

**EIGHT-PAGE SPECIAL**

# LOOK AND LEARN

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No. 95, 9th NOVEMBER 1963

EVERY MONDAY—PRICE ONE SHILLING

**BEGINS TODAY:**

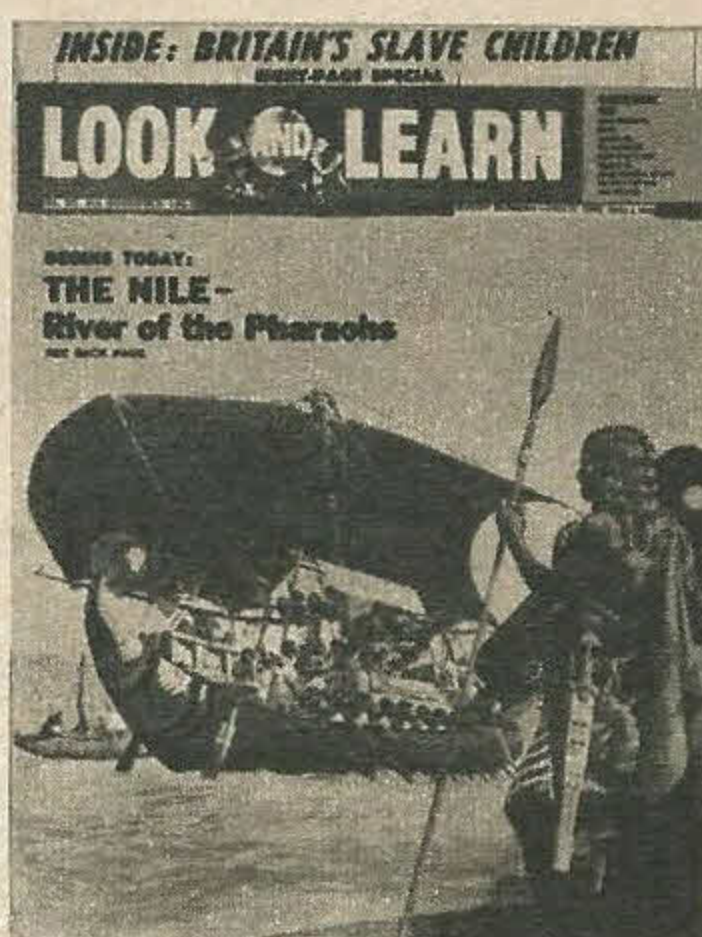
## **THE NILE— River of the Pharaohs**

SEE BACK PAGE



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## OUR COVER PICTURE

For over 10,000 years men have lived and thrived on the banks of the Nile—one of the longest and most historical rivers. Even the ancient Egyptians knew that if the Nile did not flood each year and fertilize their land the country would turn to desert. The Old Testament tells us that when Pharaoh refused to give the Israelites their freedom, God commanded Moses to turn the waters of the river to blood. The Egyptians were horrified and frantically set to work digging holes in search of water before they died of thirst. Our story of the River Nile begins this week on the back page.

# Quick Quiz

## LITERATURE

1. Who wrote *Peregrine Pickle*?
2. "Now is the winter of our discontent . . ." is the opening phrase of a famous play. Which play, and who wrote it?
3. Eric Blair was the real name of a famous modern English writer. What was his better-known pen-name?

## WORDS

1. Which of the following is nearest to the meaning of *metamorphosis*: (a) connected with the devil, (b) advanced mathematical theory, (c) a change of form.
2. A *lintel* is: (a) a vegetable, (b) a wall support, (c) a form of tariff?
3. A *crêpe Suzette* is (a) a food, (b) cotton material, (c) a drink?

## HISTORY

1. Who was Britain's victorious military leader at the Battle of Plassey?
2. How many of the four sons of King Henry II who lived to manhood were crowned King of England?
3. Who was the Labour Party's first Prime Minister?

## PEOPLE

1. Who is Britain's Minister of Education?
2. Mr. George Woodcock is connected with an important national organization. Is it (a) the Liberal Party, (b) the T.U.C., (c) the R.S.P.C.A.?
3. Who was Jack Sheppard?

ANSWERS ON PAGE 26

## BETWEEN OURSELVES

AN old newspaper cutting prompts me to ask: I wonder what happened to Mr. Feng?

Mr. Feng was a Chinese inventor who, thirty years ago, was reported to have perfected (yes, perfected) a motor car which went entirely by clockwork. Like all such intriguing stories, it was tantalizingly brief and gave no real details. But one gathered that one went to the garage, wound up the car, and drove off down the road with nothing to disturb the stillness but a tick-tick-tick. No silly complication like filling up with petrol and oil. No frustrating moments dealt with in the handbook under the heading "Engine will not start." No fumes. No decarbonizing. If the clockwork ran down just as a traffic light changed to green you would obviously have to hop out and re-wind,

but perhaps Mr. Feng had an answer even to that.

Alas, we heard no more of Mr. Feng or his car. Perhaps his first passengers were uneasy at the realization that beneath them was a mighty spring, tightly coiled, which might so easily burst its bonds and propel them skyward instead of along the road. Perhaps that even happened to Mr. Feng himself. Perhaps his wife said discouragingly, "If you think I'm going to be seen winding up that thing when I'm out shopping in the car, you're mistaken!"

Perhaps . . . but it is useless to conjecture, although when we are stuck in a fume-ridden traffic jam we shall continue to think wistfully of Mr. Feng.

*The Editor*

## It all began with the Greeks

DO you know that the "laureateship," a title given to a poet who is appointed a salaried officer of the royal household, originated from Greek mythology?

Apollo (god of the sun) was said by the Greeks to favour the laurel plant and so the Greeks and Romans used it in the form of a crown or wreath to honour their great poets and heroes. The word "laureate" or "laureated" therefore came to mean men of literary or military achievement.

The first official poet laureate in England was John Dryden, although Ben Johnson had earlier carried out the duties of the office, but had not been officially titled. In 1670 Dryden received a pension of £300, plus a free barrel of wine every year. He was expected to write poems for State occasions, but this practice is no longer required of the poet laureate.

The present poet laureate is John Masefield, appointed in 1930.

JEAN STEPHENS

Richmond, Surrey.

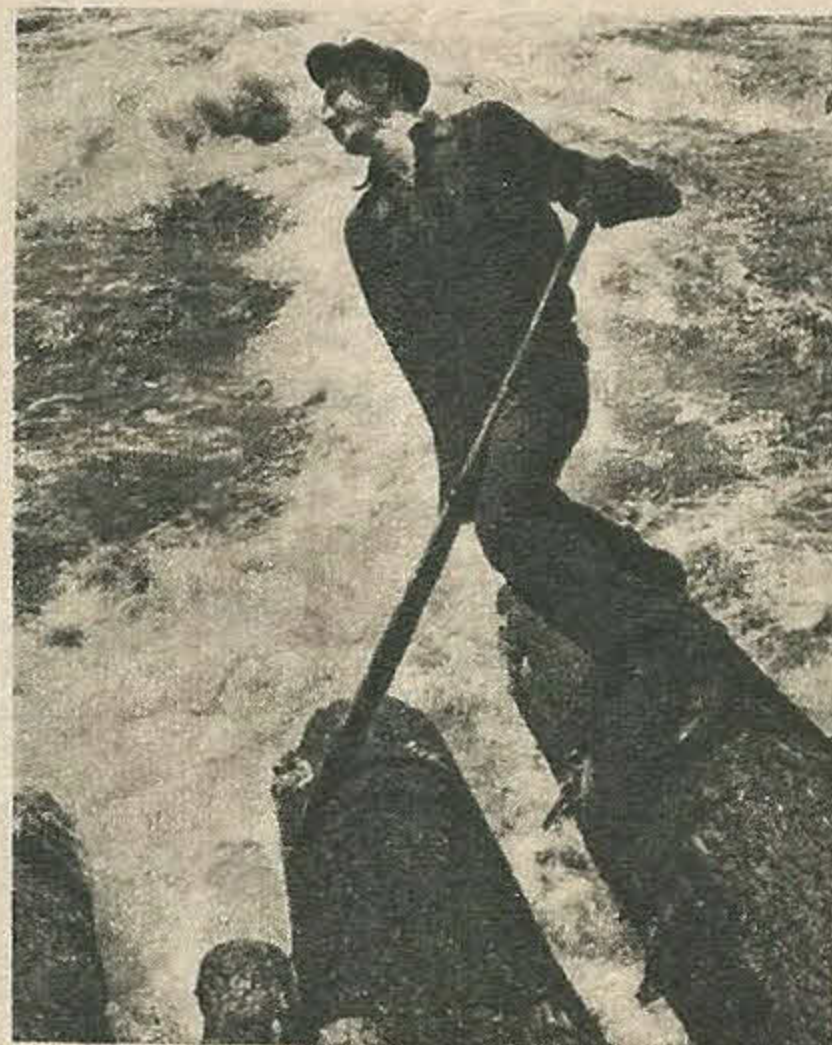
### Justice!

WHAT does "Habeas Corpus" mean?

JEAN TERENCE

Sheffield.

*Habeas Corpus* (from the Latin "have the body") is the name given to a writ (lawful document) issued to the official in charge of a person detained in prison, directing him to have the body of the person brought before a judge or court, so that the lawfulness of the detention may be investigated. This makes certain that no one in Britain can be held in prison for long without a trial.



Heave—and another jam is cleared.

### Timber!

I LIVE in Canada not far from a "lumbering town," the home of hundreds of lumberjacks. They are tough, skilled men and work through the winter felling trees, sometimes in temperatures of 40° or 50° below zero (Fahrenheit). The logs are floated down river to the saw-mills and the lumberjacks travel with them. They jump from log to log and push them about with steel poles to prevent jamming.

SIDNEY STAINES

Prince Rupert, Canada.

### Road Tax

WHAT was a "turnpike" and why was it so called?

TONY THOMSON

New South Wales, Australia.

## Greeks

A turnpike was a frame of pikes (long wooden poles with metal points) put across a road to prevent wagons, carts or any other vehicles passing until a fee had been paid. After the Romans left Britain the roads fell into decay. No attempt was made to improve them until the reign of George IV, when the Turnpike Acts came into operation. Each parish was made responsible for repairing and maintaining its own roads, so toll gates were built and the money collected went towards the cost.

### Yankee

How did the name "Yankee" originate?

KEITH BISHOP.

Worcester.

Yankees are really inhabitants of the north-eastern states of the U.S.A. It is thought that the name was used by the Red Indians for the early settlers who founded the English colonies in America. In the American Civil War it was used by the Southerners to denote the Northerners. Today the name is used by Europeans to mean any person from the U.S.A.

### Luke's Report

MOST people know that "Hansard" is the official government publication which reports the proceedings of parliament. But do you know why it is so called? It takes its name from Luke Hansard, who was the first person to print the reports in 1774.

KENNETH CLEAVES

Welwyn Garden City, Herts.

## CHILDREN'S NEWSPAPER

EVERY WEDNESDAY PRICE SIXPENCE

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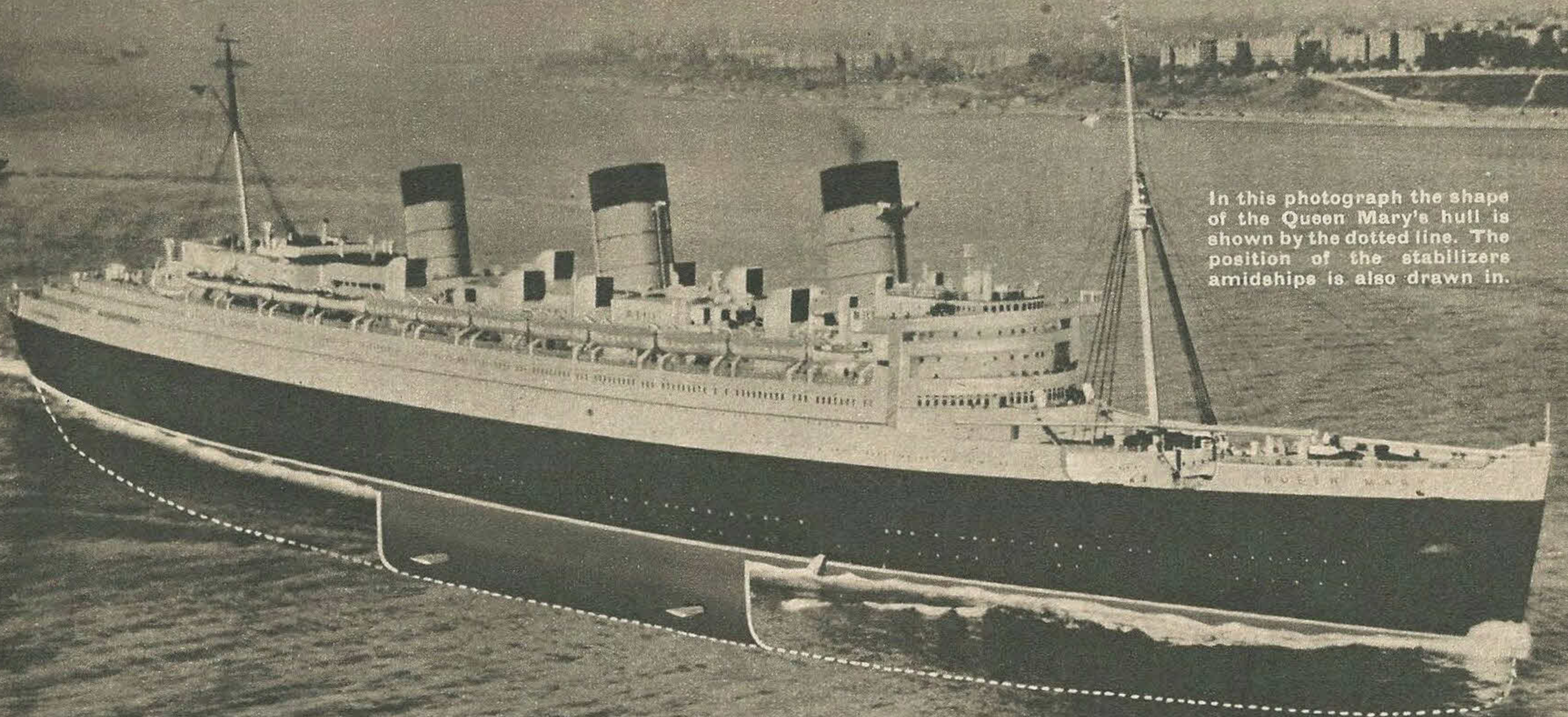
## TREASURE

EVERY MONDAY PRICE ONE SHILLING

Full of colourful and exciting pictures. The Magazine that starts young children on the road to Looking and Learning.

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In this photograph the shape of the Queen Mary's hull is shown by the dotted line. The position of the stabilizers amidships is also drawn in.

# STOP ROCKING THE BOAT!

**A**LTHOUGH the 81,000-ton Queen Mary is a lot of ship to move about, her weight is not enough to stop the world's second largest liner from rocking and rolling like a cork in a pond when she runs into an Atlantic storm.

Now serious rocking and rolling has ended for the Queen Mary by fitting her with anti-rolling devices called stabilizers.

With these to keep her steady, the liner seldom rolls more than three degrees—one and a half degrees each way from the upright—during an average rough-weather voyage across the Atlantic.

The anti-rolling equipment consists of four fins, called hydrofoils, mounted below the water-line of the ship. There are two fins on each side of the ship's hull, and by pressing a lever on the ship's bridge, the officer of the watch can push them out at right angles to the hull.

Each fin weighs nearly twelve tons, is seven feet wide, and extends eleven feet from the hull.

Shaped rather like the wings of an aeroplane, the fins are rounded at the front and tapered at the rear. When pushed out and stationary, they lie with their rounded edges towards the bows and the tapered edges towards the stern.

In that position the fins will keep the ship steady in a slight swell.

## Four giant fins mounted under the water have taken most of the rough weather rock and roll out of the Queen Mary's transatlantic crossings

If the ship begins to roll to the right, the fins on that side of the hull push down against the water. This sets up a pressure between the fins and water which forces the ship back on to an even keel. As the ship then swings to the left, the fins on that side are pushed down and create a balancing upward pressure.

It is this alternating pressure on the right and left of the hull that keeps the ship upright and on an even keel.

In very heavy seas, however, the natural see-saw action of the fins is not strong enough to stop the ship from rolling. So they have to be moved up or down mechanically.

Mounted on the centre-line of the ship's keel is a gyroscope driven by an electric motor.

A gyroscope is rather like a large top and has

the property of always spinning in an upright position no matter how much the base upon which it is mounted may move. By means of various electrical and mechanical linkages, the gyroscope on the Queen Mary's keel moves the fins up or down according to the motion of the ship.

The gyroscope is so sensitive to any movement that tries to make it spin out of its upright position that it brings the fins into operation at the start of even the slightest roll. At the end of the roll, it automatically returns them to their normal level positions.

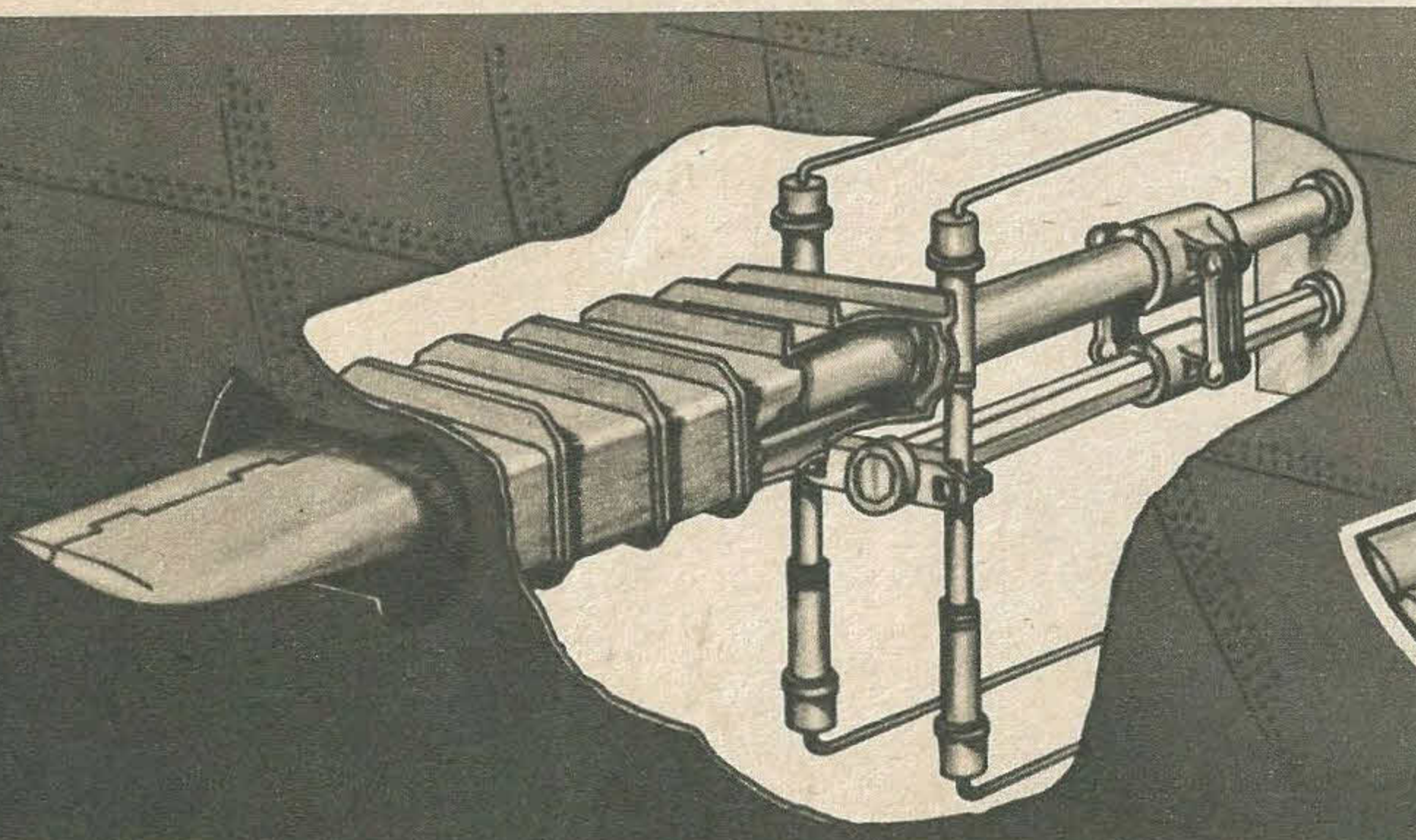
When controlled by the gyroscope, each pair of fins changes its position once a second.

In calm weather the fins are not needed and are pulled into water-tight boxes inside the hull.

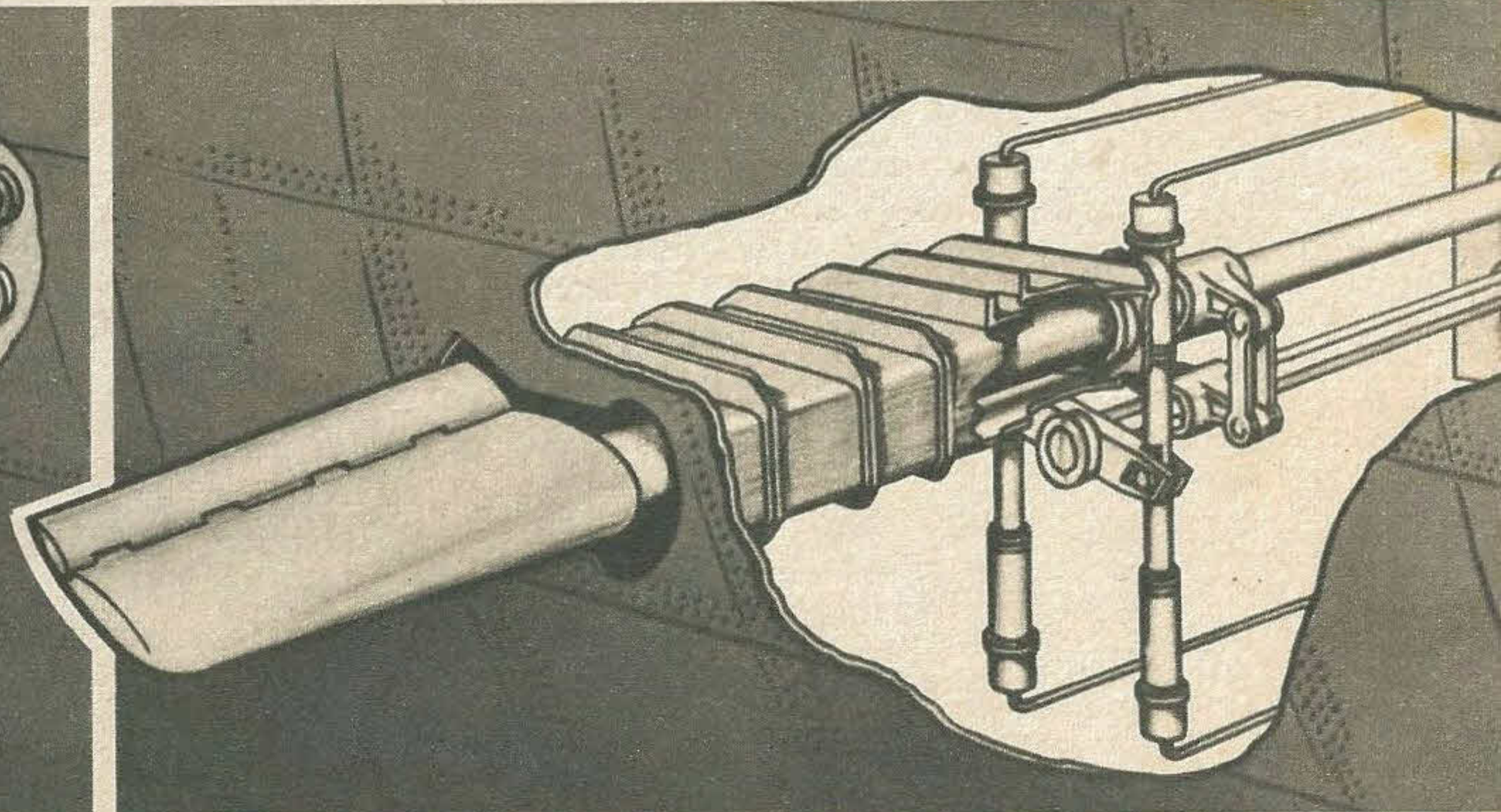
On several recent Atlantic crossings, the Queen Mary has run into seas that would cause other ships to roll nine degrees to either side—or a complete roll of eighteen degrees.

But the fins immediately came into operation, and after one slight roll the ship was on an even keel in thirty seconds.

The Queen Mary's stabilizers have proved so successful in taking rock and roll out of stormy weather that similar types of fins have been fitted to many other ships.



In this drawing, one of the stabilizing fins on the starboard side of the Queen Mary (the right-hand side of the ship looking towards the bows) has been drawn into its water-tight compartment and its surface is lying level with the keel.



This is the position of the stabilizing fin when pushed out from the side of the ship in rough weather. By means of the rods and levers inside the ship, the fin is pointing downwards ready to meet the upward roll of the sea.

# WHAT REALLY HAPPENED?

A new series that will examine the fascinating evidence of the unsolved problems of the past

# KING ARTHUR-

EVERYONE has heard of King Arthur and his Knights of the Round Table. No one can prove they ever really existed.

Yet although the time in which Arthur is supposed to have lived—in the fifth and sixth centuries—was a dark age in Britain, the story of his deeds and valour blazed right through Europe.

Not only did various parts of Britain, from Scotland to Wales and Cornwall, claim him as their own. Europe insisted he was a Breton King, and stories and songs about Arthur conquered and superseded those about Charlemagne. Sicily is one of scores of places in which his tomb is said to lie.

## His Birth

But one thing we can be sure of right at the start. If Arthur was anything, he was a Briton. For while other countries have their Arthurian battlefields, graves and castles, in Western Britain there is almost no range of rugged hills, no stretch of rock-strewn moorland that does not claim some association with Arthur.

What is the fascination of their story?

Sir Thomas Malory shows us in his great fifteenth century classic about King Arthur. Piecing together folklore, old stories and writings in French and Latin, he created *Le Morte d'Arthur*. This tells that Arthur himself was the son of King Uther and Queen Igraine. When Uther died, the country was without a king for some time. Arthur had been carried away by the wizard Merlin soon after his birth, and his existence was not known.

The Archbishop of Canterbury, on the advice of Merlin, called the Lords and gentlemen of arms to London at Christmas, as he expected there to be some sign to show who should be king.

After Christmas prayers, probably in St. Paul's, it was noticed that a great square stone had appeared in the churchyard. In the stone was an anvil, and in the anvil was stuck a sword, which bore these words in gold:

"Whoso pulleth out this sword of this stone and anvil, is rightwise king born of all England."

## The Sword

Of course, no one could move the sword an inch. Then, on New Year's Day, knights came to London to joust. Among them were Sir Ector and his young son Sir Kay and a young man called Arthur who had been brought up as Sir Kay's brother.

When the jousting was about to begin, Sir Kay discovered he had forgotten his sword. Arthur was sent to fetch it. But instead of getting Sir Kay's own sword from his lodging, he went into a tent which contained the square stone. With no trouble at all he pulled the sword out of the anvil and took it to Sir Kay.

It was not long before the amazing feat was discovered. Arthur was also the only man who

This ruined castle at Tintagel in Cornwall is believed by many to be the birthplace of King Arthur, from which as a baby he was carried away secretly by the wizard Merlin. But other ruins carry the same legend.

There can be little doubt that there was a famous Arthur, and that he was our first national hero. But the knights, the sword, and the Round Table? There lies a strange and eerie mystery . . .

could put the sword, called Excalibur, back again into the anvil. And again he was the only one to pull it out. After some delays while still more lords tried their luck, and failed, Arthur was crowned King of England. Within a few years, Arthur and his newly-founded "Knights of the Round Table" conquered all their enemies in the North of England, Scotland and the parts of Wales that did not recognize Arthur as King.

The sword Excalibur, so bright that it shines "like 30 torches," is in Arthur's hand the most formidable weapon ever seen. It slices through armour like butter.

Malory's story is a superb romance, a chronicle of bloodthirsty violence, magic and chivalry.

But is there any truth in it? William Caxton, in his preface to the original edition in 1485, referred to opinions that there was "no such Arthur, and that all such books as be made of him be but feigned and fables." These Caxton disposed of by pointing out that Arthur's sepulchre could be seen in the Monastery of Glastonbury and that his Round Table was at Winchester.

It is true that a twelfth century writer reported seeing Arthur's tomb opened at Glastonbury and witnessing that it contained his bones and Excalibur. The thigh bones and skull were of "gigantic size," and the skull showed ten wounds. But the source and authenticity of this and other reports were seriously doubted by the seventeenth century, when the poet John Milton pooh-poohed the story.

Today there is no sign of an authentic Arthur tomb at Glastonbury, or anywhere else. And the Round Table is certainly a fraud.

Now, in our search for truth, let us consider the broad sweep of history.

The Roman legions left Britain in 409. The Picts and Scots, taking advantage of the small numbers of British soldiers and the softness of a population used to Roman protection, swept down from the North.

The Britons appealed to the Saxons of Northern Europe.

The Saxons came, but not merely to fight the Scots. They mounted a great invasion and swept Britons as well as Scots before them in a fantastic series of battles.

At this dark moment in British history arose leaders who rallied the Britons under their numerous kings. One of them, according to an eleventh century manuscript which contains documents of earlier date, was Arthur. The manuscript says:

"Then Arthur fought against them (the Saxons) in those days with the kings of the Britons, and it was he who led their battles . . ."

In all the battles, which must have been some of the bloodiest in history, Arthur won overwhelming and total victory. Even allowing for exaggeration, it is clear that Arthur must have been not only a superb general but also a tremendous, if not miraculous, warrior.

Of the last battle the manuscript says:

"The twelfth battle was on the mount of Badon, wherein fell nine hundred and sixty men in one day at a single onset of Arthur; and no one overthrew them but he alone. . . ."

No wonder the true stories and the legends about him became mixed.

## Death Comes

When Arthur fell at a place named as Camlan in the year 539, the people could not believe he was dead. He was merely sleeping, awaiting with his knights and warriors the day when Britain should need him again.

In Snowdonia he is said to be in some secret cave. Shepherds have said they have seen him playing chess with his ghostly warriors in inaccessible hollows of the mountains. But a score or more other places are also claimed as his resting place.

Perhaps it was Glastonbury, after all, for ancient manuscripts tell us that the monastery there was once surrounded by marshes and called the island of Avallon, which is the place where Arthur was reputed to have been taken to recover from his wounds.

And what of Excalibur, which was supposed to have been thrown by Sir Bedivere into a mere, or small lake? It seems that this may have been Dozmary Pool on Bodmin Moor in Cornwall.

No one today can separate fact from fantasy. But there can be little doubt that Arthur lived, fought and died for Britain's lost cause against the Saxons. And that he was our first great national hero.

The legend was that only the future King of England could draw this magnificent and mysterious sword out of the anvil—and of all the knights, Arthur alone could take the magic weapon from its place.

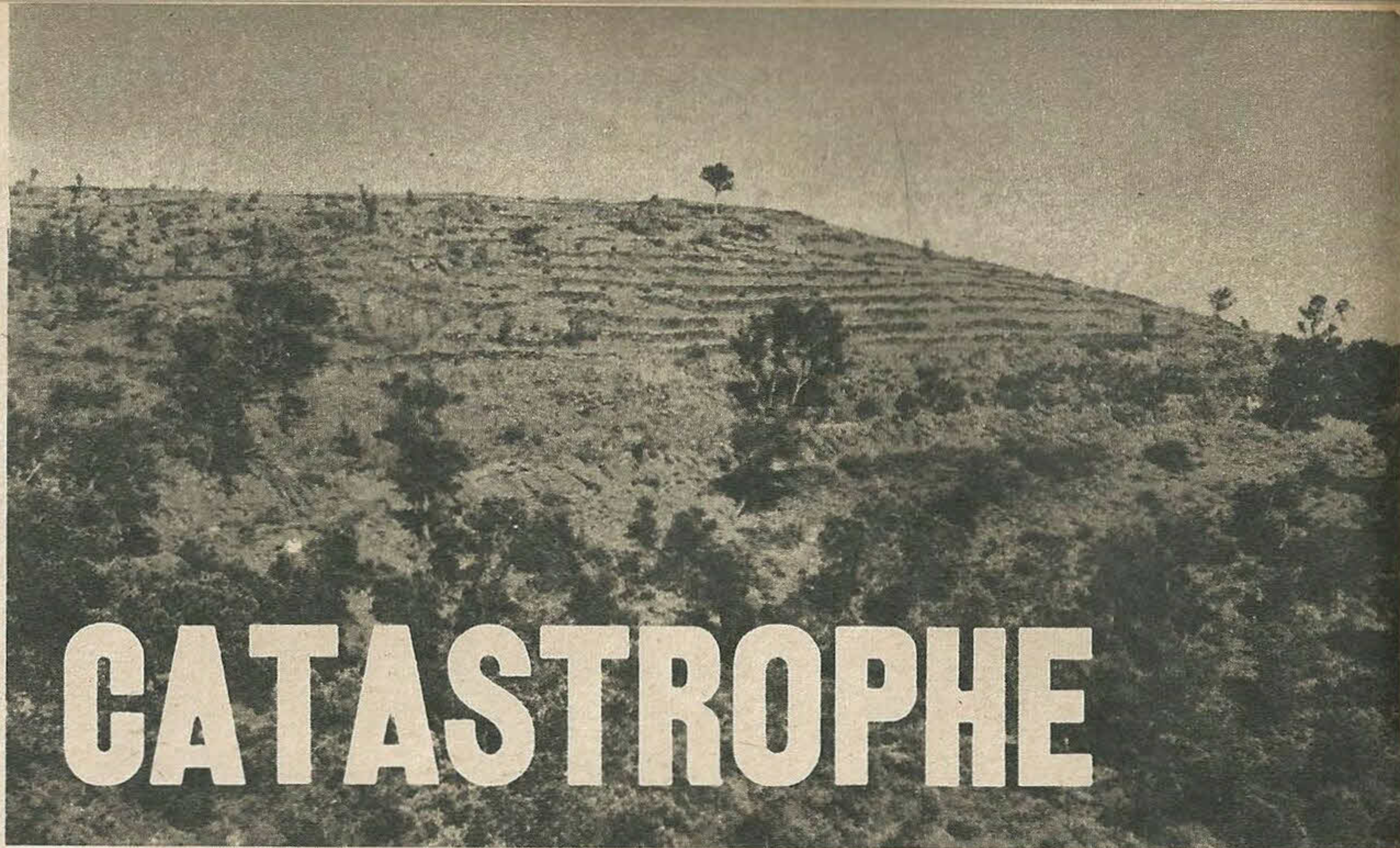
NEXT WEEK: RIDDLE OF THE LAND OF LONG EARS



# Fact or Fantasy?



# The GREAT GRAPE



# CATASTROPHE

*A tiny microbe brought ruin, poverty and death to vast areas of two countries*

Line after line of deserted stone terraces encircle a hill in Spain. These terraces were once covered with rich vineyards, but when disease destroyed the grapes the terraces fell into disuse. Today the ruined walls remain as a sad reminder of former harvests.

**I**F you go to Spain or southern France or look at pictures of the countryside there, you will soon spot a strange feature of the landscape. From the lower slopes to the tops of high hills and the peaks of many mountains you will see band after band of low, stone terraces.

From a distance they look like thin, horizontal, grey lines which follow every dent and curve of the slopes so faithfully they might have been painted on by some giant.

Nearly all of the stone terraces have one thing in common. Except for weeds and straggly grass growing in the gritty soil *they are completely empty.*

Behind the stony tracery of these terraces lies the story of a sudden catastrophe which, less than a century ago, ended more than 2,000 years of industry and brought starvation and ruin to hundreds of thousands of people. To many it even brought death.

The catastrophe happened in 1878, within the memory of some very old folk who are still alive in Spain and France today. Until that year the stone terraces had been green with lush grapevines.

The vines in Spain and France were first cultivated in the lowlands and valleys more than 500 years before the birth of Christ. The country is so hilly and mountainous that soon the vineyards began to edge up the slopes. New roots were planted higher and higher where the soil was thin and poor, so peasants hauled up basketfuls of earth for the vines to grow in.

The earth was laid out in terraces and in front

of each terrace was built a long, low ridge of stone which kept the earth from being swept down the mountainside by the rain.

Soon the earth terraces reached the mountain tops. Grape growing and winemaking became a major industry.

By 1875 there were about 5,750,000 acres given over to the cultivation of grapes in France alone. In Spain the area was even greater. In both countries the business of tending the vines and wine-making afforded employment to hundreds of thousands of people.

## New Roots

**T**HEN something happened. It was decided to try out in a few selected vineyards in Spain a new, American variety of vine with a different flavour.

In 1878 the new roots were planted. In some cases the new variety was grafted on to the base of the old, Spanish kind. But within weeks row after row of vines started wilting and dying. Soon vineyards were laid waste as far as the eye could see.

Like a prairie fire a dread disease spread north over the Pyrennees to France. Within just over a year nine-tenths of the vines of both countries had been completely destroyed!

In whole provinces the cultivation of the grape and winemaking were virtually the sole industries. Unable to earn a living, complete communities faced starvation. Many people died of hunger.

Research teams working at Montpellier, in France, eventually fixed on the cause of the growths on the roots. They decided they were caused by a tiny microbe called "phylloxera."

It had, of course, been brought over by the new American strain which though resistant to the disease itself, spread it to the French and Spanish vines. When the experts discovered this, they thought the obvious answer was to restock the vineyards with the American variety.

Hundreds of thousands of roots of the American grape were imported and planted. For a while all seemed well. But the scientists had made up their minds too soon—and again thousands of acres withered after a couple of years.

For among the phylloxera-free vines were some carrying three other serious diseases—"peronospora," "anthracnose" and "black rot."

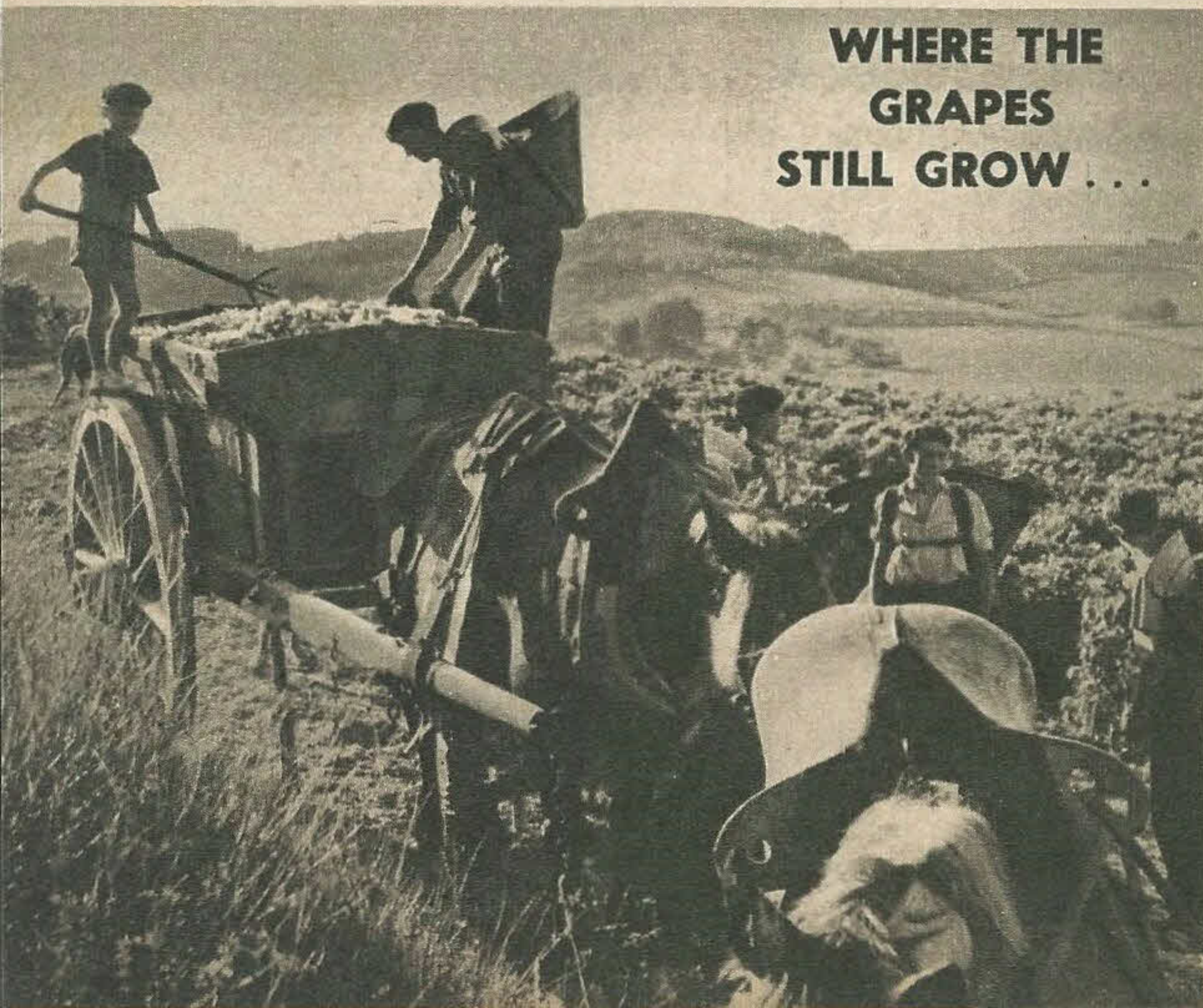
These diseases spread without check until, once again, whole areas were laid bare. This time, though, the catastrophe was complete.

For many years, no vine was grown in Europe, but today the demand for wine is increasing once again and new plants are being grown in the valleys of France and Spain; plants that are immune to disease.

The deserted terraces remain to this day. Miles and miles of them. So well were they built over the centuries that they survive snow and rain.

They will remain, like thin ribbons wound round the mountainsides; for many centuries to come—stark reminders of a catastrophe wrought by a microbe.

## WHERE THE GRAPES STILL GROW . . .



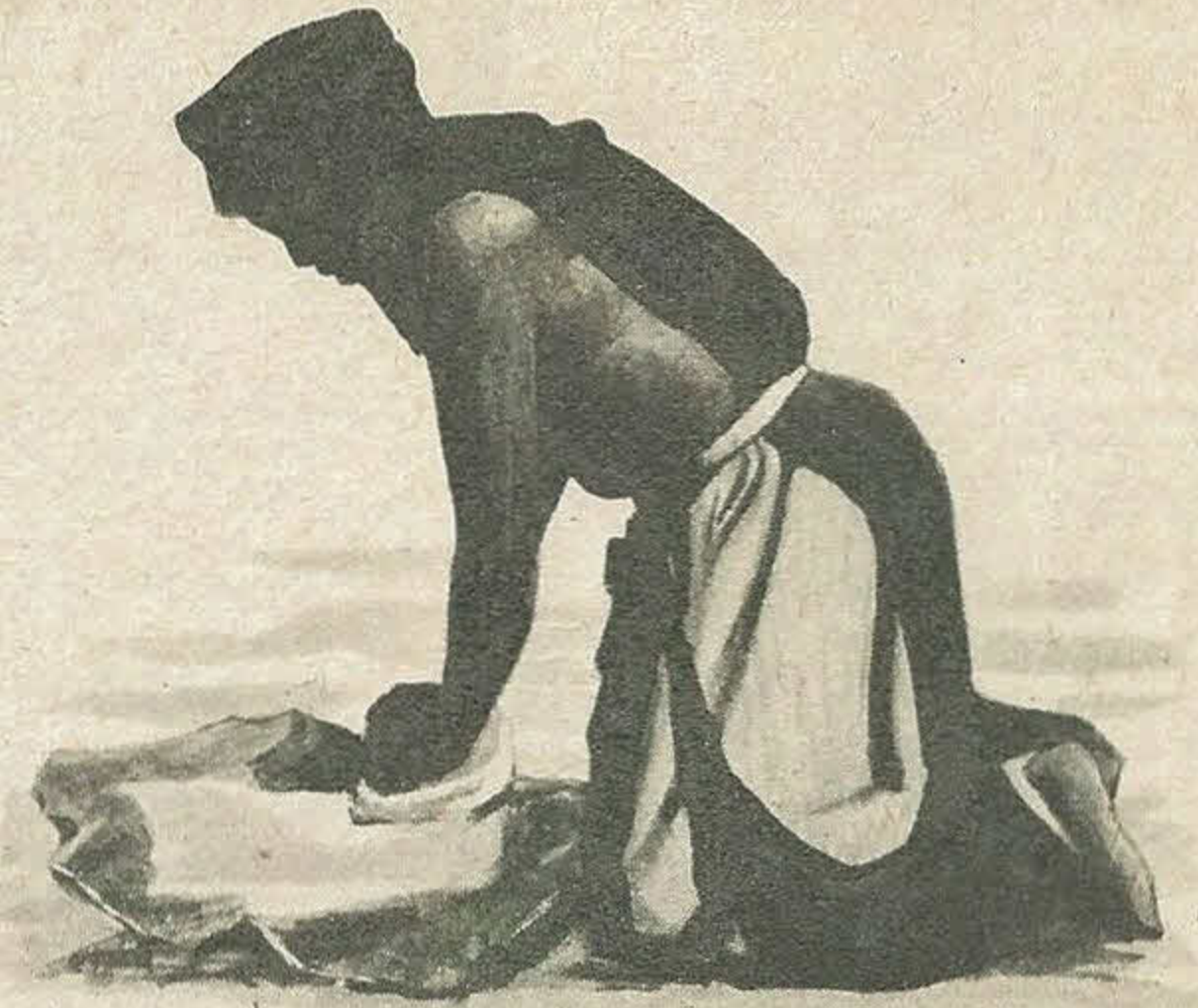
**◀** The grapes are picked by hand in September and October. They are collected in specially designed baskets worn on the back. When the baskets are full the grapes are tipped gently into wooden carts and then taken to the village presses to be made into wine.

**▶** A member of "The Order of Cavaliers of Wine Tasters"—one of the most exclusive clubs in the world—samples a wine. An experienced taster can usually identify not only the year in which the wine was made but also the name of the vineyard from which it came.



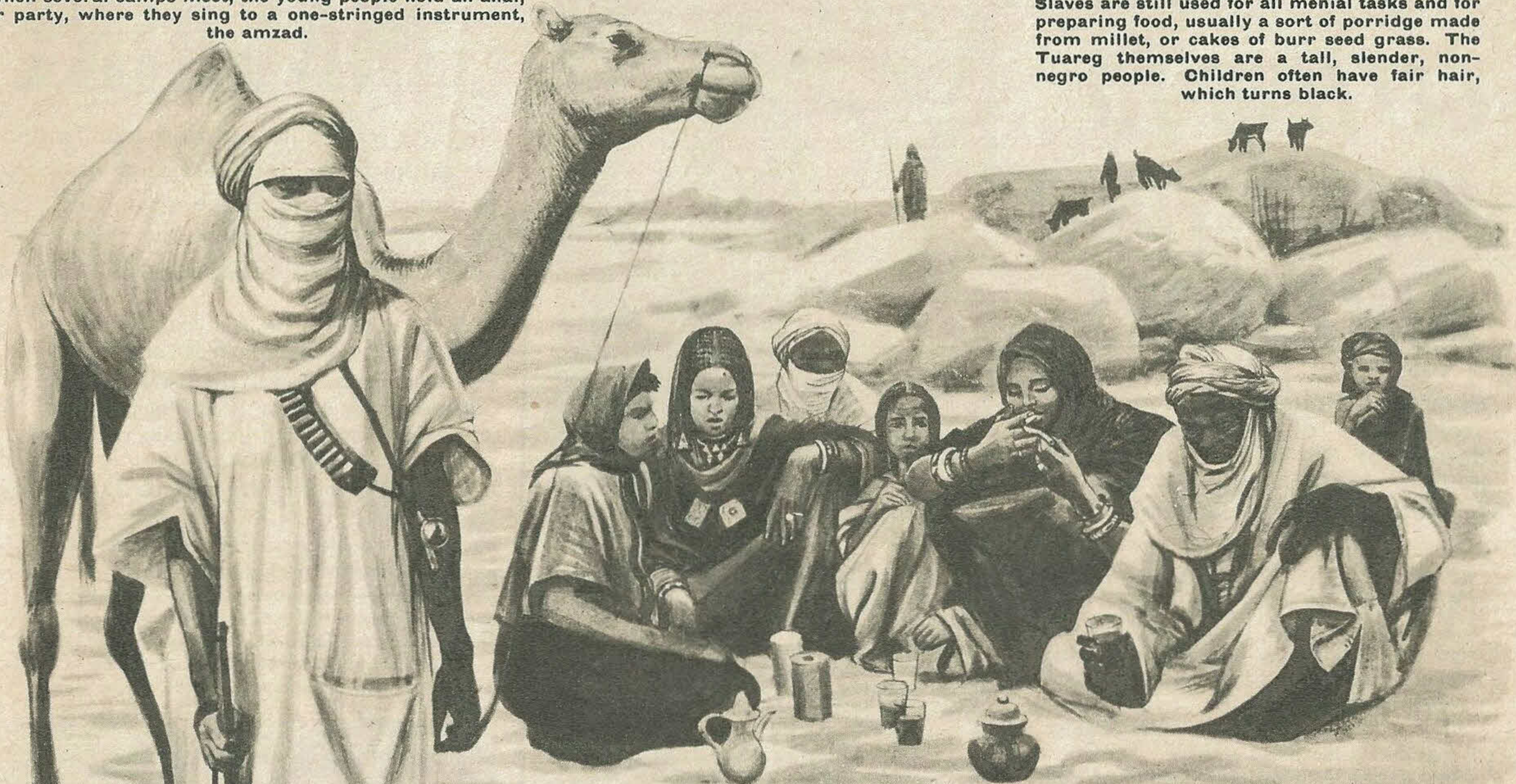
# VEILED MEN FROM THE DESERT

**T**HE wandering Tuareg of the Sahara were once the most feared people in North Africa. They raided farmlands of the Niger and Sudan, carrying off captives and trading them as slaves, and attacking and robbing every caravan in sight. They used their slaves, chiefly Sudanese negroes, to cultivate their oases and dig water-holes in the desert, for like most pastoral nomads the Tuareg disliked working with their own hands. Today the Tuareg live a peaceful life, visiting the south only to barter rock salt for millet, dates, cotton and camel saddles.



Slaves are still used for all menial tasks and for preparing food, usually a sort of porridge made from millet, or cakes of burr seed grass. The Tuareg themselves are a tall, slender, non-negro people. Children often have fair hair, which turns black.

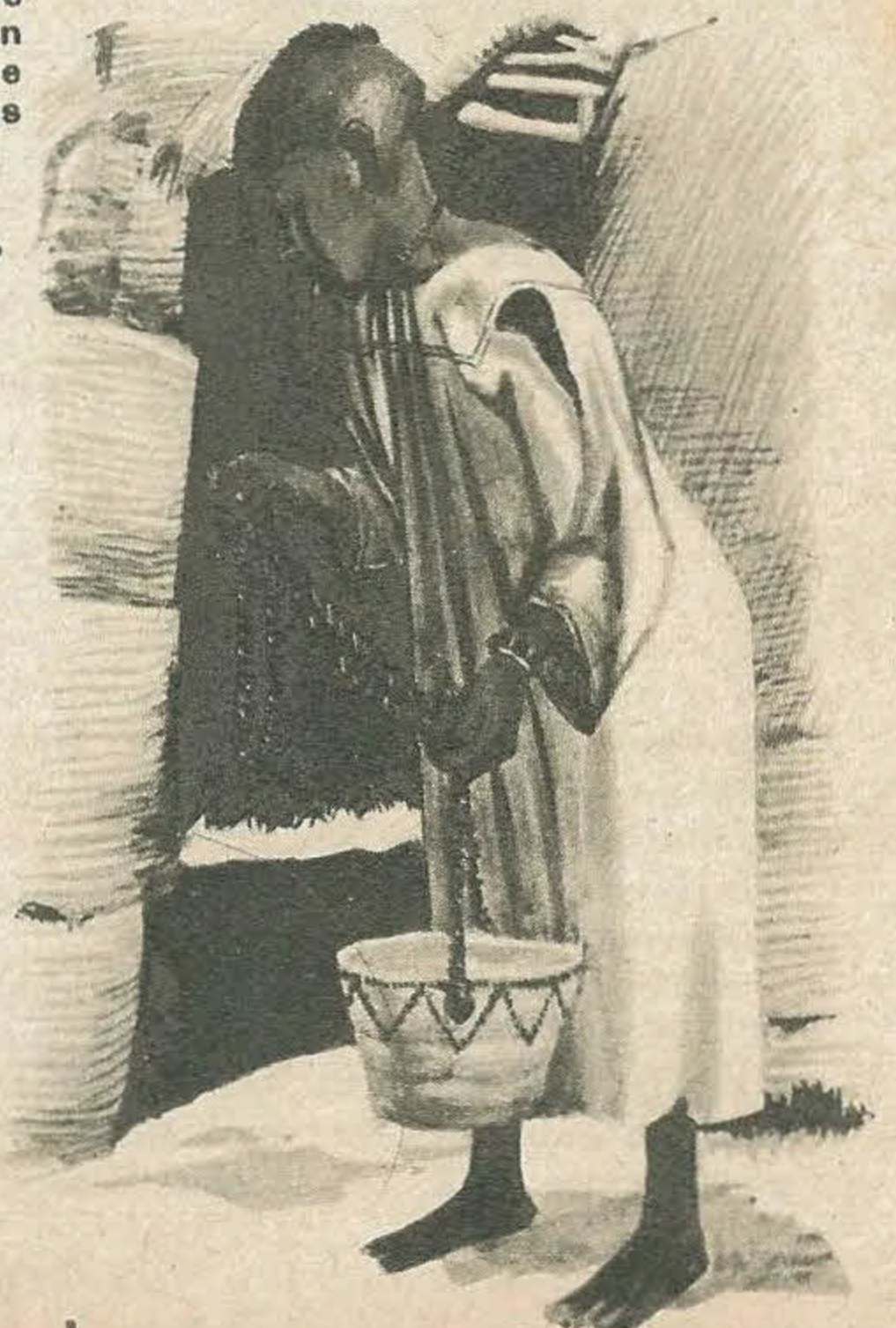
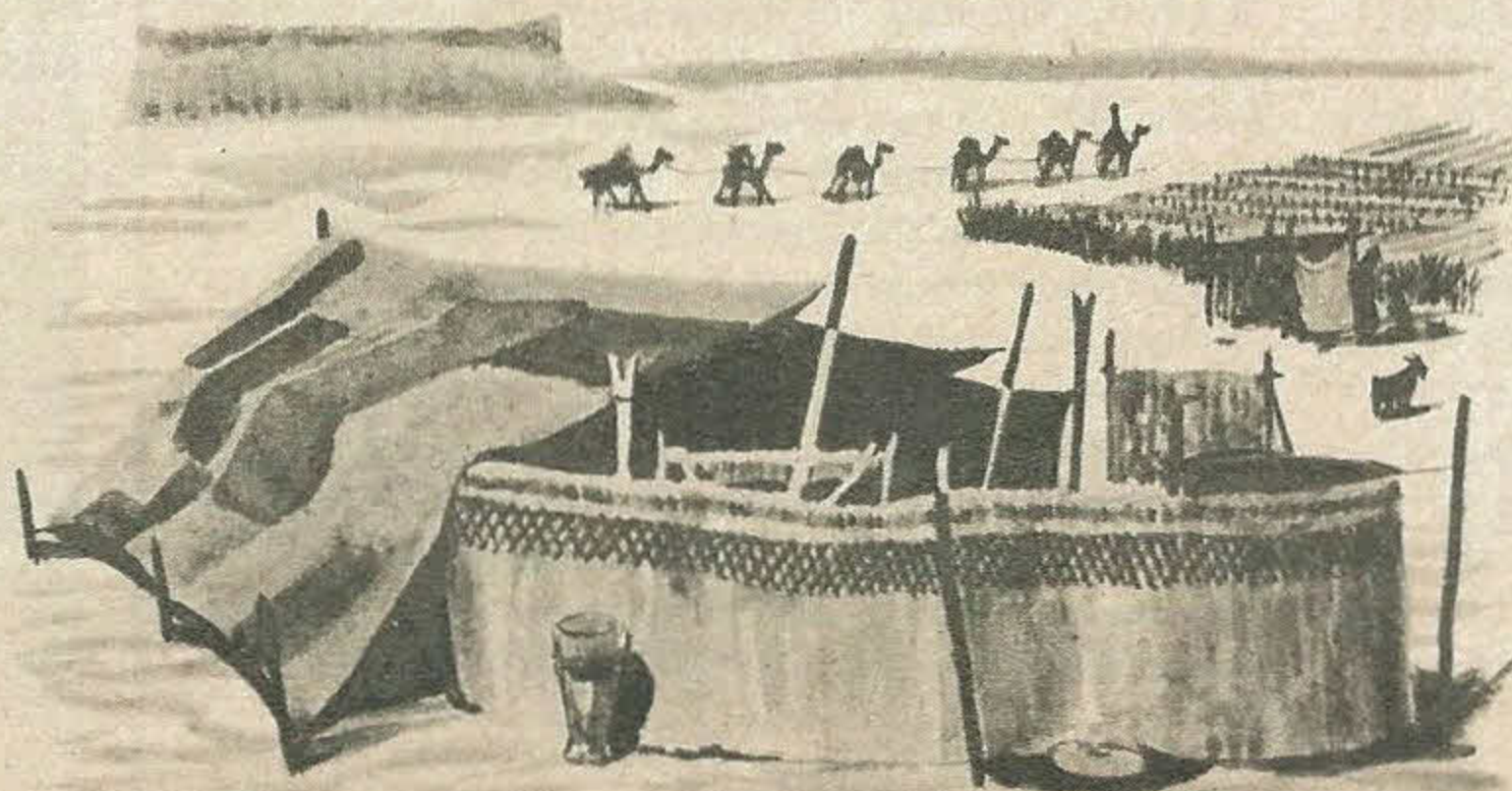
When several camps meet, the young people hold an ahal, or party, where they sing to a one-stringed instrument, the amzad.



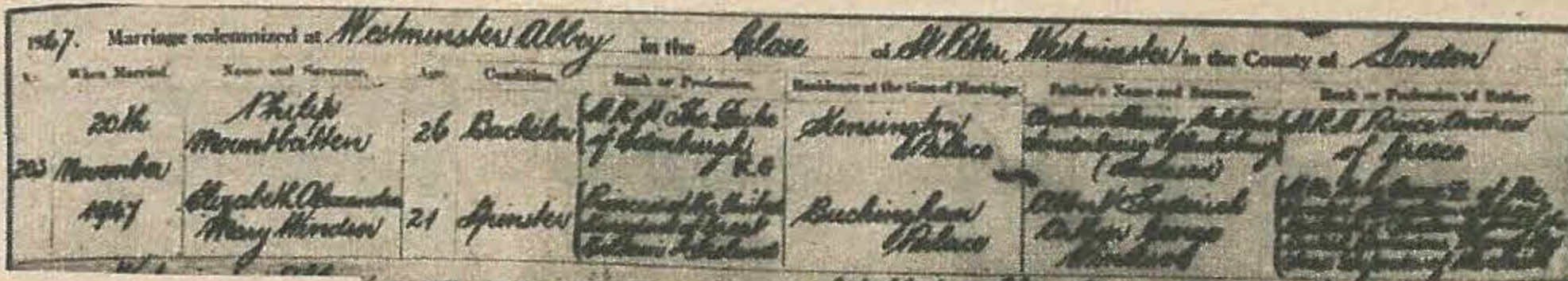
The men (left) have a curious custom of veiling themselves with a *litham*, adopted about A.D. 600-1000. Although they are Muslims, the women are unveiled and enjoy great freedom. Every girl is free to choose her own husband, who takes one wife only, and she educates the children herself. The Tuareg have many beliefs and several words in their language suggest Christian influence, including names like Samuel and David. This influence may be from victims of religious persecution who fled to the Sahara in Roman times.

The tribes are divided into classes: nobles, priests, serfs, those of mixed marriages, and slaves. The nobles still do not work but are looked after by slaves, who live on the outskirts of the Tuareg camp in rough brushwood shelters. Their tasks include tending small fields of millet, watching flocks of goats, caring for camels and, like this boy, carrying wood and water. Once the Tuaregs rode thoroughbred steeds, which they used in lightning caravan raids, but today they are not rich enough to buy horses. Instead they ride camels.

As pastoral nomads, the Tuaregs live very simply. They use milk from their camels and goats to enable them to continue for weeks without camping beside a water hole. A tribe has few possessions—mats, water skins, cooking utensils and ox-skin tents. They camp on ground in the central Sahara where there is sufficient pasture for their animals, the women putting up the tents by stretching the ox skins on poles and surrounding these structures with mats to keep out the desert winds.



**JOHN AND JANE CITIZEN**



according to the Rites and Ceremonies of the *Anglican Church* of special licence

*Married*

*Philip Mountbatten* 26 *Buckingham Palace*

*Elizabeth Alexandra Mary Windsor* 21 *Spencer*

*Geoffrey Catterall*

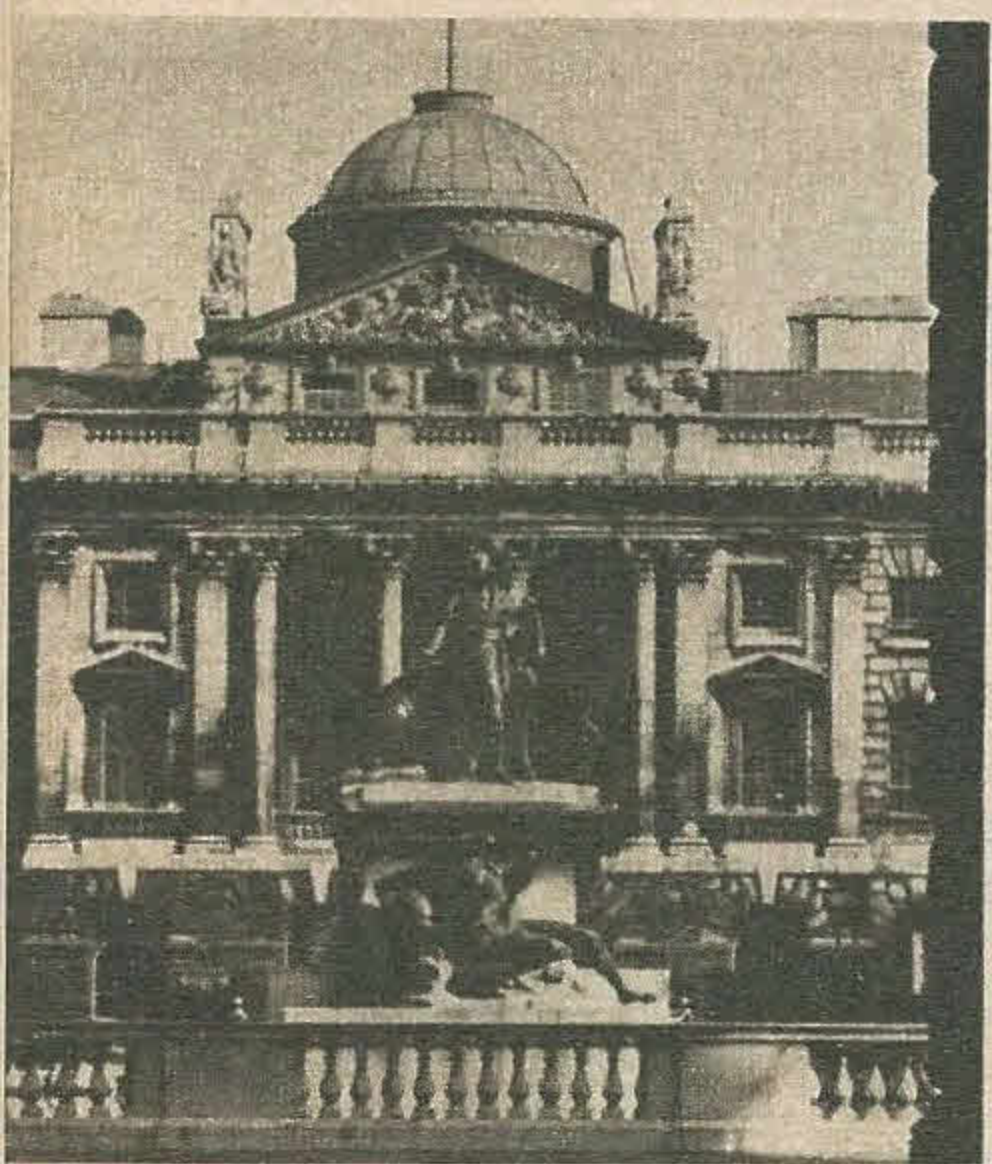
*Manhattan & Brown*

*Albion*

*Victoria Victoria*

*London*

Above: A marriage certificate like those kept in the records of Somerset House. This one certifies the marriage of the Queen and Prince Philip. Left: Somerset House in the Strand, London. Below: Christening time, and this baby's birth has already been registered, as the law requires.



**WONDERS OF NATURE:**

**PIG THAT WORKS A SLOT MACHINE**

He puts a coin in—and out comes his supper. Animals can learn lots of amazing tricks like this, and we call this learning by “conditioned reflexes”

IN the middle of the last century, there lived in Germany a famous horse called Clever Hans. Clever Hans was famous because he was able to do arithmetic—not in words of course, but by tapping out the answer to sums with his hoof!

Naturally enough Clever Hans earned for his trainer quite a lot of money—as horses that could do arithmetic were rare indeed. But the profits soon fell when a psychologist who was interested in the intelligence of animals discovered that Clever Hans's counting abilities were not quite what they seemed to be.

He found that Clever Hans had no real understanding of the sums he was asked. All he was



A Great Tit poaches cream from a milk-bottle by pecking through the metal top. The Tit probably first learned to do this by accident, or by imitating other birds.

**GETTING TO KNOW YOUR ANCESTORS...**

Somerset House is the nation's storehouse of records. It has details of 94 million births, 61 million deaths—and all the information about your family tree

MRS. JEAN BAXTER was pouring coffee when her eyes alighted upon the newspaper behind which her husband was hidden at the breakfast table. Excitedly she prodded her finger on a small advertisement.

“Look at that, Dan,” said Mrs. Baxter. “What does it mean?”

Mr. Baxter examined the column of legal announcements, and read:

*If relatives of the late Joshua P. Prendergast will write to the undersigned, they may learn something to their advantage.*

Underneath was the name and address of a firm of solicitors.

“It's obvious,” he grunted. “Those solicitors are trying to find the people entitled to inherit Mr. Prendergast's money.”

Mrs. Baxter was thrilled. “My great-grandmother's maiden name was Prendergast,” she said. “I wonder if she was related to this Joshua P. Prendergast.”

After her husband had gone to work, Mrs. Baxter put on her hat and coat and caught the train to London, where she saw the solicitors dealing with Mr. Prendergast's affairs.

“If you can prove beyond all doubt that your great-grandmother was related to Mr. Prendergast's ancestors, you may certainly be entitled to some of the money he has left,” the solicitors told Mrs. Baxter. “Your best plan is to go to Somerset House and search their records.”

Somerset House in London is the headquarters of the General Register Office where records have been kept of all the births, marriages and deaths in England and Wales (and of the births and deaths at sea) since 1837. Similar details kept by Con-



suls abroad about British subjects are included.

Scotland has its own central register office in Edinburgh at New Register House.

Mrs. Baxter searched the indexes at Somerset House, which now include 32 million marriages, 94 million births and 61 million deaths. She discovered her great-grandmother's date of birth and bought a copy of her ancestor's birth certificate for 3s. 9d. This showed that her great-grandmother's father was Lionel Adam Prendergast. Then she traced the ancestry of Joshua P. Prendergast and found that his grandfather was the same Lionel Adam Prendergast.

This is an example of the way in which the records at Somerset House are used. Information in them is obtained from 2,000 superintendent registrars and registrars in our towns and villages. By law, all births must be registered with these officials within six weeks, and all deaths within five days. A record of every marriage is made as soon as the ceremony is over.

The object of gathering all this information together in one building is to make it possible for anyone to obtain for 3s. 9d.—ninepence in the case of a shortened birth certificate—a certificate of a birth, marriage or death from a central source.

All the entries are indexed alphabetically, and for 1s. 6d. you can explore five years of them. If you want to compile your family tree, you can pay £1 10s. for the freedom of the indexes.

Somerset House is also the head office of the Inland Revenue Department, which collects our taxes, and the Probate Registry, where wills are kept. The wills stored here date back to 1382, and for a small fee you can see the will of a famous person like Shakespeare or Wellington.

Somerset House is certainly a romantic warehouse of history.



## Do Animals Think? Part 2



Though he does not know it, the Wood Mouse took this photograph himself! As he touched the bait he triggered off a flash camera concealed in a tree. He disliked the flashlight so much that after a few visits he always closed his eyes before taking the food.

Photo by John Markham

doing was tapping with his hoof until he saw his trainer give a slight sign. Then Clever Hans knew he had tapped enough times, and stopped.

The trainer was quite unconscious of the sign—it was probably a very slight sigh of relief when Hans got to the right number.

This horse story tells us two important things about animals and the things they learn. It tells us that animals can learn things, but it also tells us that they often do not learn what we think they do. Clever Hans had learnt an ingenious tapping trick, but he had not learned how to do arithmetic. If you had asked him a sum when he could not actually see you, he would have been unable to give the right answer.

Animals are very good learners and imitators, and can be taught all sorts of tricks. Seals can learn how to balance balls on their noses, bears learn how to ride bicycles, and apes and even pigs can learn to put coins in a slot machine for food!

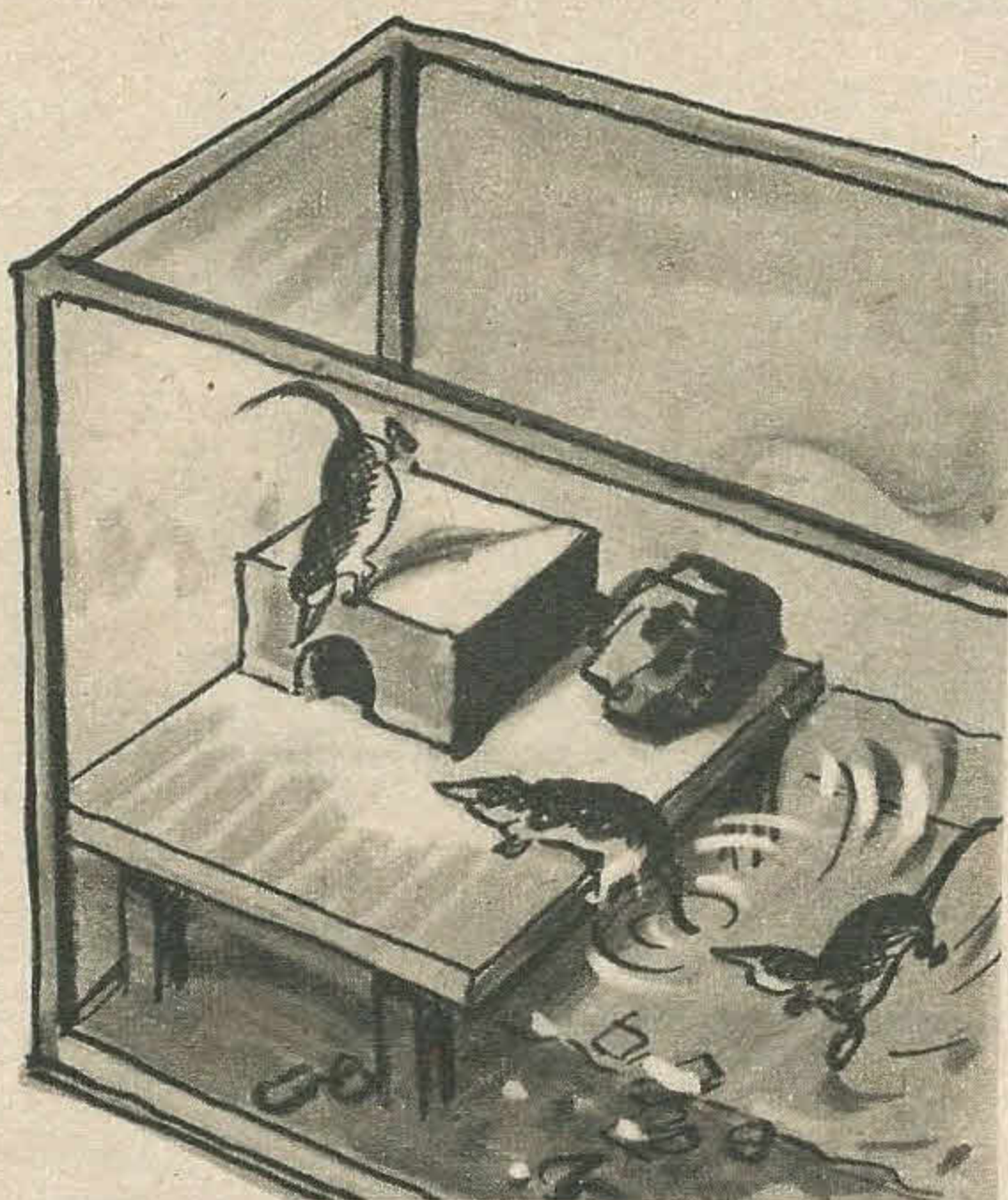
Obviously an ape or a pig would never learn to work slot machines on their own. Only human beings can teach them tricks like this.

But an animal's ability to learn in a circus is one thing; to teach itself is often impossible. For example, have you ever seen a sparrow pecking at a lump of bread on the lawn? The bread jumps about all over the place, but the sparrow has never learnt, and probably never will learn, to hold the bread still with its claws. But a man could probably teach it to do so.

In a circus act the animal learns to do a trick because it gets a reward. Once the trick has been learned, it knows it can always get a lump of sugar if it does the trick well.

In real life, learning is extremely important—it may be a question of life or death. Suppose a starving Dartmoor pony comes across an object on the ground that he has never seen before. At first he noses it around, as though asking himself, "Shall I eat it or shan't I?" He takes a bite, and finds it horrible, and from then on he remembers to avoid all other objects that look like it.

In this way, through learning from his experiences, an animal is able to store information about the world so that he can cope with his experiences intelligently.



Some water shrews dash for the safety of their box. Climbing first on to the table, they leap on to the roof and from there somersault through the hole. They never learned that it was quicker to go straight through the entrance!

But though learning is a sign of intelligence, we do not have to suppose that animals have great brains, or even that they have much understanding of what they do.

In fact animal learning only involves a very simple brain mechanism indeed. This mechanism is called a "conditioned reflex," and was first discovered by a Russian scientist named Pavlov.

Pavlov started by studying the way dogs learn. He found that when dogs were expecting some food, their mouths watered. One day he decided that just before giving them the food, he would ring a bell. He did this for several days, and he soon found that the dogs' mouths would water when they heard the dinner bell by itself, even though it was not time to eat at all.

This meant that the dogs had learned to associate the bell ringing with getting food, so that hearing the bell was enough for their mouths to

water in expectation of the meal they would get.

This simple kind of association—between a bell and food—is enough to explain a lot of animal learning—even, for example, the pig learning to put money in a slot for food.

The trainer simply taught the pig to push a coin with his snout for a reward. He slowly decreased the area and direction of the push, so that soon the pig was pushing the coin through a hole in a box for a reward, and then finally through a tiny slot. The machine automatically released food, so that the trainer was no longer needed, and the pig could feed itself.

In training pets you must always remember that they learn because they get something out of it—whether it is a lump of sugar or simply the pleasure of having your company.

Unlike instincts, which are inherited, animals slowly acquire all they learn through their own experiences. As animals all have different experiences from each other, every animal is unique. This means that though instinctive behaviour is characteristic of a species, what they learn is not. Every tomtit, for example, instinctively builds a tomtit nest, but only some tomtits learn how to peck the tops of milk bottles to get at the cream.

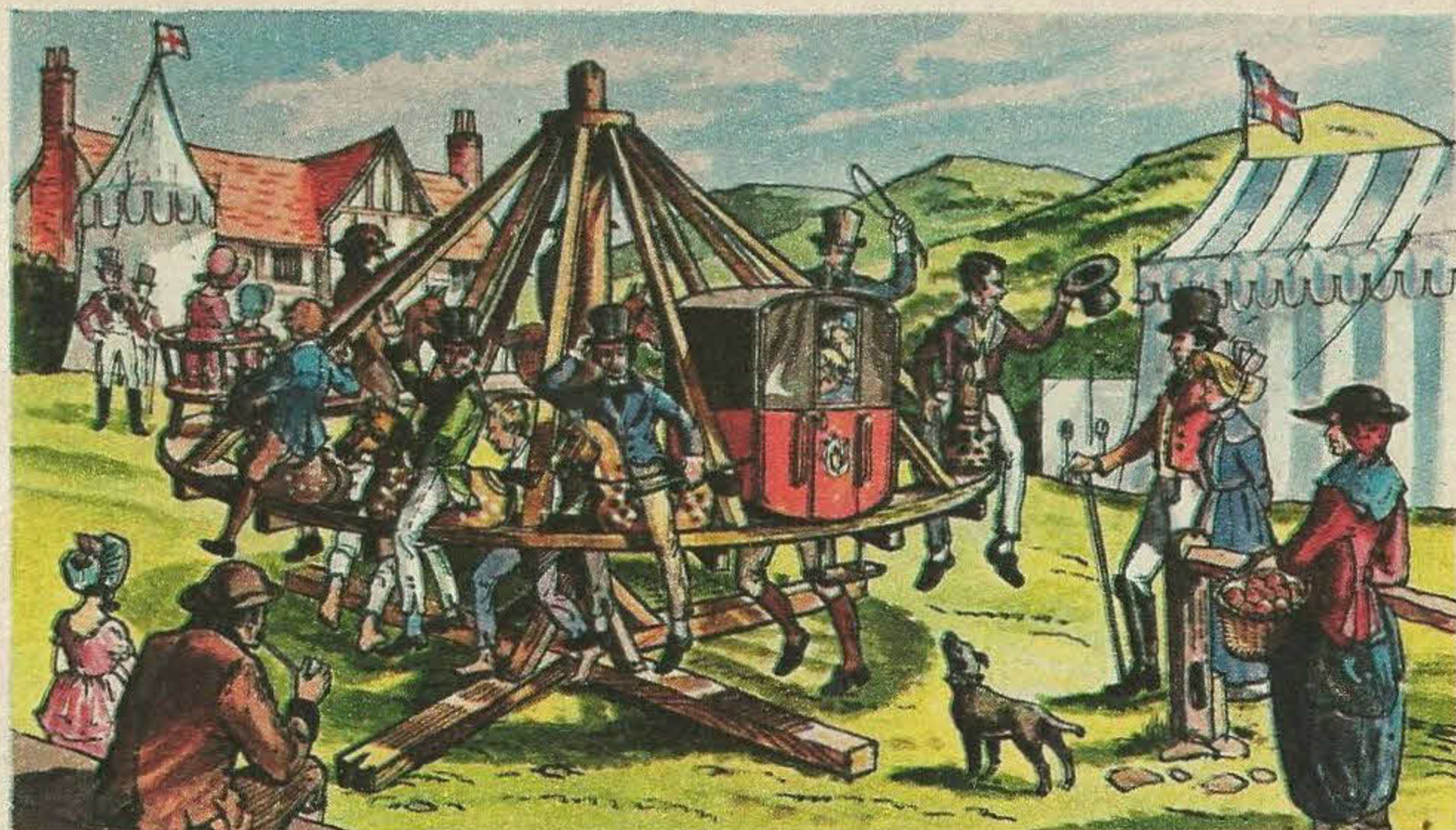
Although this kind of learning helps animals face the world intelligently, an animal that has learned something may look the very opposite of intelligent to us.

The German naturalist Konrad Lorenz once kept some water shrews in an aquarium. Their home was a little box above the water with an opening in one side. In the face of danger the shrews would rush to the home for protection. Accidentally one shrew learned to get into the home by leaping on to the roof and then falling through the hole in the side by a half-somersault.

It would obviously have been much simpler for the shrew to have got in without somersaulting from the roof, but once all the shrews had learned the somersaulting method they perfected it to the point where they could leap into their home in record time.

But in all the time that they were there they never learned that the leap and the somersault were unnecessary. They could never "see" there was a shorter way.

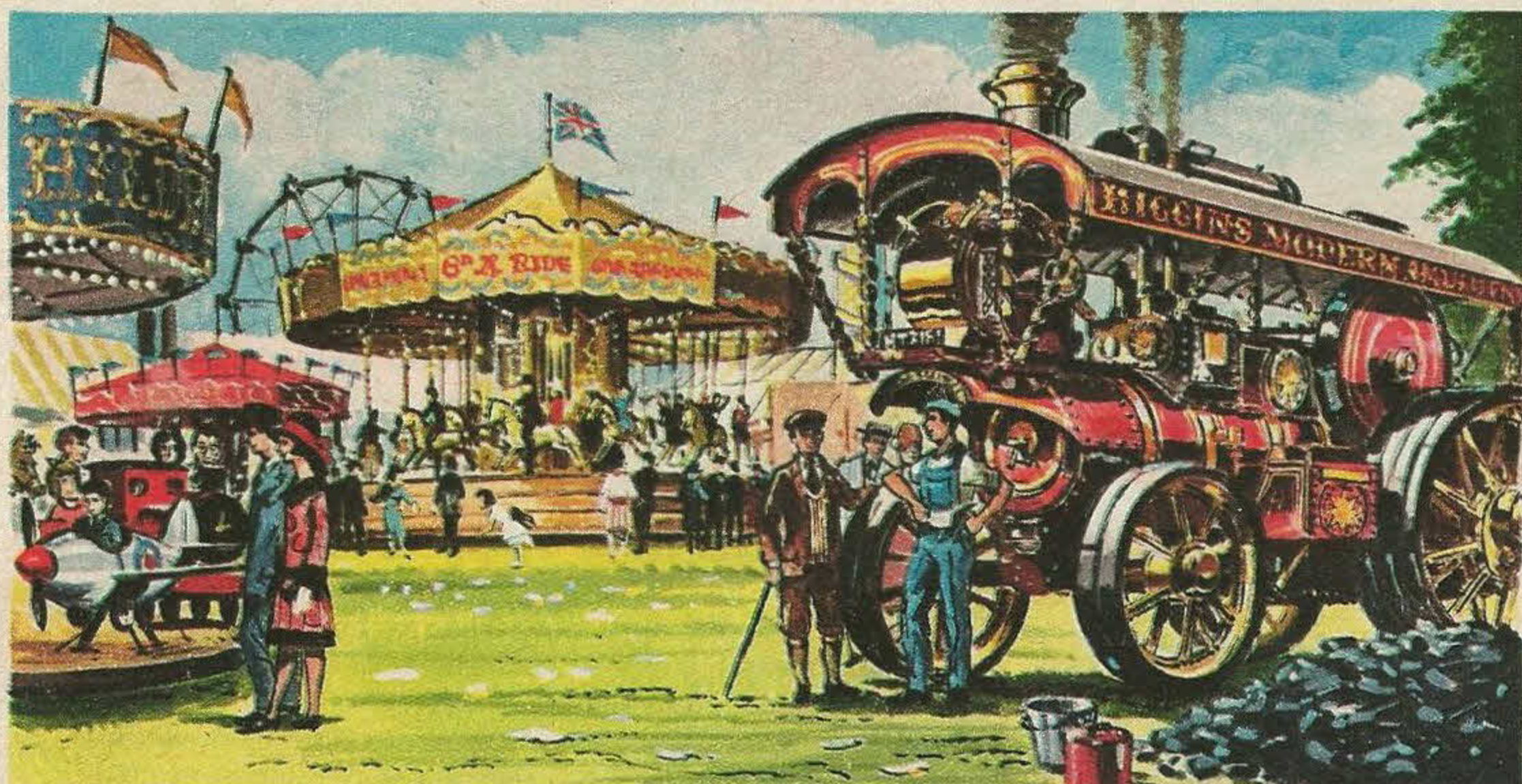
# FAIRS TAKE TO THE AIR



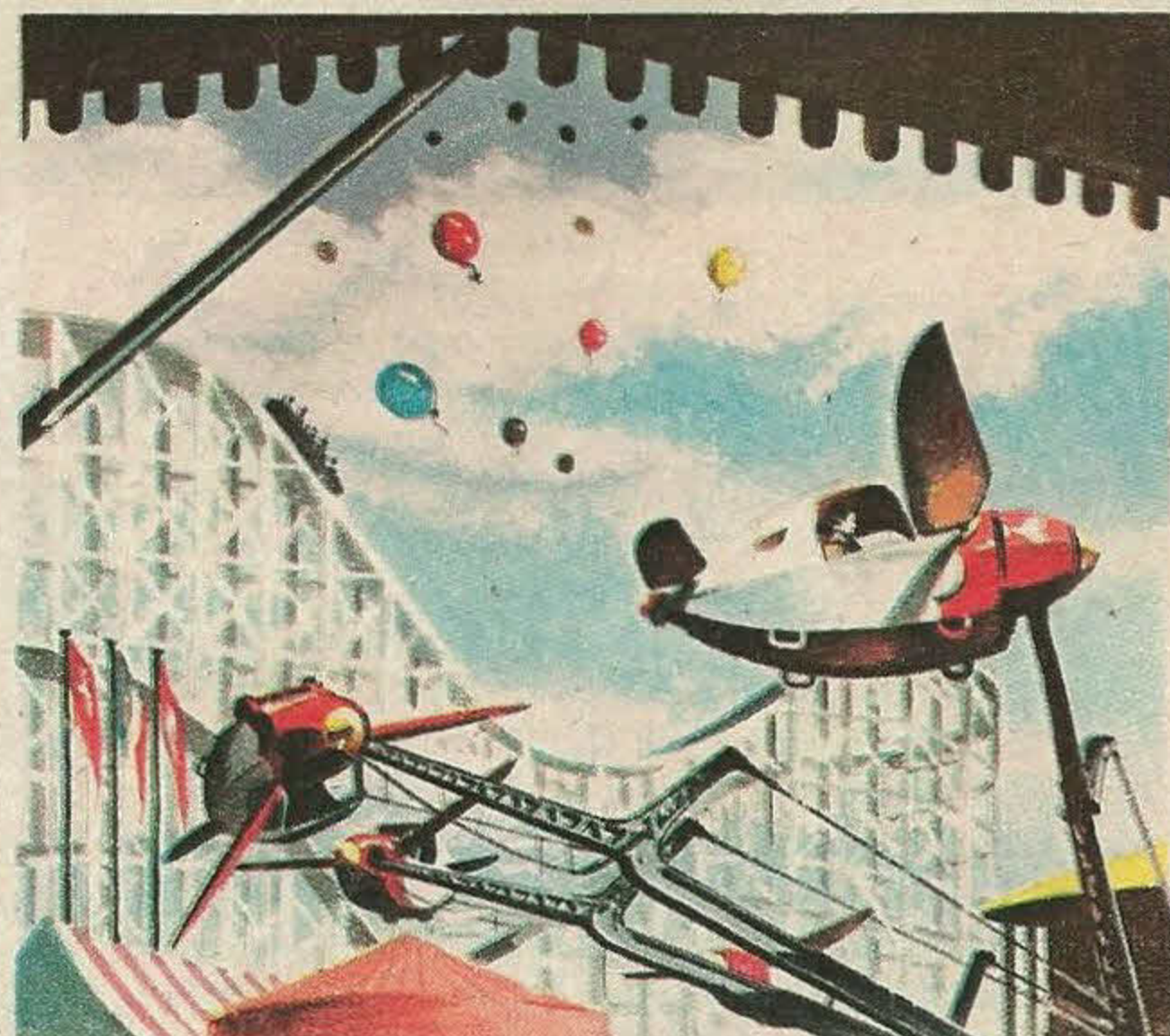
This is a primitive roundabout in action at a small country fair in 1805, when amusements had really begun to develop. There were wooden horses to ride, such as we have today, and also a scaled-down coach and a "grandfather" chair, or safe seat, for babies. The roundabout was pushed by boys who earned a few pence for their labours. Rides cost a halfpenny each.



Town-dwellers enjoyed fairs just as much as country people, and special sites were reserved in cities for fairgrounds. At this fair in an industrial town in 1840 there was a Big Wheel (still turned by hand), swings, coconut shies, and stalls for food and drink.



By 1920 fairgrounds had plenty of sideshows. Traction engines driven by steam supplied the power for roundabouts like the big one in the picture, which had music supplied by a miniature steam organ. All the stands and equipment were painted with highly decorative and traditional motifs. At night they were illuminated by electric bulbs.



Gradually permanent fairs were established, giving scope for complicated amusements like scenic railways, sky-rockets and hell-divers, powered by electricity. These attractions drew the crowds.



One of the most famous permanent fairs is in Battersea Pleasure Gardens, London. These Gardens were originally part of the Festival of Britain celebrations in 1951. This is the giant "rotunda" or open building at the beginning of the Grand Vista in the Gardens. The fair is part of the gardens.

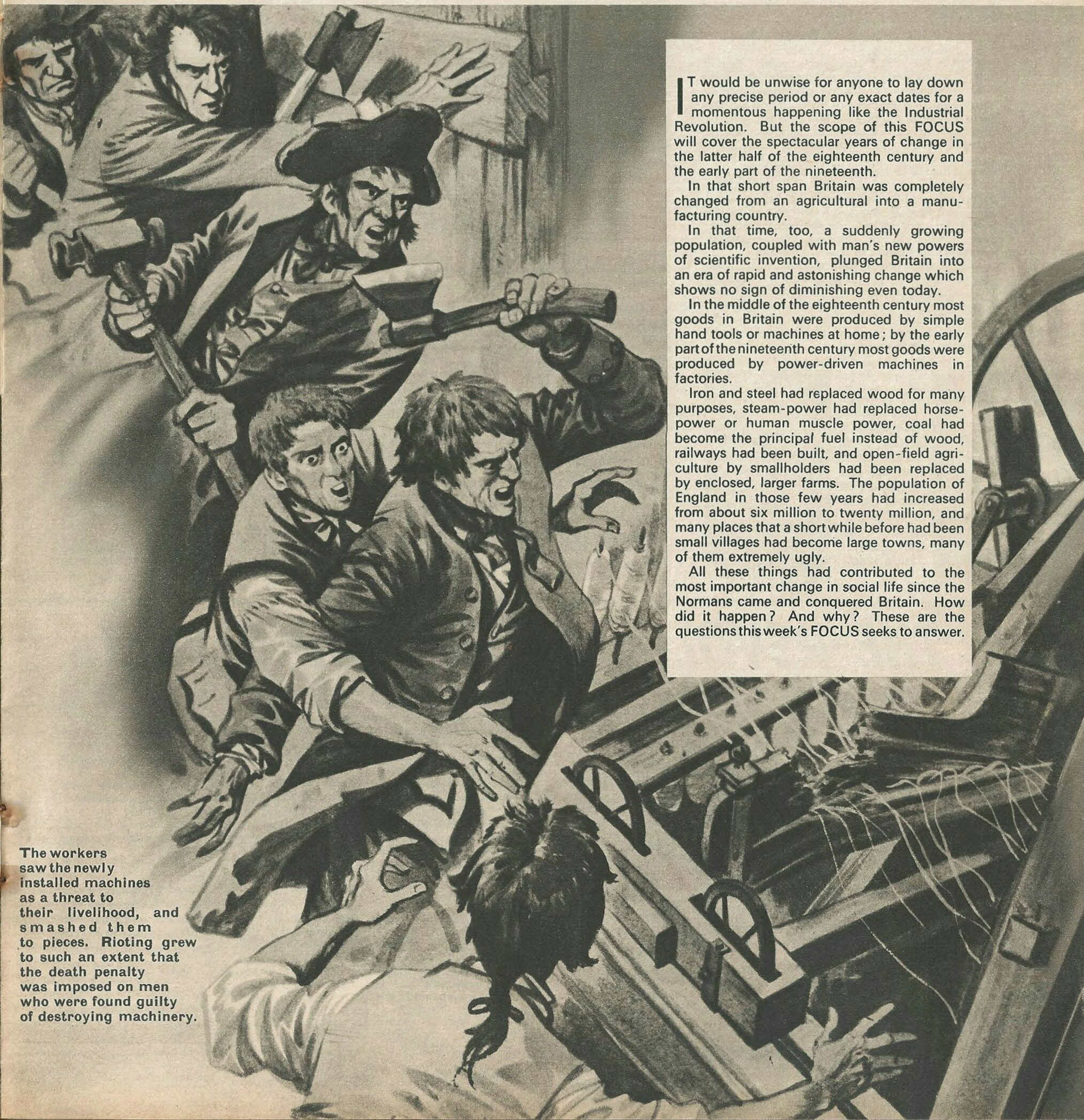


Today the old idea of trading is carried on at World Fairs, where international goods are on show. This was Seattle World Fair, 1962, where suspended cable cars took visitors to different sections of the fair. There were no roundabouts here. Inset is the 600 ft. high "space needle" with a restaurant in the revolving top.

# LOOK AND LEARN



## FOCUS on THE INDUSTRIAL REVOLUTION



It would be unwise for anyone to lay down any precise period or any exact dates for a momentous happening like the Industrial Revolution. But the scope of this FOCUS will cover the spectacular years of change in the latter half of the eighteenth century and the early part of the nineteenth.

In that short span Britain was completely changed from an agricultural into a manufacturing country.

In that time, too, a suddenly growing population, coupled with man's new powers of scientific invention, plunged Britain into an era of rapid and astonishing change which shows no sign of diminishing even today.

In the middle of the eighteenth century most goods in Britain were produced by simple hand tools or machines at home; by the early part of the nineteenth century most goods were produced by power-driven machines in factories.

Iron and steel had replaced wood for many purposes, steam-power had replaced horse-power or human muscle power, coal had become the principal fuel instead of wood, railways had been built, and open-field agriculture by smallholders had been replaced by enclosed, larger farms. The population of England in those few years had increased from about six million to twenty million, and many places that a short while before had been small villages had become large towns, many of them extremely ugly.

All these things had contributed to the most important change in social life since the Normans came and conquered Britain. How did it happen? And why? These are the questions this week's FOCUS seeks to answer.

The workers saw the newly installed machines as a threat to their livelihood, and smashed them to pieces. Rioting grew to such an extent that the death penalty was imposed on men who were found guilty of destroying machinery.

## DOWN ON THE FARM SOMETHING STIRRED

It was caused by men with new ideas. They were tired of old-fashioned farming methods—and they wanted changes

**T**HE Industrial Revolution really sprang out of an agricultural revolution. The Renaissance had stimulated many men to think and to experiment in order to find out the facts of chemistry, physics and biology, and the development of mathematics had provided a valuable instrument for measurement.

Agriculture, of course, was always the dominant industry in Britain, and it existed on old-fashioned ideas of farming the land. The accepted way for sowing seed, for instance, was for a man to walk about in a field scattering the seed from right to left. As the eighteenth century dawned a few thinking men began to question the wisdom of this old custom.

One of them was a man named Jethro Tull. He had been sent by his father, a Berkshire landowner, to study the methods of French farmers, and Jethro had noticed that in France the farmers planted their vines in long straight rows which they hoed to eliminate the weeds when the plants appeared.



Ploughing, sowing and harrowing in the eighteenth century. Before thinking men urged improvements, cattle wandered over the crops, weed seeds blew over tilled ground with impunity, and fields went unfenced.

Jethro was quick to realize that this method of planting in rows applied to ordinary farming would be far less wasteful than scattering seed everywhere about. But when he told his father's labourers about it they were most put out. They did not like the idea of bending down to sow one seed at a time in a long, monotonous row; nor did they want all the "fuss" of hoeing.

Worried by their threats to leave, Tull set his mind to work and came up with an invention—a seed drill which, when it was towed behind a horse, planted seed economically, at regular intervals and all at equal depth, in straight rows.

Thus, one enterprising Englishman set loose the train of ingenuity and inventiveness that was to change the face of Britain within the span of a lifetime.

A Norfolk squire named Lord Townshend—Turnip Townshend he was called, because he liked growing turnips—next decided to adopt Tull's method. Townshend, too, introduced a

system of rotation of crops which greatly increased the value of his land. And another famous farmer, Squire Coke, of Holkham Hall in Norfolk, began to hold regular meetings in his village to discuss ways of improving the productivity of the local land—with such success that at Holkham they had to pull down the workhouse because everyone was so busy making money out of the land that they did not need it any more!

Always the emphasis was on improvement. A Suffolk man named Arthur Young looked questioningly at the vast, hedgeless village fields still being cultivated in most places by medieval methods. Young went on a tour of England and made notes in a large book about the appalling land and labour wastage; then he set himself up as a sort of agricultural business efficiency expert and lectured farmers.

Young's message was "Improve!" That same message was already being heard elsewhere, in industrial Britain.



Left: Before Lord 'Turnip' Townshend grew turnips to provide winter feed for cattle, cows were often slaughtered at the end of summer. Right: Squire Coke of Holkham, Norfolk, another reform farmer.



## THE REVOLUTION GETS UP STEAM

Power was what the new factories wanted. Inventors Thomas Newcomen and James Watt found it—and inventor George Stephenson set it in motion



**T**HE year 1769 was the birth year of mechanical power in the Industrial Revolution. It was the year in which Richard Arkwright patented his water frame for cotton spinning, and the year in which James Watt patented his steam engine.

If Arkwright's invention accelerated the Revolution, then Watt's machine certainly changed it into top gear. But for the story of steam we need to go back farther even than Watt.

In the seventeenth century many wealthy people in the London and Home Counties area burned coal brought by sea from the North. Naturally, the demand for this "sea coal" as it was called, increased over the years, with the result that miners had to dig still deeper for it. The deeper they dug the more their mines filled with water; and water, indeed, soon prevented many mines containing plenty of good coal from being properly worked.

What was needed, then, was a device that would automatically pump out the water, so that the much-needed fuel could be safely mined.

Before the century ended one was invented and tried, but too often its boiler blew up, causing a lot of damage to the mine and considerable fright to the miners. Then, in 1712, a Devon blacksmith named Thomas Newcomen invented a steam pump.

Newcomen's engine included a piston which was driven up and down inside a cylinder 15 to 20 times a minute. The piston rod was connected to the pump handle, which worked up and down with its action.

This first real steam engine was a great success, but it was an uneconomical user of coal because

Scotsman Watt and the boiling kettle. The famous story of young James's introduction to steam power could be fact or fiction. What is definitely fact is that Watt pioneered the harnessing of this form of power and used it as the driving force of the Industrial Revolution.

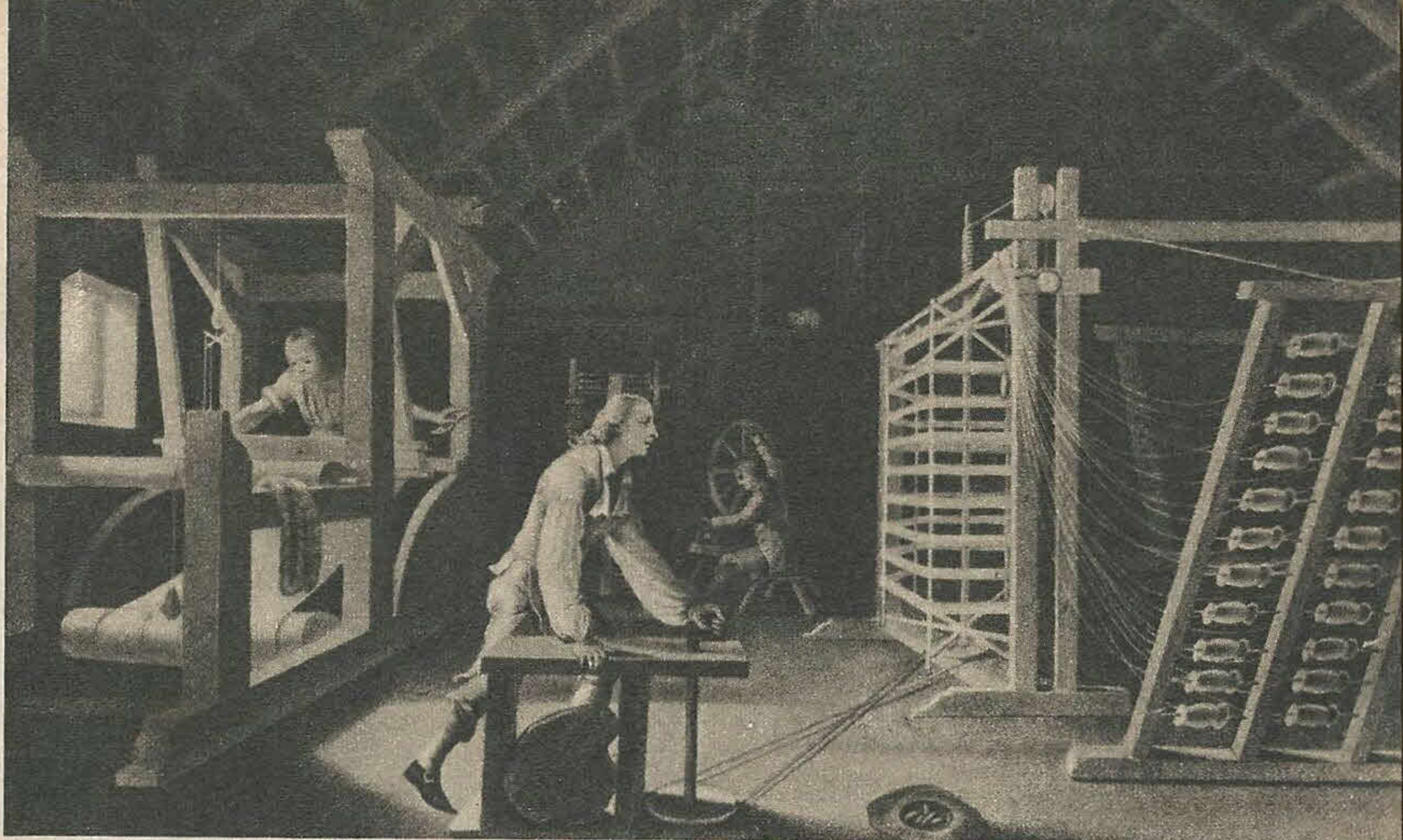
# THE GREAT INVENTORS

As new-born industry expanded, the work done by cottagers became obsolete. A handful of men were beginning to change the lives of thousands of people.

**L**IFE in mid-eighteenth-century England—a mere 200 years ago—was astonishingly different from life in England today. Most of the people, for instance, lived in villages. Most of the villagers were smallholders, but farming the land was a poor business and seldom made enough money for a family's needs. So those members of the family who were not at work in the fields bridged the gap in the joint income by doing some weaving "homework."

Thus in many of the village homes throughout Britain the work was a curious mixture of agriculture and industry: the men tilling the fields, the women and children weaving cloth.

The process of home cotton production began with the sorting and cleaning of the raw cotton



A weaver at work in an early factory. At this stage man still provided the power for the loom—steam power was still to come.

by the children of the family. It was then spun into thread by the women, and then the men, probably working in the evenings, wove it into cloth on their hand-loom. Delivery of the raw cotton to the cottagers and collection of the finished woven cloth was carried out by traveling dealers.

The family weaving loom was a simple affair, the weft being passed through the warp by the weaver. To this kind of loom an inventor named John Kay turned his attention, and pro-

duced a mechanical device called the flying shuttle, which greatly increased the weaver's working speed as well as making a much broader piece of cloth.

Kay's shuttle quickly caught on among the cottage families, and by the middle of the century nearly every cottage weaver was using one. The trouble was that it worked *too* quickly, and the spinners could not keep pace with it. What was wanted now was an invention to increase the speed of spinning, and the man who came up with it was James Hargreaves, of Blackburn, who called his machine the "spinning jenny."

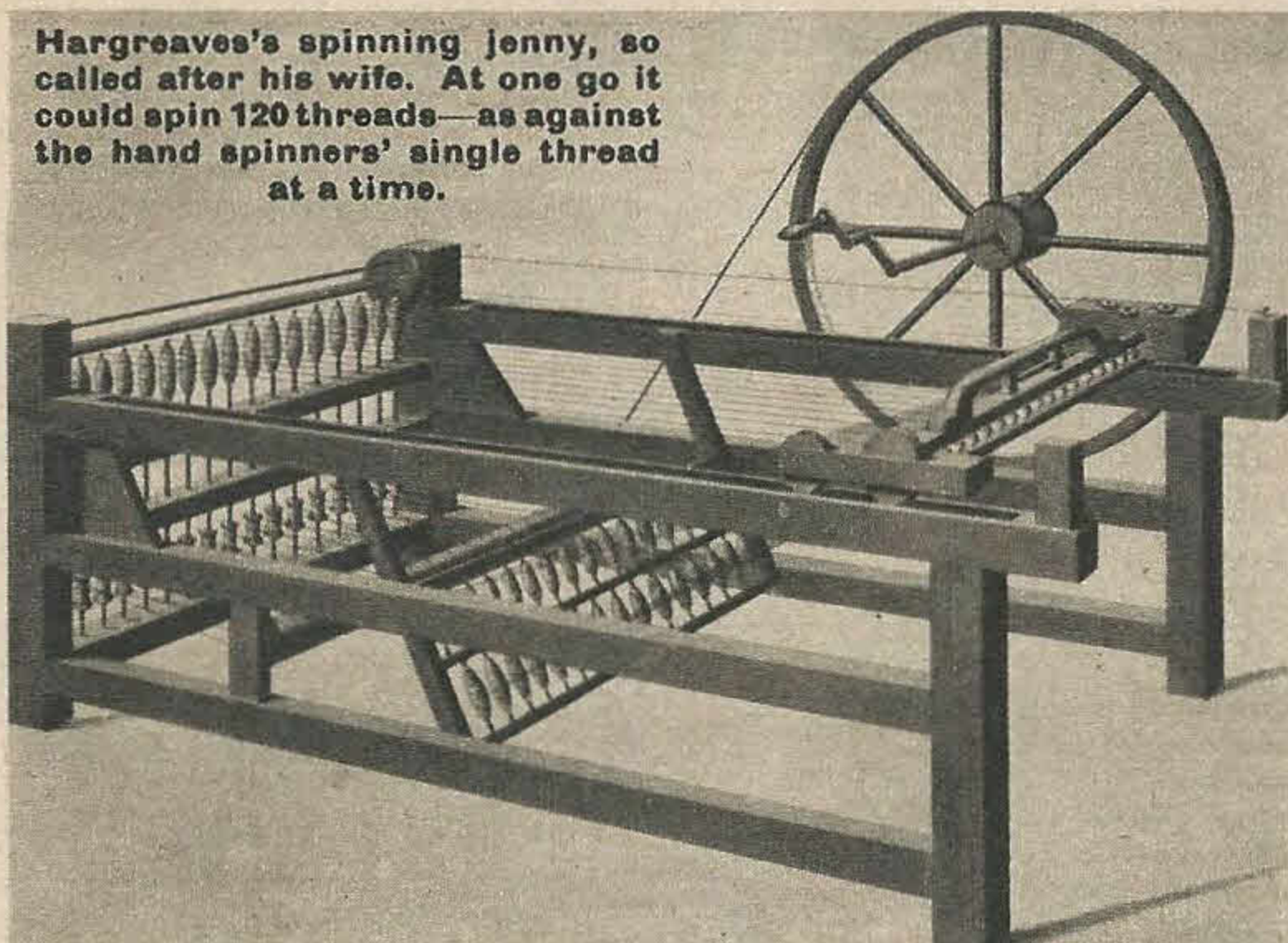
A little while after all this, a Preston barber named Richard Arkwright claimed as his invention a new kind of spinner called the "water frame," which was so big and expensive that it could only be used in a factory, where it had to be turned by a river's current.

Arkwright typified the ambitious, power-seeking Englishmen who were emerging from the Industrial Revolution; a plain, fat man determined to get rich despite all opposition to him. And there was plenty of opposition. Angry workers, frightened that his new machine would destroy their home-spun livelihood, attacked his mills and wrecked them.

Samuel Crompton, of Bolton, was next upon the scene with his "mule"—a machine that combined the best of the jenny and the water frame.

What the Industrial Revolution needed now was a cheap and ready source of power to drive its machines. And steam power was about to make its debut.

Hargreaves's spinning jenny, so called after his wife. At one go it could spin 120 threads—as against the hand spinners' single thread at a time.



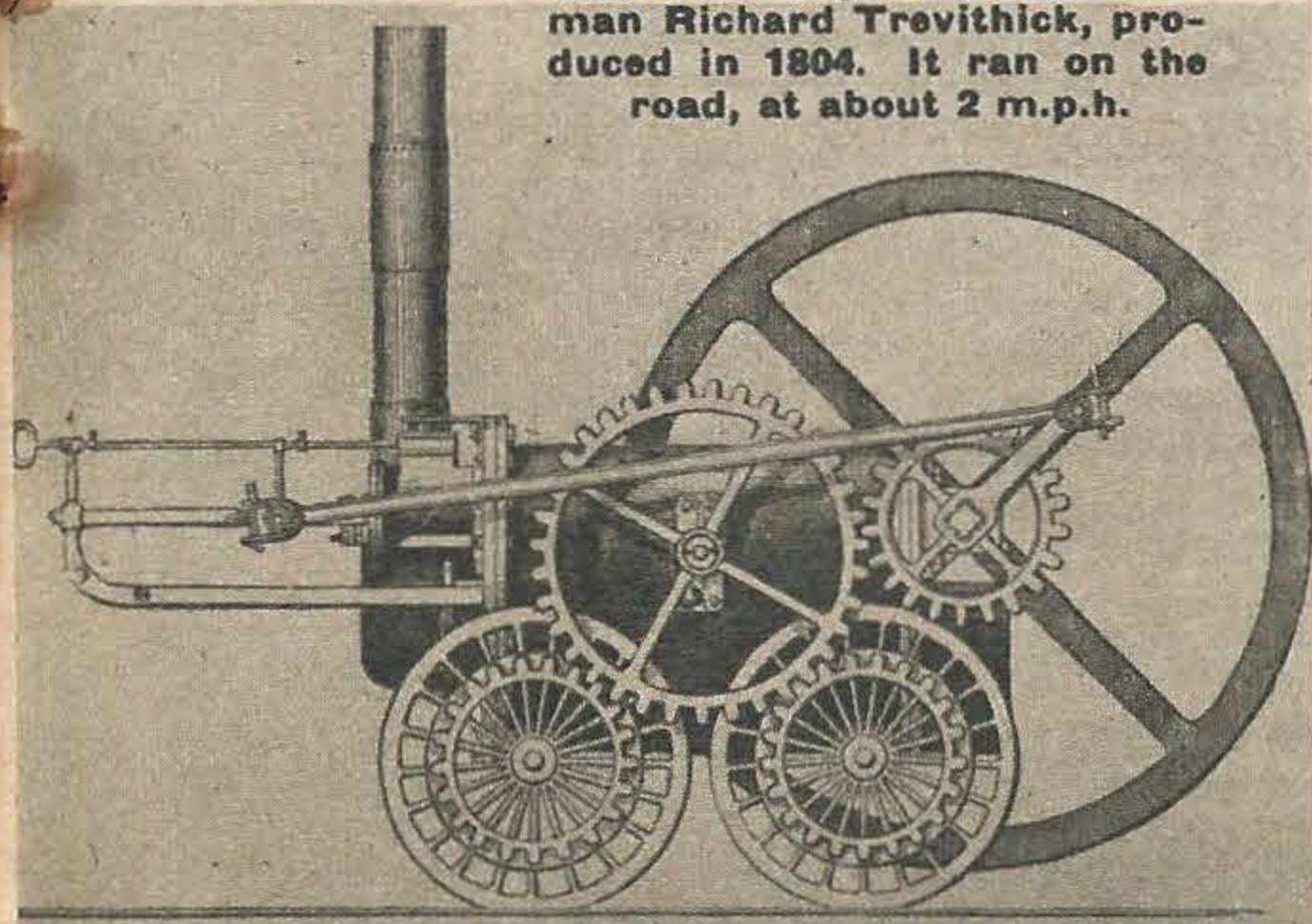
Water frame inventor Richard Arkwright. Rival inventors involved him in lawsuits which ended in him being convicted of fraud. Arkwright finally cleared his name.

the cylinder had to be cooled and re-heated at each stroke of the piston. The young man who made all the necessary improvements was, of course, the celebrated Watt.

Everyone has heard of how Watt is supposed to have been fascinated by steam power when he watched the lid of a boiling kettle being raised by steam. We do not know how true the story is; what we do know is that Watt was a keen experimenter, and the target for his attention was Newcomen's engine.

Watt decided that the best way to cool the

One of the early steam engines that was built to move was this tram-engine of Cornishman Richard Trevithick, produced in 1804. It ran on the road, at about 2 m.p.h.



piston was to condense the steam inside a separate chamber of the machine after it had been driven to the top of the cylinder. This separate chamber was kept continually cold. At once the steam engine—the driving power behind the Industrial Revolution—became a powerful commercial proposition. And when a few years later Watt used a series of cogs to make the piston turn a wheel a new golden era of opportunity opened for Britain.

As soon as steam power came to industry it was, of course, no longer necessary to site factories by the side of rivers or waterfalls, which, until then, had been the only sources of power. Instead, new factories were now placed on the coalfields, to save the cost of carrying fuel.

Steam power was still far from fully developed. What about a steam engine that actually moved on wheels? Two of the men who succeeded in making such engines were William Murdoch, the Cornishman who invented gas lighting, and his friend Richard Trevithick.

Both men's inventions were steam engines that ran slowly and ponderously upon the road, and when an engineman who worked at a colliery at Killingworth heard about them he thought he would build one too. His name was George Stephenson, the man who was soon to pioneer the railway system.

Stephenson's first engine succeeded in pulling 30 tons of coal at 8 m.p.h. Then came the famous Stockton and Darlington railway, the first commercial railway in the world.

Stephenson's Rocket. "It will burst and kill hundreds," he was warned. Instead it pulled coaches carrying 600 passengers at 30 m.p.h.



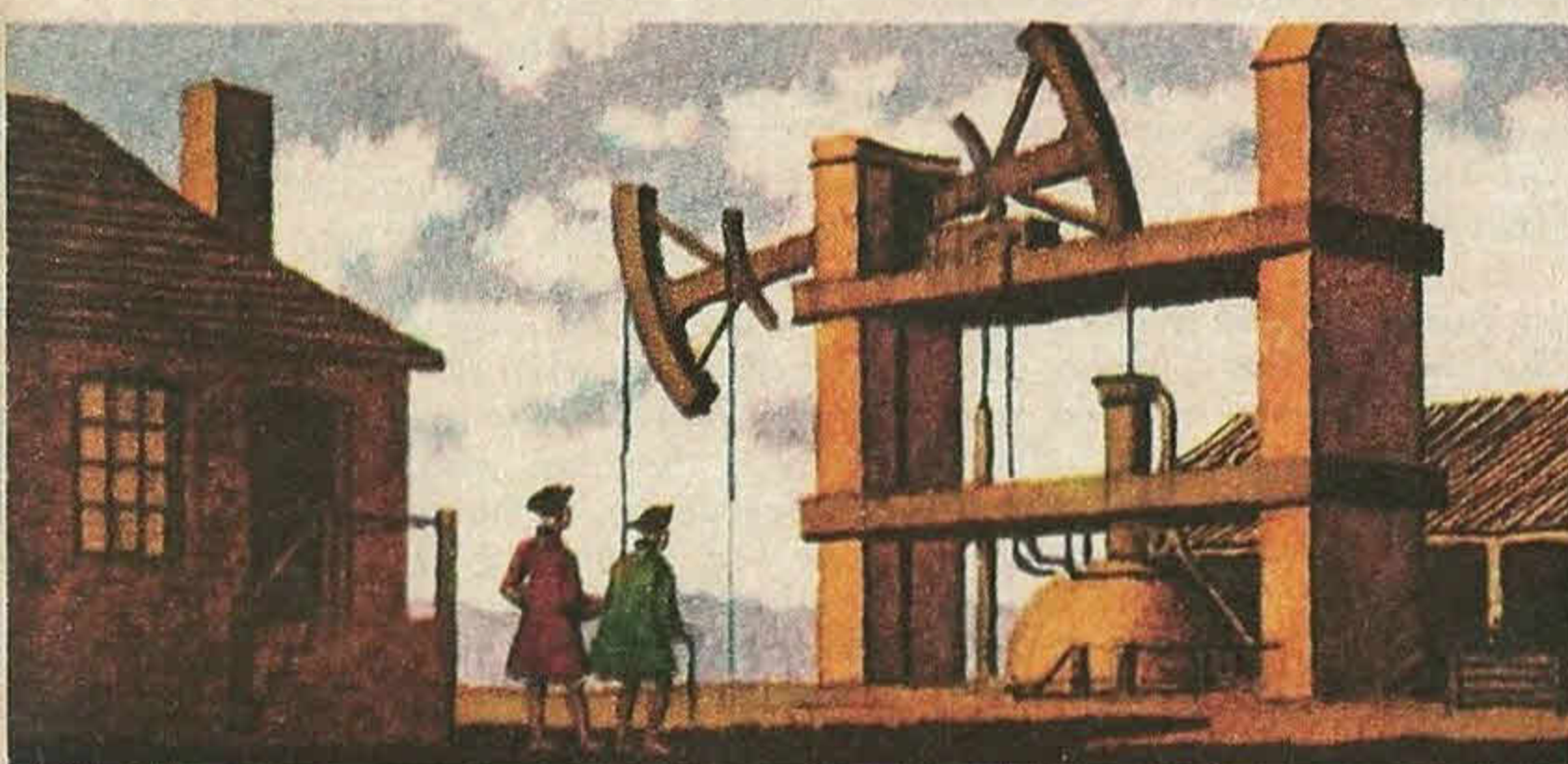
So was born the railway age. The railways carried the goods produced in the new factories, and when steam moved into the field of shipping, steamships carried Britain's new wealth to distant lands. In a few short years it was all a far cry from the typical British peasant trying to make ends meet by scattering a bag of vegetable seed over a smallholding by day and weaving a few threads of cotton by night.

# LOOK AND LEARN

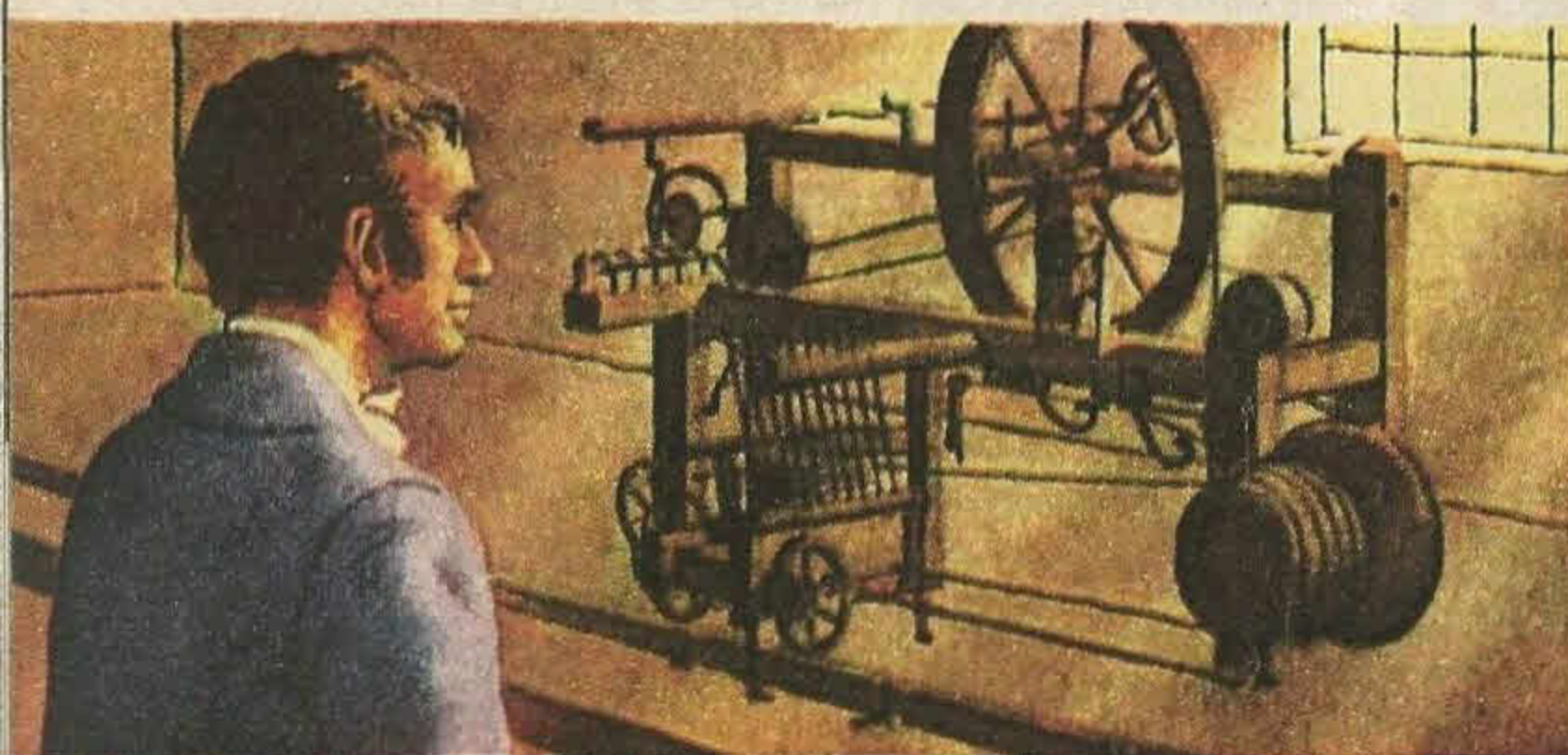
## FOCUS ON THE INDUSTRIAL REVOLUTION



For thousands of years the quickest way to move goods on land was in horse-drawn wagons, which was slow and costly. The Industrial Revolution's first solution to the problem of moving vast quantities of raw materials and manufactures quickly and cheaply was the canal. The first was built in 1761 and soon there were hundreds of miles of these artificial waterways.



The invention of the steam engine did much to bring about the Industrial Revolution. Long before steam locomotives were used to haul trains of wagons on railways, steam engines were at work driving the pumps that kept mines clear of water. This picture shows you one of the first steam engines. It was invented about 1705 by Thomas Newcomen and gave fifty years of service.



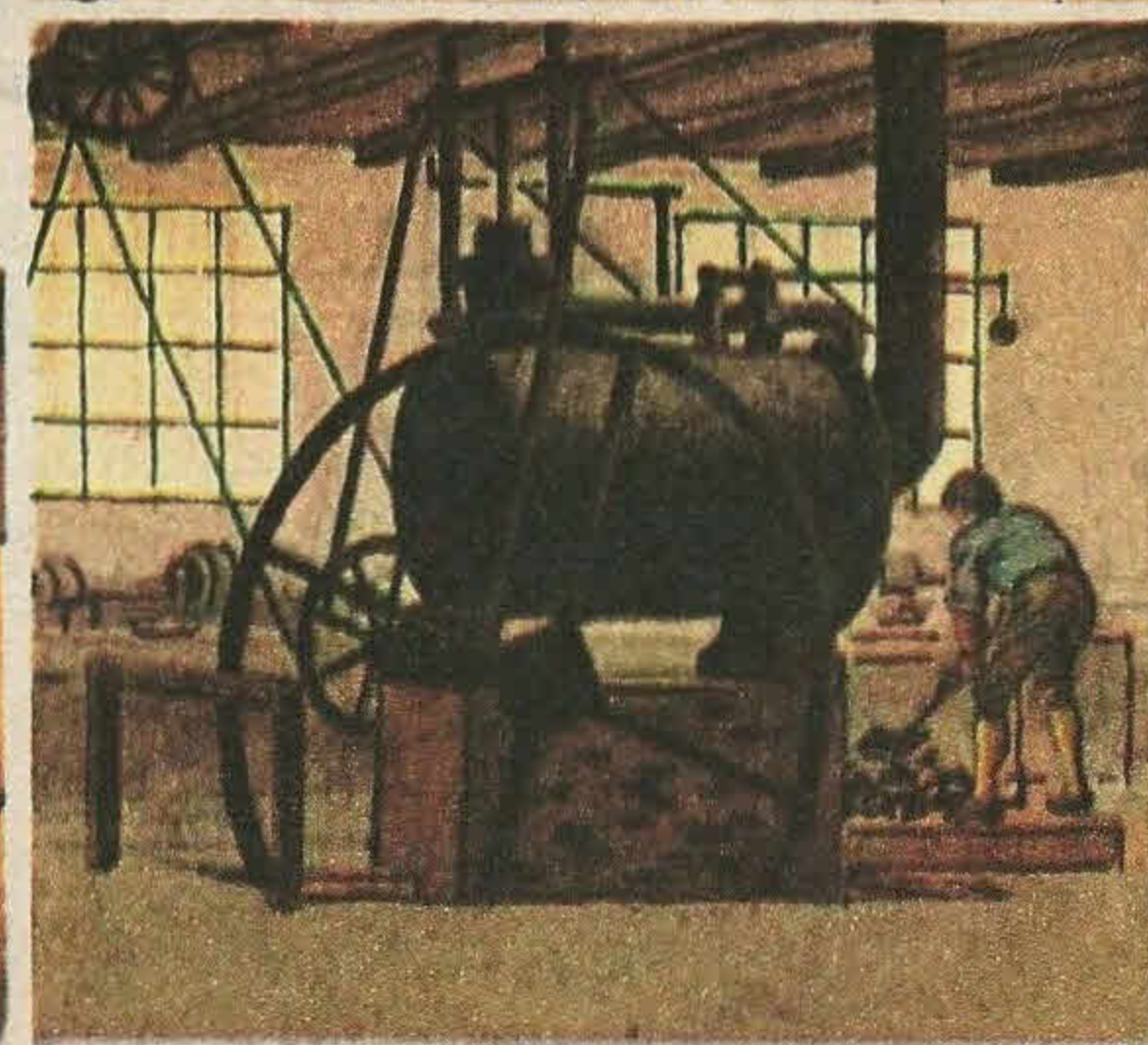
The great expansion in the textile industry came about through the inventions of a handful of far-seeing men—James Hargreaves, who invented a machine which spun 120 threads at a time, John Kay, who improved the hand loom, and Samuel Crompton, seen here watching his new spinning machine.



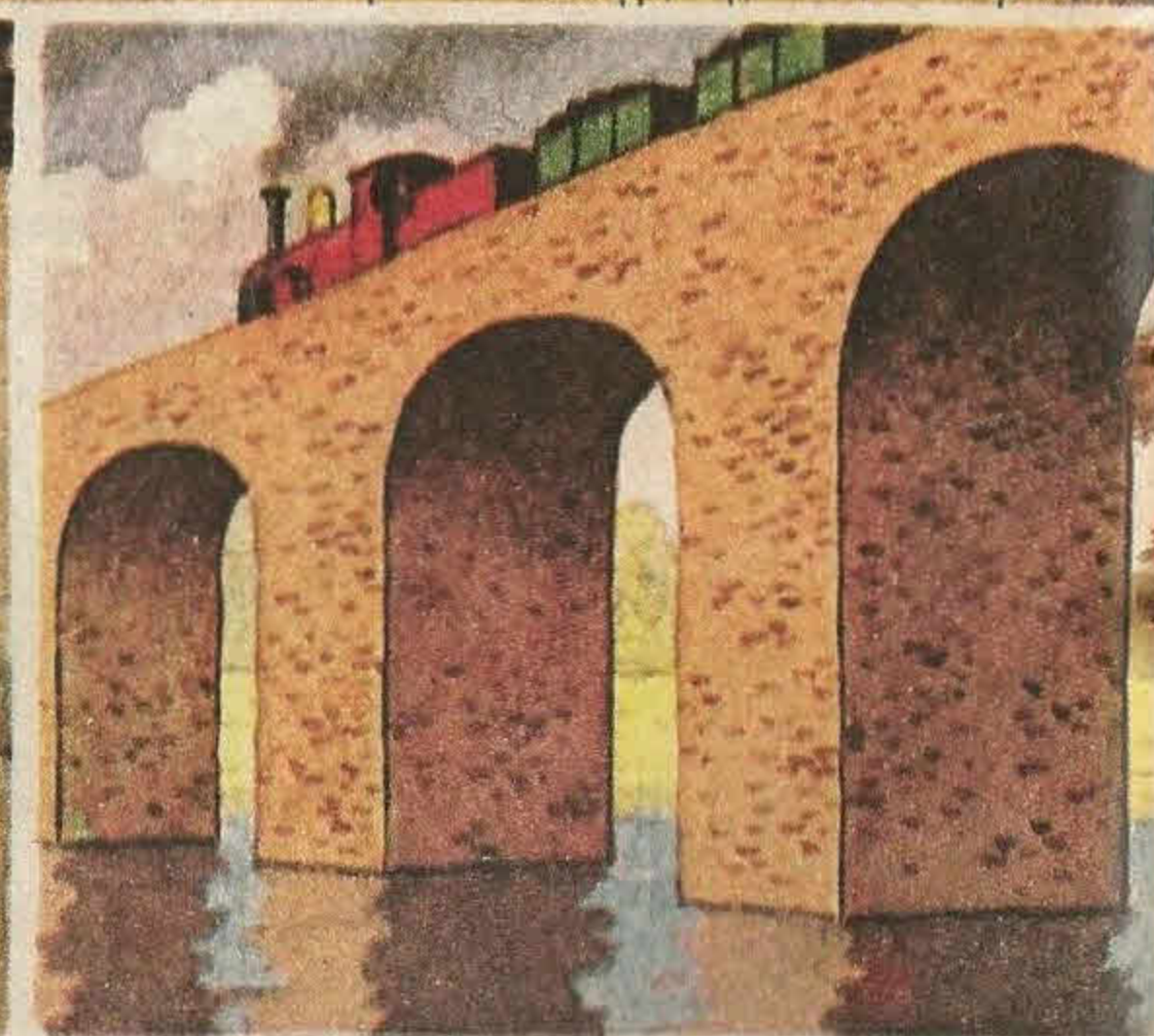
The Industrial Revolution and its machinery threatened the livelihood of thousands of workers who had made goods by hand. For a time there were serious riots throughout the country when displaced workers stormed and burned down mills and factories in which the new machines had been installed. But in time the machines brought more work for people.



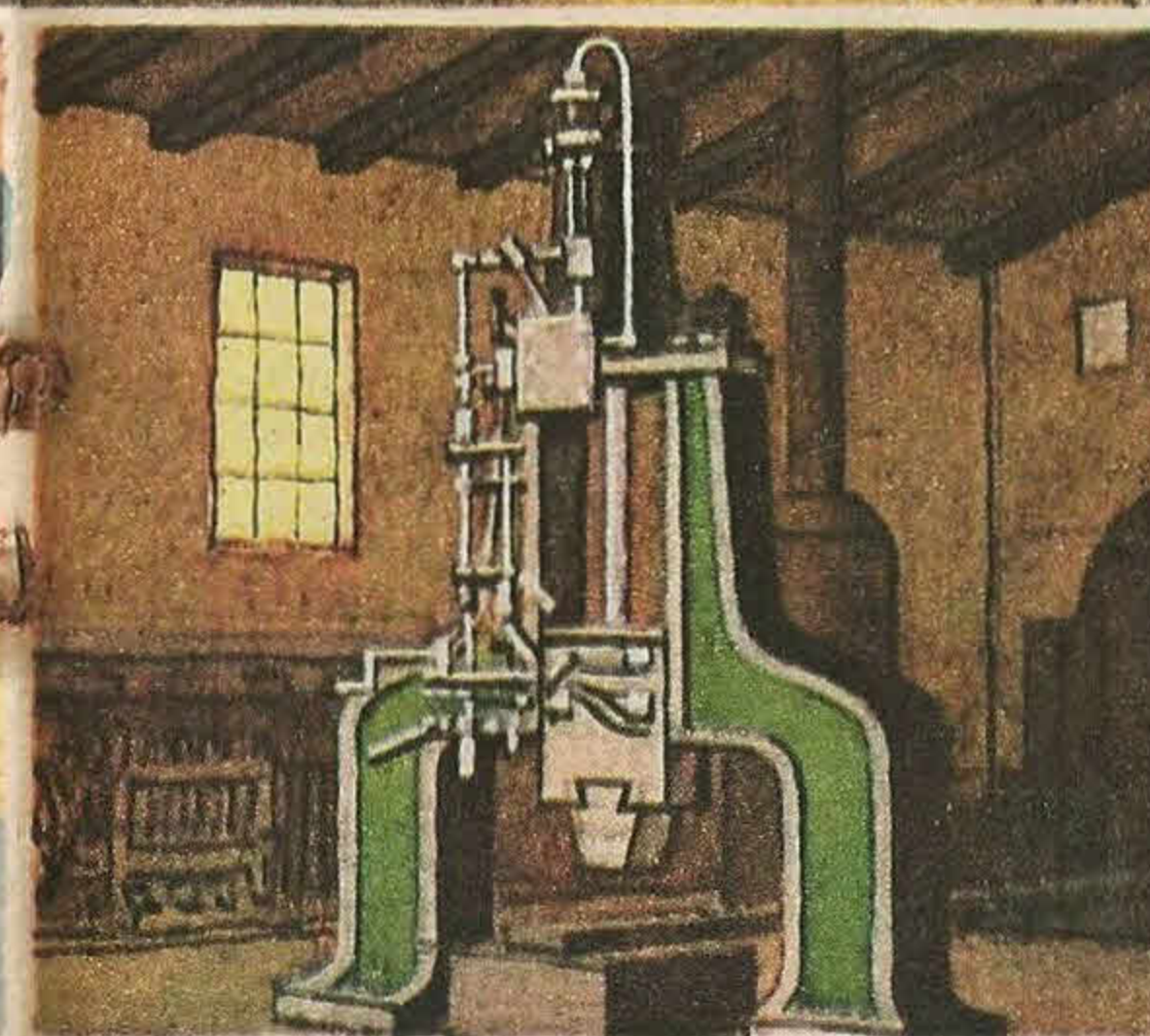
Although it was not the first steam-driven railway locomotive, George Stephenson's famous "Rocket" finally made possible the development of the railways which the Industrial Revolution so badly needed for the cheap and rapid transport of goods. Stephenson's engine hauled the first steam train on the world's first railway (Liverpool to Manchester) on September 15, 1825, and soon steam trains were a familiar sight.



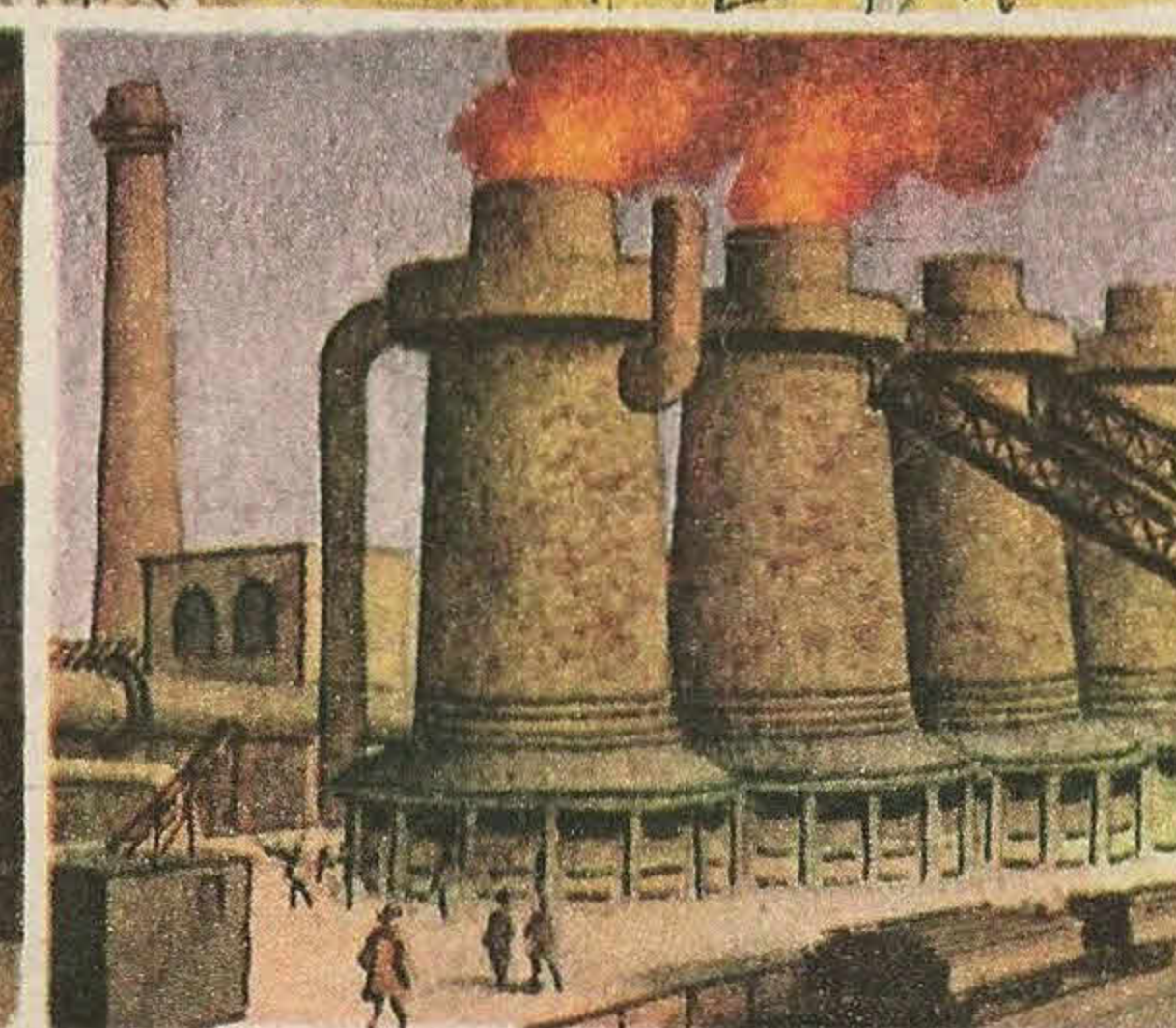
When the Industrial Revolution really got under way, the chief feature of most mills and factories was the steam engine driving the machinery. Power from the engine was taken by leather belting to the various machines. By changing the sizes of the wheels carrying the belting on the machines, the machine's speed could be adjusted.



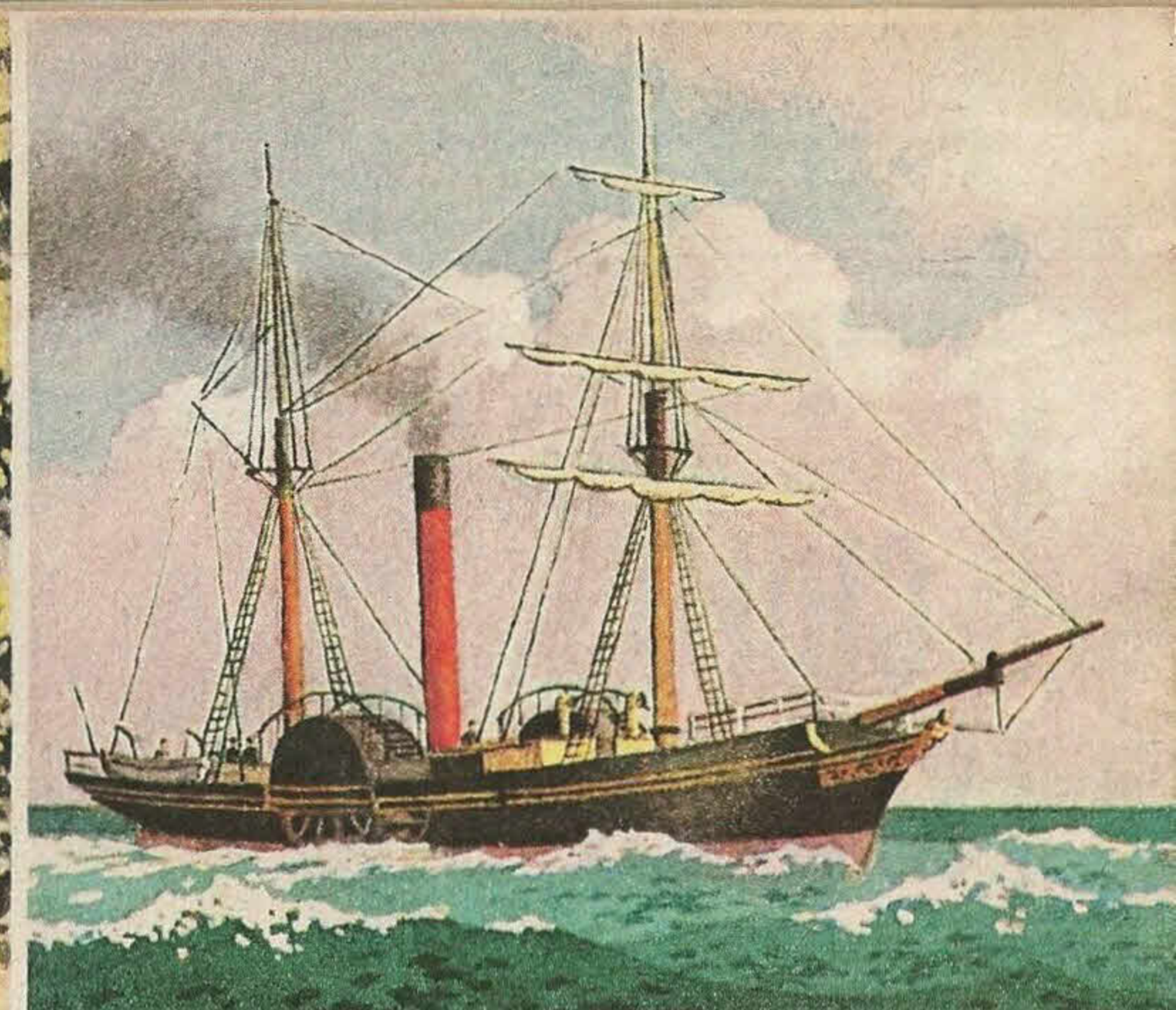
Goods and raw materials had to be delivered quickly and by the shortest route throughout the country. So great bridges were thrown across rivers and valleys. The bridges were at first of brick and stone, but as the trains and their loads became heavier, steel and iron bridges spanned the rivers.



The early iron-workers had to forge and shape their metal with hammers wielded by hand. Then in 1839 James Nasmyth invented his powerful steam-operated hammer. This was one of the first mechanical tools and with it foundries could forge and shape pieces of red-hot iron weighing many tons.



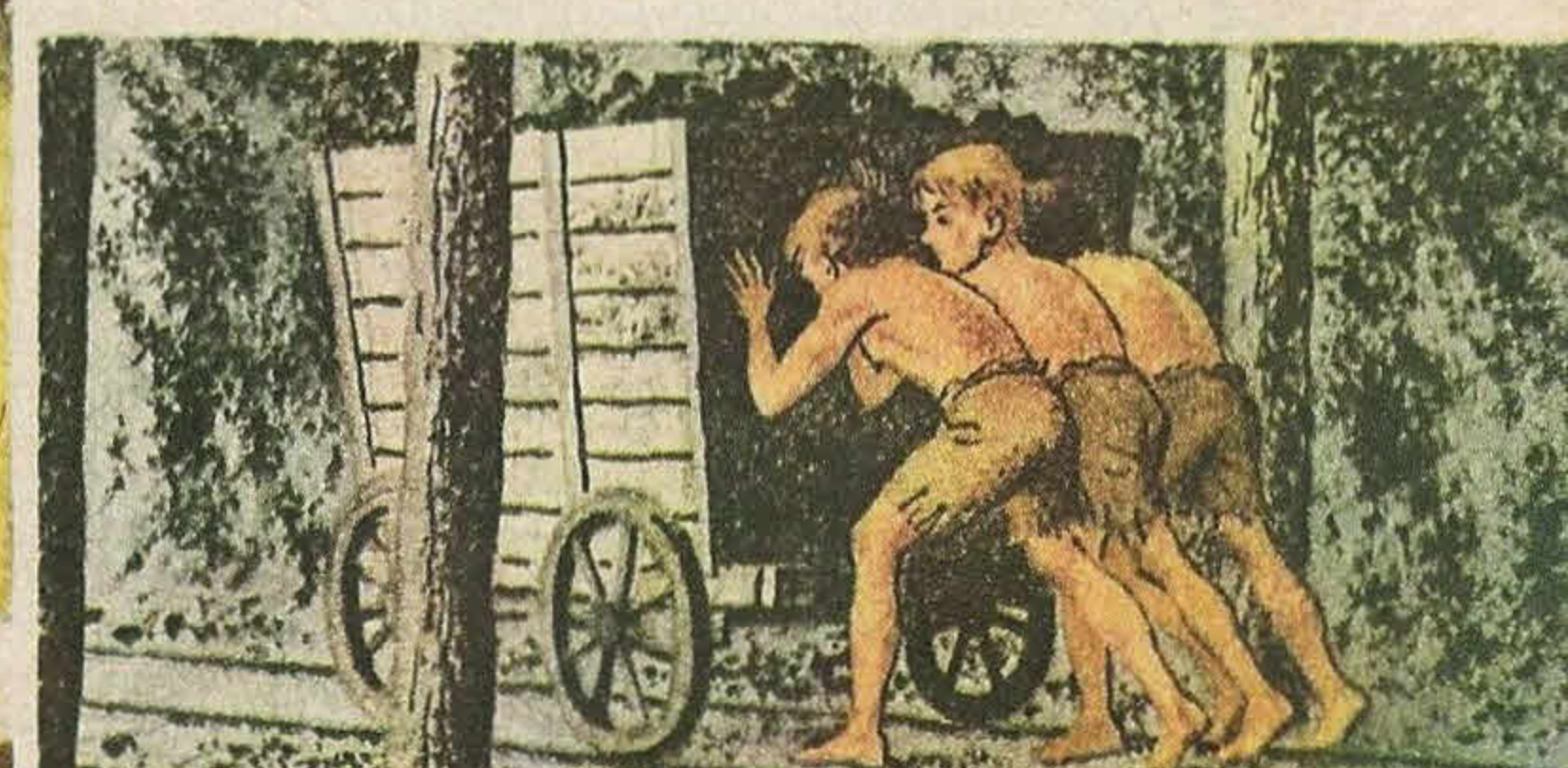
In order to extract iron from its ore, intense heat is needed. This was a slow process until the Industrial Revolution's huge appetite for iron led to the invention of the blast furnace. The great heat needed is obtained by blasts of air blown through the bottom of the furnace on to the glowing ore.



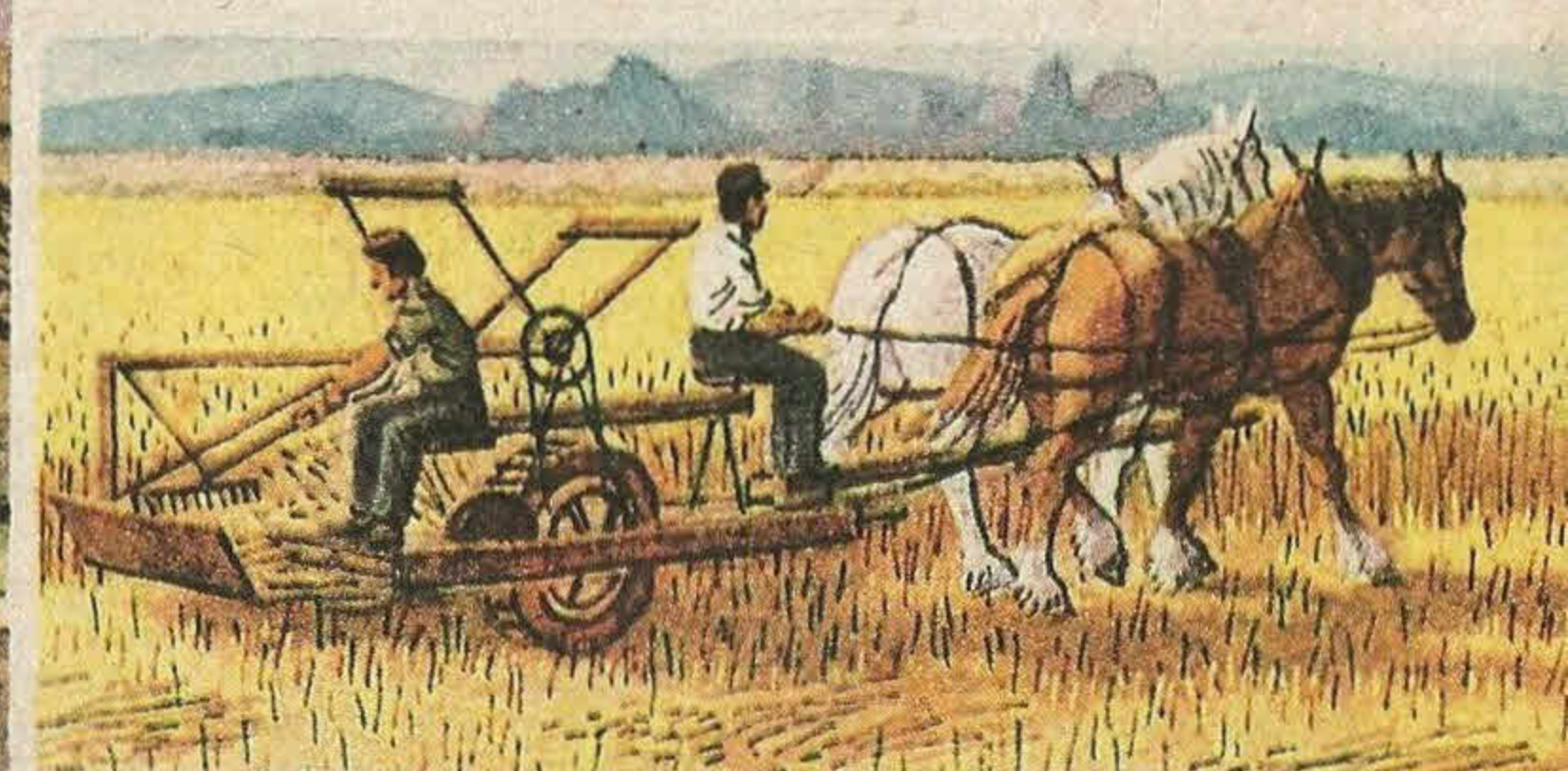
The Industrial Revolution brought about an enormous growth of Britain's overseas trade. This needed bigger and faster ships and encouraged the development of the steamer. One of the earliest of these vessels was the Savannah, which was launched in 1819. The first steamship to cross the Atlantic, she made the voyage from America to Britain in 26 days.



Although coal had been used in Britain since Roman times, it was not until the Industrial Revolution, with its steady demand for the fuel to produce steam-power, that the vast wealth of Britain's coalfields began to be exploited. In fact, it was Britain's coalfields and the realization of their value that eventually made Britain the world's workshop.



One of the heavy prices paid for winning the wealth from Britain's coal-mines was the deplorable conditions under which miners worked. Wages were low, hours were long, and the mines were wet and unhealthy. Even boys and girls not yet ten years old were pressed into service to push the heavy tubs of coal along dimly-lit mine galleries.



With the rise of the factories and the fall of cottage crafts, many farm-workers migrated to the towns in search of other employment. To replace their lost labour, farmers relied on inventors to produce machines to harvest their crops. One of the first of these reaping machines is shown here. It was invented in 1827 and could do in a day thirty labourers' work, with the aid of two men and two horses.

## THE RISE OF THE GREAT CITIES

**W**E have seen how the new machine age that precipitated the Industrial Revolution affected the conditions under which many luckless children lived and died. Two more social changes—the movement of population to the north of England and the rise of the new capitalist industry—were important to the people who lived in the Revolution and have since had far-reaching effects on our lives.

Before machinery finally ruined their livelihood, many of the cottager spinners and weavers eked out their agricultural-industrial existence in the farmlands of East Anglia. Others lived in the South and the West; by far the most sparsely populated area of Britain was the North.

But with the introduction of machinery in new factories, the arrival of steam power and the siting of industry on the northern coalfields which fed it during the eighteenth century, the population gradually began to move northwards to the work that was waiting there. As prosperity increased, so this population movement gathered momentum.

A good deal of this new labour was disgracefully exploited by the factory owners, whose maxim was to get rich quick at all costs. But this was not true of all the industrialists. Many middle-class employers kept in touch with their workers' needs and treated them as well as the times allowed. Matthew Boulton, for instance, of the Boulton and Watt company, joined his workers to a sick-pay club, and Josiah Wedgwood, the famous potter, encouraged his employees to read and study.

## CHILD SLAVES

As the great machine age burst upon Britain humanity was cast to the wind. Children of four worked for sixteen hours a day in dark mines, and when some slept at their machines they were never to awake again.



This little girl worked on a brickfield carrying heavy lumps of clay or finished bricks. Often the children worked for sixteen hours a day.

**A** LITTLE girl of eight years old said at the beginning of the nineteenth century: "I go to work in the coal mine at half past three in the morning and come out at half past five in the evening. My job is to open and close the mine ventilators and I'm so scared in the dark that I dare not sing."

This little girl's testimony was not by any means unusual. In fact, she probably had one of the easier mining jobs during the Industrial Revolution.

When new ideas are introduced to people who have been accustomed to doing things in a set way for a long period there are bound to be grievances. Such ideas are usually followed by a plan to relieve the discontent, but plans take time to form and operate, and for some time after the introduction of the new machine age to Britain's textile industry there was a lot of discontent—much of it justified.

What was to happen to the families of the small farmers who spun and wove to eke out their living? They could, and did, wreck the new machines that threatened their livelihood. They broke into inventor John Kay's house and smashed up his flying shuttle, and they wrecked Richard Arkwright's mills, but they knew that in the end the machines were bound to win.

### Choice of Evils

**T**HEIR dilemma was an important one: they could either stay where they were and starve, or they could leave their villages, their homes and their friends and move into the new industrial towns to work in the factories.

Most of them, obviously, settled for the second alternative. First thousands, then hundreds of thousands, then millions of villagers moved into the Midlands and Lancashire where, within a few years, towns like Birmingham and Manchester swelled into huge manufacturing cities.

What kind of move was it? Inevitably, and sadly, it was filled with hardship.

Night and day the grim factories belched out their smoke. Fourteen, sixteen hours was an accepted working day for men, women and

children alike—particularly children, who, for an apprentice's pittance, could be used to grease and mind the machines, and whose size permitted them to be used for crawling among the working parts, risking, and often receiving, serious injury.

### Parliament Acts

**M**ANY of these children were orphans brought up from London, and most of them were treated little better than slaves. They were wretchedly housed, clothed and fed. Many of them became ill and some died.

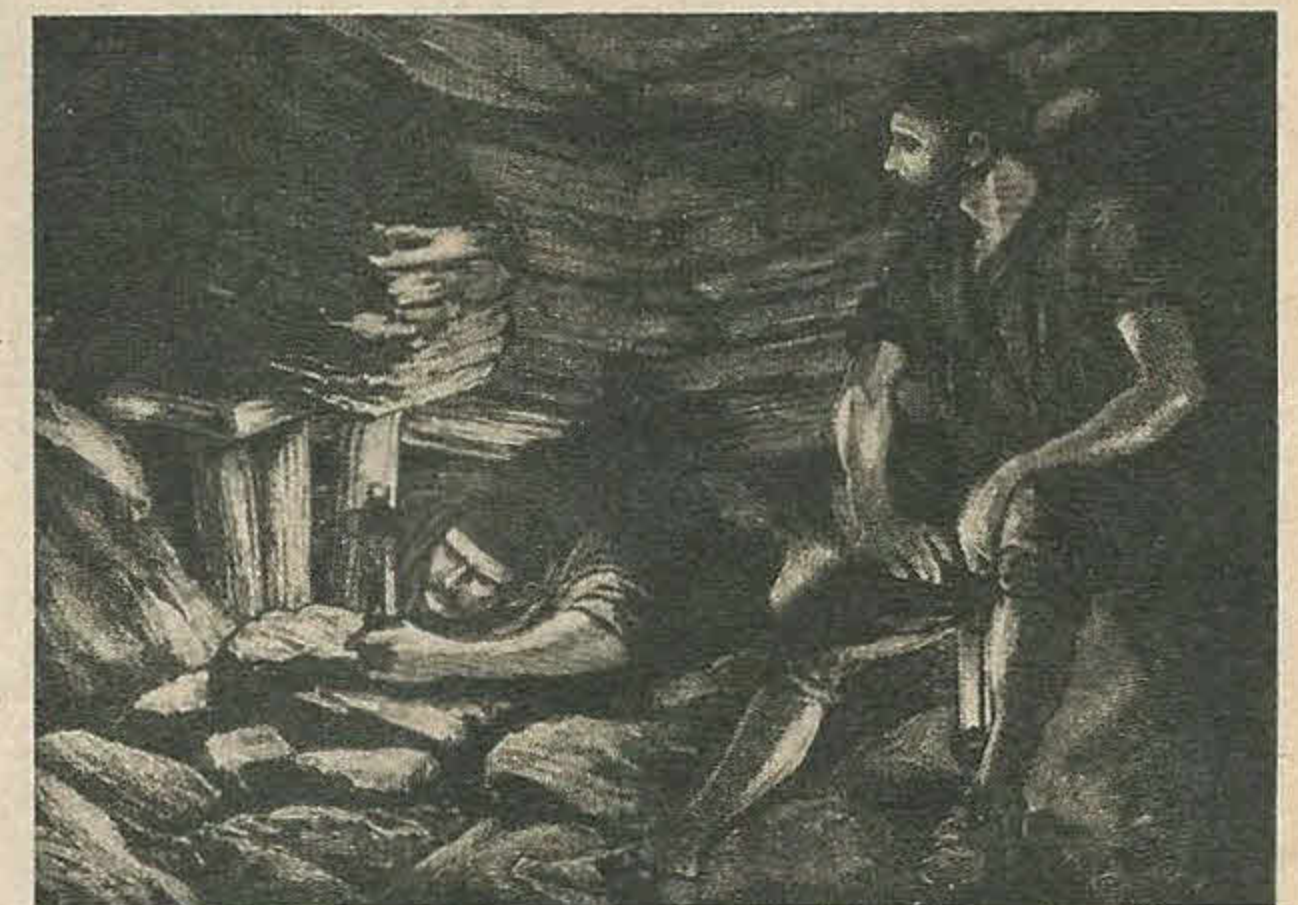
Indeed, the treatment of child labour is the ugly sore on the gigantic strides of progress made during the Industrial Revolution. The evidence is that children of five and six years old were worked cruelly from four in the morning until sometimes as late as ten at night.

Often they were so tired that they fell asleep at their machines, and then were beaten back into consciousness by tyrannical overseers. Such children never saw the sunshine, nor indeed the light of day, and some were so fatigued by the end of a day that they never had the strength even to leave the mill for their lodgings in the apprentice houses, but simply fell asleep at night on the mill floor.

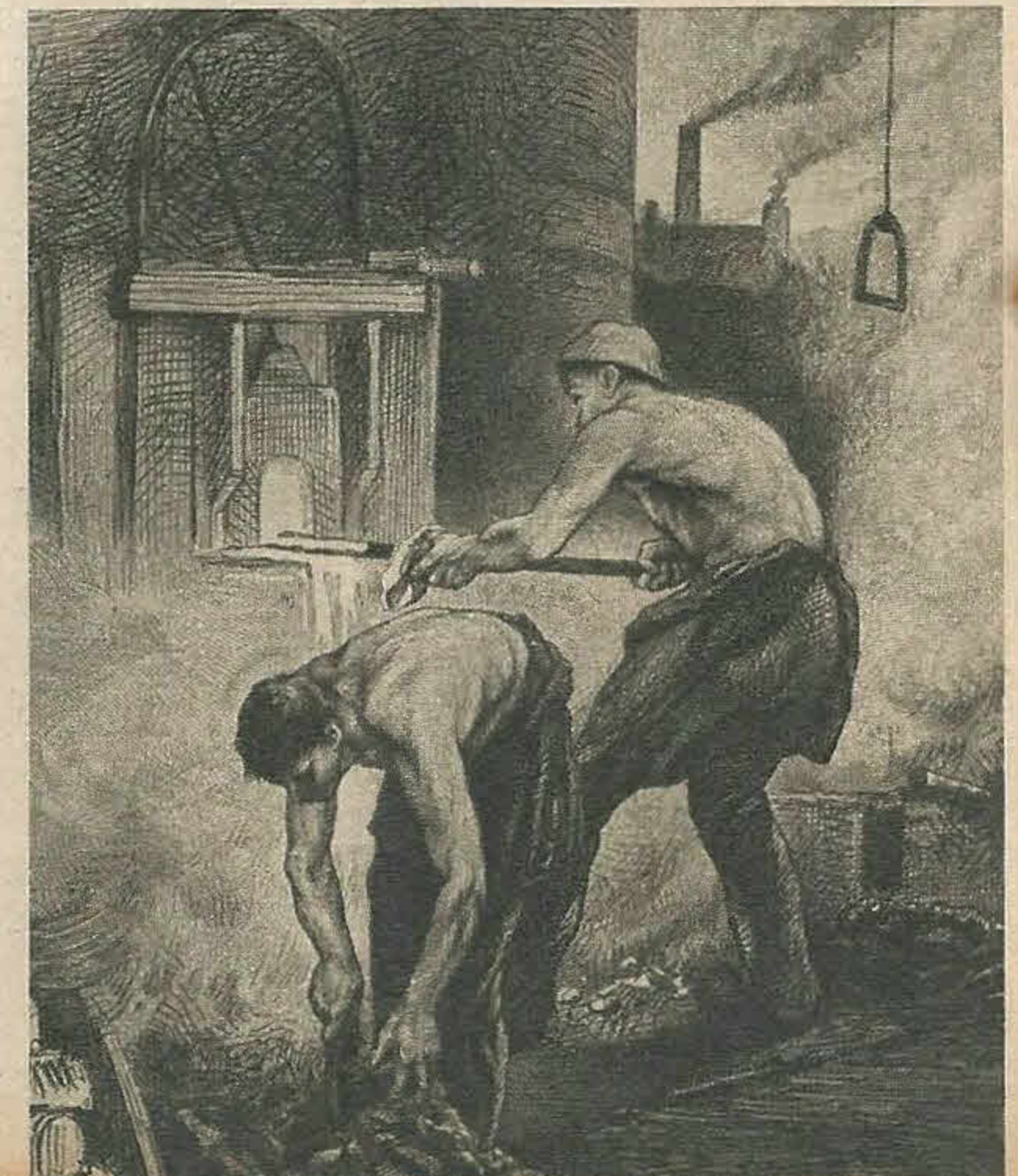
Things became so bad for them that eventually the few doctors and welfare workers that there were forced Parliament to act. In 1802 came the Apprentices Act, to protect children—by limiting their working day to 12 hours!

Very slowly, however, public anger at this cruel brand of child slavery built up, and the Factory Act of 1833 finally barred children under the age of nine from working in factories. From the age of nine to 13 the working day was not to exceed eight hours, and two hours schooling a day was compulsory.

Children outside the cotton and woollen factories had to wait even longer for their relief. Conditions for them, in industries like the potteries, the primitive coal mines, and the dyeing works, were just as bad, if not worse, as they were in the textile factories—yet they did not benefit from a Factory Act until 1864.



Coal was vital to the Industrial Revolution, but mined under appalling conditions.





Thousands of people living in the cities earned their living making matchboxes. Thin shavings of wood were folded into a box shape and covered with pasted paper. Children worked with the grown-ups, and the payment was 2½d. for 144 completed boxes, which had also to be covered with a piece of sandpaper on which the matches were struck. This made the fingers of the box makers very sore.

The factories mushroomed, and so, too, did the towns. In 1727 the town of Manchester had less than 10,000 inhabitants. Thirty years later there were twice as many, and at the end of the century there were more than 90,000 people living and working there.

Naturally the factory owners quickly made fortunes. With money on their hands they looked around for new investment possibilities, and cast covetous eyes at the countryside beyond

the big cities they were building. What better reward for an industrialist's hard-won riches than to become a respectable country landowner with an estate, farms, and acres under cultivation?

There was plenty of land to be bought, because the peasant smallholders who had not made enough money at their agricultural and cotton spinning pursuits had been attracted to find work in the new industries, leaving their neglected land behind them. So the new Squire

in many a country estate was now also a factory owner, occupying the land his factory workers had once occupied as smallholders.

The result of this re-distribution of land wealth was a good one for the country. The factory-owning Squire, and the big land-owning aristocracy who were still left behind with their great acres, soon made the land much more productive than it had ever been. Agriculture was no longer a declining industry.

# NO FUEL FOR THE BOILERS

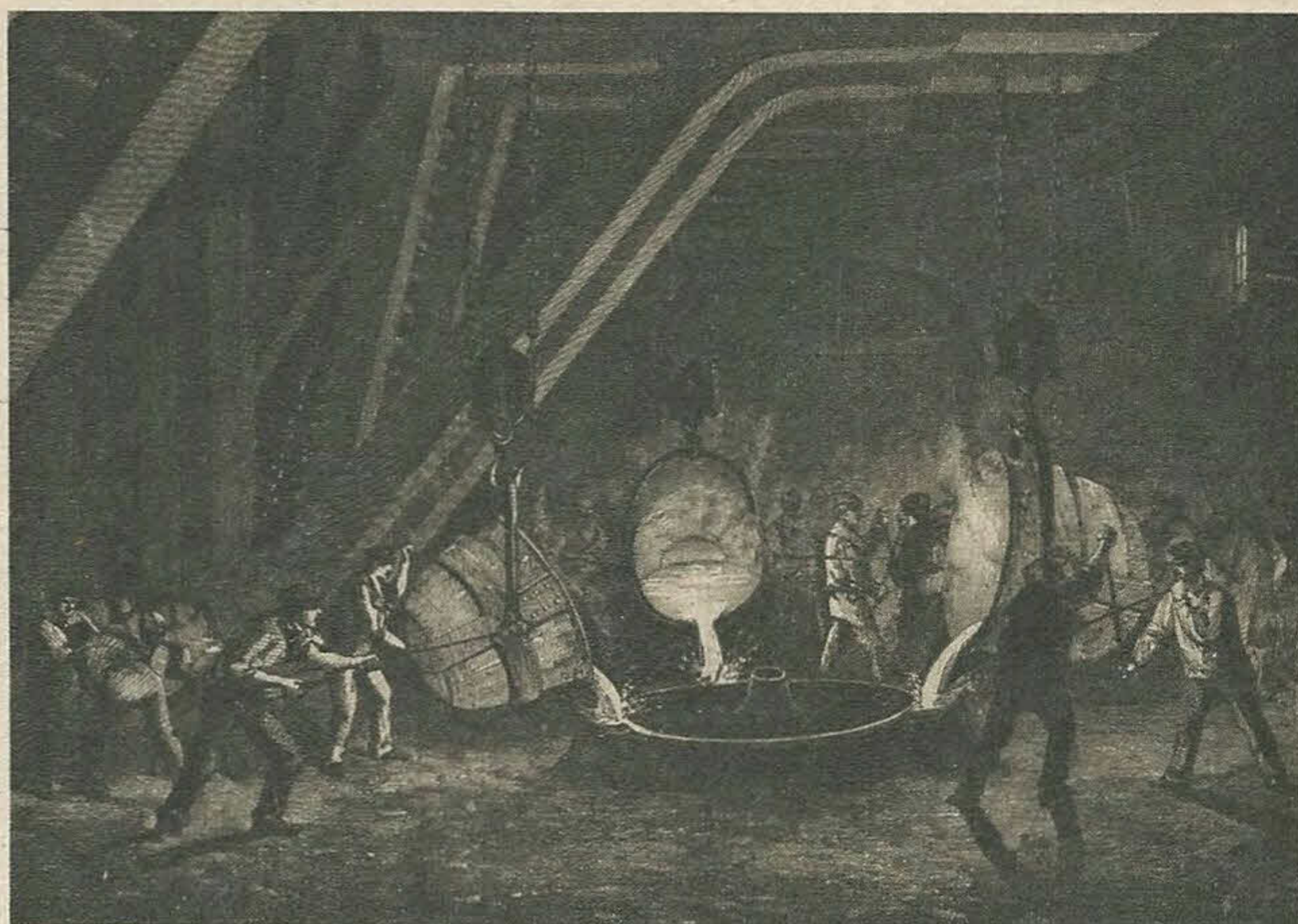
*That was the problem when England ran out of wood. The Revolution began to totter—and then they discovered coke*

**W**HEN John Kay invented his flying shuttle and James Hargreaves his spinning jenny their machines were made of wood. But as soon as steam power came upon the scene it was evident that wood was not durable enough for the work the machines had to do. Instead, they had to be built of iron.

This posed a serious problem for the country's iron workers. Ever since the Middle Ages the demand for iron had been rising—yet the iron industry had been slowly dying. The reason for this was that the use of charcoal (obtained from wood) for iron smelting had seriously depleted England's forests—to the point where laws had to be passed which made it almost impossible to use wood for any further iron smelting.

Who could find a new method, a new and abundant fuel, with which to smelt the iron? The man who answered that question was Abraham Darby, an iron-master of Coalbrookdale, in Shropshire. It was Darby who began the most potent and the most characteristic phase of the Industrial Revolution—the con-

In an iron foundry the great buckets of molten metal are poured into the mould in order to cast a cylinder.



nection of iron with coal. The problem was solved.

The fuel Darby used was not coal, but coke, which he discovered by heating coal to remove the gases. Coke, of course, is a solid material which can give great heat—just what was wanted to replace charcoal in the iron foundries.

The iron-masters, however, could still only produce *cast iron* in large quantities, which they obtained by smelting iron ore in their coke furnaces. Cast iron is tough and brittle, and consequently unworkable. To obtain *wrought iron*—which is iron that can be usefully worked—they still had to beat it in a forge to remove its impurities, and that was a long and tedious business that made wrought iron an expensive material to produce.

The man who made the manufacture of wrought iron so much easier was Henry Cort. His process was called puddling: all that hap-

pened was that when cast iron was melted in a furnace Cort stirred it with a stick to remove the impurities. Cort then invented the use of rollers, instead of sledgehammers, in the manufacture of iron bars.

Iron, decided an engineer named John Wilkinson, could now be used for anything. In 1779 he built an iron bridge, cast by a descendant of Abraham Darby, over the River Severn, and in 1790 he launched the first iron ship on the same river.

Like the textile industry, the iron foundries which had previously relied on the forests of the South and Midlands for their fuel, now moved north to the coalfields. Before the Industrial Revolution began Britain produced scarcely any iron; by 1815 there was more than enough for the voracious appetite of the new factories, and 90,000 tons of it were exported.

◀ These workers in an iron foundry were "puddlers." They had to skim impurities off the surface of the molten metal. The heat in which they worked can well be imagined.





A meeting of Chartists, the name assumed by a group of agitators for voting reform in the 1830s. They demanded a peoples' charter with votes for all and equal electoral districts. But after various encounters with the police they gradually faded away.

## FOCUS

ON  
THE INDUSTRIAL  
REVOLUTION

# YES... IT WAS A GOOD REVOLUTION

**W**E have seen how the beginning of the Industrial Revolution around the middle of the eighteenth century summoned in an era of apparent prosperity for Britain's cottager cotton spinners.

Then came the swift, dramatic switch to factory production. For a time the cottagers' answer to the changes going on all around them was to wreck all the machines in sight. Bands of workmen called Luddites, who were said to have taken their name from one of their number called Ned Ludd, smashed hundreds of machines in the new industrial North.

But from the start the die was cast against the wreckers, for the engineers' new-found inventiveness and the factory owners' new-found riches were more than they could cope with. It was clear, too, that only with the help of machinery could the textile industry progress. Then, as we have seen, the sudden and successful fruits of industrial mechanization eclipsed the welfare of the people who were needed to run the machines. The result was that the people—men, women and children—were uprooted from the country and set down in new, squalid, poverty-stricken lives, and, of course, they suffered brutally.

### Voting Troubles

**B**UT man works ultimately, though slowly perhaps, for the good of his fellows, as well as for himself, and after that initial rush to get rich, people began to remember their social consciences. This new thought, coupled with the many economic advantages of the Revolution, considerably changed Britain during the long reign of Queen Victoria.

Our trade, in which we kept the lead given us by our inventors, our command of the sea and our supply of raw material (coal and iron at home and cotton from abroad) brought immense wealth to the country during the nineteenth century, enabling us to cope with a rapidly-increasing population.

But that same teeming population was not to

allow for long some of the obvious inequalities that abounded, and the first one it attacked was political inequality. The new working population was not now prepared to see their great new towns go wholly unrepresented in Parliament while a "rotten borough," with few or no inhabitants, might send two M.P.s. to London.

Even in those cities that did have the vote it was peculiarly distributed. In some of them, self-employed people had a vote by long-standing tradition. They were called "pot-wallopers" because they could boil their food in their own pots without having to collect a wage to buy it.

On election day, however, they had to prove their right—so they would cook their dinners in the street outside their homes to show that they were voters. No wonder the new army of workers was restless at these kinds of goings-on!

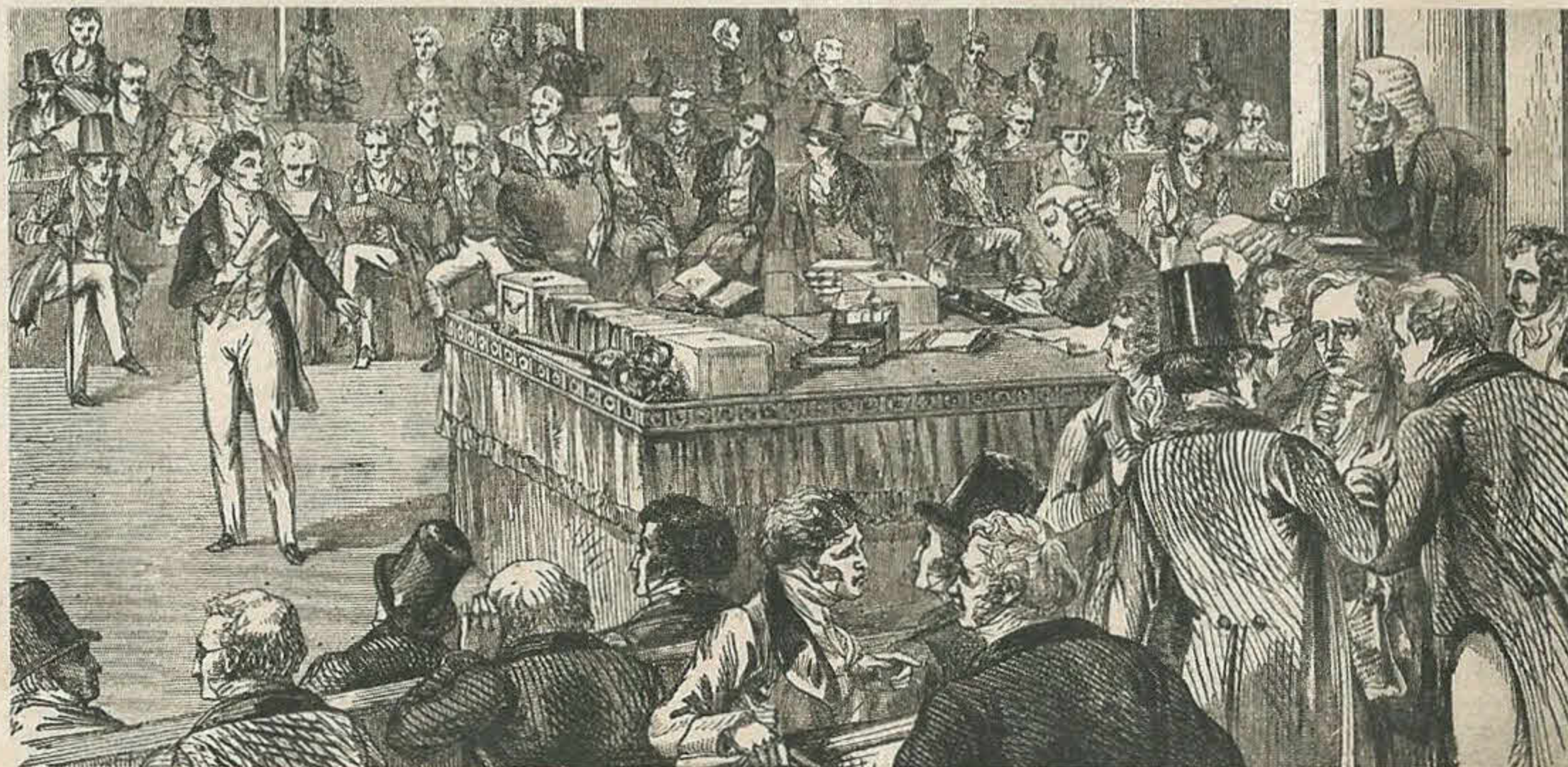
Parliament finally came to their aid in 1832

with the Reform Act, which completely changed Parliamentary constituencies and voting rights. Half a million middle-class people were now given the vote for the first time.

As the industrial towns grew still bigger the working men in them increased their demands for political equality. And in 1867 came the Second Reform Act, giving the vote to rate-payers living in towns.

It follows that men who are properly represented in Parliament can agitate for improvements in their living standards, and as soon as the ratepaying working men received their vote on that day 96 years ago, the lot of the ordinary people in Britain began to improve.

It is directly as a result of the Industrial Revolution and the improvements that followed it after the years of difficulty that we in Britain today owe the fact that we are one of the best cared for and happiest nations in the world.



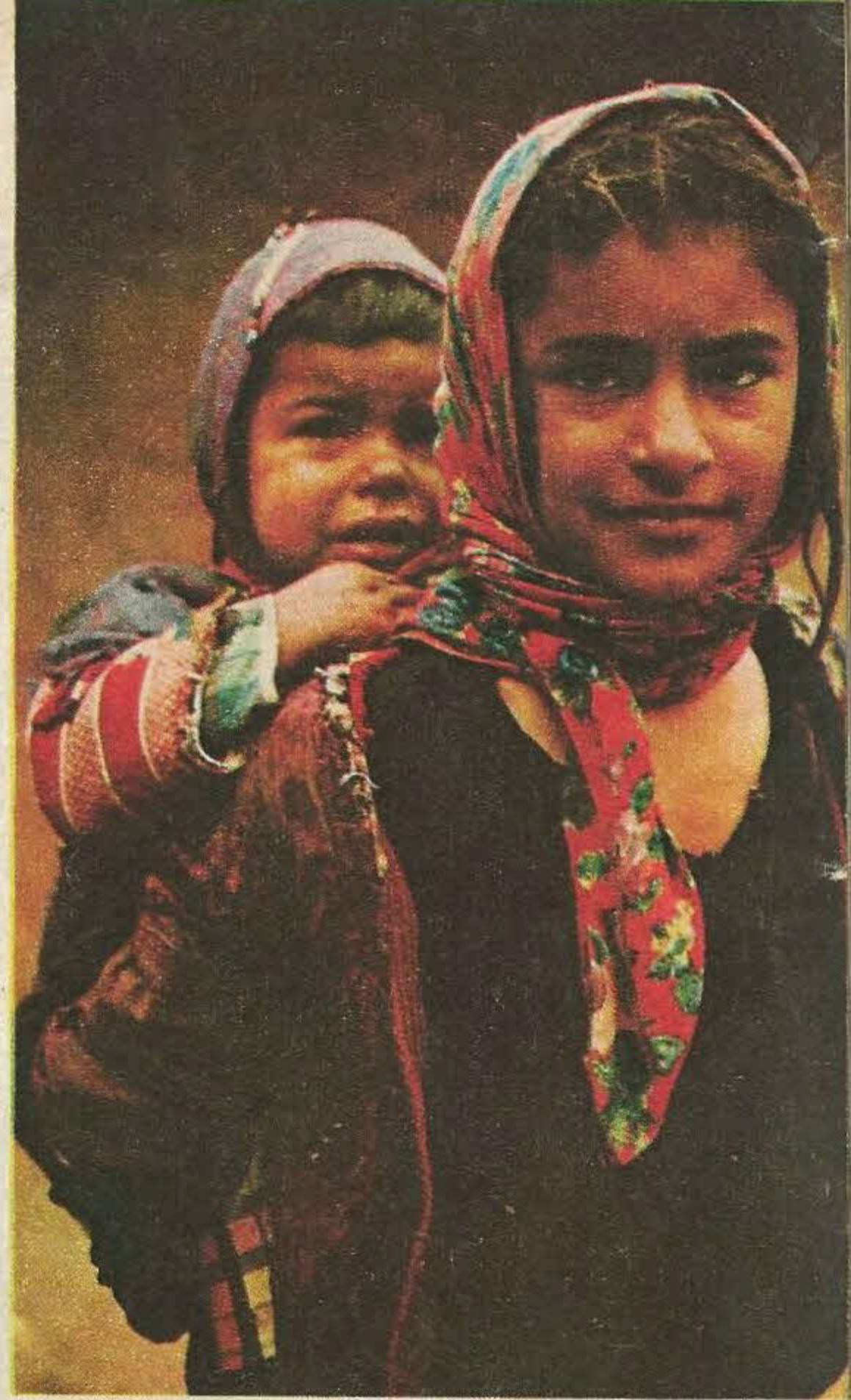
Debate on the Reform Bill in the House of Commons, 1832. The Bill was considered a major advance in reforming new constituencies caused by the Industrial Revolution—yet it gave the vote to only eight per cent of the male population.

OUR COLOUR CAMERA VISITS ...

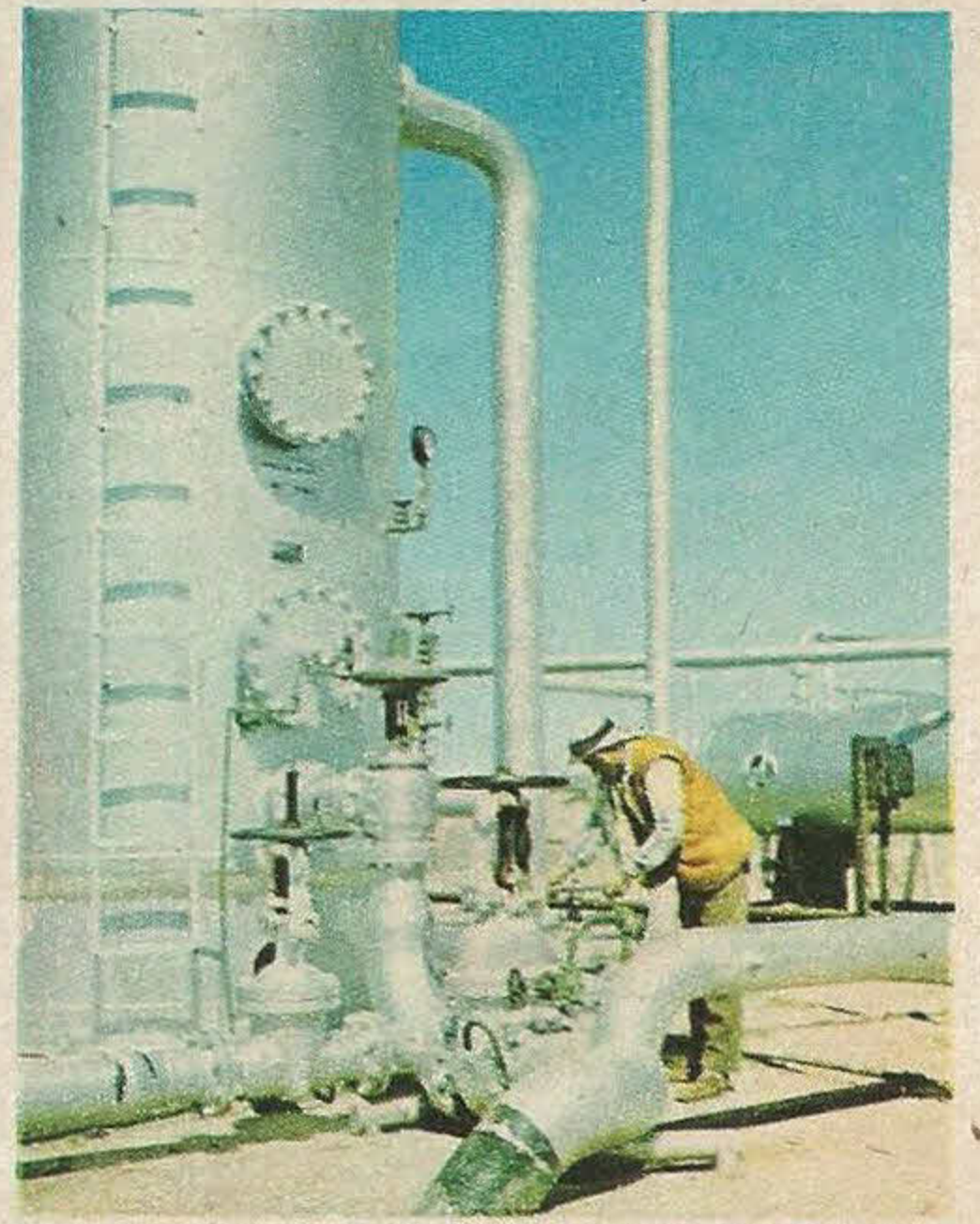
# THE DATE COUNTRY

**B**OUNDED by the mountains of Syria and Asia Minor, the Persian Hills and deserts of Arabia, lies Iraq—one of the hottest places on earth. Most of Iraq's six million people live on a fertile plain formed by the silt of the Rivers Tigris and Euphrates. Many of them are "Swamp Arabs," so called because they live in scattered villages of reed huts along the canals and creeks

of the Shatt-al-Arab, a river which runs into the Persian Gulf. Eighty per cent of the world's dates and a large amount of petroleum oil comes out of this oven-hot land, where the temperature often reaches 124 degrees Fahrenheit and where irrigation depends on canals and water-pumps. Apart from the oil-fields, the scenery in Iraq is much the same as in Biblical times.



In the north of Iraq live the Kurds (above). They are a slender, straight-nosed, long-headed people and are descended from an ancient brown-skinned people who lived on the Mediterranean shores. Other Kurdish colonies are found in Persia and Turkey.



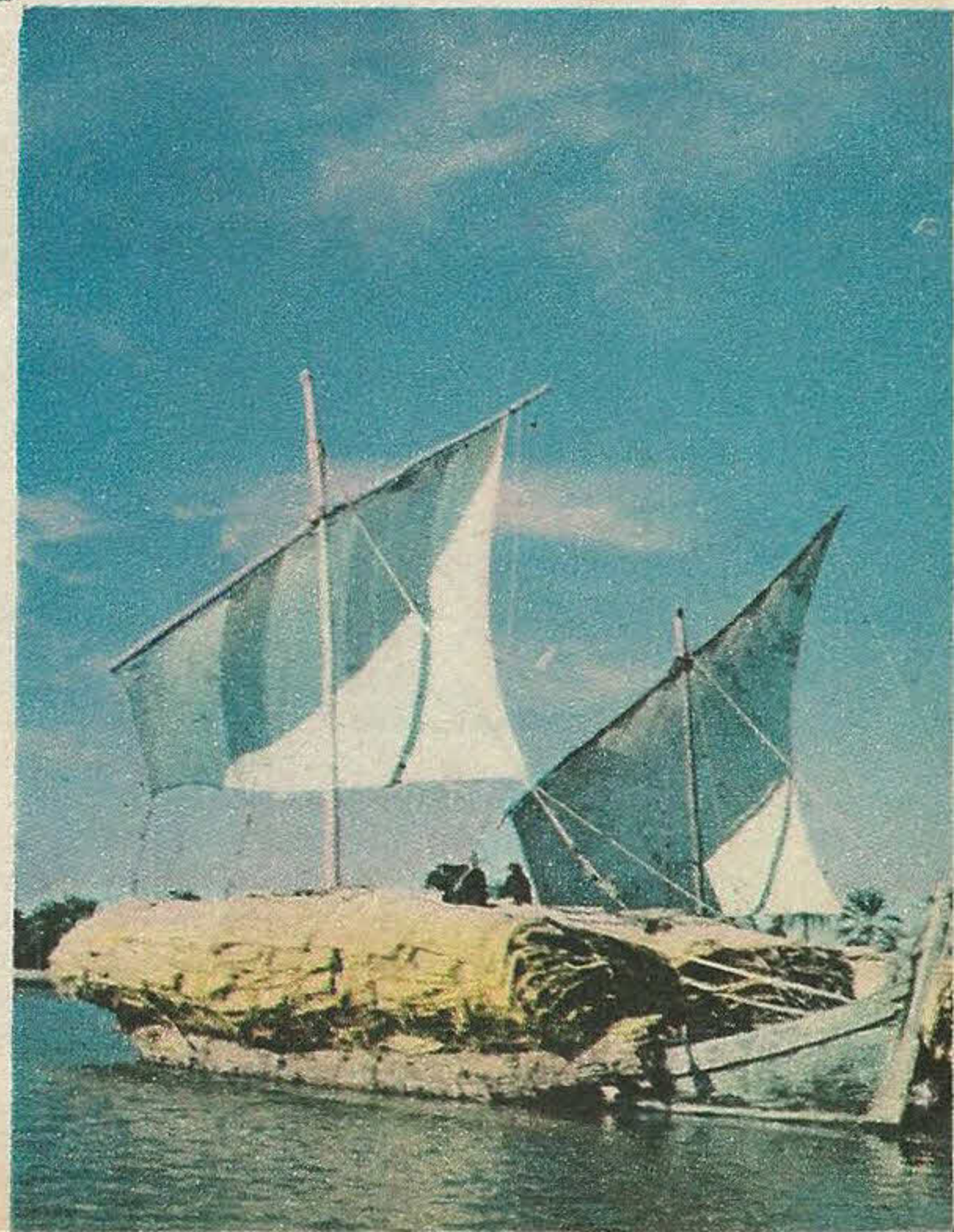
The presence of oil in Iraq was known in ancient times, but it is only in recent years that combined British, American and European oil interests have made Iraq a leading oil-producing nation.



**Above:** An Iraq market. Bread, sweetmeats, and home grown fruits—oranges, lemons, figs, apricots, grapes, pomegranates, mulberries and walnuts fill the stalls. The background building is a mosque or Moslem temple. There are many religions in Iraq, but most people are Moslems.

**Left:** Schoolchildren in Baghdad, the largest trading centre and capital of Iraq. Revenue from oil has helped to improve education, public services, flood control and irrigation. Baghdad is a centre of international airports and there is a frequent air service to and from London.

**Right:** Cargo-boats or mahailas which can carry 70 tons of cargo sail down the wide Shatt-al-Arab river. Along its banks grow half of Iraq's 64,000,000 date palms, which extend for 175 miles. Basra, the chief port of Iraq, is situated on the Shatt-al-Arab, and most of the country's imports and exports pass through it.



# Did You Know That...?



... one of the most mischievous types of monkey is the Barbary ape, found in North Africa and on the rock of Gibraltar. They cause great damage to fruit gardens, stealing all types of fruit. There is a belief that when the last Barbary ape leaves Gibraltar, the British will leave, too.



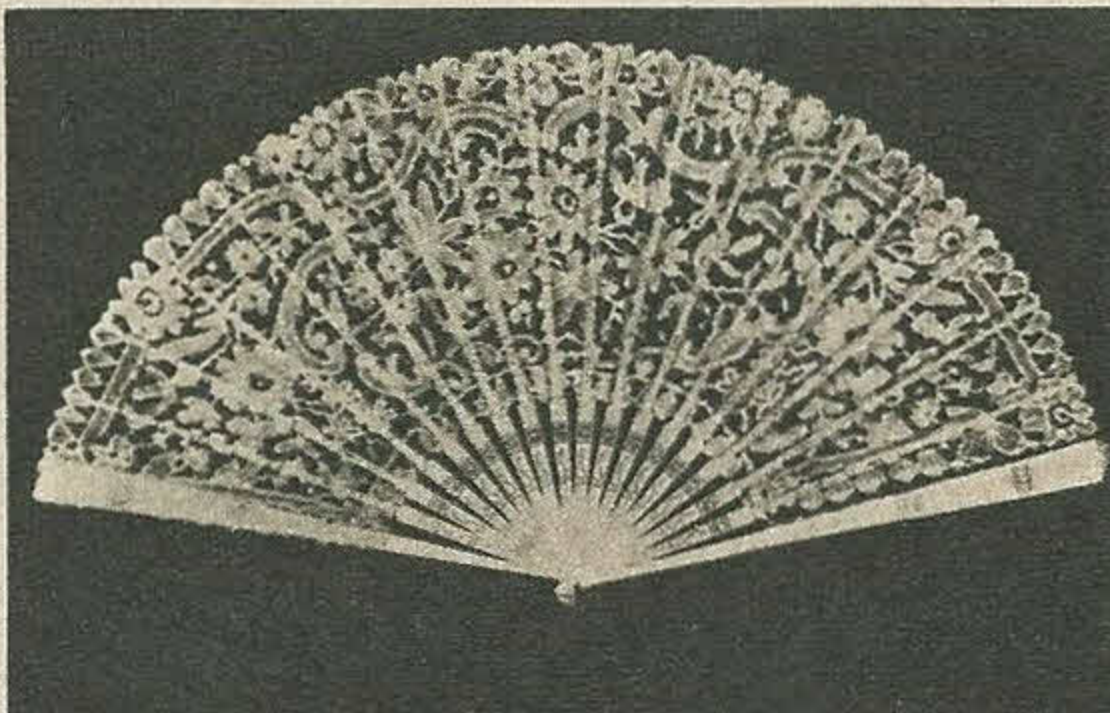
**Mystery**



**Picture**

See Page 26

... fans, used chiefly for cooling the face, were once regarded as an emblem of life in Japan. The sticks, radiating from the centre, were thought to represent life expanding out from birth onwards. Some fans, like the one in the picture, were treasured instruments decorated with precious stones or delicate pictures. By the Middle Ages fans called *flabelli* were used in church ceremonies to keep insects away from sacred vessels, but it was not until the sixteenth century that fans became popular with the ladies of Europe.



... the Teddy bear, one of the most loved of children's toys, originated in America. In 1909 President Theodore Roosevelt went on a much-publicized bear hunt, and when he returned he was presented with a toy bear as a memento. Soon toyshops everywhere in the U.S.A. were selling toy bears, nicknamed "Teddy" after the President.

## THE JIGSAW THAT MAKES GREAT BRITAIN — CUMBERLAND



\* *That is Celtic for one to fifteen. Ask any Cumberland countryman—if his father was a shepherd he probably used this counting system*

**Y**AN, taen, tether, methel. . . .” If you heard a British shepherd counting sheep like that you might think that one or other of you were dreaming.

In fact this is an ancient Celtic system of counting *one, two three, four*, and right up until the last century it was being used regularly by the shepherds of Cumberland to count their sheep.

Even today the farming families in the dales of this remote county are still familiar with the Celtic counting system.

When the Cumberland shepherd reached fifteen (*bumpit*), he counted one-and-fifteen, two-and-fifteen etc. until he reached twenty (*gigot*). Then he raised one finger and started again, until he had used five fingers and so reached a hundred. At that figure he made a mark on a stone wall and began the next hundred.

Celtic numbers were handed down through generations of dalesmen and their families from the early tribes who lived in the hills and lake-land valleys of Cumberland long before Saxon or Viking invaders reached the county's shores.

Sheep-farming has always been the main occupation of the dalesmen, and it is still vitally important for the shepherd to keep a check on the numbers of his flock. For the sheep, free to wander over the rough, green fells and outcrops of rock, can easily stray into other flocks or leave their lambs stranded high up above the dales.

### Walking Hazards

**E**ACH flock of sheep has its own particular grazing-ground, or *heaf*. Several times a year farmers from neighbouring dales meet to exchange or return straying sheep which they have cared for among their own flock. This practice saves constant, difficult journeys, for although farms may be only a few miles from each other as the crow flies, the direct route from one dale to another is often made hazardous by bogs, rocks or screes (loose stones), which must be skirted.

The sheep are marked or *smitten* with red, blue or green dye-marks to distinguish their ownership, and the shepherd is helped in his difficult task of keeping the flock together by the highly-intelligent sheepdogs bred in the county, which respond to the slightest whistle or arm signal.

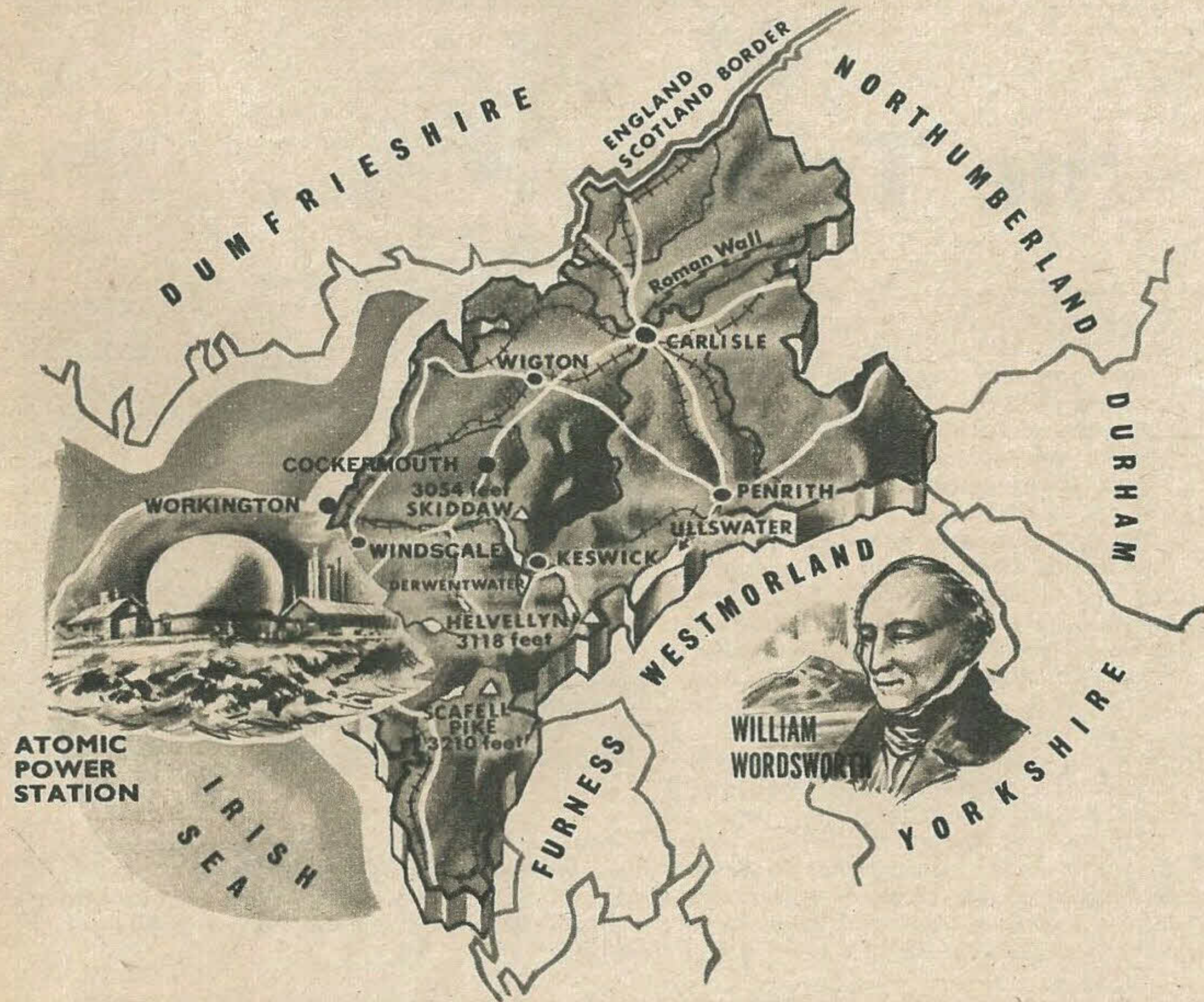
Tough and wiry as goats, Cumberland sheep are chiefly of the small, blackfaced Herdwick variety. Following their tracks is the safest way to scale a hillside in Cumberland, and hitch-hikers and rambles are always advised by local farmers to use sheep-tracks because they generally skirt round bogs or other danger-spots.

... the mail robberies of the 1800s in North America were carried out by the Red Indians, who harassed the famous Pony Express riders. The riders carried mail from St. Joseph, Missouri, to Sacramento in California in relays over a distance of 1,950 miles, each rider travelling seventy-five miles a day. One of the best-known riders was Colonel William Cody, known as Buffalo Bill. From his journeys he acquired useful knowledge of the plains which he put to advantage when he later became a U.S. Army scout.

# COUNTING SHEEP —FROM YAN TO BUMPIT\*



The raised finger of this Cumberland shepherd indicates twenty sheep. He is using a Celtic counting system.



**CUMBERLAND**  
 Area: 1,520 sq. miles.  
 Population: 292,070  
 Chief town: Carlisle.  
 Other big towns: Workington, Whitehaven, Maryport, Keswick, Cockermouth and Penrith.  
 Peaks: Scafell Pike (3,210 ft.), Scafell, Helvellyn, Skiddaw.  
 Lakes include Thirlmere, Buttermere, Ennerdale.  
 Rivers: Derwent, Esk, Duddon and Eden.  
 Occupations: sheep-farming, coal-mining.

After the Union of Scotland with England in 1603, the raids died down until they were little more than poaching episodes. But civil strife tore the county in the time of Charles I, when the Royalist city of Carlisle held out through one long winter against Parliamentary troops until sheer starvation forced the citizens to surrender.

Cumberland's hills have provided much industrial wealth for the county over the centuries, in the form of coal, iron ore, copper, lead and salt. But in the 1930s the terrible depression which followed the First World War hit Cumberland very hard, and there was much hardship in industrial towns like Alston, Cockermouth, Whitehaven and Workington. A Development Council was formed in 1935 to promote industry and tourism in the county, but the towns took many years to prosper again.

Today, of course, the county is the home of Calder Hall, the world's first atomic power station, and its neighbouring station Windscale, where plutonium (an atomic energy-producing substance) is made.

But it is to the hills and dales of Cumberland that the imagination turns. The National Trust has taken over more than fourteen square miles of beauty spots, including the chief peaks, so that the land remains much as it was when great poets like Wordsworth, Coleridge and Southey sang its praises and Hugh Walpole wrote his famous "Herries" adventure books about the life of the dale farmers.

Thousands of people visit Cumberland every year, for the wonderful scenery of its Lake District is world famous. The great, green shoulders of hills and mountains, shaped by volcanic explosions and ice erosion millions of years ago, loom like sleeping monsters above the blue stretches of lake. Constantly-changing weather of sunshine and cloud heightens the beauty of the hills, whose tops are often shrouded in mist.

Cumberland contains the highest mountains in England—Scafell Pike (rising to 3,210 ft.), followed by Scafell, Helvellyn and Skiddaw. In between these giants of the Cumbrian and Pennine mountain chains lie the green, wooded dales with their white-washed farmhouses, walled lanes, and sheep-dotted slopes.

## Isolated Farm

**I**N times past these farms were so isolated that a dalesman's son thought nothing of walking ten miles to a village dance and back if he wanted some human company.

Some of the dales have only recently been opened up to heavy traffic, and in winter many motorists are stranded on snow-bound passes through the hills. The shortest cut from village to village is often still by a treacherous footpath up hillsides, past bogs and down slithering scree slopes, the way marked by small cairns of stones.

An outer ring of small towns like Keswick, and Broughton-in-Furness (Lancs) provide shopping

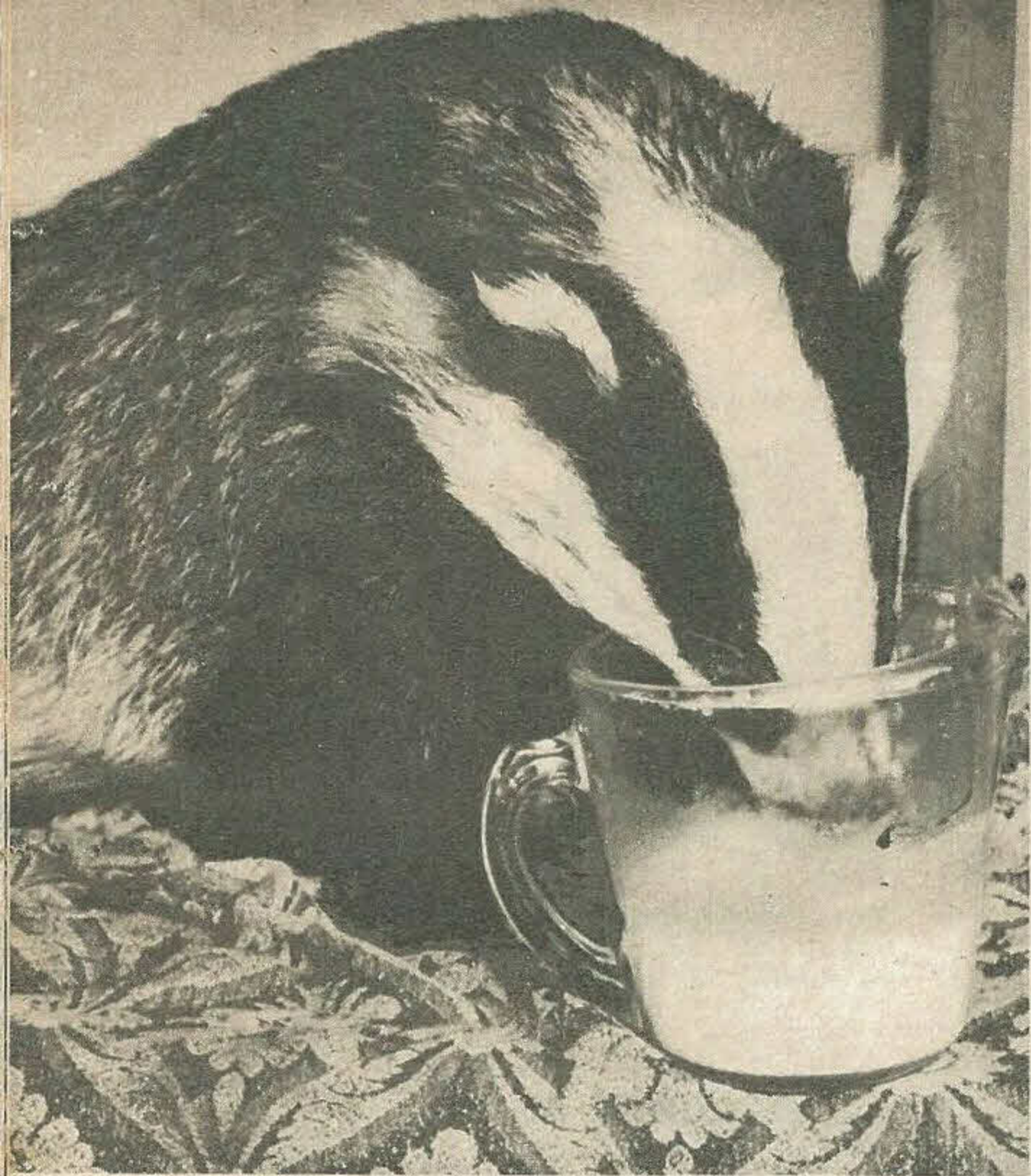
centres and post-offices, and they connect with a bigger ring of market towns—Penrith, Cocker-mouth and Wigton.

Many centuries ago this whole area was a battlefield between Scots and English border folk. The Roman governor of England, Agricola, built the first wall against the Scots in A.D. 80; then Hadrian built his famous wall of turves and stone across Cumberland to keep the Picts out of Roman territory.

Later, marauding Scots descended again and again on the dale farms, robbing, burning, murdering and laying waste. Parts of the county frequently changed hands between Scots and English, defence towers had to be added to the churches, and a system of bonfire warnings was devised. The castle at Carlisle, chief city of Cumberland, was a stronghold against the Scots.



Vast bonfires warned English farmers when Scots raiders crossed the Border into Cumberland, in the sixteenth century.



This badger is not a domesticated pet. It visits a Dorsetshire farm every evening, where it knows that a drink of milk is waiting. When the milk is gone the badger plays with the farm dog for a while—then goes back to its woodland home.

# PET TALK

by EDMUND BURKE

## WHY "PUSS?"

Our words "puss" and "pussy" seem to come from the cat goddess of Egypt, Pasht. She had other names too, Bubastis and Basteta, but we took our words from the first. Incidentally, the word "cat" itself comes from North Africa.

## KEEP YOUR TEMPER!

It is only when a dog obeys a command every time that you know it is well-trained.

## THE RIGHT PAINT

PAINTED boxes and cages for your pets not only look better but are much easier to keep clean. When you paint them, use a non-poisonous, non-metallic paint, many of which are made especially for the purpose. You would be surprised to know just how much paint even a budgerigar can pick off the bars of its cage—and with the wrong kind of paint poisoning can easily result.

## TOO LONG?

I HAVE already told you how to make a scratching post for a cat, and advised you to watch the length of a bird's claws. The same thing is true of dogs, whose nails are all too often too long.

This extra growth is usually on the front feet, because when a dog moves, it drives the back legs—and the toe nails there get more wear. The front legs are rather like stilts to hold him up and the nails on them do not wear down as fast.

If you find daily exercise on concrete or paving does not keep your dog's nails trimmed, file them back with a small flat file, working from the bottom of each nail. Be careful not to take too much back at a time.

## DOGS HELP THE ARMY

DOG licences—they were called taxes then—were first introduced in 1796. The tax was imposed to raise money so volunteers for the Armed Forces could receive a five pound bonus. The original tax was three shillings a year for a yard dog, and five for one kept in the house.

# They Started this Building at the Top!

It sounds crazy to start a 17 storey building at the 17th floor and end up by building the first floor. But that is exactly how they erected this building in Coventry.

As each floor was completed, at ground level, it was raised up on jacks. Then another floor was built underneath it—and that one was jacked up.

But why do it, anyway? What is wrong with the old idea of starting at the ground floor and building upwards? The contractors have the complete answer to this—the amazing amount of time and money spent in raising building materials up to seventeen floors is done away with. Nothing has to be lifted very much above ground level.

You can read the full story of this new and revolutionary building idea in the 1964 LOOK AND LEARN BOOK, now on sale.

It is only one of fifty interesting articles and features—only one of the 160 pages. You can read science, invention, travel, glories of the past, sport, the amazing world beneath the sea, wonders of the printing press, secrets of map making, things seen by the microscope, how man will travel to Mars, the story of the famous singer Joan Sutherland, the art of the postage stamp—these and many more features will give you hours of enjoyment.

There is a big demand for this new book and you are advised not to delay buying it, or placing an order for it. Remember the title . . .

## LOOK AND LEARN BOOK 1964

On sale at all newsagents and bookstalls

Price 12/6



Here are the jacks which lift each floor as it is completed. The stone blocks take the weight until the storey is high enough to receive the permanent concrete piles.

# BEGINNING . . . ANOTHER ORIGINAL ADVENTURE OF THE WORLD'S MOST FAMOUS SCHOOLBOY

# BUNTER THE BANDIT

BY FRANK RICHARDS



Bunter came whizzing through the study door, helped on his way by a book and a cushion.

## THE FIRST CHAPTER

### The Masked Terror!

"I SAY, you fellows—"  
"Buzz off, porpoise!"  
Those were the words of greeting that William George Bunter received when he blinked in at the door of Study No. 1 in the Remove passage, after tea.  
Harry Wharton, Frank Nugent, Bob Cherry, Johnny Bull and Hurree Singh, Peter Todd and Vernon-Smith, all of the Remove, were in the study, listening to music on the radio.  
Billy Bunter's interruption was not welcome and they all glared at him.  
"Beat it," said Bob Cherry. "Go away. Hop it. Mizzle!"  
Billy Bunter did not mizzle. He rolled farther into the study and blinked through his spectacles at the Removites.  
"Look here, you fellows, I came to ask whether any of you would lend me a few bob. Of course, I'll settle when my postal order comes—"  
"Same old postal order!" said Harry Wharton with a grin. "It's been a long time coming, Bunty. There's nothing doing, and you're interfering with the radio. Vamoose!"  
Billy did not vamoose either.  
"Look here, you fellows, I'm jolly hungry! I don't get half enough to eat at this school and I had to have a measly tea in Hall today. Now, if you could lend me a few bob—"  
"We're not going to lend you anything, old fat man!" roared Johnny Bull. "Run away and play."  
"You heartless beasts, I'm famished!" spluttered Bunter. "I've got a horrible sinking feeling, and—Yaroooooooh!"  
A large dictionary, hurled with unerring aim by Bob Cherry, whizzed at Bunter and hit him on the nose. He fell back with a roar, tripped over the carpet, and fell with a thud that rattled the windows.  
"Yarooooooh! Wow!" wailed Bunter. "My spine's fractured! You rotters! You beasts!"  
He staggered to his feet and clutched the table on which the radio set stood. It rocked, and threatened to slide to the floor.  
Nugent gave a roar.  
"You'll bust our radio, you—oh, my hat!" He made a hurried grab at the radio and only just managed to save it. Bunter was seized by many hands and sent whizzing through the door on to the linoleum outside. Another book and a cushion helped him on his way.  
Bunter picked himself up and rolled away with surprising ease for someone with a fractured spine.  
"Wow! The rotters. I'm hard up! I'm hungry! I lead a perfect dog's life at this school. Beasts!"  
He waddled into the Common Room, where Hazeldene, Bolsover major, Trevor

and a number of other Removites were discussing an item in the local newspaper.  
"That masked hold-up man has been at it again," Hazeldene was saying. "The police have been hunting for him for several days. He's been breaking into houses all over the place, and pouncing on people late at night on lonely roads. Coker was pulled up by him last night, wasn't he?"  
"Yes, he was," said Trevor. "He went for the crook and they had a fine old struggle. But the chap got away, worse luck."  
"I say, you fellows—"  
"Hallo, Bunty," said Bolsover. "You look as though you've been in the wars. What's the matter with your nose?"  
Actually, Bunter's nose was showing signs of where the dictionary hit it, but the fat boy's fertile imagination was already at work.  
"Yow!" moaned Billy Bunter. "I've been attacked by that masked crook!"  
"Eh?"  
"I've just come from Friardale," Billy continued. "As I was coming down the road, a masked rotter dashed out at me! He wore a black cloak and a mask. He held out a big revolver and told me to stand and deliver!"  
"Ha, ha, ha!" roared the Removites incredulously.  
"It's true, you fellows!" hooted Bunter, now quite convinced within his own mind that it really happened. "A great big fellow he was! You chaps would have fainted in sheer blue funk if you had seen him. But I

clenched my fists, and aimed a terrific blow and hit him right on the chin. Then I got into my stride and hit him right and left. But my strength gradually gave out. Being hungry and famished, and in a low condition from want of food—"  
The Removites roared again.  
"You heartless beasts," Bunter growled. "The least you can do is to raise a subscription to stand me a feed after the terrible struggle I had with the masked bandit chap!"  
"No fear!"  
"You're as bad as Wharton and the others!" Bunter yelled. "You're all tarred with the same brush! You—you—"  
"Oh, bump him!" grunted Bolsover. "He makes me tired with all his lying yarns!"  
Bunter backed away and beat a hasty retreat, feeling, not for the first time that day, that life—at Greyfriars, at any rate—was simply not worth living.

## THE SECOND CHAPTER

### The Dark Deed!

HALF AN HOUR later Bunter waddled out of the study of Wingate, the captain of Greyfriars. He had just delivered an imposition.  
Bunter seemed to be in trouble with everybody lately. Mr. Quelch, the Form master, was particularly down on him, for the fat junior seemed to be slacking more than ever.  
Wingate had caught Bunter pilfering tuck from the school pantry and had given him five hundred lines. But Bunter skimped the impot and tried to palm off three hundred lines instead. Wingate had not been deceived, and the Owl of the Remove had received two sharp swipes with the cane for his delinquency.  
"Ow!" gasped Bunter. "I'm leading a perfect dog's life here. Everybody's against me! I—hallo, there's Sammy!"  
Sammy Bunter, his young brother and a smaller edition of William, came out of Gerald Loder's study at that moment.  
Sammy had a pound note in his hand, and the eyes of Billy glistened when he saw it. He forgot his hurts and rolled up to his young brother.  
"Hallo, Sammy," he said. "Whose money have you got here?"  
Sammy blinked through his spectacles at his brother.  
"Oh, really Billy, you quite startled me!" he said. "This is Loder's money, of course. I'm his fag for this week, and I've got to go down to the village and get him a quid's worth of tuck. He's having a supper party in his study tonight."  
"My word!" breathed Billy, his mouth watering at the bare thought of all that food.

"I say, Sammy, let's wangle some of that tuck between us! I'm jolly hungry—starving, in fact! You could dock a few things out of the parcel and I'll take 'em away, and Loder will never know."  
"Oh, won't he!" snapped Sammy. "That's where you make a big mistake, Billy! Loder's given me orders to bring the bill back from Uncle Clegg with a list of all I bought. He'll check it over when I get back."  
"Suspicious rotter!" growled Billy Bunter. "Couldn't you manage to—er—lose some of the tuck on the way back? You could accidentally drop some and—"  
"Rats!" retorted Sammy. "I'm not going to risk a good hiding for you, Billy. You'd scoff all the grub, and I'd have to stand the racket. Yah! Not likely. Go and eat coke!"  
With that affectionate, brotherly remark, Sammy Bunter went downstairs.  
William George Bunter blinked after his young brother. He stood at the top of the stairs and thought deeply for several minutes. Suddenly he gave a fat chuckle expressive of satisfaction.

"He, he, he! I've got it. I'll get all that tuck, and nobody will ever know!"  
And having delivered himself of that soliloquy, he rolled away in the direction of the Common Room, which was now empty. A cupboard in the far corner contained the Junior Dramatic Society's "props." The Owl of the Remove rummaged in the cupboard and soon brought to light a mask, a cloak and a big black hat.  
He rolled them up in a bundle, concealed them under his jacket, and departed. He next looked in at the study of Mr. Prout, master of the Fifth. Mr. Prout collected ancient firearms, and had a number of them hanging on the wall. Bunter took down a big revolver and stealthily rolled away.  
He left Greyfriars as dusk was falling over the countryside and made his way along the Friardale Lane towards the crossroads.  
Meanwhile, Sammy Bunter had reached Uncle Clegg's tuckshop in the old High Street at Friardale and made extensive purchases of tuck, as ordered by Loder.  
Dearly would Sammy have loved to sample some of those luxuries, for his appetite was just as great as that of his brother. But terror of the wrath to come deterred Sammy from pilfering, and with a deep sigh he tucked two huge parcels under his arms and rolled out of the shop.  
It was getting dark by the time Sammy approached the crossroads, and he began to feel rather nervous. He had heard about the hold-up man, and not being of the stuff of which heroes are made he looked fearfully from side to side in the dark shadows of the trees.  
There was nobody about, and Sammy increased his pace. But suddenly he stopped and gave a gurgle of horror. A figure clad in a flowing robe and wearing a black mask detached itself from the shadows just behind him.

"Halt!" rapped a deep threatening voice.  
No need to command Sammy to halt. He stood rooted to the spot in horror. His eyes almost started from his head when he saw an ugly looking revolver pointed at him.  
"Stand and deliver!" came that deep voice again. "I have you covered! I am desperate! Drop your parcels and, if you value your life, run!"  
Sammy dropped his parcels of tuck as though they had become red-hot. Then, with a long loud yell he fled along Friardale Lane as fast as his fat little legs would carry him, disappearing into the gloom ahead.  
The bold, bad robber picked up the parcels and tucked them under his cloak. Then he crashed his way through the bushes at the side of the lane and disappeared across the fields.  
And as he went, a giggle that would have been familiar to the juniors of Greyfriars was wafted on the night air.  
"He, he, he!" chortled William George Bunter from under the disguise. "Now for a feed! Those rotters at Greyfriars can't starve me. I'm clever, that's what I am! He, he he!"



"Stand and deliver!" came a deep voice. "I have you covered with my revolver!" Sammy Bunter dropped the parcels of tuck as though they had become red-hot.

Next week:  
Billy Bunter bolts  
from Greyfriars



# The ARTS:

This Week—Poetry

## An Old Blind Man Sits Thinking

**T**HE old man dressed in black sits still and quiet in the room hung with heavy green curtains.

The furniture in the room is old and dismal. And the old man, seated in his armchair and with his long hair falling on his shoulders, seems a natural part of his surroundings and his time—England in the years after the Civil War.

There is a desk before the old man, but he pays no heed to the papers upon it. For if we look hard we can see that the man, whose name is John Milton, is blind.

What is he thinking of, this sightless man, as he sits there?

Perhaps of his boyhood in Bread Street, London, where, despite his weak eyes, he wrote poems in Latin and pamphlets in English denouncing King Charles I and the clergy.

Or perhaps the old blind man is thinking of more settled days when, after his first and disastrous marriage, the great Protector Cromwell himself appointed him "Secretary for Foreign Tongues," on account of his fluency in European languages.

And here the poet's forehead furrows. For it was at this stage in his life that his doctor had warned that unless he eased up on his work he would lose the sight of his eyes.

How could he have eased up? Had he not been appointed to serve his country in the hour of its freedom by Oliver Cromwell himself?

### How Milton Saw Satan

**PARADISE LOST**, written in blank verse, is a sheer effort of the imagination. The materials in the Bible for the Fall of Man are scanty enough, yet from this slender outline Milton built up in twelve books or chapters, a poem of 10,565 lines.

Most of the narrative is directly given by the poet, but in the middle part of the epic there is much recital of things past, and some foretelling of things to come, by angel visitants who supply Adam with knowledge and advice.

In his opening chapter Milton pictures the overthrow of the rebel angels in Heaven; their rally in the nether world under Satan, and their determination to continue their rebellion. Then he describes "their dread commander," Satan. The passage stands out as a triumph of description:

*He, above the rest  
In shape and gesture proudly eminent,  
Stood like a tower. His form had not yet lost  
All its original brightness, nor appeared  
Less than an archangel ruined, and the excess*



The helpless poet dictates "Paradise Lost" to one of his daughters.

Here the old man fingers his blind eyes. Perhaps he is thinking now that, after all, his blindness is in vain. Thinking, perhaps, of the bitterest pill of his life, the death of Cromwell and the Restoration of the Stuart kings to the throne.

And his own unceremonious removal to prison, where they took him sightless and uncomplaining, for being an enemy of the monarchy.

The old man smiles. He is out of prison now. Mercifully the king has had him released.

The blind poet leans forward and pulls at a bell rope. A girl comes into the room. She is one of his daughters. At his dictation she writes.

He talks about Satan and about God and about the Serpent and the archangels, and about the Eden that Adam and Eve lost. The blank verse of his majestic words thrill, and is catchingly beautiful.

John Milton is composing another of the twelve books of *Paradise Lost*. He does not yet know that this amazingly imaginative work, written to "justify the ways of God to man," is to become the greatest epic poem of our language.

Besides the genius of *Paradise Lost* even Milton's other brilliant works pall. This one great story developing the Bible's account of the Fall of Man places him at the head of the English poets. Yet ironically this, the greatest poem in the English language, earned for John Milton a miserable ten pounds! And when he died he was lonely, scorned and forgotten.

*Of glory obscured; as when the sun new risen  
Looks through the horizontal misty air  
Shorn of his beams, or, from behind the moon,  
In dim eclipse, disastrous twilight steals  
On half the nations, and with fear of change  
Perplexes monarchs. Darkened so, yet shone  
Above them all the archangel. But his face  
Deep scars of thunder had intrenched, and care  
Sat on his faded cheek, but under brows  
Of dauntless courage and considerate pride,  
Waiting revenge.*

The effect of Satan's oratory in rousing again his dispirited followers is mirrored in these magnificent lines:

*He spake; and to confirm his words outflew  
Millions of flaming swords, drawn from the  
thighs  
Of mighty Cherubim. The sudden blaze  
Far round illumined Hell. Highly they raged  
Against the Highest, and fierce with grasped  
arms  
Clashed on their sounding shields the din of war,  
Hurling defiance towards the vault of Heaven.*

# CROSSWORD

### CLUES ACROSS

- In 1666 this city was destroyed by a great fire. (6)
- Crinkly kind of cabbage that is also the name of a big hotel. (5)
- Popcorn is made from this cereal, when heated and sugar-coated. (5)
- King's Lynn is in this county. (7)
- This powder makes a fizzy drink. (7)
- River that forms part of the border between England and Scotland. (5)
- This bank is in the North Sea and is rich in fish. (6)
- A breed of cattle named after one of the Channel Islands. (6)
- Name of the playing area in lawn tennis. (5)
- This town stands on the River 13 across. (7)
- An old Roman town on the River 3 down, it has a row of shops raised above street level. (7)
- One of the V-shaped pieces of material on a coat. (5)
- Soft unpolished leather from which shoes are made. (5)
- You may find it in the soup. (6)



CLUE TO 16 ACROSS



CLUE TO 25 ACROSS

### CLUES DOWN

- An oil-yielding fruit grown in countries round the Mediterranean. (5)
- A river of England and Wales, 70 miles long, which flows into the Irish Sea. (3)
- Nine times ten. (6)
- Tiny fish like a herring. (5)
- Sweet-scented flowers generally of a bluish-purple colour. (7)
- Joined together, as a pair of oxen, by a frame of wood across their necks. (5)
- Occupied pleasantly. (6)
- An industrious insect that collects honey from flowers. (3)
- Cheese full of holes, first made at this place in Switzerland. (7)
- A head of corn, or what we listen with. (3)
- Country labourers. (6)
- King of Fairyland married to Titania. (6)
- These farmyard birds crow at day-break. (5)
- The name of any book or play. (5)
- This word means to urge forward. (5)
- One of the signs of the Zodiac, the lion. (3)



CLUE TO 6 DOWN



CLUE TO 17 DOWN

### SOLUTION ON PAGE 26

	1	2	3	4	5	6	7
8							
9				10			
11			12			13	
14		15			16	17	18
				19			
20			21	22		23	
24					25		
26				27			

◀ Adam and Eve in the Garden of Eden. "About them frisking playd All Beasts of th' Earth . . . Sporting the Lion rampd, and in his paw Dandl'd the Kid . . ."





Jesus cried out in a loud voice, "Lazarus! Come forth!" The watchers were gripped by fear and amazement.

## THE MAN WHO LIVED AGAIN

IN addition to the twelve disciples, Jesus had many other friends, some of whom are mentioned by name in the Gospels. Among them, perhaps the closest were members of one family who lived about two miles from Jerusalem, at a village called Bethany. Jesus used to go there sometimes to get away from the crowded and noisy city, and he spent many a quiet day with his friend Lazarus, who had two sisters, Mary and Martha.

One day, when Jesus was in another part of the country altogether, Lazarus was taken ill. When Jesus first heard the news he was not unduly troubled, being sure that Lazarus would recover. But after two days he felt that Lazarus had become worse instead of better, and that he had in fact died. Calling his disciples, Jesus told them that he intended to set off at once for Bethany.

The journey took them a full two days' walking. When the sisters of Lazarus heard that Jesus was coming, Martha set out to meet him, while Mary stayed in Bethany.

When Martha met Jesus she cried out, "If only you had been here he would not have died. Even now, whatever you ask God, He will make possible."

Jesus talked gently to her, as they walked back towards Bethany. When they neared the village they were met by Mary, who in her sorrow said, just as Martha had said, "If only you had been here, my brother would not have died!"

Jesus felt their sorrow very keenly, for Lazarus had been one of his own close friends. Knowing that he had given sight to blind people, some of the bystanders wondered whether Jesus could do anything to bring Lazarus back to life.

Yet to do this seemed quite impossible. Lazarus had now been dead for four days. His body lay in a cave, against the mouth of which a huge stone had been rolled. It was too late to think of bringing him back.

Nevertheless, Jesus asked to be shown the place where Lazarus was buried. Then, to the alarm of those present, he ordered the stone with which the grave was closed to be moved away!

Jesus prayed in silence for some time, then suddenly cried out in a loud voice, "Lazarus! Come forth!"

The watchers were gripped by fear and amazement as a figure appeared at the entrance of the cave; it was the figure of a man bound in the strips of linen cloth which were wrapped round the bodies of those prepared for burial. It was Lazarus, living and breathing!

"Loose the grave-clothes, and set him free," said Jesus quietly.

Lazarus was restored to his family circle, and Jesus enjoyed his friendship on many later visits to his home at Bethany. Only the enemies of Jesus were displeased; they told their leaders what had happened, and made plans to have him killed because they feared his amazing powers.

### ANSWER TO QUICK QUIZ (from page 2)

**Literature**  
(1) Tobias Smollett. (2) Richard III, by William Shakespeare. (3) George Orwell.

**Words**  
(1) (c). (2) (b). (3) (a).

**History**  
(1) Clive of India. (2) Two—Richard I (Lionheart) and John. (3) Ramsay Macdonald.

**People**  
(1) Sir Edward Boyle. (2) (b). (3) A notorious highwayman.

### SOLUTION TO CROSSWORD (from page 25)

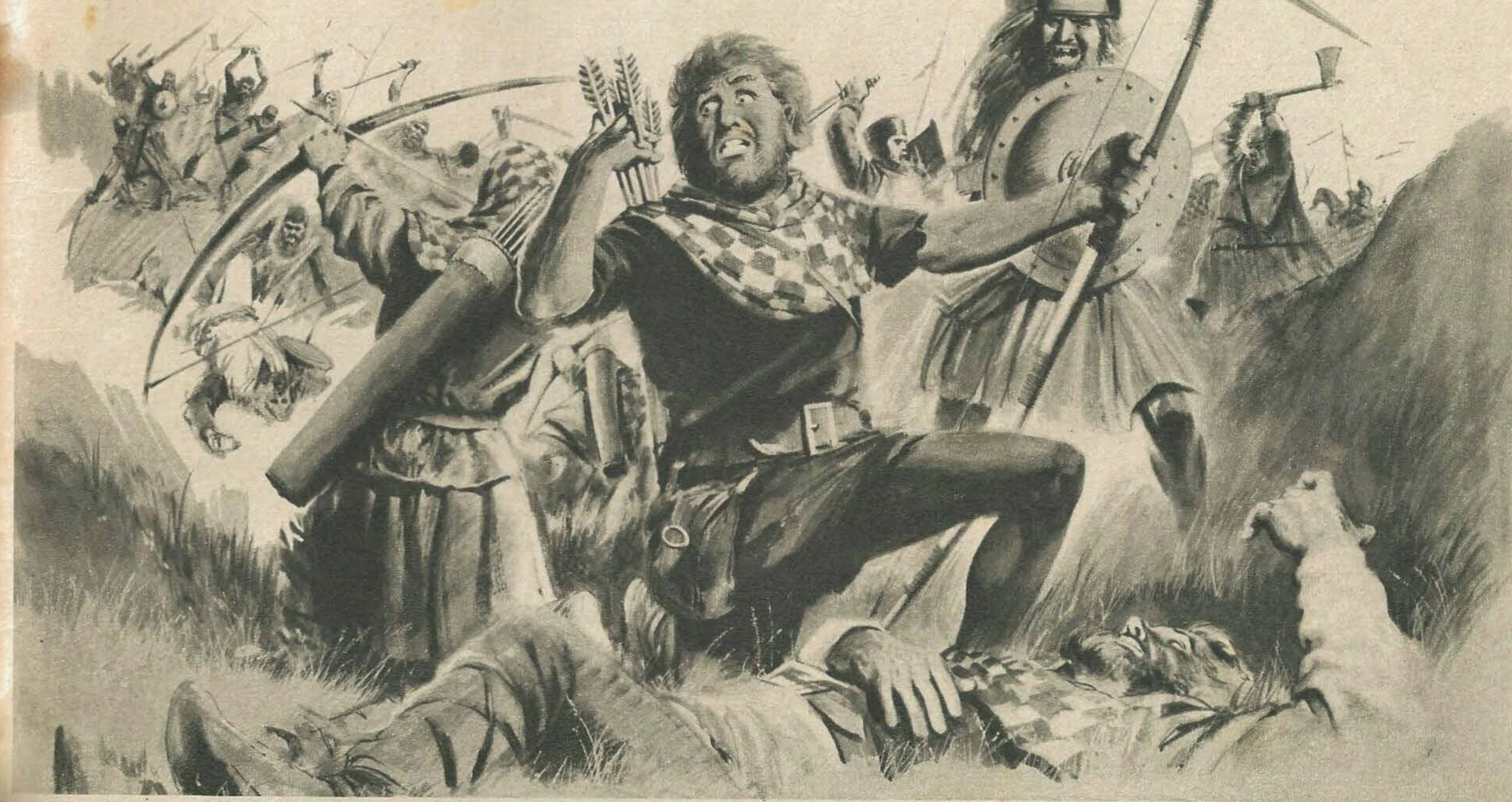
**ACROSS:** 1. London; 5. Savoy; 9. Maize; 10. Norfolk; 11. Sherbet; 13. Tweed; 14. Dogger; 16. Jersey; 20. Court; 22. Berwick; 24. Chester; 25. Lapel; 26. Suede; 27. Noodle.

**DOWN:** 2. Olive; 3. Dee; 4. Ninety; 5. Sprat; 6. Violets; 7. Yoked; 8. Amused; 12. Bee; 15. Gruyère; 17. Ear; 18. Yokels; 19. Oberon; 20. Cocks; 21. Title; 23. Impel; 25. Leo.

### ANSWER TO MYSTERY PICTURE: DAVID JACOBS (from page 20)

# THEY FOUGHT FOR A SHRED OF SILK

In a minor skirmish Douglas of Scotland captured the pennant from Henry Hotspur's lance. Now, Douglas decided, they would have a battle—to allow Hotspur the chance of getting it back!



Forced to retreat by the Scots, the English longbowmen had too little room in which to use their weapons.

jumped to his feet, buckling on his heavy sword. "Trumpeter, sound the advance at once!" he ordered.

While Percy greeted the news with delight his troops were not so pleased. For one reason they were just beginning their lunch, and for another they did not relish a quick march in pursuit of those wretched Scots.

With much grumbling and grousing, Percy's army stirred itself into action, left its lunch in the main unneaten, and set off after Percy's pennant.

There were something like eight thousand men under Percy's command, and at Otterburn Douglas waited with a thousand or so less.

Douglas did not think the English would advance so quickly. Dusk was sucking the colour from the trees as Percy's army came within reach of the Scots.

A look-out raised the alarm in the Scots camp. Men hurried to help the knights on with their heavy armour. All was haste. The Earl of Dunbar, in his anxiety, forgot to put on his helmet.

### Attack From Behind

SOLDIERS gripped their swords, said their prayers and prepared for the coming battle. Percy now called Sir Thomas Umfraville to him and told him to take some of his force on a flank march and attack the rear of the Scots camp. Douglas, in the meantime, was advancing with

his force. As the evening fell he and Umfraville passed each other. Now the sun was going down behind the clouds, casting its red light on slender lances, and the chink of chain-mail in the distance betrayed whole armies on the move.

Umfraville took the Scots in the rear. It was a devastating attack. Opposing him were mainly the grooms and servants but they fought valiantly for all that. With frantic haste they piled up baggage to impede the advancing English. Here and there a Scot hurled himself at a knight on a prancing horse, bringing him down with a crash and a clatter.

### Death of Douglas

BUT the English soon overcame this gallant resistance. Umfraville and his men were in command of the position at the rear and now he waited for Percy to make his advance.

Percy never had the chance. It was Douglas who advanced to attack his flank. With a great shouting and shrieking the Scots swept forward, pushing the English back into a narrow area between two hills.

In this cramped space the English longbowmen—a strategic part of Percy's army—found themselves unable to use these most deadly weapons.

Douglas, brave, gallant, youthful Douglas, rode in the thick of the fight. From his lance fluttered his pennant and that of Percy. But who, in that gloom, could see? Not Percy, who

fought in some other corner of the field. Not even any of his soldiers.

Douglas's horse fell, and he with it. In a moment some English soldier leapt upon him, and with his dagger made sure that Douglas would never rise again. Yet even the man who killed him did not know the prize he had earned himself. Douglas fell unnoticed and in the darkness men and horses trampled his body into the mud of Otterburn.

The Scots, though, were gaining the upper hand. The English had marched half the day. The Scots had been resting. They were the fresher and stronger force. Gradually they drove the English from the field of battle. Percy, for all his courage, did not catch a glimpse of his precious pennant.

He found himself surrounded by a dozen Scots and was taken prisoner. So, too, was his brother, Ralph.

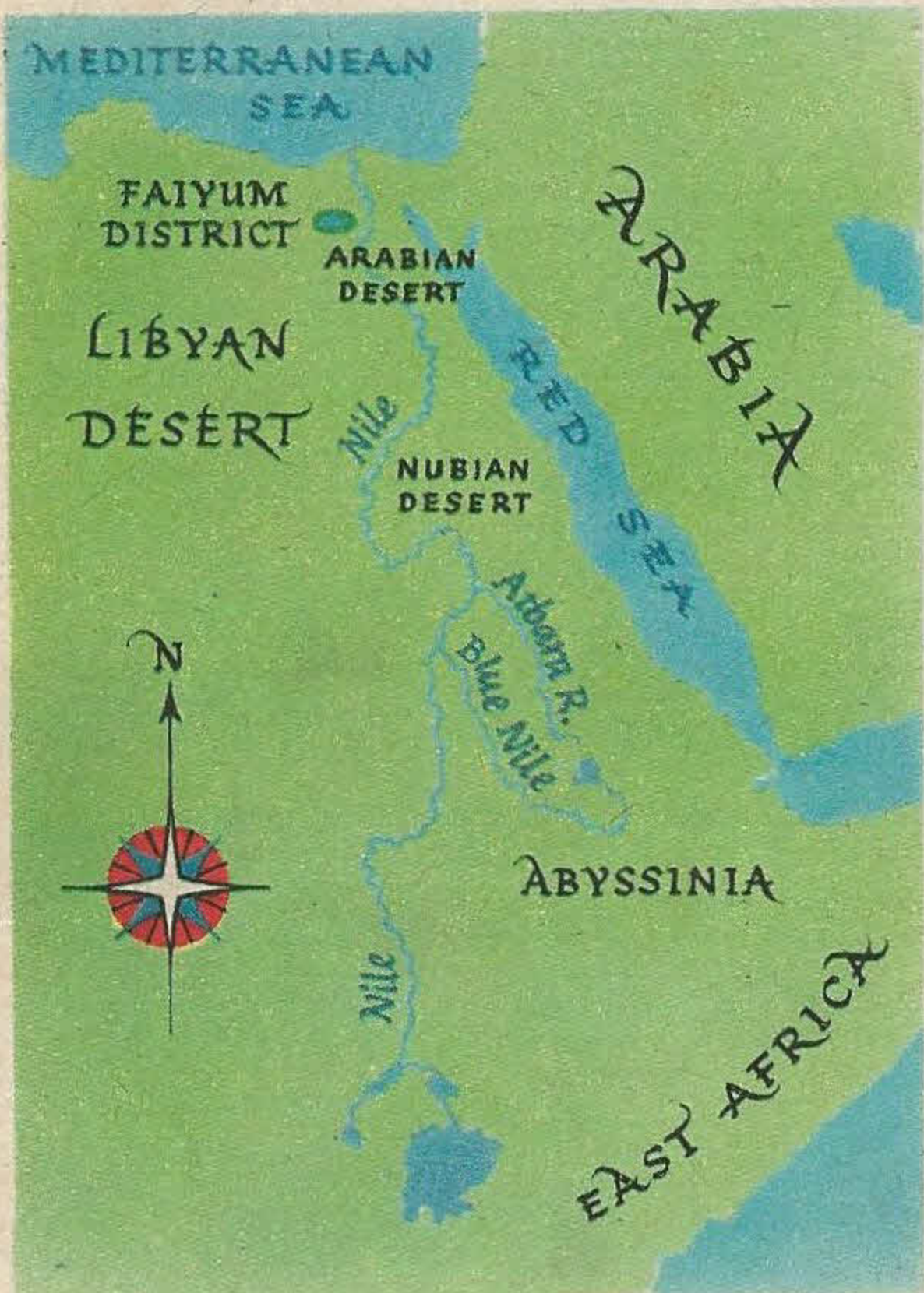
Many brave men on both sides had died that night, and not one, neither Scotsman nor Englishman, could say that he had gained some advantage for his own country.

Truly it was a battle over nothing.

**NEXT WEEK:  
HOW THE ZULUS CRUSHED  
A BRITISH ARMY**

**BEGINNING: The Epic Story  
of the River Nile—Part One . . .**

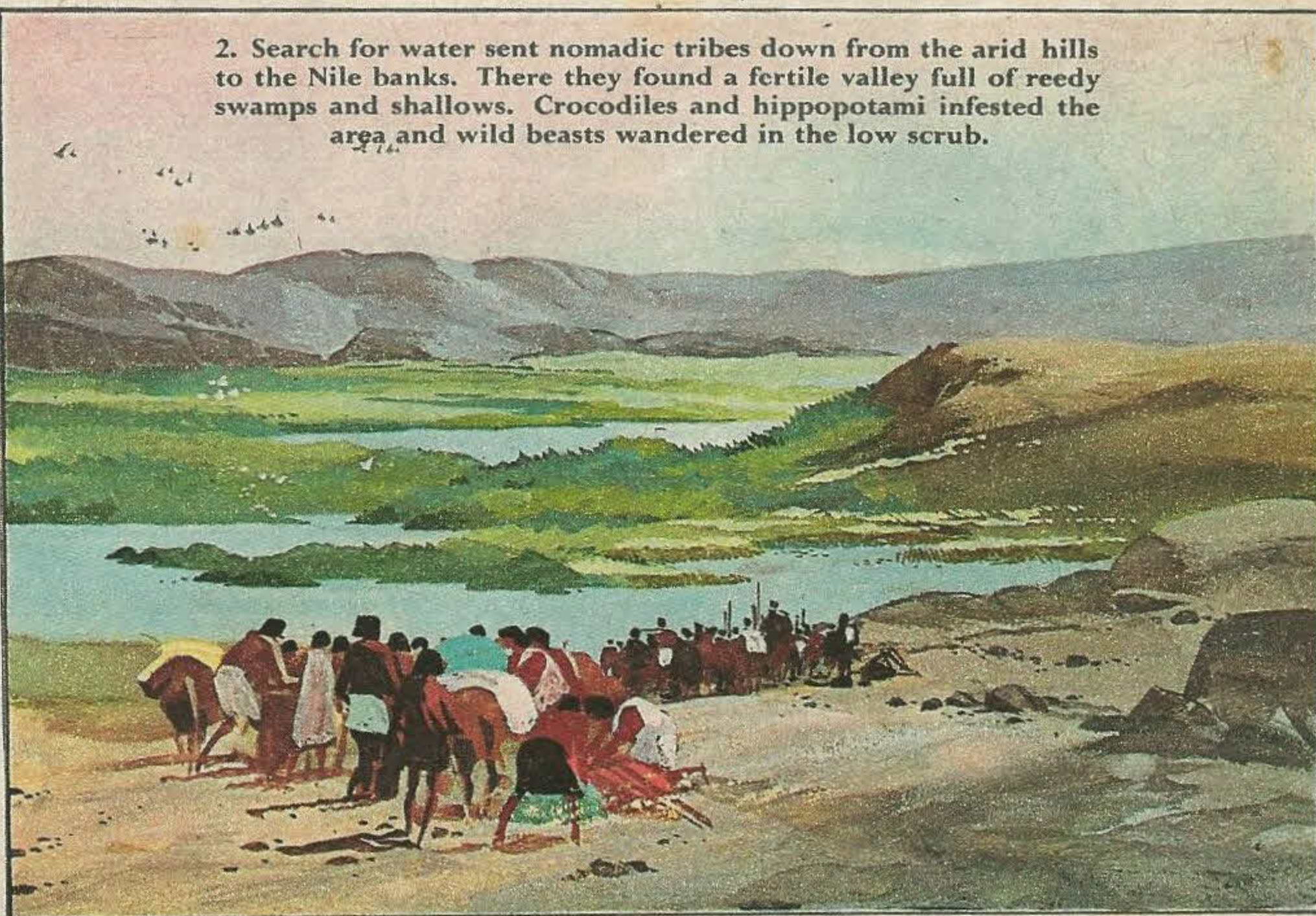
# THE FIRST EGYPTIANS



The land of Egypt has always depended upon the River Nile. Every year, since man first dwelt on the banks, the waters have risen and flooded the parched countryside. When the floods have died down, grass and crops have flourished in the rich silt along the banks. Without this annual flood, Egypt would soon have become a barren desert. Early Egyptians did not know from where the Nile came. They knew only that the source lay somewhere in three great lakes near mysterious mountains in the south. . . .

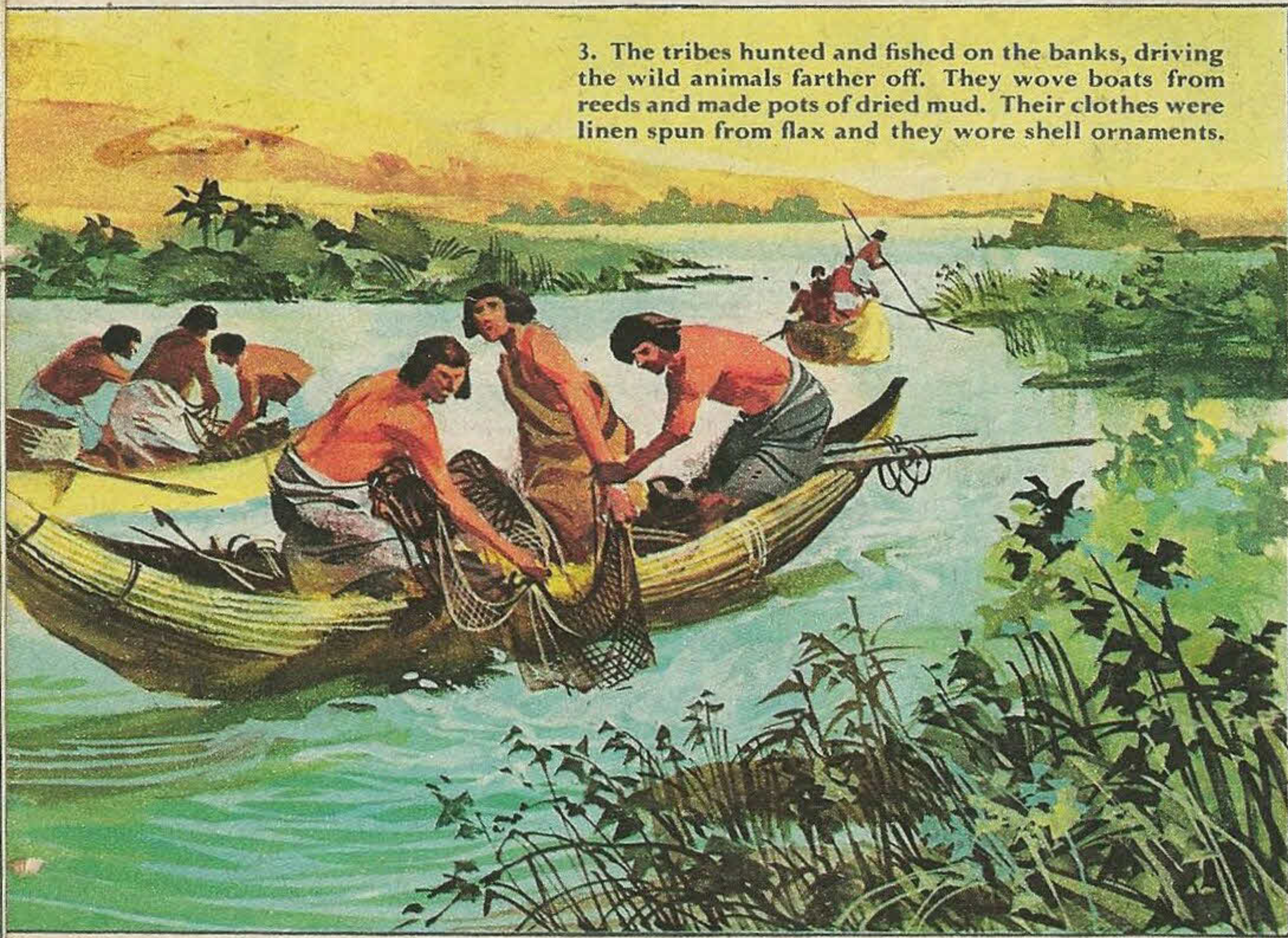


1. Millions of years ago, during the last great Ice Age, the climate of North Africa became drier as the ice-cap in Europe retreated. The Nile shrank from a vast inland sea to a flowing river, flanked by deserts.

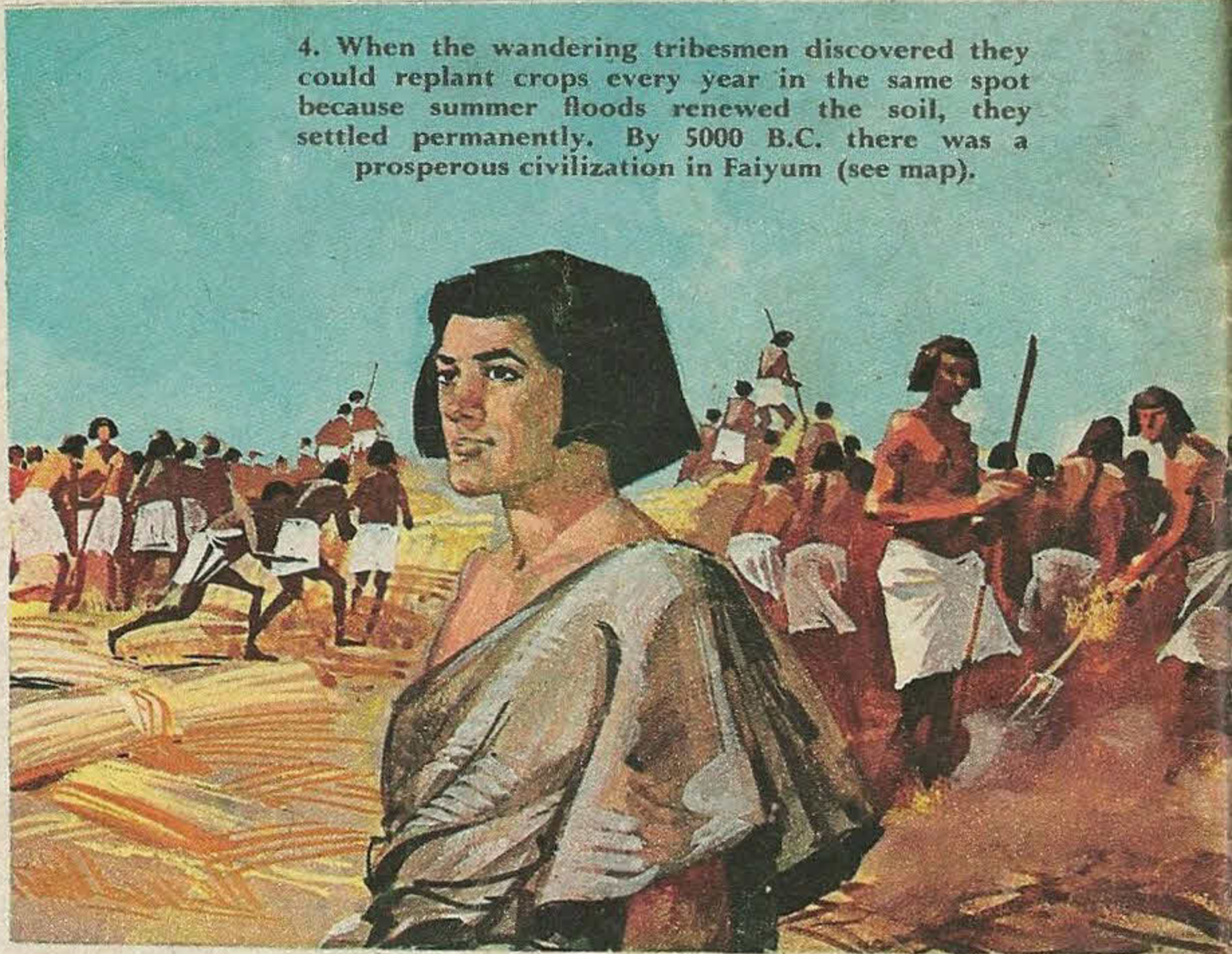


2. Search for water sent nomadic tribes down from the arid hills to the Nile banks. There they found a fertile valley full of reedy swamps and shallows. Crocodiles and hippopotami infested the area and wild beasts wandered in the low scrub.

3. The tribes hunted and fished on the banks, driving the wild animals farther off. They wove boats from reeds and made pots of dried mud. Their clothes were linen spun from flax and they wore shell ornaments.



4. When the wandering tribesmen discovered they could replant crops every year in the same spot because summer floods renewed the soil, they settled permanently. By 5000 B.C. there was a prosperous civilization in Faiyum (see map).



6. Leaders were elected in the villages, which were grouped into districts. As the population grew, the first canals and dams were dug in an attempt to harness the annual flood and distribute it evenly over a wider area to produce bigger crops.

**NEXT WEEK: STARS FORETELL THE FLOOD**

5. These ancient Egyptians built homes of mud-brick on rising ground, protected by a circular wall. High causeways linked the villages above flood level.

