A WINDOW OPEN ON THE WORLD

The UNESCO Courier

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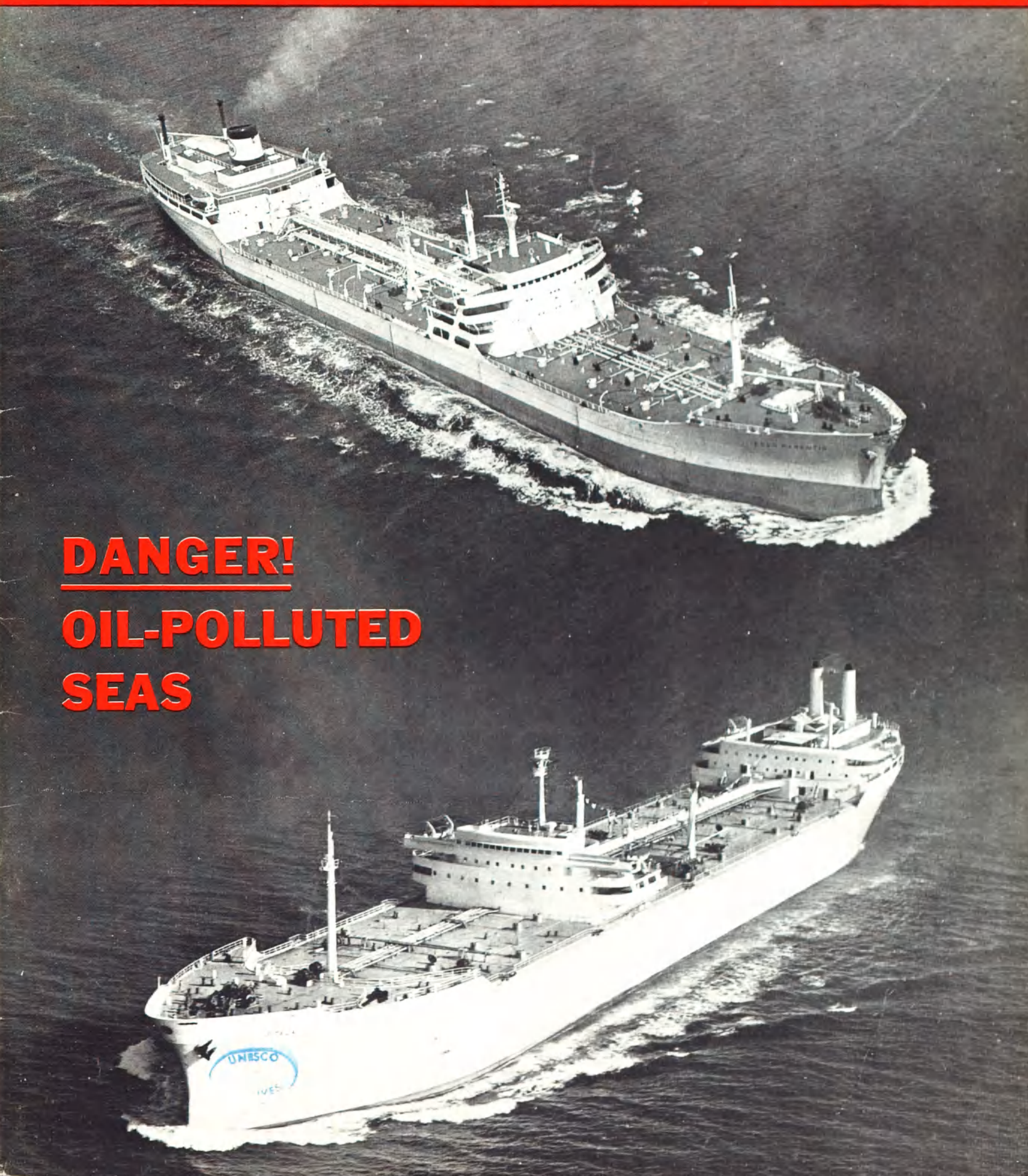

DANGER! OIL-POLLUTED SEAS

From the Dolores Olmedo Phillips Collection, Mexico. Photo © Gisèle Freund.

PANORAMA OF MEXICAN ART

This terra-cotta figure of a warrior holding a lance and shield from Ixtlan, Mexico, was produced by the Pacific Coast Civilization that flourished between 300 and 1250 A.D. It is one item in a rich collection of Mexican art, dating from pre-Columbian times to the present day, which is now being shown in Europe. This travelling exhibition has already visited Belgium, Switzerland, the Federal Republic of Germany, the Netherlands, Austria, the U.S.S.R., Poland, France and Italy where it has been seen by many people. It will shortly be shown in Yugoslavia.

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No. 9

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Tankers on the high seas. The pollution of the oceans through the discharge by ships of fuel oil waste and contaminated water ballast has become a major world problem. At a recent conference in London, 40 nations adopted measures to reduce the fouling of the seas and shores and the consequent destruction of birds and marine life. (Story page 10).

Photos (top) Esso (bottom) Spirale

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Editorial Offices
Unesco, Place de Fontenoy, Paris 7e, France

Editor-in-Chief
Sandy Koffler

Assistant Editor
René Caloz

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Layout & Design
Robert Jacquemin

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All correspondence should be addressed to the Editor-in-Chief.

THE violin and the melodious sounds which virtuosi extract from it are familiar to us all. But casting off the blinkers of habit, let us take a fresh look at this modest wooden case. How extraordinary it is that a few plates of thin wood, and the friction of horsehair on four strings should be able to produce the quivering strains which lead and dominate an orchestra, the powerful and moving voice that holds large audiences in thrall. The miracle of the violin is indeed a miracle of human art and ingenuity, which has never yet been fully explained by science.

When the great Italian violin-makers of the sixteenth and seventeenth centuries constructed models of stringed instruments which have never since been rivalled. they received no help from acoustics, a science which did not then exist. Yet, by a process of trial and error, repeated experiments and empirical research, and thanks to the kind of intuition which rewards tenacious effort, they managed to achieve remarkable results and to create sounding-boxes that correspond in every way to the laws of modern acoustics.

The making of a stringed instrument is more than a matter of technique. There are so many subtle relationships between its component parts, between the choice of the wood and the way in which it is worked, between the capacity of the resonant box and the thickness of its wooden plates, and between the wood and the varnish, that no formula can be a guarantee of success.

The instrument-maker's personal talent is all-important; his experience and skill cannot be conveyed in written instructions, but must be passed on from man to man in the course of a long apprenticeship. As a matter of fact, this is unfortunate, because the old instrument-maker's art is in great danger of being lost.

The quality of stringed instruments, of which violins, violas and violoncellos are the most important, depends primarily upon the wood of which they are made: *epicea excelsa* for the upper part or belly, maple for the back and the "ribs" which form a violin's sides, ebony for the finger-board, and Guiana "bees' wood" or Pernambuco wood for the bow. *Epicea*, a variety of pine, is found in Switzerland; maple is scattered through some valleys of Central Europe. The wood must be compact and fine-grained, without knots, but with the "ripples" which make the varnish shimmer.

Exposure, soil and climate have as much influence on a crop of wood as they have on vines; the wood must be cut "di quarto", that is, not longitudinally, but from the bark to the heart, like the lith of an orange; only the central part of the trunk—not too near the roots, where the wood would be too damp, or too near the top, where the sun would have dried it out—is considered satisfactory; and, lastly, the part exposed to the south is held to be the best. All these prescriptions give an idea of the care taken by stringed-instrument makers in choosing their raw material.

The work of a master violin-maker is done entirely by hand, and by the same craftsman, except for the bow,

THE

ANCESTORS FROM THE EAST

Photos © Marcel Arthaud

The Indian ravanastron is believed to be the oldest of instruments played with a bow. It may have travelled to Arabia to become the rebab (1). The rebab was perhaps the father of the rebec, reconstituted versions of which are shown here (2), though this mediaeval stringed instrument may be a descendant of earlier Western ones. Most widely-used bowed instrument of the Middle Ages was the viol. Shown here are three "love viols" from Germany and Italy (3). The instrument makers of the Tyrol and Cremona, in northern Italy, transformed the viol into violins like this Stradivarius (4) dating from 1724. This violin (5) once belonged to Johann Strauss.

MUSIC ON A STRING

by Claude Marly

Carved head decoration on a "Viola d'Amore", literally "love viol", made by Nicolas Lupot (1758-1824), a craftsman who has often been called "The French Stradivarius".
© Marcel Arthaud.

Young gipsy fiddler
© Goldner

executed by a skilled bow-maker. Despite the simplicity of its outline, a violin is composed of 83 to 85 parts, all of which must be fashioned with the utmost care.

The violin-maker, with the help of a mould, cuts out the back, which is generally made of two pieces glued together so that the graining of the wood corresponds. He fines down the arch of the belly so as to give it the necessary convexity, forms the curve of the ribs with a hot iron, calculates the size of the neck, which he fits to the instrument, uses a penknife to cut the sound-holes in the belly—S-shaped holes which give the instrument its resonance and elegance—mounts the pegs and bridge.

Lastly, with a little tool inserted in the sound-holes, he fixes that essential part of the instrument which the Italians and French call the *soul* and the Germans the *voice* of the violin. This is a wooden cylinder, designed primarily to keep the belly firm under the pressure of the strings; but it also seems to influence resonance of the instrument, since a millimetre's difference in its position is enough to alter that resonance.

Up to this point, however, the violin is still unfinished; it awaits its finest adornment—the famous "varnish", so much appreciated by the connoisseurs, which enhances the instrument's elegant curves and enables the light to play on the grain of the precious wood. The purpose of the varnish is to protect the violin against the ravages of time and climate; it is highly important because, even though a bad violin cannot be improved by a good varnish, a bad varnish can "muffle" an excellent violin.

Unfortunately, the famous varnish of Cremona which combined depth with transparence and gave the

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VIOLIN FAMILY TREE

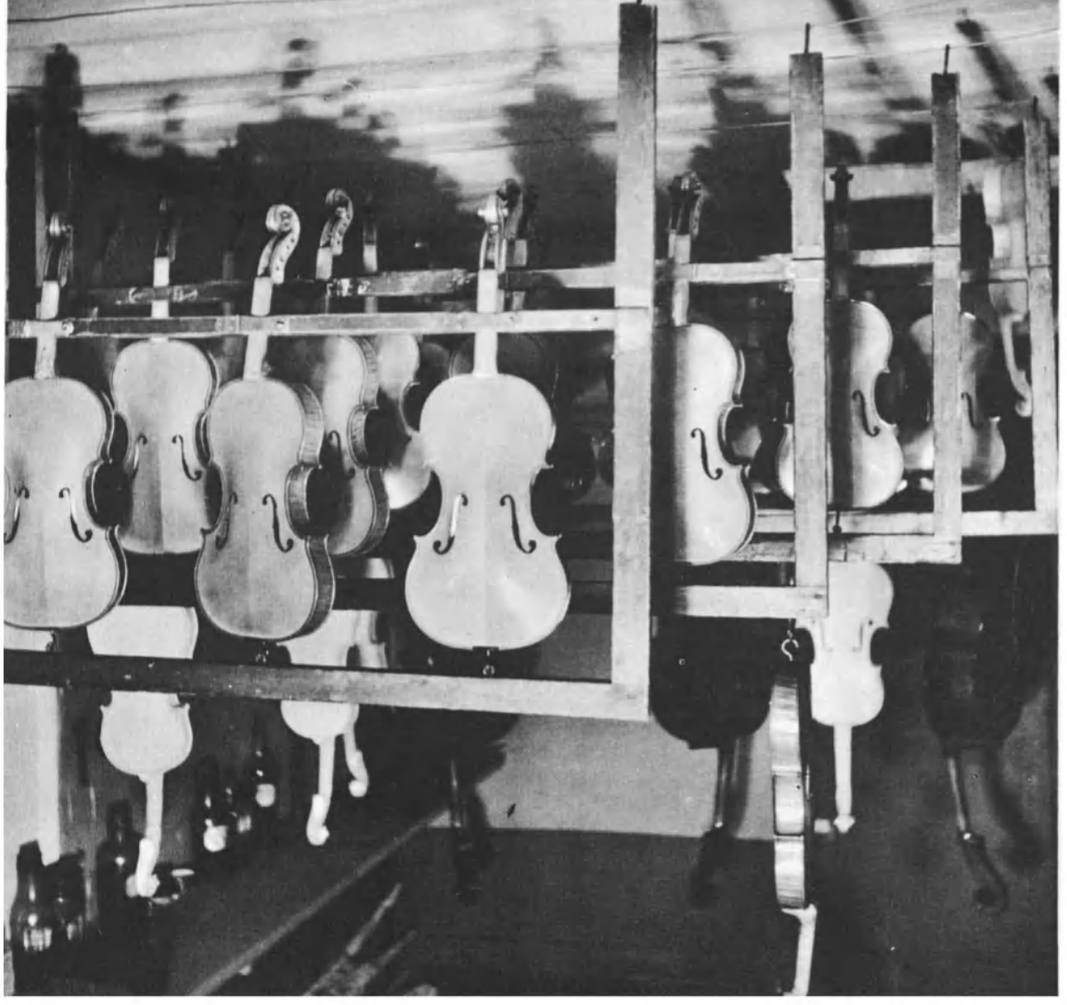
CELTIC OR ARAB ORIGIN ?

MUSIC OF THE MIDDLE AGES

FOR VIRTUOSOS

Conservatoire National de Musique, Paris
© Goldner

TOKEN OF REMEMBRANCE



MUSIC ON A STRING
(Cont'd)

In the early days of the Renaissance, there were two groups of stringed instruments in Europe: vielles, which were once used to accompany troubador songs (and later evolved into *organistrums*, or large hurdy-gurdies) and the nobler family of the viols, bowed instruments whose gradual modification no doubt produced the violin, the most important of modern stringed instruments. The legendary name of Stradivarius dominates this branch of instrument-making, which demands great manual skill and a perfect ear for tone. Below, a well-known French violin maker, Emile Français, in his Paris workshop. Left, violins drying after being varnished. Varnish protects a violin but can also affect its resonance.

Photos © Goursat

A lost secret of the Cremona craftsmen

instruments their inimitable golden or reddish tortoise-shell colour, is a lost secret. No chemical analysis has yet revealed its composition. Some plants in the Tyrolese woods are said to have produced a gum which, collected in special bags, supplied the violin-makers of Cremona with the main ingredient of their oil varnish.

The last person able to secure these bags of gum appears to have been Carlo Bergonzi, disciple of Stradivari, who bought the master's workshop after his death. Once the trees yielding it had been felled, this gum could no longer be found, and the varnish has never since been the same. However, time, which mellows the tone of old instruments, has probably also given their wood its inimitable patina.

Strings are quite, or almost, as delicate a matter. Those used by the Italian craftsmen were produced in the central and southern parts of the peninsula, especially in Naples; the gut was derived from the intestines of seven or eight-month-old lambs. This gut was left to soak for a long time in alkalinized water before being dried and twisted. It was believed that the exposure of the pasture-lands, the season at which the lambs were slaughtered and the kind of water used influenced the quality of the strings and especially their resistance. In fact, that resistance is extraordinary, considering that the four violin strings are subjected to a total tension of over 50 pounds.

Thus we see what subtle alchemy of plant and animal matter and what intuitive, meticulous craftsmanship are needed in order that wood, gut and horsehair may be transformed into that great, enchanting voice, with its infinite modulations, which by another miracle of human genius, can be heard today in every home.

The first stringed instrument was a gift of nature, a tortoise-shell converted into a sounding-box by a few strings stretched across it. That is why the lyre retained the name of *chelys* in Greek and *testudo* in Latin. And according to classical tradition, the first stringed-instrument maker was Orpheus, who replaced the linen threads of the lyre with strings made from the intestines of animals.

Stringed instruments are found among primitive peoples: the Negro viol of Nyasaland has a bow made of two strips of willow, one straight and the other curved. But musicologists generally agree that the earliest ancestor of the violin is the *ravanastron*, which has all the same features: resonant box, neck, bridge, pegs, strings made of gazelles' intestines and bow. This instrument is said to have been invented over five thousand years ago by Ravana, king of Ceylon, a ten-headed giant. It is still sometimes seen in India, in the hands of certain mendicant Buddhist monks.

The story goes that the *ravanastron*, transported from India to Persia and thence to Arabia, became the Arabian *rebab*, which, in Europe, engendered the rebec, a small, three-stringed bowed instrument played by the minstrels. On the other hand, Breton bards before the Moorish invasion used a bowed instrument called the *crwth*, which was an improved version of the *rebab*. Was the latter imported into the East by the Crusaders? Or did they bring it back from Palestine? Or else, as ethnomusicology would seem to testify, did the various forms of bowed stringed instruments make their appearance as independent inventions in different countries?

At all events, by the beginning of the Renaissance in Europe, there were two groups of stringed instruments: vielles, which, after being used to accompany troubadour songs, evolved into *organistrums*, or large hurdy-gurdies, worked by a handle and employed for dance music or for

CONT'D ON NEXT PAGE

THE VIOLIN CURIOSITY SHOP

Viol with five strings copied from an instrument in a painting by Cimabue, the 13th century Florentine artist.

Photos © Arthaud.

Viol with three strings reconstituted according to a 13th century sculptured figure in Chartres Cathedral.

Violin marked with the monogram of Antonio Stradivari—Stradivarius in Latin—the most celebrated of the great violin-makers of Cremona (1644-1736).

Photo © Goursat.

The names of the different kinds of viols are as musical as the sounds they make: viola d'amore (love viol), viola di gamba (placed between the knees for playing), violetta marina (for which Handel wrote pieces), viola di bordone, viola pomposa (said to have been invented by Bach; his VI suite for violoncello was actually written for the viola pomposa) and viola bastarda which at first had 6 or 7 strings and later, fitted with 14 strings, became the "English violet".

★

Almost all the great violin concertos (for example, those of Mozart, Beethoven, Paganini, Brahms, Tchaïkovsky, Lalo, etc) are written in D.

★

One of the most strange-looking of all musical instruments was the tromba marina (marine trumpet) which was very popular in Germany from the 14th to the 17th centuries. It has been suggested that one part of its name came from the use made of it for signalling in the British Navy.

The octobasse, an immense stringed double-bass, 10 feet high invented by the 19th century French instrument maker, Jean-B. Vuillaume.

THE INCREASING USE OF STRINGS IN THE ORCHESTRA

HAYDN	BEETHOVEN	WAGNER	STRAVINSKY
(as used in his 78th Symphony)	(as used in the 5th Symphony)	(as used in "Parsifal")	(as used in the "Rite of Spring")
4 Basses.	8 Basses.	10 Basses.	10 Basses.
4 Cellos.	8 Cellos.	12 Cellos.	12 Cellos.
4 Violas.	10 Violas.	12 Violas.	13 Violas.
8 First Violins.	14 First Violins.	18 First Violins.	18 First Violins.
6 Second Violins.	12 Second Violins.	18 Second Violins.	18 Second Violins.

Masterpieces from a prison cell

the entertainment of drinking parties; and the nobler family of the viols, bowed instruments which may or may not have been derived from the vielle. The gradual modification of early viols doubtless produced the violin, the most important of modern stringed instruments.

The first violins are generally attributed to Gasparo da Salo, who, together with Maggini, founded the famous school of Brescia in Lombardy. Yet a few years before Salo's birth in 1533, Francis I of France was already travelling with eight violin players in his train. There was probably an uncertain period during which various modifications of the viol were called violins, although the proportions of the violin had not yet been established. Such hesitation is evidenced by the fact that the French word *violon* means "large viol", whilst the Italian *violino* means a small-sized viol.

The Brescia school later seemed primitive in comparison with that of Cremona, founded in the seventeenth century by the Amati dynasty, the most famous member of which, Nicola, lived to be eighty-eight (1596-1684) and was the master of Stradivarius. His small violins, with their strong voice and brilliant, transparent varnish, were already masterpieces.

A STRANGE legend surrounds Giuseppe Guarnieri (1683-1745), known as "del Gesù", because, in order to distinguish himself from the other violin-makers of the family, he adopted a label on which his name was followed by the three letters I.H.S. (Iesus Hominum Salvator) surmounted by a cross. His violins have acquired such a reputation that a "del Gesù" has become a common expression. It was, for instance, on a "del Gesù", which he donated to his native city of Genoa, that Paganini played.

The story is that, despite his pious nickname, Guarnieri, who only began his career as a violin-maker at the age of thirty-eight, produced his best instruments while in prison. Some of them are called "prison violins" or "the servant-girl's violins", in memory of the goaler's daughter who is supposed to have supplied him with the material he required.

The greatest and best-known of the violin-makers of Cremona was Stradivari—Stradivarius in Latin—whose name has become synonymous with the finest and most valuable violins. He lived to be ninety-three and had two wives and fourteen children, only two of whom took up the craft. Starting as a pupil of Nicola Amati, he began to sign his instruments, using his own label from 1670 onwards, and had very soon surpassed his master.

After this first thirty-year period, known as the "Amitized" period because of the influence of Amati's models, he developed his own style through passionately keen and unremitting labour; and it was to remain unrivalled. He designed his model with sober grandeur, the height of the vaulting was reduced, the volume of air in resonating bodies methodically refined, the thicknesses accurately calculated and the exact intonation of the woods ascertained. The Magginis had a veiled, melancholy voice, the Amatis a soft, silvery one; but Stradivarius was the first to be able to combine strength and sweetness, vigour and tenderness.

The Cremona master chose his woods with the greatest care and tried to use the same piece for the back and the ribs. His backs were often in one piece. He rounded off angles lovingly and decorated them with faultless profiling. His angles were cut in an elegant manner all his own; the paraph of the sound-holes was exquisitely fine. His varnishes were incomparable, thoroughly resistant, sometimes amber-coloured, sometimes tending towards a russet shade called *rossino*, and always highly transparent.

The whole of Stradivari's long life (1644-1737) was

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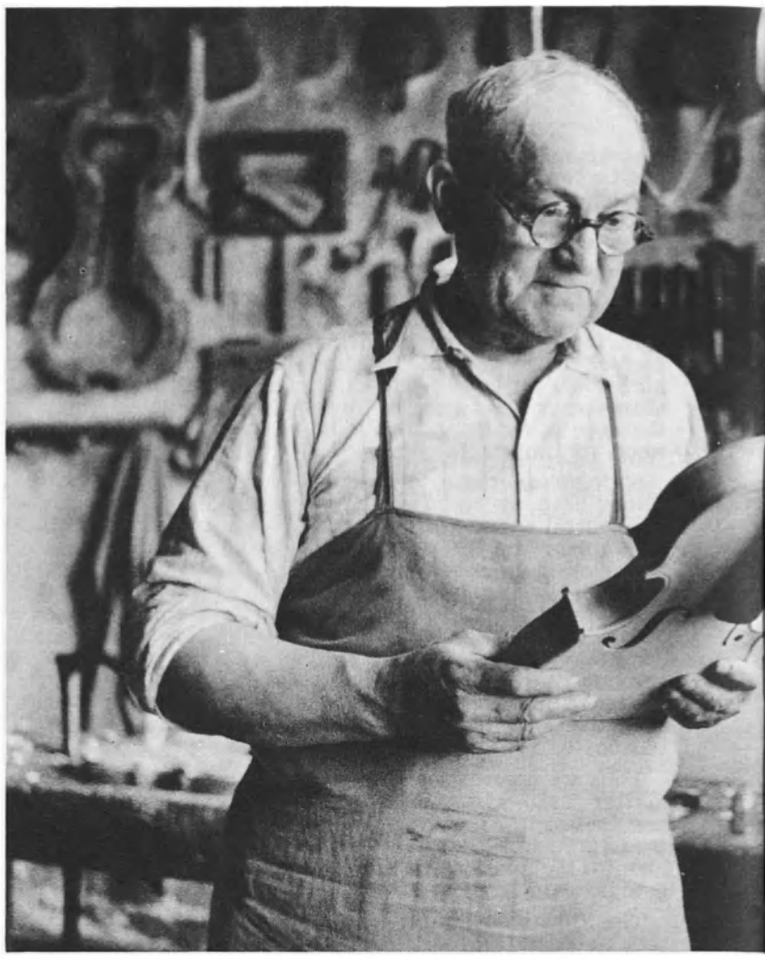
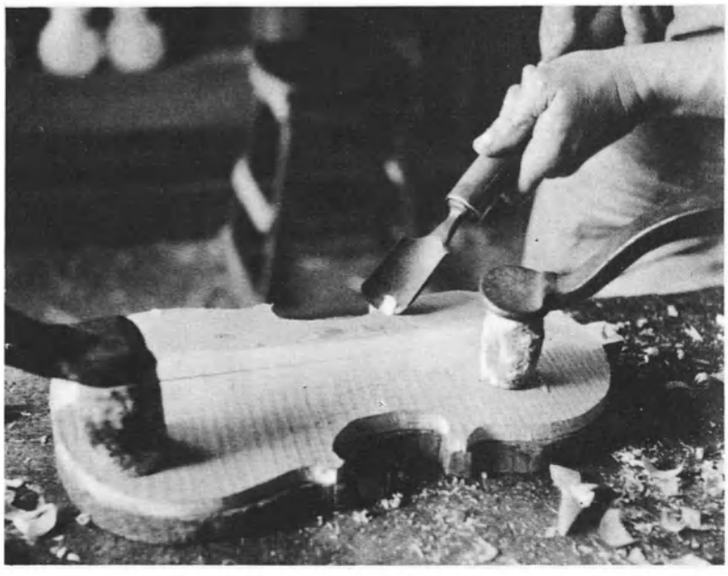
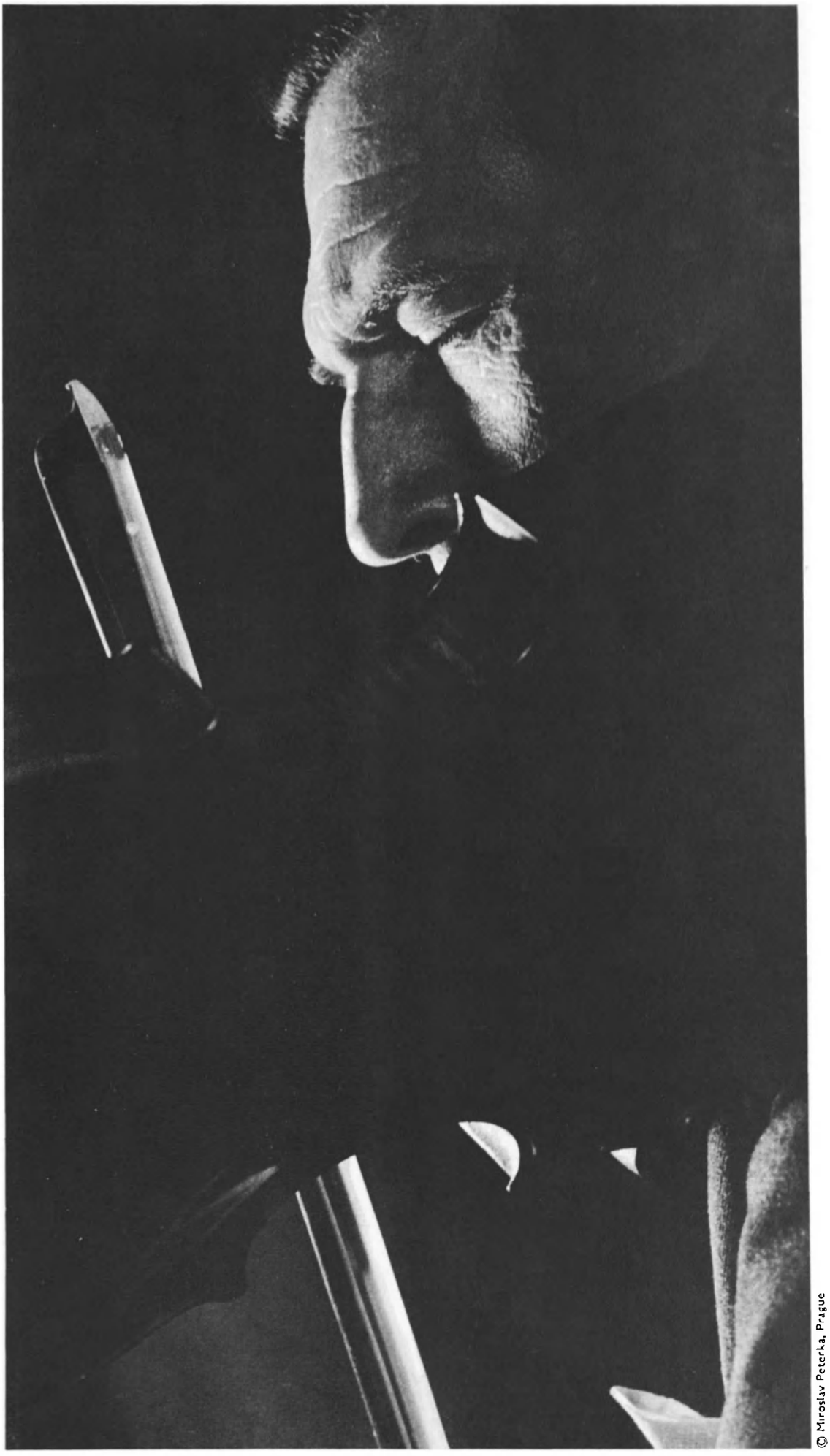




Photos © Goursat



© Miroslav Peterka, Prague

For almost three centuries, French violin makers have been carrying on the great traditions they inherited from the craftsmen of Italy. In the small town of Mirecourt, on the borders of Lorraine, veteran violin makers like this one examining a finished instrument (above) still hand on the secrets of their craft to new generations. Left, a violin back is prepared and (below left) finished parts are fitted together. The work of making and assembling well over 80 parts for each violin is done entirely by hand. When meticulous skill and loving care have done their utmost, the result is an instrument worthy of concert artists like the Czech violinist, Alexander Plocek (right).

Stradivarius inspires French violin village

devoted not only to making instruments—violins, viols, violoncellos, double basses, lutes and pocket-violins—but also to research and experiment. Those who knew him have described his tall, lean, figure. He always wore a white cap—a woollen one in winter and a cotton one in summer. While working, he wore a white leather apron and, we are told, "since he was always working, his costume hardly varied". Corelli may have given him advice for the perfecting of a violin; but no virtuoso could advise him about the violoncello, then considered as an instrument of secondary importance, and yet his 'cellos are the best ever made.

Artists such as Boccherini, Tartini, Kreutzer, Kramer, Lafont, Rode, Pugnani and Sarasate made the sound of Stradivarious violins famous. Some of these, the "Rode", the "Messiah", the "Dolphin" and the "Dawn" are considered to be the Cremona craftsman's masterpieces. Henceforth, the power and range of stringed instruments made it possible for them to leave the drawing-rooms of the aristocracy and reach an increasingly wide public in theatres and big concert halls.

Although Stradivarius was to give the violin its final form and style, the instrument had already been known and even popular in France, England and Flanders since the middle of the Sixteenth century. Violin-makers worked in those countries; in Paris, they fashioned the instruments under the supervision of musicians and were sometimes classified with braziers. The following century witnessed the appearance in France of great violin-makers, such as Nicolas Lupot, who made a very careful study of the Stradivarius proportions, and Médard, who set up his workshop at Nancy.

Thus France inherited from Cremona. Paris violin-makers are all grouped in the "Europe" quarter, but it is, above all, the small town of Mirecourt, on the borders of Lorraine, which has long specialized in the art of stringed-instrument making. The first historical document concerning Mirecourt violin-making dates from 1637 and is a contract binding an apprentice to his master. For over three centuries, therefore, the people of Mirecourt have been teaching or learning how to cut, adjust, assemble and varnish stringed-instruments with the famous "Italian sonority".

There is a historical explanation of this tradition. When the Dukes of Lorraine, great patrons of the arts, went to stay in their castle at Ravenel—a few walls of which are still standing—they brought with them their musicians and, in particular, their violin-maker, named Tywersus, who had worked in Cremona. Tywersus taught the craft to a few inhabitants of the village near the castle, and they transmitted their knowledge to their descendants.

In 1732, the violin-makers of Mirecourt received their charters as a corporation from Francis II, Duke of Lorraine. Today, workshops of instrument makers survive at Mirecourt alongside modern industry; the work is done by hand, skilfully and lovingly, and with respect for Renaissance traditions.

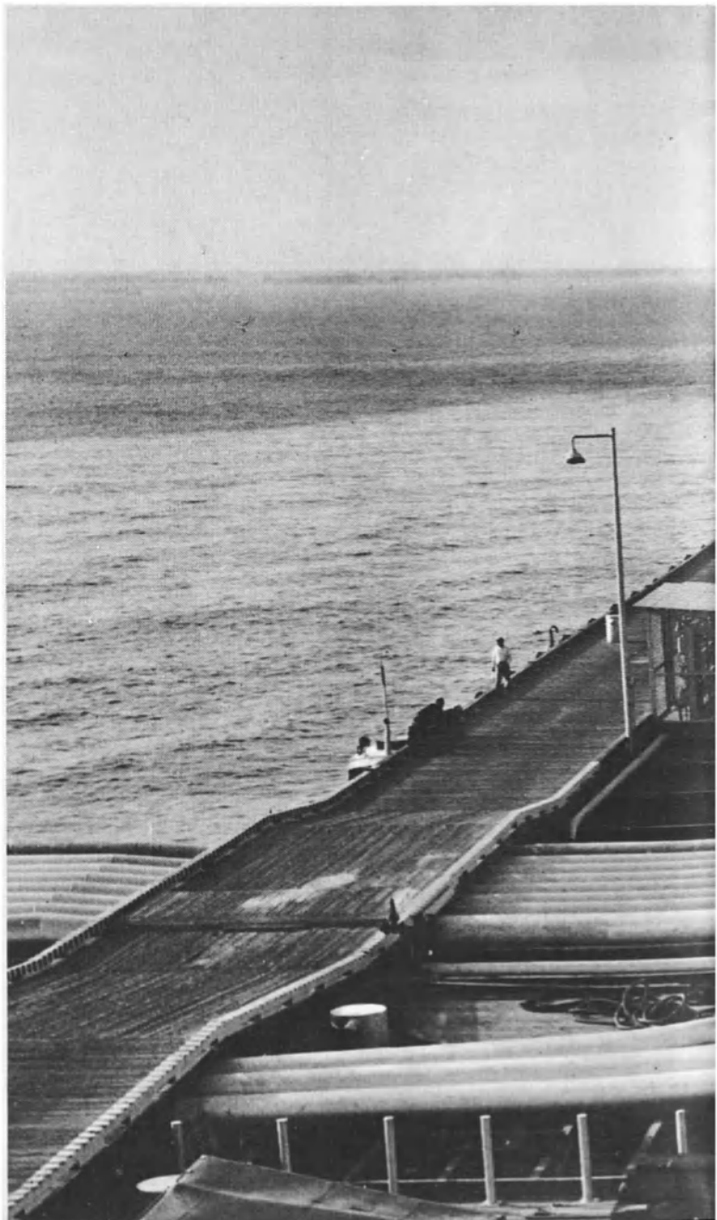
There are other centres of the art in Austria, the Netherlands and Italy, where high quality violin-making is by no means dead, as well as in other European countries. But heavy competition comes from mass-produced work; the instrument market is quickly saturated, and apprenticeship is long and difficult at a time when young people are faced with openings in less exacting and more lucrative trades.

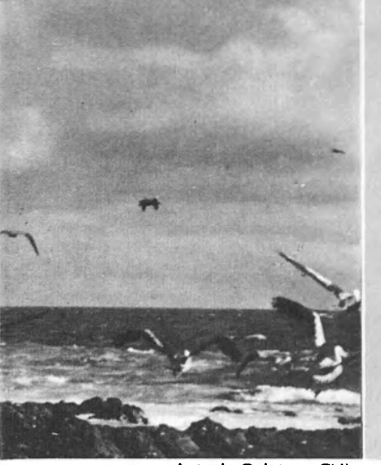
Will the master violin-maker of today find disciples to whom they can bequeath their knowledge? It is to be hoped so, for the perfection of these resonating bodies is one of music's secret weapons, and instrumental music—henceforth accessible everywhere, a joy and comfort to all, as well as a common language—has an even greater and more vital part to play in modern times than in the past.

A GROWING THREAT to wild creatures, including seals, penguins and graceful seabirds like those above on the South American coast, is widespread oil pollution.

The International Conference on the Prevention of Pollution of the Sea, convened, by the Inter-Governmental Maritime Consultative Organization (IMCO), ended on April 13, 1962, with the signing of the Final Act of the Conference by representatives of 40 nations. These countries represent over two-thirds of the world's shipping tonnage and well over half the oil tanker tonnage. A number of other countries sent observers to the Conference.

POLLUTION is due chiefly to tankers washing out storage tanks before taking on a new load or through ordinary cargo ships replacing the fuel they burn by water ballast, and later discharging this contaminated water. Below, petrol tankers take on oil at Kuwait on the Persian Gulf.





Antonio Quintana, Chile

DANGER! OIL-POLLUTED SEAS

by David Woodward

On the shores of the seven seas, from the Antarctic to Florida and all along the West coast of Europe, the pollution of the sea by oil fuel has for years been an unmitigated nuisance to all those who look to the seashore for their pleasure or for their livelihood.

Oil, washed up on the beaches, and left behind by the receding tide, is at the least unpleasant. It spoils the enjoyment of swimmers and holiday makers, ruining their clothes and their shoes. If these conditions prevail over any length of coastline, the dispirited holiday maker can pack up and go home, or if he is lucky during the holiday season find somewhere else to go; but thousands of people whose livelihood is provided by the seaside, suffer a loss of trade as well as damage to the carpets and furnishings of their hotels or lodging houses.

Inshore fishermen suffer, for it is impossible to wash fish covered with oil. Lobsters do not breed. And even the most thoughtless must deplore the plight of sea birds whose feathers have become coated with oil and have thus been deprived of their power to swim or to fly. Unless they receive highly skilled help, such birds are doomed to a miserable end by starvation. As an indication, it is calculated some quarter of a million sea birds perish in this manner every year around the coasts of Great Britain alone.

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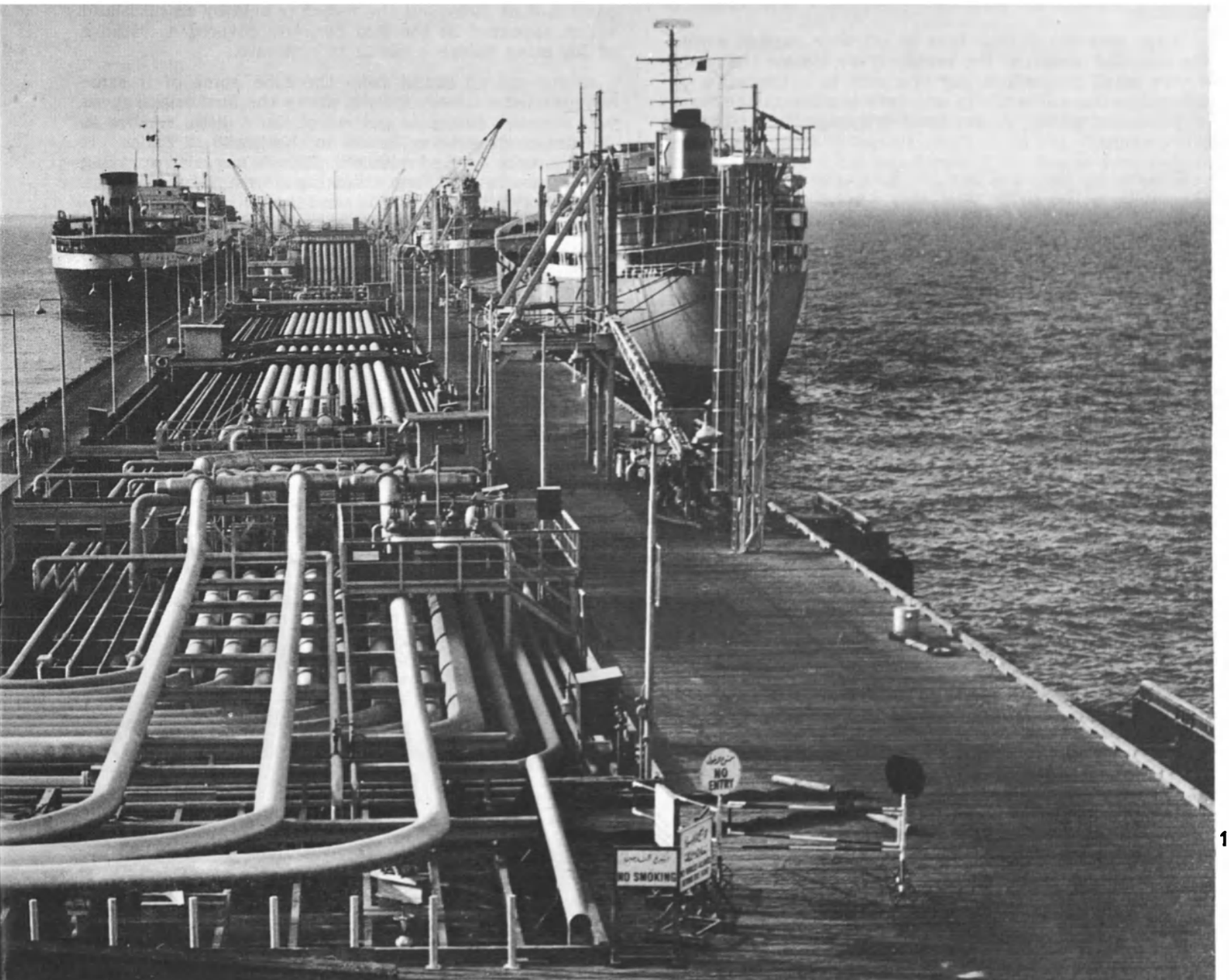


Messages in plastic bottles dropped by the thousand in the sea

In the Antarctic the plight of seals and penguins covered with oil has touched the hearts of even the tough whaling men. Dr. Harry R. Lillie, a former surgeon to an Antarctic whaling fleet, said in a newspaper interview:

"I have found half-grown seals covered in a sticky tarry mess, their eyes bloodshot with irritation; and penguins hopelessly clogged, waiting for a slow death."

Dr. Lillie added that he had spent a lot of time cleaning up the birds on board the factory ship:

"I must say with respect to the whaling crews, they were generally little concerned with the suffering of harpooned whales, but I never found any of the men around me who ever felt that our butter supply was too good to be used to clean up oiled penguins."

The fact that pollution has become a major problem is due to the enormous growth of oil fuel used throughout the world—a fifty-fold increase in the last 40 years, and almost all this oil is carried about the world in tankers.

Sir Gilmour Jenkins, President of the IMCO Conference which met in April, told the meeting:

"Last year 500 million tons of oil were carried across the seas and oceans of the world. If we assume that only a very small proportion, say one part in a thousand, of this vast amount found its way into the sea in the form of persistent waste, we get the terrifying total of half a million tons."

This oil, for the most part, is the sludge left behind in the tanks of the ships after they have discharged their cargo. The tanks are washed out by sprays of hot water and pumped into the sea. And there it floats. Man has always used the sea as a vast cesspit, for such various commodities as sewage, unwanted high explosives and atomic waste. But the oily waste is persistent and may well stay in the sea for ever.

A secondary source of this oil is the practice of oil-fuelled merchant ships replacing the fuel which they burn during a voyage by water ballast. Later, the water ballast, now contaminated by oil, is pumped out, and another addition is made to the pollution of the high seas.

To deal with the whole problem two approaches are being tried. One is to limit the areas of the sea in which oily waste may be pumped overboard. The other is the use of machinery on board ship, known as separators, which remove the oil from the waste water or the provision at ports of plant to receive the tank washings. These are both fairly expensive proceedings. A separator also may cost between £500 and £1,000 ($1,400 and $2,800). At one large port for oil tankers, the plant to receive tank washings has cost some £300,000 ($784,000). At the same time, the period spent in getting rid of the washings must be cut to an absolute minimum. Every day's delay to a big tanker can easily cost as much as $1,000.

A third source of oil on the sea, happily much rarer, is through accidents, when a ship is lost and her oil tanks perforated, or when the oil fuel must be jettisoned to free the ship from a position of danger. As one example of the damage that may be caused under such circumstances, there is the case of a tanker which ran aground at the mouth of the river Elbe, and lightened herself by pumping overboard 6,000 tons of oil. An enormous floating island of oil was thus released, which slowly drifted about the North Sea. Oil islands like this usually last for some 50 miles before they break up and patches float away, but the record is held by an oil island which appeared in the Red Sea and covered a distance of 500 miles before it began to dissipate.

As for the oil island from the Elbe, some of it came ashore on the island of Sylt, where the authorities spent vast sums of money to get rid of it. A little further to the north, six miles of beach on the island of Fanoe, off Esbjerg, were covered with oil. The Danes tried spraying it with sawdust and then attacking it with flame throwers, but the oil survived, and the sand that it had contaminated had to be bulldozed into open trenches.

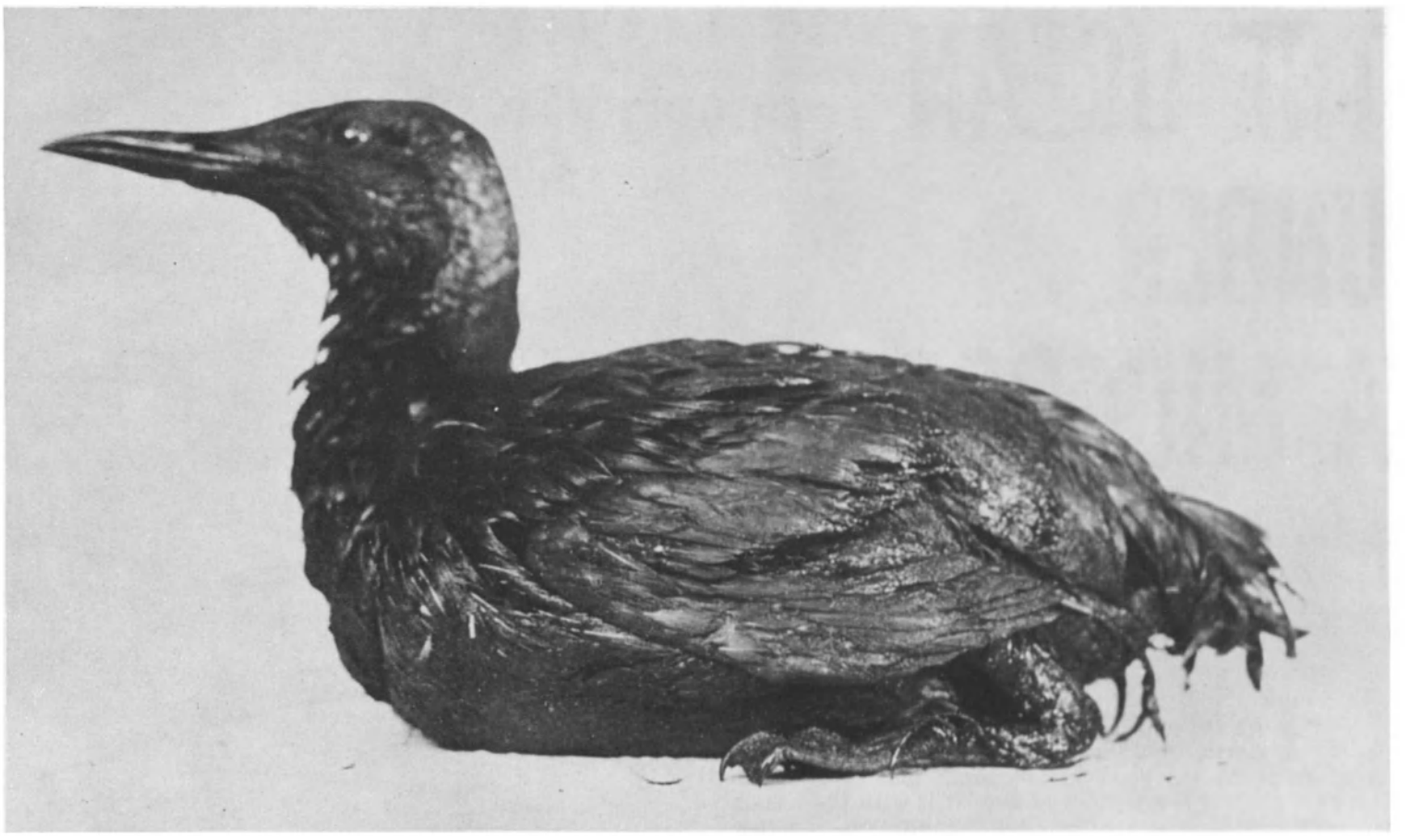
Another example of the difficulty of getting rid of the oil was provided by a tanker which was in collision in the Solent, off Portsmouth, in England, a couple of years ago. Two months later the authorities of that town were still trying to clean up the mess. An enormous tonnage of oily shingle had to be taken away and four thousand tons of clean shingle brought in to take its place.

Among recent experiments made to get rid of oil which has accumulated in this way has been a Danish attempt

OIL-FOULED BEACHES are a major headache for swimmers, holiday makers and local authorities. Freeing them of the slimy, black oil that sometimes comes ashore is a major operation. Below left, cleaning up an oil-polluted beach at Portsmouth, England. At Rampen, Germany (below right) an oil "island" that drifted in with the tide had to be ploughed into the sand to a depth of three feet before it was clear.

Photo Rank Organization

© Dr. H. Ecke



© RSPCA

OIL CAKED SEABIRD is one of countless thousands that each year pay the penalty of years of unchecked oil-dumping at sea. They are tossed up in flocks of thousands (a quarter of a million are believed to perish around the coasts of Great Britain each year) feathers too matted by oil to fly.

to impregnate the oil with a powder which would cause it to sink. Some fully effective remedy of this sort may eventually be devised, but it will always be expensive; the logical way of dealing with most of the oil in the sea is to prevent its deliberate discharge and to encourage the wider use of facilities ashore. This, in fact, was what the IMCO Conference did.

The world's conscience had already been aroused by the oil pollution problem before 1962. An International Convention on Pollution of the Sea by Oil was drawn up at a conference held in London during 1954 and was later ratified by 17 nations, including many of the largest shipowning countries. Scientific investigation was undertaken and, in some cases, was followed by legislative action.

To start with, it was necessary to plot the ocean currents which carry the oil. For that purpose, aircraft dropped thousands of plastic envelopes into the sea. Inside each envelope was a message inviting the finder to say where the envelope had been found. And a piece of cork which made certain that the envelope floated. Two vessels of the international force of weather ships dropped an envelope overboard every day of the year 1954 at noon. The results of all this research were plotted by the British National Institute of Oceanography.

Some governments also took legislative action. For example, the United Kingdom introduced the Oil in Navigable Waters Act which forbade British ships to discharge oil within 50 miles of the coast. But national measures could not be successful by themselves; it was clearly necessary to persuade all nations owning large merchant fleets to adopt the same kind of measures. This was the background to the IMCO Conference of 1962 where a number of resolutions were unanimously adopted which aim at increasing the effectiveness of the earlier measures and at strengthening them through a new Convention. Many delegates emphasized the importance of mineral oils to man, but deplored his casual approach to the fouling of seas or shores and the destruction of birds and marine life.

The new Convention has considerably increased the areas of the sea in which it is forbidden to discharge oil. Formerly fixed as any area less than 50 miles from the coast, this zone has now been increased in many parts of the world.

Discharge is now completely forbidden in the North Sea and the Baltic; the 50-mile limit has been superseded by a limit of 100 miles off the North-Eastern coast of North America, the Mediterranean, the Red Sea and the Persian Gulf as well as the west coast of Canada, the Atlantic coast of Spain, the coast of Portugal, the Arabian Sea, the Bay of Bengal and Australian waters.

Three years after the ratification of the agreement by the Soviet Union and Rumania, the Black Sea and the Sea of Azov will become a zone in which discharge of oil is completely forbidden. These arrangements are probably rather more than a halfway house to an eventual ban on the discharge of oil anywhere at sea.

Clearly the seas of the world will not become suddenly cleaner as a result of the April Conference or the new Convention. But useful progress has been made. Much will depend on the oil companies which control a large share of the world's tanker tonnage. And, as William Graham, Acting Secretary-General of IMCO, said, "no truly successful result can be achieved without the active co-operation of those directly responsible for operations on board ship and ashore which may cause oil pollution."

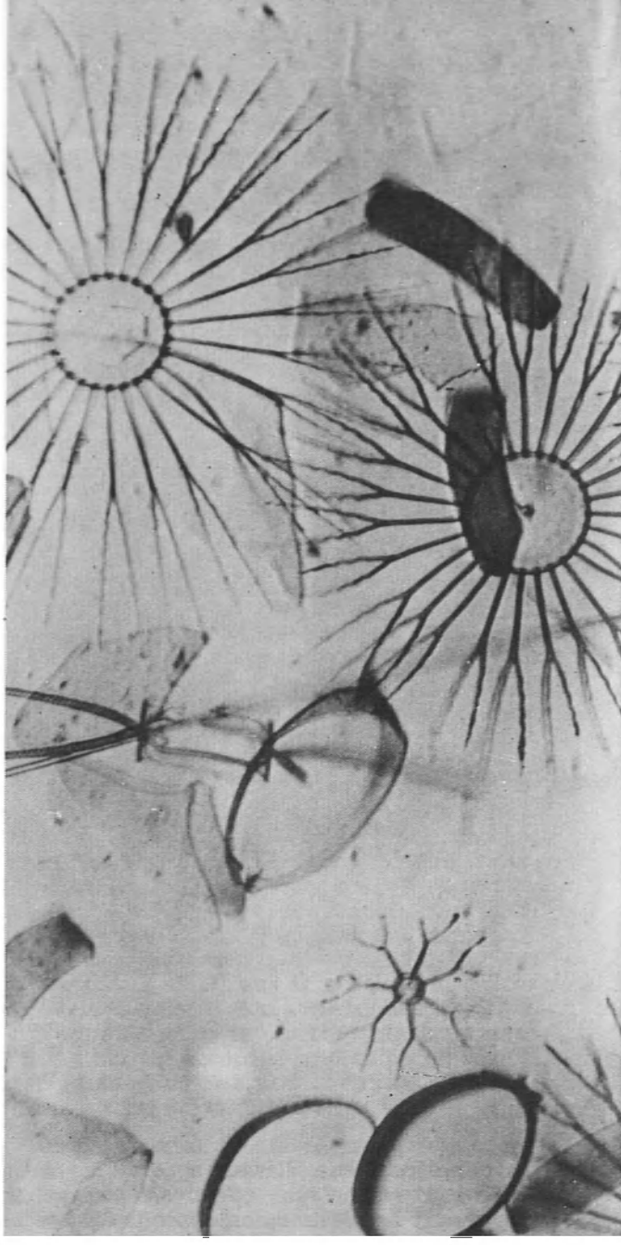
David Woodward *is a documentary writer-producer for the British Broadcasting Corporation, London.*

THE OCEAN UNDER A MICROSCOPE

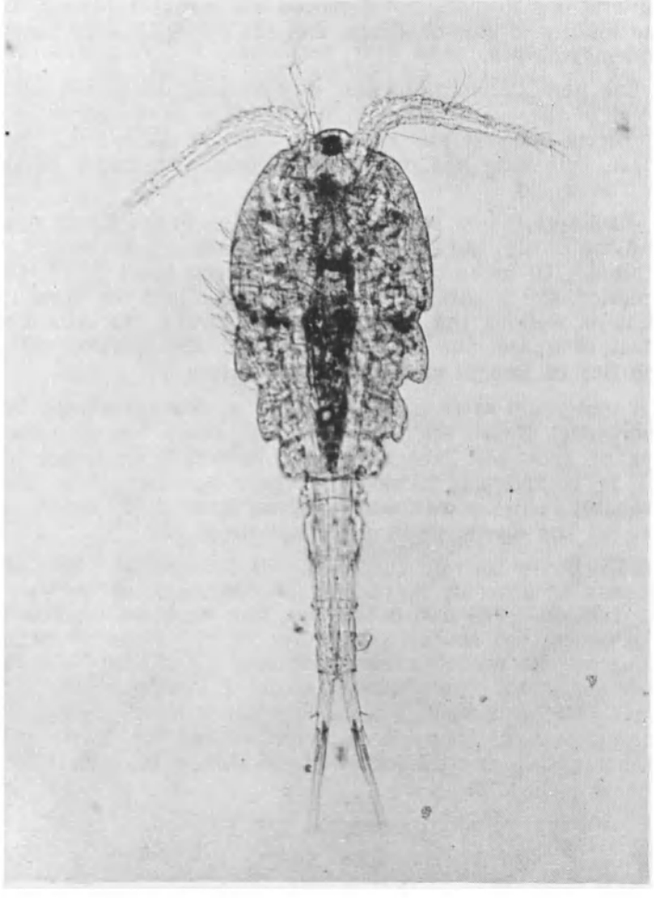
by L. Howell-Rivero

The sea is populated by myriads of microscopic organisms known as plankton. The vast majority of these marine biota are so small that if we were to take a glass of sea water and look at it with the naked eye, we should only see—after close examination—a series of dots which might make the water appear muddy. Viewing a sample under a strong magnifying glass, however, we should see that these dots consist of living bodies.

Their composition is very varied; some of them are unicellular plants (phytoplankton), others are animals (zooplankton); they also include microscopic animals and other marine animals in their larval state.



STRANGELY-SHAPED DIATOMS are a form of phytoplankton from the ocean which have a shell of pure silica crystals. How these tiny organisms extract the silica from sea-water solutions is still a mystery.



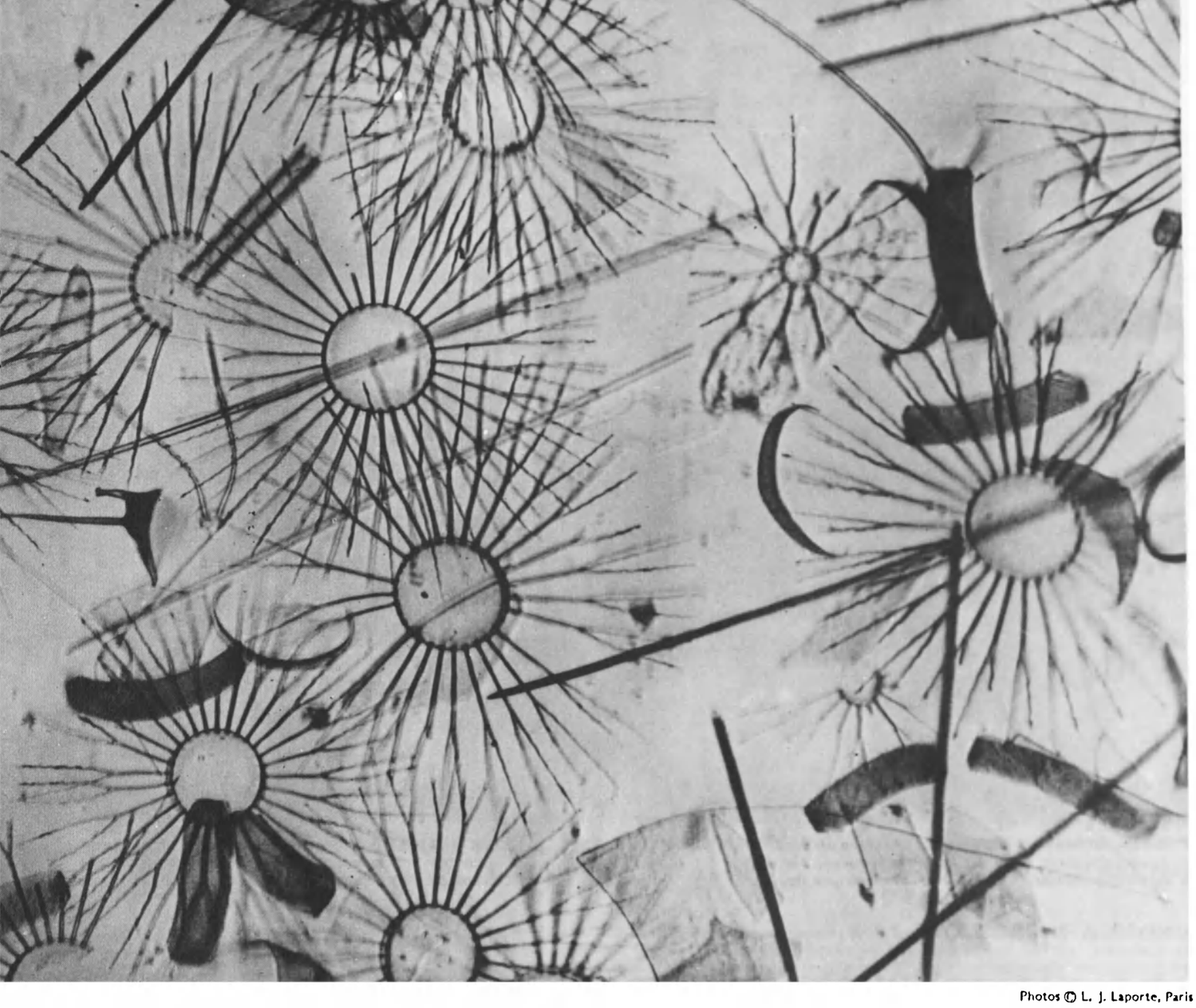
ONE-EYED CYCLOPS is a minute animal of the copepod family found in parts of the Baltic Sea. Copepods are an important food for the sea's edible fish.

These organisms are clearly of very great importance, since phytoplankton is at the origin of what is known as the food chain; it derives its own nourishment from the nutrient salts in the sea-water, uses sunlight as a source of energy and in turn acts as food for zooplankton and other marine animals further up the scale. Thus, the productivity of a given zone can be deduced from the quantity of nutrient salts and plankton it contains.

There are many features of this microscopic world which claim our attention and cause us to marvel at the wisdom of Nature. Among the phytoplankton, for instance, there is that group of microscopic algae, known as diatoms, which have a shell of pure silica crystals with varied and fantastic shapes. How do these tiny organisms extract the silica from the different sea-water solutions to make their shells?

In other microbiota, such as the foraminifera type of zooplankton the shell is calcareous like that of sea-shells; here the question is how can the soluble carbonate of lime be made to create such insoluble shells ?

These are some of the mysteries to which Man must find the answer if he is to take up Nature's challenge.



Photos © L. J. Laporte, Paris

In spite of their mysterious origin, these minute organisms provide clues to the history of our planet since, as their shells settled in the depths of the sea throughout the ages, they became part of the radiolarian, foraminiferous and other types of ooze layers.

If we recall the theories concerning the marine origin of petroleum deposits, we shall see why the study of foraminifera in the different geological strata of our planet is one of the basic means of determining the possible location of "black gold".

Let us turn, however, to the great planktonic mass formed by other marine animals in their larval state; a vast and fascinating world lies before us when we consider the changes and metamorphoses that some of them undergo before they become the creatures we are accustomed to see, such as oysters, sea-urchins, lobsters and all kinds of fish.

Certain species of common oyster which, when full-grown, are sedentary and are found attached to the roots of coastal plants such as the mangrove, move about freely when in their larval state until they find a suitable place to cling and develop into the commercial form which can later be eaten by Man. During this short larval period, they live of phytoplankton and move by means of a crown of fronds, reminiscent of helicopter blades. The larval state typical of certain sea molluscs which scientists call "veliger larva" reveal a number of varied and interesting structures. One of the most fascinating subjects of zoological research is that of the development of these structures.

We have all seen sea-urchins and star-fish on beaches or have felt their sharp spikes in our feet. They again, in their larval state, bear no resemblance to the fully-grown species. In the case of star-fish, for instance, a small bi-symmetrical organism is transformed on metamorphosis into a creature with radial symmetry.

Even when its animal organisms can move of their own free-will this does not prevent plankton from being carried away by the great ocean currents, which thus distribute the different marine species over wide areas.

A typical example is provided by the marine lobster in the Caribbean. The adult species is found on the coral sea-board of the whole area washed by the same set of currents, which also ensure its distribution by carrying the larvæ away.

Here again, we encounter a great difference between adult and larval forms. The larvæ of lobsters look like transparent spiders with long legs and no feelers. At birth, each is about the size of a full-stop on this page. As they grow, the features associated with the adult lobster gradually begin to appear and the larval characteristics are lost. When they are hardly more than an inch long, they select the coastal stretch where they will turn into the lobsters that will subsequently be eaten.

There are many varieties of fish which undergo considerable transformations from the time they are born until they become full-grown. We shall consider the two most outstanding examples.

The first is the eel. This fish, which lives in European and American rivers, migrates to the distant Sargasso

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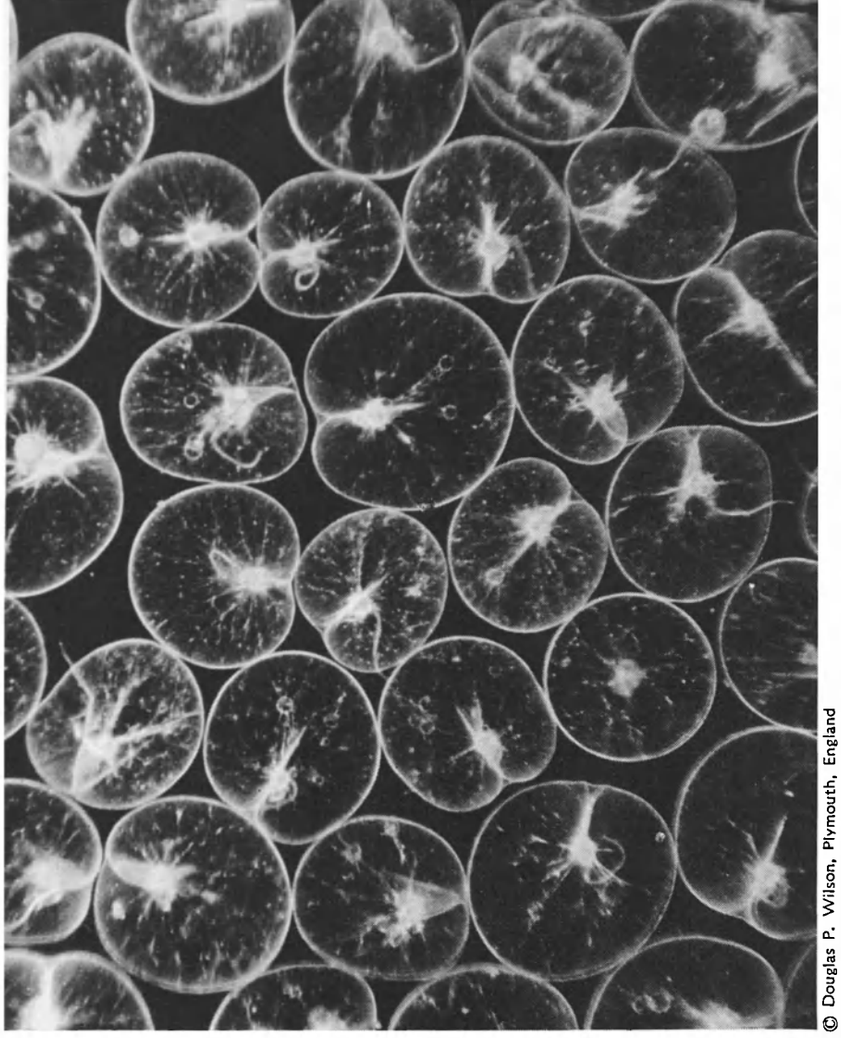
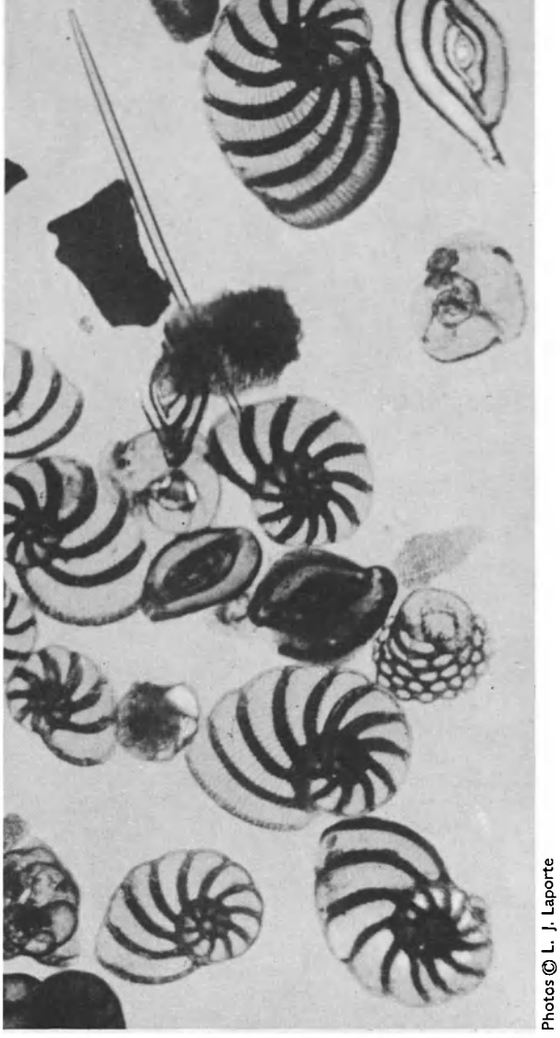


© Douglas P. Wilson, Plymouth, England

THE SEA has many tiny animals that glow in the dark and, when very abundant, make the waters luminescent. Here is *Noctiluca scintillans*, photographed by electronic flash.



Photos © L. J. Laporte

ZOOPLANKTON of the forminifera type. From deposits of their calcareous shells in sediment geologists can reconstruct the history of the waters in which they lived.

UNDER A MICROSCOPE *(Cont'd)*

The plaice with the roaming eye

Sea to spawn; its larvæ then begin their return journey to their respective continents during metamorphosis.

At first these transparent, planktonic organisms are very minute, and when they reach the river mouths they are scarcely two inches long; at this point they are sometimes caught and sold as canned "fry". Scientific research has established the relationship between the larvæ and the adult of this species, but there are many other species which have yet to be investigated.

The other example worthy of note is that of the plaice or sole. Everyone must have noticed that their eyes are on the same side of their bodies. But they were not born like that. As tiny creatures in their larval state, they are bi-symmetrical and have the shape of a normal fish, with one eye on each side of the head.

By one of Nature's quirks, one of their eyes moves over to the other side, with the result that the head bones become twisted; it is in this way that the peculiar features of the fully-grown fish are produced. However, does one eye in particular move from one side to the other? Here again, Nature challenges us to discover the design behind her apparent capriciousness. In some species, it is the left eye which moves, in others it is the right eye, and in yet others, this movement is unpredictable.

We can therefore see the enormous problem facing the scientists who wish to learn about marine life; in order to catch these microbiota, they have to make use of such special methods and techniques as plankton nets; after the plankton has been caught, it has to be studied not only for itself, but also for its possible long-term practical value.

The reader may ask: What can plankton be used for? Is there any special justification for the efforts made to catch and study it? What benefits does it bring to Man? Science is attempting to give a satisfactory answer to these questions.

The relationship between nutrients and phytoplankton is a guide to the economic potentialities of an area and hence to areas where fish of commercial value may be able to exist in abundance. In addition, there are species of zooplankton which reveal the presence of fish of commercial value. Lastly, plankton itself provides food for many different kinds of fish. This makes us wonder whether Man himself could not use plankton for food.

Although it is reasonable to expect the time and effort devoted to marine research to be justified by practical applications, the research in itself is valuable in so far as it reveals that Man is making an effort to learn more about the natural phenomena surrounding him, their causes and effects, and about the organisms living in a given medium. Perhaps one of the most interesting and least known of such fields is that of microscopic sea-life.

Former professor of Ichthyology at the University of Havana, LUIS HOWELL-RIVERO *is now the Oceanography specialist at the Unesco Latin American Science Cooperation Office, Montevideo, Uruguay.*

The anatomy of underdevelopment (Part 2)

PATTERNS OF ECONOMIC CHANGE

All countries are in some respects underdeveloped for all are still in the development process. But broad distinctions can nevertheless be made between the different levels of development that have been achieved. These different characteristics are analyzed in the following article, the second of a series whose publication began in the July-August issue of The Unesco Courier. They are taken from a new study produced by the United Nations as part of the World Campaign Against Hunger.

INDUSTRIALIZATION, or the opportunity for all to partake of its benefits, is essential to economic progress. It is not, however, an end in itself. Schools, hospitals, museums, art galleries, theatres are built not for their own sake, but to serve specific purposes, and factories are no exception. They are indispensable tools in the struggle to raise living standards among the less fortunate of the world's people. This is a fundamental objective of the United Nations and the sole purpose of the technical assistance programmes.

Factories, mines, power stations, transport undertakings and so on are symbols of the economic development by which this raising of living standards can be achieved. Economic development must go hand in hand with the production of more food, the improvement of health, the spread of education and the promotion of social welfare and human rights. It will help to put more money into the pockets of the people who need it. Without that increase in spending power, the people in the "underdeveloped" countries cannot know freedom from misery and want.

The most striking difference between the developed and the underdeveloped countries lies, as we have seen, in the standard of living attained by the majority of their people—in other words, in the extent to which the national income is distributed through wide strata of the population. It is, however, possible to attempt some more exact definition of the term underdeveloped.

An underdeveloped country might be described as one in which the natural and human resources are used for economic purposes to only a very limited degree. The trained personnel, the capital and the administrative

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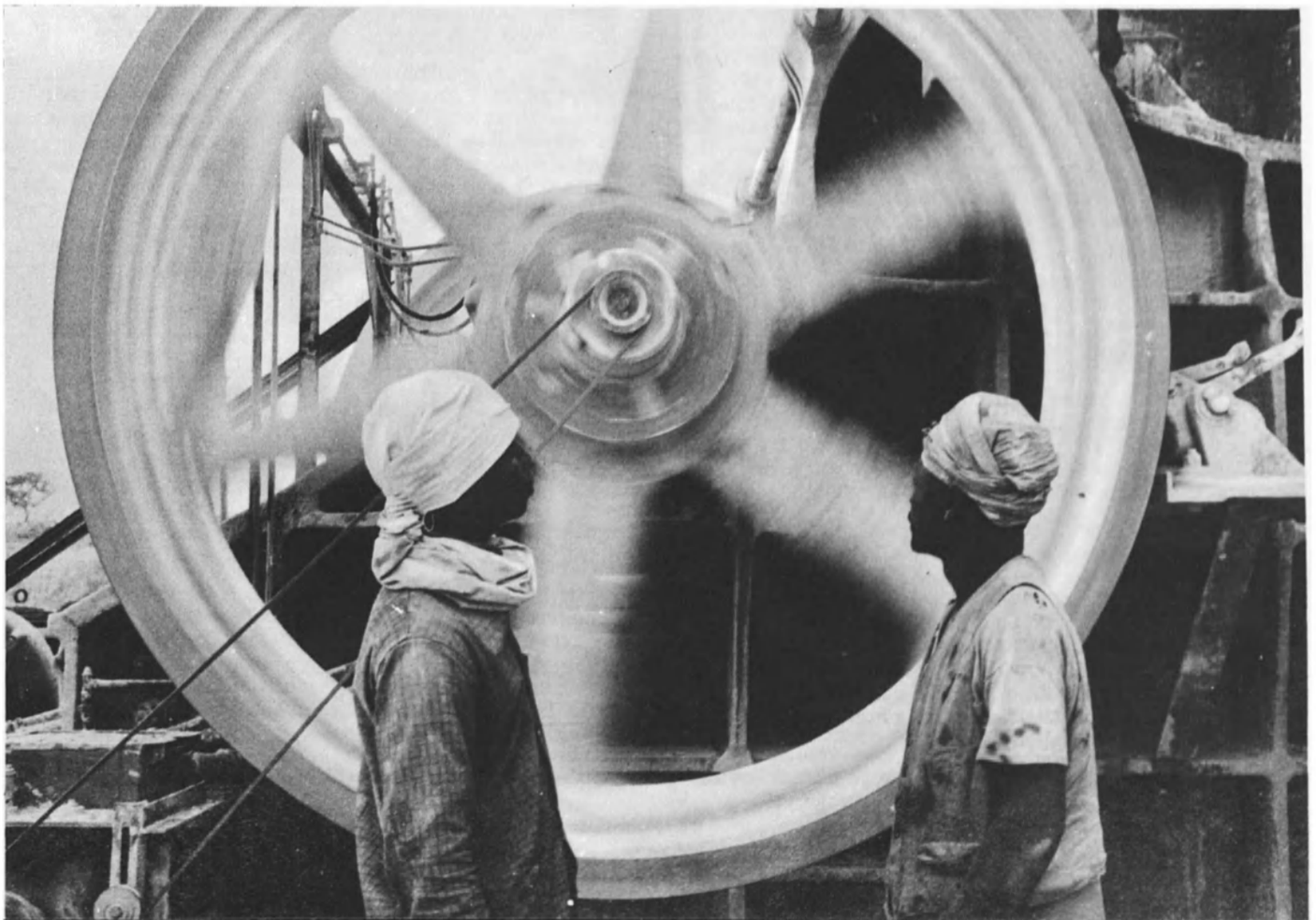
Economic growth, symbolized by industrialization, leads to greater employment and increased incomes for workers. The foundations for progress of this kind in the world's less-developed countries have often been laid thanks to international aid. The World Bank (International Bank for Reconstruction and Development) for instance, has already awarded development loans totalling 5,000 million dollars, including nearly 800 million dollars for different countries in Africa.

World Bank



Innovations that changed history's course

machinery necessary to make proper use of them are partly, or wholly lacking. Such a definition is no more than rough and ready. The word "resource" itself needs clarification. We might say that, in the economic sense, a resource only becomes a resource when it can be put to an appropriate use. Until that time, the richest resources are valueless in themselves.

If we look back over the long history of mankind, we see a period, perhaps lasting up to half a million years or more, during which the food gatherers and hunters of the Palaeolithic, or Old Stone Age, wandered countless times across what was later to be recognized as rich arable land without being able to make the slightest use of it. It was probably not more than ten thousand years ago that the first Neolithic farmers, by sowing and harvesting grain, discovered the possibilities inherent in such land. Thanks to this innovation, they took to living in settled communities and so changed the course of human history.

We can find plenty of examples nearer our own time, In fact, the more complex civilization has become, the more intense has been the search for new resources or new uses for old resources. Coal was occasionally used in the Middle Ages, but its real value as a natural resource was discovered only when the factories of the industrial revolution created a demand for fuel which could not be met by the diminishing woodlands of late eighteenth and early nineteenth-century England.

At a further stage in the industrial revolution, oil began to take the place of coal as a fuel and the vast deposits lying under the Middle East, Central America, Texas, the Caspian Sea area and elsewhere acquired immense economic importance for the industrialized civilization of the twentieth century.

During the last few years, several countries have discovered that their deposits of uranium have tremendous value. Only a generation ago, little attention would have been paid to them. Because resources become resources only when a use is found for them, it follows that new discoveries may at any moment reveal value in hitherto neglected materials or new uses for resources already being exploited. Even the most highly developed countries may therefore possess natural resources which still contribute nothing to their economic life.

As long as this is the case and as long as those countries continue the search to improve their techniques and to use the sum total of their natural and human resources to better purpose, even advanced countries are still in the process of development, or are technically underdeveloped. Moreover, as the easily accessible supply of certain minerals begins to fail under the heavy demands of industry, new sources are constantly being turned to account by technological research. An example would be the extraction of magnesium from the sea, now a considerable industry in the United States.

It looks as if two great steps forward will be taken shortly when automation and atomic energy begin to play a leading part in industrial life. Automation, which is merely an extension of the use of machines to replace workers and of electronic equipment to replace brains, is beginning to revolutionize industrial prospects. Perhaps, when the economically advanced countries of today look back, fifty years hence, from the early atomic-automation era, they will regard their present condition as having been very "underdeveloped" indeed.

Bearing these facts in mind, we can still list certain characteristic features which distinguish the countries that have not yet set out upon the road of economic progress or have advanced only a little way along it. Generally speaking, most of the people living in such countries get their livelihood from agriculture of a primitive kind, which yields them only a bare subsistence and little or no surplus for exchange purposes.

Industries tend to be few and their level of output per worker is very low, as a result of the low level of capital per worker. Transportation facilities are generally inadequate. Such countries tend to have widespread underemployment, illiteracy, poor housing, low nutrition and health standards and an acute shortage both of educated people and of teachers.

It is broadly true that the economically underdeveloped countries mostly lie in the hotter regions of the earth's surface. Many of them have experienced colonial status, the traces of which have often been left on the national economy. In many of the less developed countries, an industry extracting one specific local raw material or product has long had a preponderating place. This may be a mineral or a vegetable product such as rubber, coffee or cocoa. Fluctuations in the price of such commodities on the world market tend to make the economic life of the country concerned unstable, and this economic instability is another characteristic shared by many of the underdeveloped countries.

It would be difficult to say how many of the world's inhabitants live in the underdeveloped areas, because we have seen that there is no precise definition of the term underdeveloped. It is obvious, however, that much of Asia, Latin America, Africa and the Middle East would be covered by any normal use of the term "economically underdeveloped area." These regions comprise between them some 75 per cent of the world's population.

As only a small fraction of their inhabitants enjoy a standard of living which could be described as high or even adequate, and, as some people even in the more developed areas are living on the subsistence level, probably three-quarters of the world's men and women are at present condemned to a life of grim poverty and often of bitter hardship.

Economic development is the means by which those material hardships can be reduced and by which poverty can be attacked at its root.

Three stages in the process of economic development have been distinguished. At first, communities are primarily agricultural and mostly self-supporting. Next, a network of commercial and exchange activities is developed. Then follows the introduction of manufacturing industry.

The beginnings of exchange in an agricultural society usually concern a surplus of local products, such as salt or fish. When markets begin to take shape, commodities specially produced for sale acquire increasing importance. As money becomes more generally used, there is greater specialization both in producing and in selling goods.

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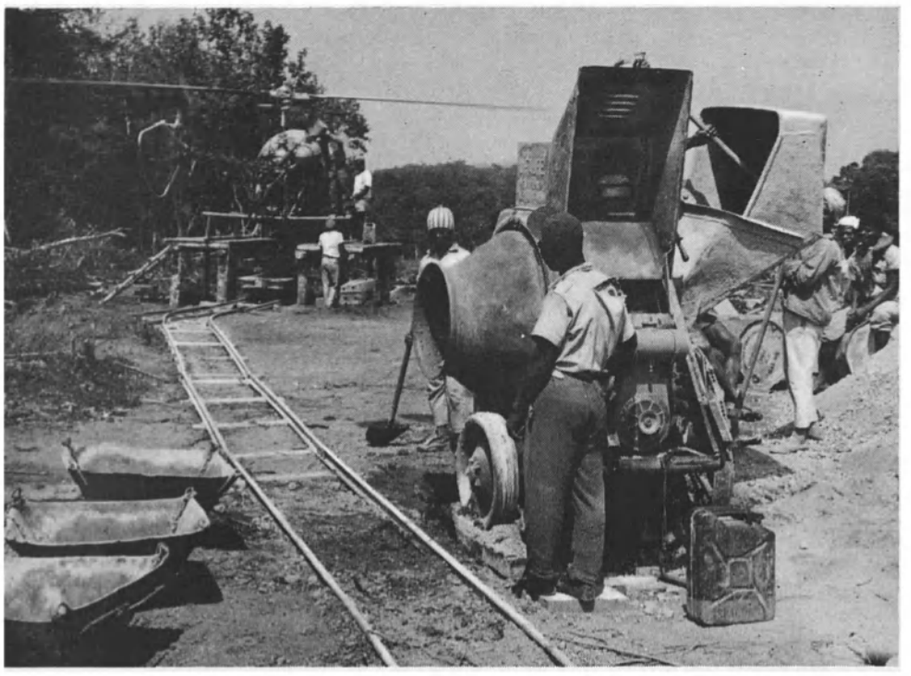
The construction of highways and railroads is opening up the road to economic development in many countries, making possible increased trade and the export of raw materials. These sections of railroad line are for a new section of railway being constructed in the Republic of Congo which will transport manganese ore mined in the neighbouring Republic of Gabon to the African coast.



HELICOPTERS LINK JUNGLE BUILDING SITES

Near Bacoumba in the Republic of Gabon, helicopters help to construct an aerial cableway, 45 miles long, which will carry manganese ore to a new 180 mile railroad link. Men, equipment and cement are flown (left and right) over the dense forest to the almost inaccessible pylon sites. Far right and below, iron girders are flown to a jungle clearing in which pylons will soon rise.

The slow emergence of industries

This type of society remains more or less self-contained, but it includes the elements of an exchange of commercial economy, the promise of bigger things to come. It is typical of much of contemporary Africa and also of parts of Latin America and Southeast Asia.

By organizing a system of trade, such societies take the first step leading from the subsistence agriculture stage to that of industry. There is, however, no elaborate transformation of materials, no use of complex machines and no employment of specialized wage earners in a common place of work. Nevertheless, the emergence of better transportation and the increasing sale of goods open the way to further specialization.

At first individuals, then organized groups, devote themselves entirely to secondary occupations away from the land, such as the transformation, preparation or carrying of raw materials. This early commercial stage with its simple industries grows out of the subsistence agriculture phase. Later, and generally much later, comes the stage of more complex manufacturing industry, with the use of machines on an ever-increasing scale, an increasing specialization of many workers and the creation of more and more elaborate administrative and financial techniques to keep pace with heavier economic demands.

Industry first appears with the processing of primary products. Grain is milled, leather is tanned, wool or vegetable fibres are spun, ores are smelted. These processes obviously call for the next level of industrial development, when materials are transformed and not merely processed. The grain so milled is turned into bread, the leather into footwear, the cloth into wearing apparel, the smelted ores into ploughshares, horseshoes and other metal goods.

At this stage, goods are still produced for immediate use by the person who buys them. The major difference between this phase and the next, more complex, stage of large-scale industry is that capital equipment now begins to be produced not to satisfy immediate consumer demand, but to help in the future production of such goods over a long period of time and with far more elaborate marketing facilities in mind.

Civilizations do not pass through these phases in clearly defined historical periods. Human history is an untidy phenomenon. It allows for much disorder and for the existence side by side of processes of varying age and efficiency. The so-called industrial civilization of our time is distinguished by a tremendous emphasis on the third, or machine-dominated stage.

The railroad, the steamship, the internal-combustion engine, flight, atomic power, electronics, all of them Western discoveries or inventions, have vastly broadened the horizon of man's possibilities. Their advantages are now becoming available by degree to countries which have never experienced the preliminary stages of industrial progress.

As a result, our contemporary world presents the picture of an economically advanced minority of peoples on the one hand and, on the other, a highly diversified group of peoples who make up the majority of mankind and who, at varying stages of economic underdevelopment, are seeking to narrow the broad gap which separates them from the economic leaders. It may be possible perhaps to distinguish various categories among these underdeveloped countries and the distinction will help to make clearer both their economic problems and their potentialities.

(a) First there are societies in which there has as yet been practically no autonomous economic growth. Most of the people wrest a meagre livelihood from the soil as subsistence farmers. A very elementary marketing system exists, but the exchange of products is on too small a scale to allow any real division of labour into different skills and crafts, and thus the incentive to progress is lacking.

Great areas of Africa would be typical of this phase of

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The increasing importance of government intervention

economic development, as would a territory like New Guinea, hardly affected as yet by outside civilization. In such regions, the people themselves lack all the essential means to promote their economic growth. They must be helped to modify the pattern of subsistence agriculture. A more complex exchange system must be introduced to promote buying and selling and the manufacture or preparation of products.

In these simply constituted economic societies (personal and tribal relationships, like the indigenous languages, are often far more complex than any in the "civilized" world) this will always require both technical assistance and capital from outside to get the static economy moving.

(b) The second category is more common in the contemporary world. Here, we are dealing with underdeveloped countries where foreign enterprise, capital and management, have introduced themselves into a relatively simple economic society and have caused a rapid evolution in certain sectors. This situation is to be seen in a number of ex-colonial countries such as Indonesia and Malaya.

Here, valuable raw materials like rubber and tin have been exploited through foreign technical skill and capital. As a result, a few highly developed industries have been set up to obtain and export such raw materials. The coming of these industries has introduced, in part at least, a commercial economy into the country concerned. This has brought with it an elaborate exchange mechanism and has provided commercial employment for some of the local population.

World Bank

LACK OF TRUCKS in Iran encourages dangerous overloading which, in turn, causes road surfaces to break up and turn to powder. Iran's plan of economic development now includes the reconstruction and widening of existing highways and the construction of some 1,500 miles of new highways.

MEANWHILE, the primitive agricultural economy goes on as before over the country as a whole. The scale and complexity of local industries which may arise to process raw materials on the spot will vary according to the nature of the product removed and exported with foreign help. If this is a mineral, the local processing plant is likely to be more complicated than in the case of a vegetable product like sisal, for example, which is grown and processed in Tanganyika. Much more complex are the copper refineries in Katanga and Northern Rhodesia and the oil refineries of the Middle East.

(c) A third category of countries differs from the rest mainly as a result of internal, rather than external, economic factors. How far will domestic demand encourage industrial enterprise? We have seen above how the partial economic development of an underdeveloped country may be stimulated by demand from abroad for a particular raw material or product. Where this foreign demand is absent, economic growth will occur only when a local demand for goods exists.

This demand, in turn, will depend upon the way in which income is distributed among the people and the tastes of potential customers. If only small numbers of the population can afford to buy consumer goods, they may prefer imported articles. Local manufacturers will then receive little encouragement to enter the field and there will be as little impulse to extend the industrialization process. A number of Latin American countries are in this situation.

At this point a word must be said about the important factor of government intervention. Government intervention has tended to increase markedly in our time. It is particularly noticeable in countries which have recently gained their political independence and which find themselves faced with the great task of raising the living standards of their people with a minimum of delay.

This task requires some degree of central direction. Essential data about natural resources, both natural and human, have to be centrally collected and assessed. Plans must be centrally drawn up for the development of these resources, as part of an overall national programme of economic and social development. Priorities must be centrally established, official encouragement must be given to projects and industries which are likely to promote the welfare of the people as a whole, and technical assistance and foreign loans must be applied for through recognized government channels.

This government intervention ranges from encouragement and advice, as seen, for example, in community development projects sponsored by the authorities in India and elsewhere, to actual direction by the state in the U.S.S.R., the countries associated with her and in the mainland of China. The methods applied to achieve economic development will reflect the prevailing idelology. But it should be borne in mind that the conditions favouring spontaneous economic growth are present only in a small measure in the underdeveloped countries and, without some degree of government action, no substantial progress could be expected in the foreseeable future.

(To be continued)

GERHART HAUPTMANN

DRAMATIST OF THE OPPRESSED

by Karl Ruhrberg

© AFP, Paris

Gerhart Hauptmann in the grounds of his home at Agnetendorf, in the Riesengebirge mountains of Silesia.

GERHART HAUPTMANN, the German poet and playwright, was born a hundred years ago, on November 15, 1862, at Salzbrunn, in Silesia. He died on June 6, 1946, at ten minutes past three in the afternoon, in his house at Agnetendorf (Riesengebirge). The conciliatory attitude shown by the occupying troops to the most representative dramatist of the defeated country, immediately after the war—when suspicion, bitterness and hatred were the order of the day—bore consoling witness to the indestructible power of the spirit and to the strength of the love that breathes through every page and line of Hauptmann's work.

Hauptmann's writings found a response throughout the world, partly because he vigorously championed the rights of oppressed peoples. Travelling in Italy at the age of twenty, he had been profoundly shocked to discover the wretched condition of the poorer classes, particularly in Naples. He never forgot his experience, and it was reflected in his plays, where he gave expression to his sympathy for the poor and for underdogs in general.

Alfred Kerr, the dramatic critic, who devoted a lifetime to commenting on Hauptmann's development and explaining his intentions, declared that the basic sentiment in his writings was *longing*—longing for a better world, where all men would be brothers, all class and racial prejudices forgotten.

That is the impression left by his descriptions of misery, destitution and fear. This was what made him a great writer. All aesthetical considerations and discussions as to the strictly literary merits of his enormous output (even the first section of which, omitting fragments, variants and preliminary drafts fills 17 volumes) are overshadowed by it.

IN March, 1945, Hauptmann, then 82 years, of age, returned from Dresden to his house at Agnetendorf. His journey coincided with the Allied air-raids that reduced the former capital of Saxony to a heap of rubble, two months before the end of the Second World War. The advocate of compassion and love among men, the poet who stood for a secularized Christianity, focused on the things of this world, was profoundly afflicted by all the suffering he had been forced to witness. "Anyone who had lost the power to weep would recover it amid the ruins of Dresden," he declared, only a few weeks before Germany's final defeat.

He was deeply distressed by the horrors he had seen, but his grief was passive and resigned. He made no attempt to stir up resistance to the powers of darkness that had brought disaster on the world. "I am nearly 83 years old", he said, "and I come before God with a prayer which has no power in it, alas, but it comes from the heart—the prayer that God may show greater love to men

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Last German 'Prince of Poets'

than hitherto, that he may transform them and enlighten them for their own salvation."

This submissive attitude was not due merely to Hauptmann's great age, it was part of his nature. He was a Socialist, but not a militant one, he believed that nothing could change the course of destiny. He was no utopian reformer, he had no taste for moralizing or polemics. His plays depicted the grim world of the poor, the outcast, the oppressed and rejected; but they also showed that there could be beauty even in ugliness, nobility even in cramped and petty circumstances and that even the most despised members of the community had a destiny to fulfil. He made no demands, however; his attitude was one of hope and—despite his pessimism—of confidence.

He did not aspire to be a stormer of barricades, and this helps to explain his reserved attitude while Hitler was in power, for which he was much criticized. In spirit he was strongly opposed to National Socialism and to the brutality of the dictators who showed him reluctant respect because he was a great national figure; and in 1937 he wrote a requiem entitled "Finsternisse" (Tenebrae), based on Tolstoy's "Power of Darkness", for his Jewish friend Max Pinkus. But he made no open resistance; he preached love and brotherhood, but not rebellion. So his international reputation as a committed champion of the proletariat is partly due to a misconception.

This is already made clear in his first play, "Vor Sonnenaufgang" (Before Sunrise), which was produced in Berlin in 1889 and caused a scandal by its unvarnished portrayal of a family of alcoholics. The original title of this play was "Der Säemann" (The Sower), and as the word indicates, the Sower was the forerunner of a new world. His name in the play was Loth, and in some respects he shows a marked resemblance to Hauptmann himself. Loth, an enlightened prophet of Socialism, irrupts into the drab world of profiteers, petty tyrants and their victims, in a mining district in Upper Silesia, and falls in love with Helene, a girl who has kept her simplicity, freshness and purity, in an environment of corruption, drunkenness and immorality.

THE talk between Helene and Loth is one of the most beautiful love scenes in German dramatic literature. But Loth is afraid Helene may have inherited undesirable qualities from her father, who has become a victim of drink, so he leaves her, and she commits suicide. This denouement reveals the fundamental weakness of the central figure and of the play as whole. But it also illustrates the untenable philosophical attitude of nineteenth-century Europe and its blind faith in science—in this case taking the form of a conviction that the theory of heredity is infallible.

Hauptmann was a passive observer, not an accuser, much less a rebel. In this he differs from the militant socialist writers, such as Maxim Gorki and Bertolt Brecht. It is understandable that the first collected edition of his works should have appeared not in Germany, but in Russia, where it was published in 1902-1905. This also shows that Hauptmann's writing's were in fundamental accord with the spiritual situation of his own day, not in Germany alone, but throughout the world.

Gerhart Hauptmann became a legend during his own lifetime (he won the Nobel Prize in 1912), largely owing to his forceful personality and his physical resemblance to Germany's greatest poet, Gœthe. He revelled in the role of the last German Prince of Poets, which rather paradoxically devolved upon him as the champion of the poor in drama; his personality had a powerful streak of the actor in it, to which Thomas Mann paid a somewhat equivocal literary tribute by portraying him, with a mixture of respect and irony, as Mr. Peeperkorn in his novel "Der Zauberberg" (The Magic Mountain).

Together with Brecht, of whose "epic drama" his "narrative" plays, with their informal style, were to some extent the forerunners, Hauptmann was the most prolific and important German playwright of the century. His success during his own lifetime far exceeded that of any other dramatist, even Schiller. For several decades he dominated the German stage, and even theatres in other countries still keep his work in their repertory.

His epic writings have attracted comparatively little attention, though they include some ambitious efforts such as "Bahnwärter Thiedel" (Thiel the Signalman), "Der Ketzer von Soana" (The Criminal of Soana), "Der Narr in Christo Emanuel Quint" (Christ's Fool, Emmanuel Quint), "Till Eulenspiegel", "Der grosse Traum" (The Great Dream) and above all "Griechischer Frühling" (Grecian Spring). There can be no doubt that Gerhart Hauptmann reached the loftiest standard of his generation; he touched its most responsive chord, and this alone would fully justify his fame.

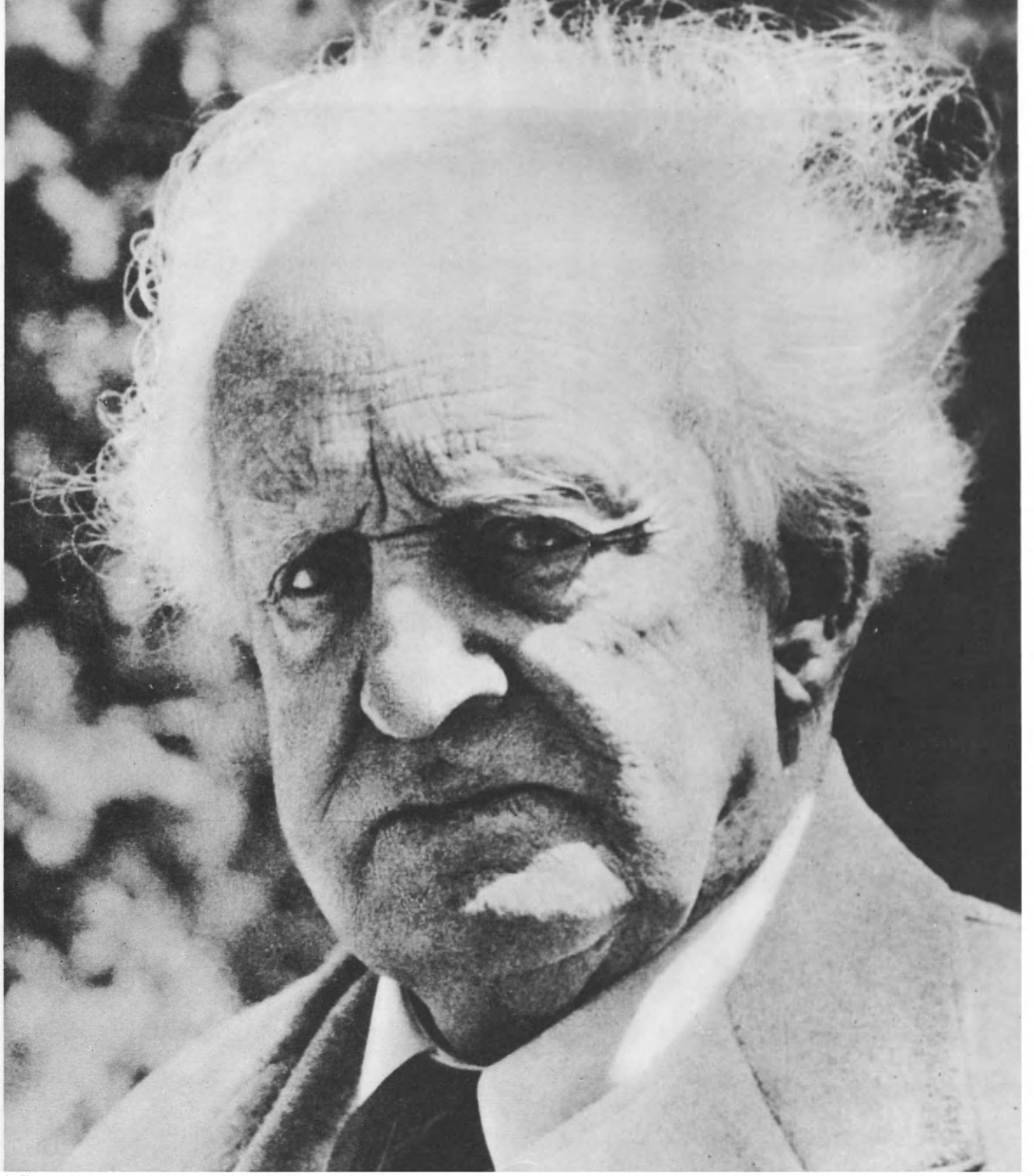
SINCE the war, little has been heard of him, either in Germany or abroad. Only a few of his plays are still acted, and those not very often, and there is practically no discussion of his work in literary circles. There are several reasons for this. Hauptmann's plays are not "literature" in the strict sense of the term. As a boy he wanted to be a sculptor, and this ambition left its mark on his writing. He simply changed from one medium to another, using words instead of stone and bronze. He wrote in a local idiom (Silesian and Berlin).

The characters in his plays are shown "in the round". Their facial expressions, movements and gestures, even their silences, are as important as the words they utter. They stem from the visual imagination of a man who used his eyes, who thought in pictures. Hauptmann was not a philosophical writer, and he was the very reverse of a rationalist. He wrote in a semi-hypnotic state, sunk in meditation. To borrow a term from modern psychoanalysis, "something" wrote inside him, and much of his output was enigmatic, sybilline.

So in his enormous output the sublime is juxtaposed with the commonplace, enduring values with topical ephemera, realism with romanticism. Not all his writings were carried to the ultimate perfection of form, and their literary quality is very unequal. Incompleteness, unfinished sentences, have their own significance, as in the conversation of Thomas Mann's Mr. Peeperkorn, whose words take on meaning from his personality and whose regal gestures raise his stammering utterances to the unattainable level of impenetrable cosmic mysteries.

GERHART HAUPTMANN'S plays only come to life when they are acted, it rests with the audience to put the finishing touch to them. The written lines are not enough. This is one reason why the literary commentators have hitherto shunned the gigantic figure of this last of Silesian mystics.

There is another reason for their avoidance of him, however, the fact that his work has an unusually wide stylistic range. It includes all the movements that arose during his long life, and there were a great many of them. The plays range from naturalism, with its attempt to show the world and its inhabitants as they really are, to neo-romanticism, which won its greatest but briefest theatrical triumph in "Die Versunkene Glocke" (The Sunken Bell); from social dramas such as "Die Weber" (The Weavers), which deals with the abortive uprising of the Silesian weavers in the 1840's—doomed to end in resigned surrender—to the four Atrides plays, with their sombre retelling of an ancient tale of doom, which make up a belated testament, influenced by the inhumanity of his own day.



GERHART HAUPTMANN. HE WAS BORN ON NOVEMBER 15, 1862 AND DIED ON JUNE 6, 1946.

Interspersed with these are pieces like "Der Biberpelz" (The Beaver Coat), a delightful comedy about a theft in Berlin; the moving legend of "Hanneles Himmelfahrt" (Hannele Ascends to Heaven), in which an unreal dream-world breaks into a poverty-stricken environment; the tragedy of "Florian Geyer", the chivalrous peasant leader, which "penetrated to the very heart of German discord"; the tragedy of the artist, "Michael Kramer": "Die Ratten" (The Rats), a poignant tragicomedy whose characters are broken-down artists, proletarians and anti-social elements, and which is perhaps Hauptmann's best play; "Rose Bernd", a tragedy of infanticide, based on the period of German genius; an original version of the Hamlet story called "Hamlet in Wittenberg", which vied with Shakespeare and caused much controversy; and many other works.

Hauptmann's most poetical play is a fairy-tale, "Und Pippa Tanzt" (And Pippa Dances), set amid a community of glass-blowers and in which the eternal powers—Eros, the spirit, and youth—find poetic embodiment in the characters of the girl Pippa, the malevolent glassblower Huhn, Wann, the gentle sage who is an earthly incarnation of God, and the travelling journeyman, Michel Hellriegal.

Thus, in nearly all Hauptmann's plays, the plot centres on love. It may be humiliated, scorned and wounded, but it cannot be destroyed. Hauptmann knows that people do not love one another enough. "Nobody has had enough love", moans Rose Bernd, driven to crime and disaster by other people's cowardice and selfishness; and August Kell, once her betrothed, speaking "solemnly, from the depth" utters the closing words of the tragedy: "Poor girl—what she must have suffered!"

A specialist and writer on theatrical questions, KARL RUHRBERG *is a director of the "Deutsche Oper am Rhein" theatre, at Düsseldorf-Duisberg.*

Grave Mound near Amesbury in southern England comes to light under the careful digging of archæologists and volunteer helpers. In foreground two students record the position of a skeleton with the help of a string grid. The area of Amesbury is very rich in remains of prehistoric man, among the best-known of which is Stonehenge, the greatest surviving megalithic structure in the British Isles.

Photo L. Titchener © Northern Rhodesia Information Dept

Students working on an excavation site in Rhodesia learn to use a surveyor's level to contour the area before digging begins.

HOW TO BE AN AMATEUR ARCHÆOLOGIST

by Beatrice de Cardi

© Austin D. Underwood

The amateur field worker is no new phenomenon in British archæology. His contribution to research dates back to the 18th century when, as a gentleman of leisure, an appreciation of classical antiquities led him to record and collect relics of the past which he observed in the countryside around him.

By the 19th century, the emphasis lay firmly on collecting, the antiquary perhaps reflecting the materialism of the age in his acquisitive attitude which saw in fieldwork little more than a legitimate means of enriching private collections. Barrow after barrow was dug with rarely a thought to the circumstances of its burial beyond the excavated urn. Narrow as the horizon may appear, it evoked widespread public interest, particularly as it coincided with the broader consideration of man's evolution proposed by Darwin. The spate of county archæological societies founded in the middle of the century is

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From teen-agers to septuagenarians

but one expression of the trend which led in turn to the establishment of museums maintained at public expense.

The rapid growth of museum collections, with their assembled wealth of artifacts, made possible the application of methods used in related branches of the natural sciences and produced the typologies and chronological framework upon which much of British prehistory has been built up. The credit for this research rests largely with the amateur and the museum archæologist.

There were in fact few professionals in other fields of archæology until the close of the century, when the State, lagging somewhat behind public opinion, accepted a limited responsibility for the preservation of ancient monuments and a nucleus of Civil Service archæologists was formed in 1882 with General Pitt-Rivers as the first Inspector of Ancient Monuments of the Ministry of Works.

The establishment of the Royal Commissions to survey and record historical monuments followed in 1908 and provided further openings for the professional.

DIGGING UP HISTORY, in the Zambezi Valley, Rhodesia, students of the Third Livingstone School of Archæology (above and right) set to work on a Later Stone Age mound. A specialist in prehistoric rock art (above) shows a student how to recognize a Stone Age scraping tool. Delicate and thorough searches call for small tools like trowels and brushes which students (right) are using inside each of the marked squares that have been allocated to them. Below right, excavations at Earlswood Long Barrow, near Salisbury, England. The word barrow (grave mound) has been incorporated in many place-names in Britain.

The gulf between the amateur and the professional archæologist was already becoming apparent as the pace of specialization quickened in the 1930's. World War II completed the process. The leisured classes, who were once the mainstay of the archæological societies, found they had neither the time to keep abreast of current thought nor the resources to devote to archæology. The societies in turn were faced with serious financial problems: navvy labour for excavation was often beyond their means and increased printing charges made it difficult to maintain the high standard of publication which had prevailed before the war.

At the same time there was more urgent need than ever before for extensive fieldwork. Agricultural and urban development, were threatening field monuments with destruction in all parts of the country and the commercial exploitation of the river gravels and ironstone was devouring the archæology of whole regions at a rate which made recording and examination well nigh impossible for the small body of professional archæologists to tackle single-handed, especially as many of them had heavy teaching and other commitments. The State has, as a result, assumed a greater responsibility for large-scale excavation but much still remains for the societies to do. It is here that the amateur can help, provided he is prepared to acquire the requisite skill in field techniques.

It is hard to generalize about present-day amateurs. Their age may range from 16 to 70 and their background is as varied. The retired colonel, the doctors of divinity or medicine, town councillors and engineers, biochemists and school-teachers, housewives, students and schoolchildren can all be found working side by side upon an excavation. Some may be members of an archæological society; others may be students attending an adult education course. A few may have no clear idea what led them to spend their spare time toiling in a trench apart from the general fascination which archæology now appears to hold for many people.

The present popularity of the subject undoubtedly owes much to television. Broadcast series such as *The Archæologist*, introduced in 1946, have also had an effect as the sale of 55,000 copies of a British Broadcasting Corporation pamphlet on Roman Britain proves. Excavations provide an even greater attraction.

The discovery of a Roman temple in London drew a patient queue of 30,000 visitors and 60,000 persons found their way through the suburbs to watch the foundations of Nonsuch Palace being uncovered in the space of less than two months recently. Archæology is news to the daily press and popular magazines which turn unprompted each spring to inquire about forthcoming excavations from the Council for British Archæology.

The Council was formed in 1944 to promote and co-ordinate archæology in the British Isles. It received State recognition five years later in the shape of a small annual subsidy. The Council was alive to the dangers of popularizing archæology and realized that an outlet should be provided for the growing public interest in fieldwork. The obvious remedy was to organize training-schools for the serious amateur and to put those who simply wanted an archæological holiday in touch with the director of an excavation where their help would be welcomed.

The latter was easy enough to arrange. A brief questionnaire to professional archæologists likely to be digging usually produces requests for helpers on between 70-80 sites during the season. Last year such sites included Bronze Age barrows within sight of Stonehenge, Iron Age farmsteads and hillforts, and many Roman sites —towns, temples, villas and forts in all parts of the country. A small expedition went to Orkney and adjacent islands to search for evidence of Scandinavian settlement in the form of pagan burial-mounds. Work will continue in the mediæval towns of Winchester and Southampton, on castles, priories, manors and on the site of long deserted villages. Town, country or even uninhabited island, there is something for all tastes.

Details of these sites are circulated to prospective volunteers in the form of a *Calendar of Excavations*, issued monthly from March until the end of the digging season in September for an annual fee of 5s. The volunteer selects whichever site appeals to him and writes to the director to ask if he may help. When the *Calendar* first appeared in 1950 it had a modest circulation of

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Photos L. Titchener © Northern Rhodesia Information Dept

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Women ideal for uncovering skeletons

67 copies. Within a matter of months it had increased threefold, and subscribers now total over a thousand and include students in America and on the Continent.

The success of the *Calendar* lies largely in the fact that it meets the needs of both excavators and volunteers with a minimum of correspondence or formality. The archæologist can appeal for helpers of all kinds: trained supervisors, photographers, surveyors, a soil scientist or even a cook-caterer ,and his chances of finding them are good.

The volunteer, on the other hand, is told as much as possible about the site; its nature, period and location. In particular, he is warned of projects which are only suitable for those with previous field experience and his attention is drawn to sites where beginners would be given elementary training. Women as well as men are welcomed on most sites, particularly where a delicate touch is needed in uncovering skeletons. And no distinction is made unless primitive living conditions in some isolated spot demand it.

When the site lies near a village, the volunteer is usually expected to find his own accommodation. In the case of a popular holiday resort, difficulties may arise but the organizer of the dig will usually provide a list of likely lodgings or may even arrange a camp.

The degree of organization on these sites varies greatly. A primary qualification of any excavation is that it should be disciplined. The director must have some assurance that his helpers will spend at least a week with him if not longer, and that they will arrive on time each day. Where the temptation of sand and surf is likely to prove too strong, some directors, wisely recognizing the frailty of their helpers, adjust their hours of work to allow for a swim in the middle of the day. Nor are such amenities as the local pub equipped with darts-board overlooked.

Once on the site, the volunteer will be shown how to dig and use a trowel, and the necessity for removing the soil layer by layer will be explained to him. He will also be told about the purpose and general progress of the work so that he may understand developments beyond the limits of his own trench. He—or she—will be expected to share heavy manual jobs and on the larger excavations may even have to take a turn as guide-lecturer in showing visitors round the site.

Many amateurs return each season to the same site acquiring confidence from their familiarity with the stratigraphy. It is, however, difficult to gain a thorough grounding in all aspects of fieldwork on an ordinary excavation. The archæological problems of the site must take precedence over training and all too often the director may be working against time.

Volunteers with long-term aspirations in archæology usually prefer to attend a training-school, returning in successive seasons until they have acquired the background and technical knowledge needed to work on their own. The majority of amateurs can devote their energies to only such limited objectives as the rescue-excavation of sites threatened with destruction. Even so, they need an understanding of the basic principles of excavation and their practical application in recording stratification, the registration of associated objects and field survey.

The past decade has seen a notable increase in the provision of such training facilities. In Scotland a Field School of Archæology was established in 1947 under the auspices of four Scottish universities and the C.B.A. regional group. Its purpose was to build up a cadre of trained field workers to tackle emergency excavation when needed. Ten years later, of the 171 students who had received training, seven had become professional archæologists or museum officials. Eight had conducted excavations on their own account and 32 had acted as assistants on sites in Scotland and elsewhere.

The students were drawn from a wide range of occupations which included the professions, the Forces, the Civil Service, journalism, broadcasting, science and industry. Thirty-seven were teachers and it is interesting to note that the majority used archæology to a greater or lesser degree in their work.

Similar groups of trained field workers are being built up in other regions. The University of Durham has for a number of years used the site of *Corstopitum* (Corbridge) on Hadrian's Wall as a training-school for students and amateurs. The University of London is associated with *Verulamium* (St. Albans). In the east Midlands, the University of Nottingham's Department of Adult Education has held eight successive summer schools on the Romano-British town and neighbouring villa site of Great Casterton, Rutland.

Experience on these sites has shown that ideally the training-school should be envisaged as an integral part of a more prolonged theoretical course which could best be provided by means of university extension or adult education lectures during the winter months. Now, thanks to public demand, tutorial courses can be followed in many parts of the country.

Extensive as are the facilities provided on the training-schools, it sometimes happens that they do not meet the requirements of the active but inexperienced members of a local society who may wish to work on a site in their own locality. If there is no archæologist of suitable experience among their ranks, such a project can best be pursued by inviting a qualified archæologist to advise and direct their activities. Unless he is a person with both means and leisure, his visits are likely to be restricted to a minimum, especially if the local society is unable to meet his travelling expenses.

The Carnegie Trust has recently provided a solution to this problem by making grants to meet the fees and expenses of qualified archæologists willing to direct projects undertaken by societies and recommended by the C.B.A. The Trust will also provide funds for the purchase of tools and expensive items of equipment, which reverts to the C.B.A. when the society no longer needs them.

Since the project was initiated in 1958, it has been possible to train over 200 members of some 28 archæological societies. Excavation was entailed in the majority of cases, but several societies have embarked on long-term field surveys. These included surveys of early settlements in Northumberland and Devon, the tracing of Roman roads in Flintshire, and the recording of early domestic architecture in several regions.

The provision of so wide a range of training facilities for the amateur as distinct from the student who intends to make archæology his profession has been one of the most interesting developments of the postwar period. Its full effects cannot yet be gauged and much will depend upon the ability of the local societies to move with the times and provide for more active participation in fieldwork than has hitherto been customary. Herein lies their best chance of survival. There is much work to be done both in field survey and by excavation in all parts of the country and it is through his local archæological society that the amateur can most usefully contribute to research.

BEATRICE DE CARDI *is a Fellow of the Society of Antiquaries and Secretary of the British Council for Archæology, London.*

JODO KUMAMI
King of story-tellers for Kyoto's children

by Muneharu Kitagaki

On December 31, 1959, an old man of 77 died peacefully in Kyoto, the ancient capital of Japan. With his death, a familiar figure disappeared from the city's streets. For some fifty years, passers-by had been accustomed to see Jodo Kumami riding around in his tricycle wheelchair pulled by two dogs, a conspicuous sight with his long hair and moustache which made him look somewhat like a Chinese physician or a fortune-teller.

Jodo Kumami was a story-teller and a friend of children for whom he organized many activities at a time when few people thought of providing playgrounds or arranging excursions for youngsters in the city. He was born in 1882, son of a poor family in Osaka, and after his parents' death, was brought up by his brother in Ako, a town famous in Japanese feudal history. Burns on his legs crippled him for life at thirteen, when he accidentally upset a lighted oil lamp. Being unable to walk, however, seems to have spurred his imagination and obliged him to develop other talents.

His first ambition was to become an artist. He went to Kyoto to study under a master and, while he earned a meagre living by drawing designs for kimonos, he began to make up fairy tales to entertain his neighbours' children. As they told their friends about his stories, more and more children flocked to him. Finally, his small room would not hold them and he had to hire a large public meeting hall.

About this time, he organized the Kyoto Fairy Tale Club which held regular meetings for boys and girls and published a monthly magazine in which his stories appeared. But he did not confine his activities for children to in-

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Jodo Kumami (1882-1959) became accidently crippled at the age of 13. Afterwards, for some fifty years of his life he was a familiar figure in the streets of Kyoto, Japan, riding in his wheelchair.

Unesco photos

The magic of 'once upon a time'

venting stories for them; he also arranged baseball teams and excursions and organized summer camps.

By now, he was well-known as a story-teller and a familiar figure in Kyoto. Children loved him, and called him "Sensei" (master). They used to push his wheelchair for him and in exchange he gave them drawings illustrating scenes from his stories.

To commemorate the tenth anniversary of the Kyoto Fairy Tale Club, Kumami organized Kyoto's first story competition for schoolchildren in the Town Hall in 1920. More than ten schools took part in the competition, which was sponsored by a leading Japanese newspaper. On another occasion, the Club launched a fund-raising campaign for Lieutenant Shirase's Antarctic expedition, an event which opened up vistas of a new world in the children's imagination. When Britain's Prince of Wales visited Kyoto in April 1922, the Club gave him a set of dolls made by master dollmakers of Kyoto to illustrate the famous fairy tale of the Tongue-Cut Sparrow.

When it came to money, Jodo Kumami, like many artists, was impractical. From time to time, financial difficulties forced him to close the Club. One evening, when he had been evicted for not paying his rent, an eight-year-old girl who had listened to his stories found him in the street and brought him home. Her parents, who owned

a hotel, approved their daughter's generosity and allowed him to stay for a year.

Kumami wrote many tales, but lack of money prevented him from collecting them in book form, and in the course of time, the manuscripts were scattered and lost. Usually, the stories began with. "Once upon a time." They had simple, dramatic themes, and the chief characters were ants, butterflies, dragonflies, rats, mice, rabbits and goldfish.

Public recognition of Jodo Kumami's activities for children only came a few years ago, and by then his name meant little to the rising generation of Japanese youth who prefer radio, television and cinema to story-telling. In 1953, the old man who had given joy to hundreds of youngsters, was presented with a motor-driven wheelchair by the Mayor of Kyoto. But even this brought him no luck. He soon crashed it into a streetcar, and was seriously injured. He was not at home in the world of modern machines any more than he was in the world of modern entertainment. When he got well after his accident, he again went back to using his old, trustworthy, dog-powered tricycle-chair.

When he fell ill in 1959, one of his friends asked a nearby primary school to send some schoolchildren to visit him. The request was granted, and a group of boys and girls brought musical instruments to console the forgotten storyteller with a concert. It was only a half-hour visit, but Kumami was excited to tears, and remarked that he was so happy that now he was ready to die.

In Kyoto there are still many grown-up people who cherish a childhood memory of Kumami Sensei. But outside of Kyoto, and among young people and children even there, he is almost unknown. One Japanese writer of children's books calls his work old-fashioned. Nevertheless his tales are deeply implanted in the minds of hundreds of people—doctors, university professors, bankers, merchants, housewives—who listened to Jodo Kumami when they were small.

Because he became an almost legendary figure in the lives of people familiar with his stories, he has been compared to Hans Christian Andersen. The two had much in common: both came from poor families and spent a poverty-stricken childhood, and both became story-tellers. But there are differences. Andersen had opportunities to attend school, while Kumami had none. Andersen had the advantage of travelling all over Europe —to Rome and to London—but Kumami was a cripple and never went beyond the city of Kyoto. Andersen met Charles Dickens, and was helped by King Frederick VI of Denmark, but Kumami had no such distinguished friends. And, unlike Andersen, Kumami had no opportunity to publish his fairy tales. Recently, however, efforts have been made to bring him recognition. Fairy tales never really die; and for young children, the world around there is still magic in the words: "Once upon a time..."

Professor MUNEHARU KITAGAKI *is a member of the faculty of Doshisha University, Kyoto.*

Letters to the Editor

WHY NOT COMPROMISE?

Sir,

Although I have been a subscriber to THE UNESCO COURIER since the May, 1956 issue, this is my first correspondance. Despite my unforgivable incommunicativeness, the fact that I have continued my subscription since 1956 should indicate my satisfaction; but the fact that I write now is to indicate a dissatisfaction and offer a placative suggestion. My dissatisfaction lies with your "new editorial policy of publishing a greater variety of articles" instead of devoting "whole issues" to one theme (April, 1962); my suggestion is a compromise: devote *some* issues to the one-theme approach, and *some* to the multi-theme approach. Some themes, such as conservation, ethnology, the sea, are in themselves so pregnant with diverse matter that UNESCO could only perform an abortive service by editing only one or two articles per theme; on the other hand, there are a number of other subjects that are relatively confined in scope so as not to require extenuated treatment. Exactly what subjects should be thrown in your diversity pot to make a rich stew for your diversity readers I leave to you; but please! do not fall into that either-or fallacy. Your UNESCO fare is broad enough to make a variety of editorial approaches, not just the one approach of squeezing "variety" in *every* issue.

Tom Kloepping
New Jersey, U.S.A.

Ed. Note: *We should be interested to know what other readers feel. Please send us your BRIEF comments.*

TRAFFIC LIGHTS THAT 'THINK'

Sir,

I have viewed with interest your "From the Unesco Newsroom", for several years now, and have found it one of the high points of each issue. I wish to point out however that in it (March 1962), I saw to my astonishment that there appeared an article on the "new" idea of mechanically controlled "thinking" traffic lights in Leningrad. Living in one of the worst cities—as far as traffic problems go—in the world, we have been forced to try everything, and have had in operation for many years, a great number of these "Thinking" traffic lights. They are now so commonplace here, that nearly every major street has them sprinkled at crowded intersections.

Andrew Getz
Los Angeles, U.S.A.

LIFE-SAVING BLOOD

Sir,

In your interesting magazine—and particularly in the May, 1962 issue (Two Faces of World Health)—you frequently refer to causes of death in the economically-developed countries: road accidents (subject of a special issue last year), accidents at work and cardiovascular diseases which in Europe and North America have become "killers of modern times". I think you would be in line with the aims of UNESCO if you reminded your readers of the role nowadays played by blood. It is needed for daring heart operations, used in the treatment of severely-burned people and also in the case of "blood poisoning" which sometimes occurs in young babies because their parents have opposing rhesus factors in their blood. Everyone should know to which blood group he belongs and many more people should offer to donate a little of their blood once or twice each year. If this was done, we should certainly be better protected against the afflictions of prosperity.

L. Balzy
Paris, France

TEMPLE OF UNDERSTANDING

Sir,

Perhaps your readers will be interested to know that the Temple of Understanding as mentioned in the November 1961 issue of THE UNESCO COURIER continues to grow apace! At the request of many Embassy friends in Washington, a lower or cultural half has been added to the plans for the building. The six wings, representing the six major world religions will be duplicated below in order to represent Art, Science, Music, Philosophy, Literature and Architecture. These wings will centre on an auditorium to be called the Hall of Nations where the cultural activities of visitors from abroad may be performed. This is to broaden our theme that Truth is indeed a diamond of many facets.

If any readers are interested in knowing more about "Project Understanding" we warmly welcome their inquiries. Letters should be sent to Box 191, Greenwich, Connecticut, U.S.A.

Judith Hollister
New York, U.S.A.

DOLLS GO TO SCHOOL

Sir,

I was so intrigued by the article, "Ping-Pong Dolls go to School" (February 1962) that I showed it to the teachers in the nursery schools of Rostov who, in turn, were interested in this way of using Lilliputian "teachers" to bring lessons alive. I should like to receive from Madame Poinsart-Chasson, its originator, full details of this particular aspect of "active" methods of education. I would like to add that thanks to the publication of a letter I sent to The UNESCO COURIER in 1959 on the subject of frost-resisting vines, I had replies from America ,Japan, Belgium, Sweden, Norway, Denmark and France.

I. S. Aitkov
Rostov-on-Don, U.S.S.R.

SEEKING THE CAUSES OF WAR

Sir,

Has UNESCO ever sponsored a study of history, by scholars of all nations, with the object of discovering the causes of war and the conditions necessary for peace? Even if nothing new is discovered, the published findings of such research should emphasize, for world leaders and people alike, the need to build peace upon a firm foundation.

Similarly a UNESCO publication of the lives of those who have devoted themselves to the pursuit of peace, could be of value. Provided the lives of these people carried the same elements of courage and adventure as the heroes of war, they could prove a great inspiration to all.

Peter A. Walker
Victoria, Australia

Ed. Note:
Unesco's studies relating indirectly to the causes of war and the promotion of peace begin in 1947 with studies of international tensions, many of which have been published. These include "Tensions that Cause War", "How Nations See Each Other", "Ways of Life" studies, covering Australia, Norway, Switzerland, and South Africa, and studies dealing with the question of racial and ethnic minorities (The Race Question in Modern Science). Since 1956 emphasis has been placed on studies of the positive aspects of improving international relations rather than conducting research into the negative aspects of such relations which tend to bring about war. Study projects have included: social aspects of economic development (urbanization, consequences of technological change), Human Rights (race questions, changing situation of women) and, more particularly, questions of peaceful co-operation and international understanding.

THE LIKEABLE EMPEROR PENGUIN

Sir,

The article on "The Emperor Penguin, Monarch of Antarctica" (May 1962) gave me special pleasure. The originality of the subject, the excellence of the text and the striking photographs illustrating it should have satisfied even the most demanding readers, to judge from the opinions I heard expressed around me. Thanks, too, to Jean Prévost, the author, for having given us such a pleasant introduction to a little-known member of the animal world.

J. Tripier
Asnières, France

ERRATUM

The three photos which appeared on page 25 of the June 1962 issue of The Unesco Courier, illustrating the article on Paul Geheeb, are by Yolande Custer.

From the Unesco Newsroom...

MEDICAL SCHOOL BY RADIO: Family doctors in Australia will find it easier to keep abreast of new developments in medicine thanks to a "radio medical school" which is to be started by the University of New South Wales, in Sydney. The courses, to be broadcast by the University's own medium-wave transmitter, have been widely requested by doctors.

U.S.S.R. HAS 381,000 LIBRARIES: This was the figure, covering all types of libraries, revealed by the most recent census, and on their shelves was a total of 1,900 million books. Largest is the Lenin Library in Moscow with 21,200,000 books, but more than 100 libraries have more than half a million books each. Scientific, technical and specialist libraries in the Soviet Union have 20 million readers.

T.B. STILL A PROBLEM IN EUROPE: Tuberculosis is still a threatening disease in Europe, reports the World Heath Organization. Death rates have dropped sharply since the war, but the decline in newly detected cases annually has been less marked. Hope that tuberculosis would be eliminated by "miracle" drugs has been undermined by the fact that the tubercle bacillus is acquiring resistance to these highly efficient agents. New methods of attack will now have to devised.

YOUTH BUILDS FOR YOUTH: An International Village named for Henri Dunant (founder of the International Red Cross) is being built at Varazze, on the Italian Riviera, by and for young people. Apprentice masons, electricians, carpenters and gardeners from technical schools in Switzerland are devoting time from their own holidays to help build five modern blocks of buildings of this holiday centre for young people.

MORE GIRLS IN SCHOOL: A survey carried out by UNESCO for the U.N. Commission on the Status of Women regarding opportunities for girls in elementary education in 82 countries and territories has revealed a spectacular rise in the number of girls attending school. But schooling for girls is still a serious problem in many countries, and the U.N. Commision has urged the U.N. Economic and Social Council to recommend to all U.N. member states to provide equal educational rights and facilities for boys and girls alike.

CAST YOUR TREE... The cherry trees which bring thousands of visitors to Washington, the U. S. capital, each spring were a gift from the people of Tokyo fifty years ago. The parent trees in Tokyo, however, disappeared through blight and damage after World War II. Now, thanks to a gift of 40 grafts from the trees in Washington, young cherry trees have again bloomed on the Arakawa Embankment in Tokyo from which Washington received the original gift.

MEKONG FLOOD STUDIES: Thanks to assistance from the U.N. Special Fund, a special study for the eventual construction of a flood control dam on the Mekong River Delta will be carried out by UNESCO. The study will reveal the effect the dam would have on flood control, sylviculture, fisheries, navigation and power production in Cambodia and Vietnam.

FRANZ HALS IN HAARLEM: The 100th anniversary of the creation of the Franz Hals Museum in the city of Haarlem, The Netherlands, has been celebrated by a large-scale exhibition of the Dutch master's works—many loaned by museums and galleries in other countries —which ends on September 30.

INTERNATIONAL POSTER CONTEST: An international jury has now awarded prizes in the UNESCO Poster Contest on international understanding and cooperation, for which a total of 124 designs were submitted through the intermediary of UNESCO National Commissions. As no design fulfilled all the requirements for the award of a first prize, the jury awarded two second prizes of $500 each to Mr. Morteza Tabrizian of Iran and Mr. Stanislaw Zagorski of Poland. The third prize of $300 was won by Mr Pau Macia i Pons of Spain.

WARSAW'S BOOK FAIR: The 7th International Book Fair was held in Warsaw's Palace of Culture and Science recently, when in addition to many Polish publishers, 140 foreign exhibitors, representing some 2,000 publishers and booksellers, set up their stands. Exhibitors included the United Nations, UNESCO, the Food and Agriculture Organization, and the International Atomic Energy Agency.

UNESCO PHILATELIC SERVICE

Shown above is a stamp recently issued in 2 and 6 rial denominations by Iran in honour of the 15th anniversary of Unesco. As the agent in France of the U.N. Postal Administration, Unesco's Philatelic Service stocks all the U.N. stamps and first-day covers currently on sale as well as many stamps, like the one shown above, issued by Unesco member states to commemorate important events in the history of Unesco and the U.N. For prices and further details write: The Unesco Philatelic Service, place de Fontenoy, Paris (7e).

DANGERS OF RADIATION: The increasing number of radioactive products now being used constitute a growing health problem and call for the organization of radiation protection services, the training of personnel and promotion of research. These problems were reviewed at a recent conference sponsored by the World Health Organization in Düsseldorf, which considered aspects ranging from existing laws and regulations and control measures to the supervision of contamination in man's natural surroundings—in air, water, soil and food.

GUIDES TO U.N. FAMILY: A new Study Guide Series of five books on the United Nations and related agencies specially designed for teachers, group leaders and students is being published by Oceana Publications, Inc., of Dobbs Ferry, New York. Material was prepared by the UNESCO Youth Institute in close co-operation with the U.N. and specialized agencies. The first four volumes are entitled "World Peace and the United Nations", "Food for Life—Food for Thought", "Improving Living Conditions" and "Pooling Skills for Human Progress". The fifth volume to be published in the Autumn, is entitled "International Co-operation". The books should be ordered through Oceana Publications Inc., Dobbs Ferry, New York, U.S.A., and not through Unesco.

LANGUAGE TEACHING AIDS: Language teachers in countries other than English-speaking ones may also be interested in a selective list of materials for use by teachers in modern foreign languages in elementary and secondary schools which has been prepared and published by the Modern Language Association of America. The list, which covers material in French, German, Italian, Modern Hebrew, Norwegian, Polish, Portuguese, Russian, Spanish and Swedish, can be obtained from the Modern Language Association Foreign Language Program Research Center, 70 Fifth Avenue, New York 11, N.Y. price $1.00 each.

Flashes...

■ *Ghana and Canada recently joined the Universal Copyright Convention, under which 42 countries have now agreed to grant foreign works the same protection accorded works by their own nationals.*

■ *A sea as big as the Sea of Azov (14,500 square miles in area) has been discovered deep underground between the Dnieper and Molochnaya Rivers in the Ukraine.*

■ *The World Health Organization reports that of 1,420 million people exposed to malaria before 1955, 317 million (22%) now live in areas where malaria has been eradicated. Eradication programmes are in progress in areas with 710 million inhabitants.*

■ *Switzerland recently became the 49th state to adhere to the UNESCO-sponsored Convention on Protection of Cultural Property in the Event of Armed Conflict.*

■ *High peaks between McMurdo Sound and Beardmore Glacier in Antarctica have been mapped by helicopter. Radio signals between a surveyor landed by helicopter on mountain peaks and "master units" 20 miles away enabled distances between the two points to be calculated with a margin of error of about six inches.*

Imp. GEORGES LANG, PARIS. IMPRIMÉ EN FRANCE.

UNESCO ART SLIDES

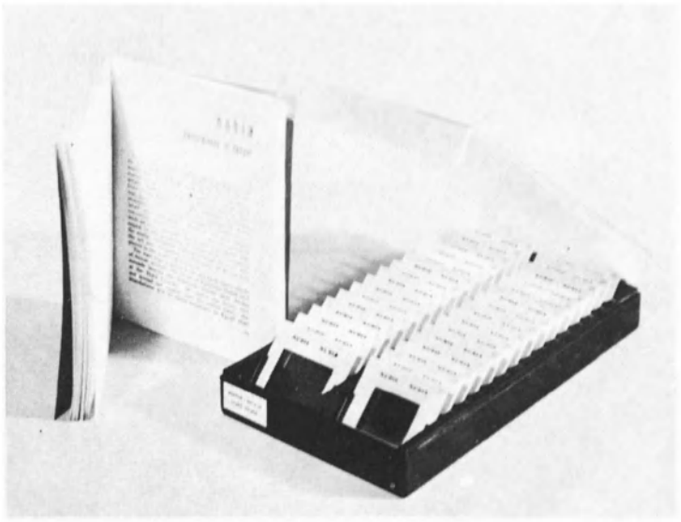
A collection of colour transparencies to make known to the public masterpieces of world art which, in spite of their importance for the history of art and for the understanding of the genius of the nation which created them, are all too often unknown. Most of the slides are based on the Unesco World Art Series Albums, with which readers of The Unesco Courier are already familiar. The slides, produced for Unesco by Publications Filmées d'Art et d'Histoire in Paris, are of top quality and reasonably priced. They are presented in a plastic case for ready projection, each series containing thirty transparencies, in mounts 5 × 5 cm, and an explanatory booklet with text and titles in French, English and Spanish. The very high standard of colour reproduction makes these slides valuable not only to teachers and lecturers but also to art lovers everywhere.

Series now available :

1. EGYPT: Paintings from Tombs and Temples.
2. YUGOSLAVIA ; Mediaeval Frescoes.
3. INDIA : Paintings from the Ajanta Caves.
4. IRAN: Persian Miniatures, Imperial Library.
5. SPAIN: Romanesque Paintings.
6. NORWAY: Paintings from the Stave Churches.
7. MASACCIO: Frescoes in Florence.
8. AUSTRALIA: Aboriginal Paintings from Arnhem Land.
9. CEYLON: Paintings from Temple, Shrine and Rock.
10. NUBIA: Masterpieces in Danger.
11. U.S.S.R.: Early Russian Icons.
12. MEXICO: Pre-Hispanic paintings.

To be published shortly :

13. JAPAN: Ancient Buddhist Paintings (late 1962).
14. CZECHOSLOVAKIA: Romanesque and Gothic Illuminated Manuscripts (late 1962).
15. GREECE: Byzantine Mosaics (early 1963).
16. ISRAEL: Ancient Mosaics (early 1963).



Art education slides :

These sets of slides, and the accompanying text, illustrate contemporary concepts and methods of art education in different parts of the world.

1. Play - Explore - Perceive - Create.

2. Three-dimensional art for the adolescent.

Prices vary according to country, but do not exceed the equivalent of $10 in local currency.

SPECIAL AGENTS FOR ART SLIDES

Argentine : Editorial Sudamericana S.A., Alsina 500, Buenos Aires.

Australia : Tradco Agencies, 109 Swanston Street, Melbourne C. I.

Belgium : Louis de Lannoy, 22, place de Brouckère, Brussels.

Denmark : Mellemfolkeligt Samvirke, Kronprinsessegade 32 (4), Copenhagen.

Finland : Kuvanauha Oy, Alkutie 51, Pakila.

France : Unesco, DPV, 7, place de Fontenoy, Paris (VII[e]).
Publications Filmées d'Art et d'Histoire, 44, rue du Dragon, Paris (VI[e]).
Rousseau, 6, place Chapou, Cahors (Lot).

Germany : Dr. Lucas Lichtbild, 1, Berlin-Lichterfelde-West, Fontanestr, 9A.

India : National Education and Information Films Ltd., National House, Tulloch Road, Apollo Bunder, Bombay I.

Israel : Blumstein's Bookstores Ltd., 35 Allenby Road and 48 Nahlat Benjamin Street, Tel-Aviv.

Italy : Casa Editrice Bemporad-Marzocco, Via Scipione Ammirato, 35-37, Florence.

Japan : Maruzen Co. Ltd., 6, Tori-Nichome, Nihonbashi, P.O. Box 605, Tokyo Central, Tokyo.

Netherlands : C.P.L.I., Postgiro 15476, Amsterdam (O).

Norway : Johan Grundt Tanum Bokhandel, Karl Johansgt. 41, Oslo.

Spain : Librería Científica Medinaceli, Duque de Medinceli 4, Madrid 14.

Sweden : Pogo Produktion AB, Fack 452, Solna 4.

United Kingdom : Educational Productions Ltd., East Ardsley, Wakefield, Yorks.

U.S.A. : Unesco Publications Center, 801 Third Avenue, New York 22, N.Y.

Switzerland : Films Fixes Fribourg S.A., 20, rue du Romont, Fribourg.

IMPORTANT

1. — ART SLIDES — In countries where there is no special agent, application should be made to the National Distributors for Unesco Publications.

2. — UNESCO PUBLICATIONS AND SUBSCRIPTIONS TO THE UNESCO COURIER — Please see the list of National Distributors in the last number.

From the Gobelins Museum. Photo © Bulloz, Paris.

MUSIC OF BYGONE DAYS

The viol and the guitar figure in this fragment of a 15th century tapestry, "Concert at the Fountain of Youth", believed to have been executed for Pierre de Rohan, a Marshal of France. The preservation, down the centuries, of the cherished skills and traditions of stringed-instrument construction have made this ancient art a modern one too (see article, " Music on a String ", .page 4).