile de France; and they made it a thorn in the flesh of the British during the long drawn-out war between France and England. Using Mauritius as a base, French men-of-war and privateers could command the seas through which British merchantmen sailed to and from India.

The British captured the Island in 1810, and it was formally ceded to Britain four years later. The name of Mauritius was restored.

Throughout these changing years the population was growing in numbers and changing its composition. Under French rule the landowners and businessmen were French, and those who worked for them on the settlements and plantations came from Africa. Under the British there was a big influx of Indians, who were brought to work in the sugar fields, and in many cases settled permanently. Today their descendants make up two-thirds of the population. There is also a small Chinese community.

The Island is a picture of contrasts, a mixture of African, Asian and European. The cosmopolitan background emerges in the varied styles of the buildings, the crowded bazaars, the colourful saris mingling with the Paris dresses, the muezzin's call alongside the church bells, the Hindu and Chinese ceremonies. It is reflected in the languages: English, the official one, French, the most commonly spoken, and Creole, the French vernacular, the one familiar to all.

Even the landscape changes sharply from district to district. The chiselled hills rise steeply from adjoining forests and carefully cultivated fields.

With all these contrasts the 730,000 Mauritians have a common problem. Mauritius is one of the most densely populated areas in the world. It supports 1,000 persons to the square mile, or one person to little more than half an acre—or in terms of cultivated land, one person to less than one-third of an acre. Moreover, the population is expanding fast, at the rate of 3 per cent per year. And this means it would be more than a million by around 1980 and nearly three million by the end of the century.

How are these people to support themselves? The Island has no mineral wealth of any kind. Its industries are few and on a small scale. It must import much of its staple food, including rice, flour and meat, and most of its manufactured and consumer goods.

What Mauritius has got is sugar. The whole economy is based on sugar—it can be said that Mauritius lives on sugar.

Sugar accounts for no less than 98 per cent of domestic exports and it contributes directly and indirectly more than half of the gross national product. Sugar cane covers about 92 per cent of the total cultivated area. Output has not only kept pace with the growing population but has outstripped it. While the land under sugar has increased by 43 per cent over the last 20 years, annual production has doubled to nearly 700,000 tons.

Up till now the Island has been able to sell all the sugar it produces. A guaranteed market and stable prices are provided for about 60 per cent of the crop under the terms of the Commonwealth Sugar Agreement. Production could even be stepped up by 20–25 per cent, by introducing more efficient methods among the smaller growers who work about half of the cane fields. This would mean an additional income of £4 million annually—more than the combined earnings of all the Island's other manufacturing industries.

This concentration on sugar makes the economy of Mauritius particularly vulnerable. It has been suggested that Mauritians should limit production and expand their other industries. But this suggestion, by an outside economist, was not welcomed by them. They hold that both sugar production and certain other industries should be developed.

Few of the industries suggested could do more than supply the home market. They cannot compete abroad against the highly organised production lines of the big nations.

Still, there are possibilities. The tea crop might be expanded. Improved production methods have raised output over the last 10 years from less than 1,000,000 lb. to 3,500,000 lb. What is more, the sugar and tea crops are complementary: tea grows well in districts less favourable to sugar.

A new scheme is under study for utilising bagasse, that is the residue from sugar cane after crushing, for the manufacture of hardboard.

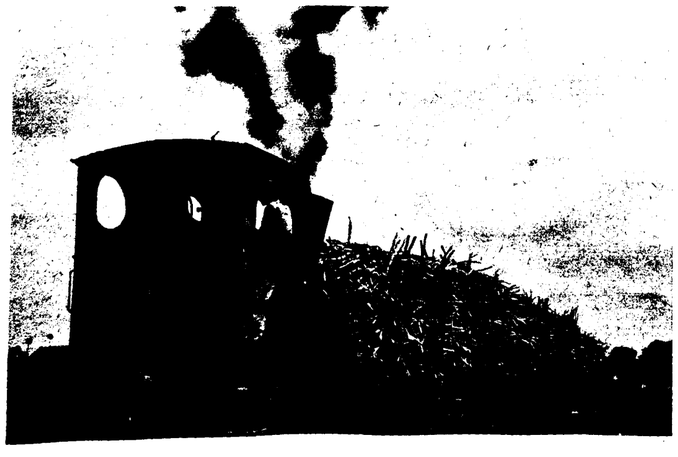
Part of the land at present unproductive could be cultivated if it were irrigated—and recent investigations into ground water supplies have been encouraging.

Deep-sea fishing could perhaps be organised on an industrial scale, and this could lead to the establishment of a fish canning industry.

Tourism is a particularly promising field. The number of visitors over recent years has been mounting sharply. BOAC's *VC*10 and other big inter-continental jet aircraft now call at Mauritius. More visitors will be encouraged to come by the construction of new hotels and the development of amenities. The remoteness of the Island, a factor which has hitherto discouraged travellers, could now be an attraction as travel becomes easier.

Combined, these various projects could provide work for a considerable number of people, and their success would mark a welcome advance in making the Island less dependent on its single major product—sugar.

Sugar Island needs new industries



Loaded to capacity, the little train hauls sugar cane from the fields to the mills for crushing

Above: **The open air market at Vacoas where the visitor is soon conscious of the great diversity of people of this small island of approximately 720 square miles. The population comprises people of European descent, mixed and African origin, Indo-Mauritians and Sino-Mauritians**

Right: **Pieter Both (2,699 feet) whose fantastically shaped masses of basalt testify to the volcanic origin of the island. The land rises from the coastal plain to a central plateau rising to a level of some 1,900 feet. No part of the island is more than 15 miles from the sea**

Below: **Hauling in a marlin. Fish is a popular part of the Mauritian diet. The fisheries in Mauritian waters have great possibilities and plans are in hand to develop them**

London gathering of Speakers of forty-two Commonwealth Parliaments

In the year of the 700th anniversary of Parliament, the Speakers of forty-two Commonwealth Parliaments gather in London. This historic picture was taken at the Speaker's House, Palace of Westminster, where the Commonwealth Speakers held their Conference

BACK ROW (*left to right*): Dr. A. M. Merriweather (Bechuanaland); Mr. H. Maurice Scott (Fiji); Mr. W. Thomson (Gibraltar); Mr. M. P. Allen (St. Christopher-Nevis-Anguilla); Mr. R. H. Le Masurier (Jersey); Mr. L. Cools-Lartigue (Dominica); Mr. F. J. Archibald (Grenada); Dr. F. J. Clarke (St. Lucia); Mr. E. F. Adams (St. Vincent); Mr. W. H. Courtenay (British Honduras); Mr. D. W. Hurst (Antigua); Sir Arthur Charles (Aden); Sir William Arnold (Guernsey); Mr. W. P. Stanford (Basutoland); Mr. J. D. A. Germond (Swaziland)

CENTRE ROW (*left to right*): Mr. H. C. Kerruish (Isle of Man); Mr. J. E. T. Brancker (Barbados); Sir John Cox (Bermuda); Sir Norman Stronge (N. Ireland); Mr. W. P. Nyirenda (Zambia); Mr. I. K. Surtee (Malawi); Mr. N. Patel (Uganda); Mr. H. Slade (Kenya); Mr. P. Pace (Malta); Mr. A. S. Jack (The Gambia); Mr. A. R. W. Stumbles (Rhodesia); Mr. R. H. Symonette (Bahamas); Mr. H. R. Vaghjee (Mauritius); Mr. A. P. Alleyne (British Guiana)

FRONT ROW (*left to right*): Mr. C. A. Thomasos (Trinidad and Tobago); Mr. Tejan-Sie (Sierra Leone); Alhaji Waziri (Nigeria); Mr. K. A. Ofori-Atta (Ghana); Sir Ronald Algie (New Zealand); Mr. A. A. Macnaughton (Canada); Sir Harry Hylton-Foster (Britain); Sir John McLeay (Australia); Sardar Hukam Singh (India); Sir Albert Peries (Ceylon); Dato' Chik Mohamed Yusuf (Malaysia); Mr. G. Clerides (Cyprus); Mr. T. C. Golding (Jamaica)

The Gardens that changed the world

Below: **Inside the Palm House graceful cast iron staircases enable visitors to reach a gallery from which they can look down on a mass of tropical foliage**

Above: **The Palm House was designed by Decimus Burton and built in 1844–48. It is over 120 yards long and more than 30 yards wide, and was for many years the largest glasshouse in existence.** *Below:* **Many Commonwealth students have worked at Kew. Here, Edward Kingi from Kenya, and Donald McLaughlin from Bermuda study plants under the microscope**

Above: **The giant Victoria amazonica water lily has saucer-like leaves seven feet across which will bear the weight of a child. The plant is a native of the rivers of tropical South America**

THE Royal Botanic Gardens at Kew has the world's largest collection of growing plants. There are more than 25,000 species (i.e. plants as found in the wild) and many thousands of cultivated varieties, which have been bred from wild plants in the 300 acres of the gardens, which include 5½ acres of glasshouses. Each year more than a million people visit Kew to enjoy the colours and perfumes of plants from every part of the world. There are strange plants that look like stones, plants that develop so slowly that they take from ten to sixty years to flower, and others that grow incredibly fast. One giant bamboo grows from the floor to the roof of the Palm House (60 ft.) during the summer. The water lily, Victoria amazonica, sown from a seed the size of a pea in January, fills a tank 35 ft. by 46 ft. with its seven-foot leaves by August.

But though Kew has entertained millions of visitors with its beauty and variety, its main purpose has always been scientific. Kew is the world clearing house for essential information on plant species and varieties. The Herbarium is the most extensive in existence, containing nearly 7 million botanical specimens, dried, pressed and mounted on sheets, and filed in cabinets under an easy reference system.

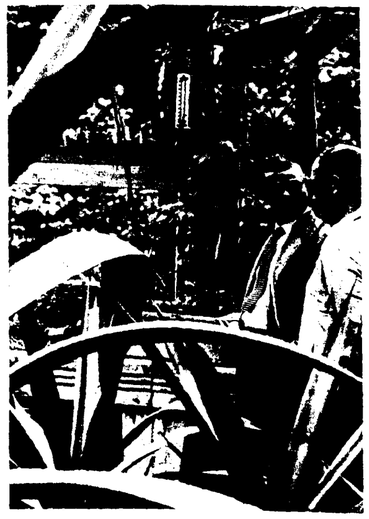
"To go through the Herbarium and note carefully all the species would occupy one person, without holidays, for rather more than 40 years of continuous work," a Director of Kew once told the Royal Society. Taxonomists (botanists who specialise in the classification of plants) come from all over the world to refer to it, and to work in Kew's unrivalled botanical library, which contains 80,000 bound volumes, together with 80,000 papers and reprints, and 150,000 drawings and paintings of plants.

The gardens were founded at Kew more than 200 years ago by Princess Augusta of Saxe-Gotha, the mother of King George III. But it was Sir Joseph Banks, acting unofficially as director of the gardens, who persuaded George III that Kew should become a place where the plant resources of the world would be studied and made known, and where men might be trained to go out and seek new plants. The collections were built up and these aims have been followed ever since. Banks himself sailed with Captain Cook to Australia, where he landed on an uncharted coast in search of new botanical specimens. In one spot he and his assistant, Daniel Solander, collected a thousand new plants. To commemorate the discovery they gave the place the name by which it is still known, Botany Bay.

When the gardens were founded, Kew was deep in the country, but in the 200 years since then London has grown steadily and now surrounds Kew. Air pollution makes it difficult to grow some plants, and the gardens have long been overcrowded. This situation will be relieved in the next year or so when a new botanic garden, a satellite of Kew, is opened at Wakehurst Place, Ardingly, Sussex, 36 miles from London. Wakehurst, a National Trust property leased to Kew, is already a botanical treasure. Over the years successive owners collected specimen trees and shrubs from many countries. The 600 acres of woodland and garden (twice the size of Kew itself) contain an especially fine collection of rhododendrons, azaleas, magnolias, and other flowering shrubs. A special clearing and planting programme, directed by experts from Kew, will augment the already great beauty and interest of the grounds. When Wakehurst, the new "Kew in the country" is opened to the public, it will be one of the show places of Britain.

This is not the only development at Kew. There is a new £126,000 laboratory, built to replace the original Jodrell laboratory which had been in use since 1876. The new building includes a lecture theatre and departments of plant anatomy, plant cytology, and plant physiology. Equipment in the plant physiology department includes growing cabinets in which any desired "climate" can be produced, so that plants with the most exacting requirements can be raised.

Detective work on plants and plant materials is part of the routine in the laboratories at Kew. Shrivelled flowers found in 4,000-year-old Egyptian tombs have been positively identified at Kew, and archaeological material, mostly timber or charcoal, from excavations in various parts of the British Isles and overseas, is still frequently received for determination. Kew's scientists are often called in to help in criminal cases. Recently they were asked to identify rope fibres found in the clothing of a man suspected of being concerned in a mail bag robbery. Routine examinations of plant substances which may have medicinal or economic value, or are suspected of being poisonous, are

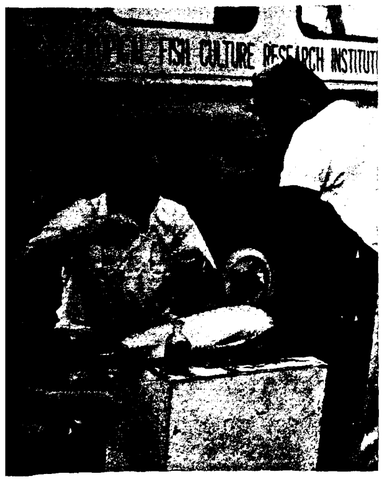


Top right: **Cacti and other water-storing plants characteristic of the dry and desert regions of the earth are grown in the Succulent House.** *Bottom right:* **The four and a half acre lake at Kew contains a number of small islands where wildfowl are allowed to breed undisturbed**

Right: **Pupils of the Sarawak School of Agriculture take notes during a lesson in fresh-water fish culture**

Below left: **Mr. Dudley Kurth, an Australian physiologist at the Tropical Fish Culture Research Institute, Malacca, Malaysia, extracts eggs from carp from the culture ponds. British, Australian, Malaysian, and other scientists at the Institute work together on research which will help to increase the number, size, and quality of fish available for food**

Below right: **Bream bred in the fish ponds at Chilanga, Zambia, and transported by road in a tanker of oxygenated water, finally reach their destination in the new Lake Kariba**



several million Hong Kong dollars every year, over 10 million fish fry are exported to other fish farming countries.

But in all these places the farming is done in fresh or brackish water, and unfortunately not much of the expert knowledge which has been built up can be applied to marine fish farming. In farming the sea the elemental forces of tides and weather have to be mastered. Other problems arise because the kinds of sea fish most popular as food are carnivorous, whereas the fish farmed in fresh water, usually carp or bream, are vegetarian feeders. It is much easier to obtain extra food for vegetarian fish than it is for fish which must be fed on small sea creatures.

In Japan, marine fish cultivation is a rapidly growing industry, and the government, together with commercial concerns, is making a considerable effort to supplement the natural stocks. The cultivation technique used in Japan consists of catching fry (baby fish) in the open sea during spring and rearing them to marketable size in enclosed areas of the Inland Sea by the following winter. It is possible that this method could also be used in Britain, but for the time being the British researchers are concentrating on the pilot scheme at Ardtoe. Under this system the whole cycle from hatching to marketing will be under control, and this should make it easier to assess the commercial possibilities of marine fish farming.

If fish farming is found to be commercially attractive it will certainly be developed in sea lochs and shore ponds warmed by effluent from power stations. Farming of the open sea raises the question of international agreements, and it is considered by British experts to be a long way off in the future. But there are many countries with indented coastlines which could adapt British techniques and farm enclosures of the sea. The leaders of the British fishing industry view marine fish farming as a logical insurance against the diminishing supply in an increasingly competitive world industry, and the more countries that take it up the greater its value in this respect will be.

As Gordon Eddie, technical director of the White Fish Authority, points out, the fishing industry is still in the neolithic period, for despite far-reaching technical developments in recent years, the food is still hunted. "Farming fish," he says, "is at present in the same stage of development as stock farming was, when man first decided to fence in his cow instead of chasing it for miles." But with scientists working in the knowledge that every possible means of increasing world food supplies must be thoroughly investigated, progress is likely to be rapid.

Left: **Fish ponds on the west coast of the New Territories, Hong Kong. Now that the fish culture industry is proving a financial success, pond acreage is expected to increase rapidly**

READERS PICTURES

Readers are invited to send photographs which they must have taken themselves. Address and description should be marked on the back. A guinea will be paid for each photograph published. Photographs, which must be black and white, should be addressed to the Editor, COMMONWEALTH TODAY, Hercules House, Hercules Road, London, S.E.1. Photographs will only be returned if requested.

Morning mist. Devidas Kasbekar, 127/3541, Pant Nagar, Maharashtra Housing Colony, Ghatkopar, Bombay, 75, India

Fishing village in Sierra Leone. Miss Pamela Baker, "Woodbury", Farnham Lane, Haslemere, Surrey

Two friends. Yusaf Munir, M.A., La Salle High School, Peoples Colony, Lyallpur City, W. Pakistan

Beauty from Kenya. Charles S. Ferguson, 2, Bonel Flats, Cushieri Street, Gzira, Malta, G.C.

GEOGRAPHY STUDY BY SIR DUDLEY STAMP, CBE

THE MIDLAND VALLEY OF SCOTLAND

Scotland falls very naturally into three unequal and contrasted parts. The northern two-thirds are occupied by the Highlands of Scotland, mainly hill and mountain land covered with moorlands and some forests. The Highlands terminate quite abruptly in the south along a line which runs from the mouth of the Clyde north-eastwards across the country to a point near Stonehaven on the east coast. This line coincides with an actual break or fault in the rocks of the earth's crust: the Highland Boundary Fault which separates very ancient hard rocks to the north from younger, softer ones to the south. The Southern Uplands, also mainly grassy hill lands, but less elevated than the Highlands, run across Southern Scotland from south-west to north-east. They too are bounded by a great fault line.

Between these two hilly areas lie lower land, usually called the Midland Valley of Scotland. Here live more than three-quarters of all the people of the country, here are to be found the coalfields and most of the industries.

But the Midland Valley is only a valley in the sense that it is mainly low land between masses of higher ground—indeed, another name is the Central Lowlands. It is broken by lines of hills, often marking the outcrops of old volcanic rocks, and sometimes with steep-sided and rugged scenery. Such hills are the Sidlaws, the Ochils, the Campsie Fells, and others. There are also some small, steep-sided hills, which mark the necks of ancient volcanoes; the most famous is that on which Edinburgh Castle was built. Then there are the coalfields, really three main ones. In the west is the Ayrshire field; in the heart is the Central Coalfield, lying largely in Lanarkshire; in the east a coalfield which runs under the Firth of Forth, so that it is worked as the Fifeshire Coalfield in the north, the Midlothian Coalfield in the south. The coalfields, as in England and Wales, have given rise to many industries and industrial towns—this is especially true of the Central Coalfield.

A glance at the map shows that the Central Lowlands of Scotland are deeply penetrated by the estuaries or "Firths" of three main rivers. In the west is the Firth of Clyde, and the Clyde is navigable by large ocean-going vessels as far as Glasgow. Below Glasgow, on both banks, are the famous shipyards where the greatest liners in the world, the *Queen Mary* and *Queen Elizabeth*, were built and countless other vessels. The Clyde is kept dredged so that these giants can be launched—and notice how this stretch of the Clyde is sheltered from south-west gales. In the north-east the lowlands are penetrated by the estuary or Firth of Tay with Perth at the head and Dundee, Scotland's third or fourth city (the rival is Aberdeen), on the north.

From Dundee the Firth has long been crossed by a very long railway bridge from which a whole train was once blown off the rails into the swirling waters below, on the night of 28th December, 1879. The present bridge, reconstructed in 1887, is the third longest in the world measured over the water (10,289 feet). Now a road bridge is being constructed. The other deep entry of the sea in the east is the Firth of Forth, near which stands Edinburgh, Scotland's capital. The famous railway bridge (8,291 feet over water) is now paralleled by the suspension road bridge opened in 1964, with its central span of 3,300 feet, the longest in Europe.

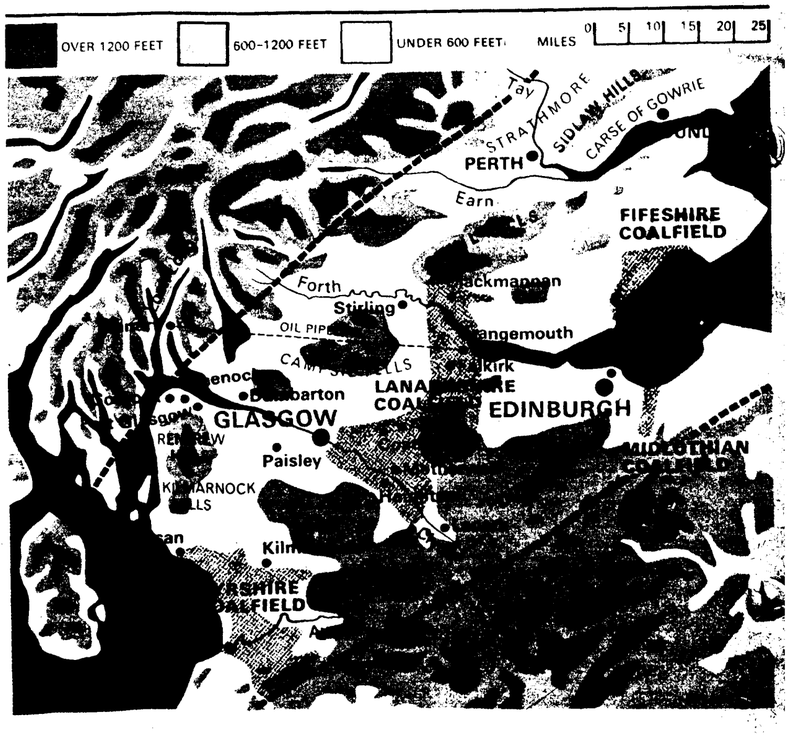
The map shows how narrow is the "waist" of Scotland between the navigable Clyde and the navigable Forth. There were many plans for a ship canal to take large ships, but actually the small canal from Grangemouth to Bowling below Glasgow never carried much traffic, and is abandoned now. But there is a modern development of great importance. Huge oil tankers can come alongside the piers on Loch Long, a sheltered but deep offshoot of the Firth of Clyde, and the oil is sent by pipeline across to great refineries at Grangemouth on the Firth of Forth.

Quite apart from the numerous industries associated thus with its coalfields and waterways the Midland Valley of Scotland has some fine rich soils on its lowlands and valleys. In the west the wet climate favours the growth of grass and dairy farming. The brown and white cattle, formerly with long horns but now dehorned, known as Ayrshires, yield good rich and abundant milk, and originate from the county which has given them their name.

In the east, around Edinburgh, the drier sunnier climate favours wheat, barley and market garden crops. In certain areas, notably the Carse of Gowrie, near Dundee, small fruits (raspberries) have long been famous. This gave rise to a jam-making industry, but in order to keep the jam factories working in the winter, oranges were imported, so that Dundee is now justly famous for its marmalade.

Dundee is also famous as a world centre for the jute industry, and this too arose for geographical reasons. There was an old industry making hempen twine for fishermen's nets; the supply of hemp, then imported from Russia, was cut off for a time, so the manufacturers tried a new material, the jute from India. It proved to be unsuitable as a substitute for hemp, but good for making sacks and sacking.

These are good examples of "geographical momentum". Now the Midland Valley has a great range of industries; its old congested towns where workers lived in high blocks are being rebuilt on modern lines, and well-planned new towns are also under construction, such as Cumbernauld, East Kilbride and Livingston. Greater Glasgow has over a million people, Edinburgh nearly half a million.



BOOKS

COURSE FOR BOOKSELLERS

Commonwealth booksellers on a visit to a factory where shelving is made by disabled workers

booksellers from 18 countries—for the most Commonwealth territories—attended first course on Bookselling and Book bution organised by the British Council operation with the British book trade. was not designed to teach cal points of bookselling—the members were, after all, booksellers of experience—to promote greater understanding of the of view of everyone concerned in the duction of books. Part of the course cluded working in bookshops in different ts of Britain. Instruction ranged through whole spectrum of book publishing, design, printing and production to methods of running bookshops, vertising and staff management. During visits to printing works, publishers and booksellers, the visitors were particularly pressed by the new university bookshops, and the large number of titles published each year in Britain.

Talks by leading personalities of the British book trade focused on the problems and viewpoints of people with whom the booksellers had to deal: publishers and buyers and, in particular, librarians. Talks by publishers enabled them to appreciate the problems of producing the right books at the right time, and in subsequent discussions the visiting booksellers had the opportunity to present their points of view and to criticise publishers' methods when they felt improvements could be made. In general the booksellers were pleased at the interest which publishers clearly had in Commonwealth markets and impressed at the extent to which British publishers were carrying on local publishing ventures in Commonwealth territories.

Magna Carta and Its Influence in the World Today, by Sir Ivor Jennings (*Her Majesty's Stationery Office, 1965, price 3s. 6d.*).

This booklet by Sir Ivor Jennings, Master of Trinity Hall and Downing Professor of the Laws of England in the University of Cambridge, has been written to mark the 750th anniversary of the sealing of Magna Carta and the 700th anniversary of Parliament.

The booklet carries a translation of the text of the historic document and is fully illustrated. A preface describes Magna Carta as "the most important single document in the development of constitutional and legal freedom not only in Britain but also the United States of America and in many countries of the Commonwealth".

An essay, written in class by a 12-year-old schoolgirl, has been published as an information booklet by the New Zealand High Commission Office in London. Miss Jane Shotter (below), daughter of a British civil servant, lived for three years in New Zealand when her father was posted to Wellington. Jane's story of her life in New Zealand so captivated the imaginations of her teachers and school friends that she was prevailed upon to send it to the High Commissioner's Office. Ten thousand copies were printed and these are sent to children of about Jane's age who seek information about New Zealand.

STAMPS

The Bahamas

British colony for well over three centuries, the Bahamas consist of an archipelago of 20 inhabited islands and hundreds of uninhabited rocks and cays stretching from the coast of Florida southward toward Haiti and Cuba. With their white coral sands and shimmering seas, their lagoons, reefs, and luxuriant sub-tropical vegetation, Bahamas have a special appeal for rists, and catering for them provides colony with its principal source of e. Some of the scenic beauties Bahamas are featured in the ms of a new series of stamps y issued for ordinary use.

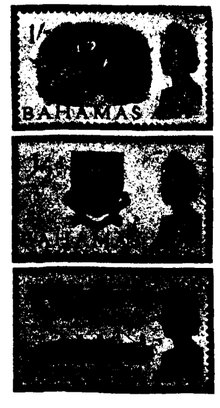
series begins with a ½d. value , in full colour, the colony's rms. The motto, *Expulsis estituta commercia* (The Pirates Commerce restored), recalls that the Bahamas were once the haunt of the pirates who preyed upon shipping in these waters, and it was not until the eighteenth century that a serious attempt was made by the British government to expel the pirates and protect the legitimate commerce of the islands. A new Governor, Captain Woodes Rogers, was appointed with orders to carry out this task. It was widely rumoured that the Captain himself had once been a member of the piratical fraternity but, on the principle of "set a thief to catch a thief", the choice was a wise one and the Bahamas began to know more peaceful times.

Today, holiday liners, including the *Queen Elizabeth* depicted on the new 4d. stamp, visit the islands regularly and the white sails of yachts such as those on the 1d. and 8d. stamps, have replaced those of the pirate ships.

The 1s. stamp features the sea gardens off Nassau, capital of the Bahamas. The brilliant colours of the tropical fish, the sea anemones and the many varieties of sea-weed make these underwater gardens a popular attraction for tourists, some of whom go skin-diving in the crystal-clear waters, while others are content to view the gardens from the security of a glass-bottomed boat.

Wild-life above the sea is represented on the 3d. stamp by the red flamingo, of which hundreds are to be found on the islands of Andros and Great Inagua. Other stamps show the old cannons at Fort Charlotte, the High School at Nassau, and the flagship of Christopher Columbus, whose first landfall in the New World was made during his voyage of 1492 at one of the Bahamas which he named San Salvador, and which is now called Watling's Island.

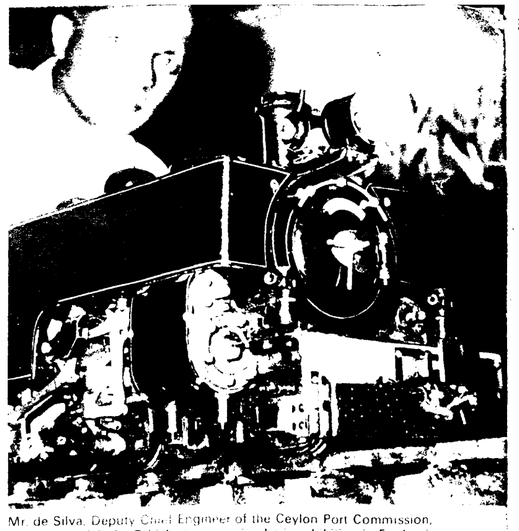
C. W. HILL



PICTURESCOPE

British built equipment for Vietnam • Malaysian Deputy Prime Minister in Kenya • Australian Defence Minister in Thailand • New British Ambassador to Laos • Model steam engine for British exhibition • Les Ballets Africains in Kuala Lumpur

Mr. F. A. Warner, the new British Ambassador to Laos (left), pictured on his arrival at Vientiane airport with Mr. Denson, Head of Chancery, and Monsieur Ouday Souvannavong, Head of Protocol (right)



Mr. de Silva, Deputy Chief Engineer of the Ceylon Port Commission, with the model of a British steam engine he is exhibiting in England. Every part of the engine has been made in his home workshop

Dr. U. They Hta Way from Rangoon General Hospital, Burma (second left) sees a patient receive treatment at Dunedin Dental School, New Zealand. Dr. Way is taking a Dental Surgery course there under the Colombo Plan

Members of Les Ballets Africains were entertained to tea by the Prime Minister, Tunku Abdul Rahman, during their visit to Kuala Lumpur. Here they are singing to the Tunku's granddaughter at her birthday party

Mr. John Davis (right), Chairman of the Rank Organisation, and Mr. Graham Dawson, Marketing Director, pictured on arrival in India from London. At Thana, Mr. Davis opened the new British radio factory set up by Mulchandani Electrical and Radio Industries Ltd

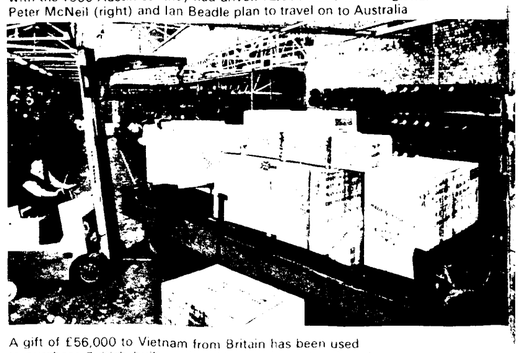
The Australian Defence Minister, Senator Shane Paltridge (right), visited the Thai Australian Rebuild Vehicle Workshop at Rangsit, near Bangkok. Pictured here with him is Lieut. Colonel Randal White from Australia (left) and Vice-Admiral Prajum Mokaves

During his visit to Kenya, the Malaysian Deputy Prime Minister, Mr. Tun Razak, talks to Kenya's Acting Minister for External Affairs, Dr. Mangat (left) and the British High Commissioner

A young Manali girl from the Mulu Valley, Punjab, smiles for the camera

Two Gurkha officers, Capt. Partapsing Gurung (left) of the 2nd Gurkhas and Capt. Jarnabahadur Rai of the Gurkha Army Service Corps, who served as orderly officers to H.M. Queen Elizabeth, received the M.V.O. before returning to their own country, Nepal

Two 21-year-old British electronics engineers pictured in Colombo with the 1930 Austin car they had driven 12,800 miles from England. Peter McNeil (right) and Ian Beadle plan to travel on to Australia



A gift of £56,000 to Vietnam from Britain has been used to purchase British built road-making equipment and engines for fishing boats. Here, material from Petters Ltd. is loaded up in England

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