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THE NATIONAL GEOGRAPHIC MAGAZINE

APRIL, 1949

The British Way

With 19 Illustrations 51 Paintings

SIR EVELYN WRENCH

Our Search for British Paintings

With 4 Illustrations

FRANKLIN L. FISHER

The Society's New Map of the British Isles

GILBERT GROSVENOR

Map of the British Isles

Forty-eight Pages of Illustrations in Color

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THE NATIONAL GEOGRAPHIC MAGAZINE

The British Way

Great Britain's Major Gifts to Freedom, Democratic Government, Science, and Society

By Sir Evelyn Wrench

Founder of the English-Speaking Union

THIS ARTICLE is an attempt to tell the story of Great Britain's contributions to Western civilization, not only in evolving parliamentary institutions but in other fields of human endeavor: literature, law, chemistry, physics, medicine, exploration, theater, agriculture, and sport. It is a tremendous theme.

A series of 48 historical paintings illustrates episodes and some of the chief actors in British history. The events and pictures by no means represent all that Britain has contributed; they have been selected by your Editor, Dr. Grosvenor, with the object of showing aspects of our civilization and culture which have become part of the American and Canadian heritage (pages 446 to 541).

I write in no spirit of jingoism but with the hope that the readers of the National Geographic Magazine, in the American and British Commonwealths, may derive inspiration from this review of some of the events which have helped to fashion our joint civilization.

Americans Draw on British Contributions

The American legislator, magistrate, and lawyer constantly draw on their British background.

When the American citizen takes his place in a railway train, he might give a passing thought to George Stephenson, the constructor of the first railroad.

When he is vaccinated by his physician, he can remember with gratitude the name of Edward Jenner, who overcame smallpox.

When he goes to hospital for surgical treatment, he can bless the name of Lister, the father of antiseptic methods.

When he sticks a postage stamp on his letter, he can recall the name of Rowland Hill, whose introduction of the postage stamp in 1840 changed the daily life of man.

When he enters a skyscraper, he can reflect that its erection was made possible, in part, by the discoveries of Henry Bessemer.

When he turns on the electric switch in his home, he should remember the pioneer work of Humphry Davy and Michael Faraday.

When he listens to the radio, he can recall the early experiments of Joseph J. Thomson.

If he plays a round of golf, a set of tennis, or a game of football or of soccer, he is linked up with pioneer British sportsmen.

When he sinks into his armchair at the end of a strenuous day's work and takes up a novel, he can bless the name of Samuel Richardson, whose *Pamela* was the first real novel; or if his book is a detective story, that of Conan Doyle, creator of Sherlock Holmes.

Even when he reads about the atom bomb, he should remember that Lord Rutherford first showed that radioactivity is an atomic phenomenon.

Tight Little Island

This is the story of an island less than the size of the State of Oregon, situated on the edge of Europe and yet in no sense merely European in its outlook. For some 350 years the islanders have looked across the ocean. One of the greatest moments in Britain's story

National Geographic Photographer Willard R. Culver.

The Lacock Abbey Magna Carta Was on Exhibit in the Library of Congress

Lent to the United States by an Act of Parliament, this A. D. 1225 copy of the historic document was kept in Washington, D. C., for two years. It was returned to the British Museum's deputy keeper of manuscripts by Dr. Luther Evans (left), Librarian of Congress, at simple ceremonies in the rare book room, December 23, 1948. At the center of the picture is Chief Justice of the United States Fred M. Vinson and at the right Sir Oliver Shewell Franks, Ambassador from Great Britain (see page 456).

was when her people realized their oceanic destiny. Great Britain has become a stepping-stone between the Old and the New Worlds.

A realization of what our insular position means to us came home to me during World War I, when, flying over the English Channel, I looked down on a narrow strip of silver sea sparkling in the summer sunshine. How narrow the Strait of Dover was I had never realized so forcibly before. In the early days of flight, however, it provided an impassable barrier between Britain and Europe. We had much to be thankful for; that narrow "ditch" was our salvation. Since the Norman Conquest we had fought our foes on foreign soil.

On the debit side, perhaps, was the fact that isolation from Europe had been responsible for a too strong streak of conservatism and a tendency at times to be tardy in adopting the improved methods of our neighbors. On the other hand, this strip of water had contributed in no small degree to the development of a rugged individuality which had been the mainspring of Britain's genius through many centuries.

Our heritage has been drawn from many quarters. Our religious faith springs from the hills of Galilee; our architecture and philosophy have been fundamentally influenced by Greece; our laws have been based in part on the jurisprudence of the Roman Empire; the Crusades gave us new vistas of the world in which we live; the Renaissance reached us from the cities of Italy. Finally, the migra-

tion of between 50,000 and 100,000 Dutch refugees, who sought asylum in East Anglia and southeastern England from Spanish persecution in the Low Countries, played a great part in shaping our way of life in the reign of Elizabeth.

Evolution of Parliament

Incomparably the greatest gift of the English people to the civilized world has been that of parliamentary institutions.*

The origins of the jury are somewhat obscure, but certainly England has played a great part in its evolution, although it was introduced by the Normans. Under Norman law the jurors were investigators rather than judges of evidence. When William the Conqueror ordered the Domesday Book to be compiled (page 452), his commissioners checked the evidence of the witnesses they called with the aid of a "jury" of twelve reliable men in each district.

In the picture of the Roman Wall, with which the series opens (page 446), we can ponder on the extent to which our way of life has been influenced by Imperial Rome.

Every student of history should visit the Roman Wall, especially at Borcovicus, about halfway between Newcastle and Carlisle, where the marks of Roman chariot wheels can be seen on the pavements. It is a moving experience to look down from these battlements, as they curl up and down the hillside, and realize what a mighty barrier they presented to the wild men of the north.

The painting of Alfred represents one of the greatest of our rulers, who helped to forge the unity of our nation, repelled the Danish invader, realized the importance of sea power, stimulated interest in Latin culture, and made his capital a seat of learning (page 448).

Richard Coeur de Lion represents the Crusades, which quickened our interest in Eastern thought and gave new conceptions of chivalry to the barons and knights of the feudal age (page 455).

The story of Lady Godiva, who in the words of Tennyson "built herself an everlasting name," takes us into the region of history and legend. She was a benefactress of the church at the time of the Norman Conquest and symbolizes the ideal of self-sacrifice (page 450).

Arthurian Legend

In the shadowy realm where myth and history intermingle, the story of King Arthur and his Round Table has captured the imagination of poets and painters down the ages. English literature would certainly be immeasurably the poorer without the Arthurian legend.

As we wander through the Duchy of Cornwall, the neighboring counties, and the Welsh mountains, our holidays are much enriched by visits to the Arthurian shrines. In a materialistic world we rejoice that poets and seers—above all, Tennyson in the 19th century—have given us the vision of Galahad, the spiritual knight, and of his search for the Holy Grail, visible only to the pure in heart.

One of our earliest publications was a collection of ballads entitled *A Lytell Geste of Robyn Hode*. Robin Hood was a popular figure in the second half of the 12th century. He was a high-born youth who, so the story goes, was outlawed for killing one of the King's deer. The territory over which he roamed extended from Sherwood Forest in Nottinghamshire to the dales of Cumberland.

Around him he gathered a goodly company of archers whose example inspired the Englishmen of the day with a determination to become proficient in archery as a means of national defense. He has long been a national hero, and his bravery and chivalry endeared him to his countrymen. In a sense, we may regard him as an early example of the British sportsmen who stimulated in us the desire to excel in games (page 444).

Elizabethan Mariners

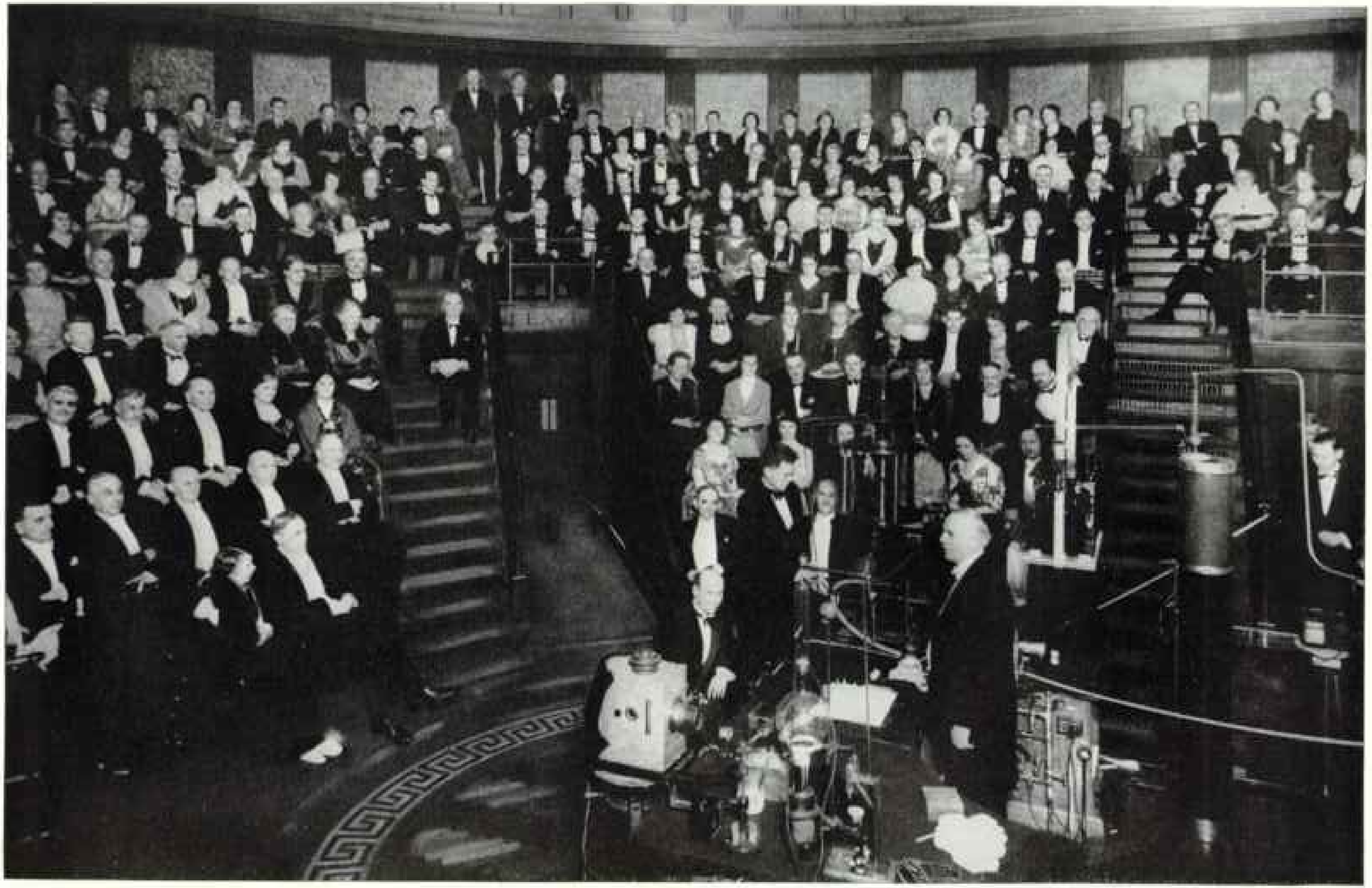
Various reasons have been given for the amazing transformation which took place in the national character between the reigns of Elizabeth and William and Mary. There was a grim and coarse side to life under the Tudors. Incredible Elizabeth was typical of her age, as changeable as quicksilver but very sagacious. She could swear like a trooper with her subjects; but she gave her country internal peace for 40 years, in which it made ready for the era of expansion overseas (page 466).

The Renaissance, the Reformation, the opportunity to study the Bible in English, the resounding victory over the Spaniards, all helped to give a new direction to the nation's thoughts. The islanders gratefully accepted their triumph over the Armada as an indication of divine intervention on their behalf.

Having turned their backs on Europe, the Elizabethans penetrated unknown seas from the Arctic to Cape Horn. Obsessed with the desire of finding a shorter route to the riches of the Orient, they performed prodigies of valor and endurance in searching for the Northwest Passage.

* See "Yanks at Westminster," by Capt. Leonard David Gammans, M.P., National Geographic Magazine, August, 1946.

In St. Paul's Cathedral the King and Queen Offer Thanks on Their Silver Wedding Anniversary, April 26, 1948



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Lord Rutherford Lectures on Transmutation of Elements, an Atom Bomb Principle, Before the Royal Institution, March, 1934

For these Friday evening assemblages all persons in the audience wear formal dress. An invitation to address the distinguished meeting is an accolade conferred only on outstanding scientists. The Institution was founded in 1799 by Count Rumford, Benjamin Thompson, who was born in Massachusetts.

National Geographic Photographer B. Anthony Stewart

Top-hatted, an Eton Boy Entertains Visitors at the June 4 Celebration

The headpiece is a part of a once inviolable tradition at this famous old school, where many of England's great have had their early training. Since September 1, 1948, the requirement no longer holds.

In our cavalcade, on pages 461, 468, and 498, are included scenes from the lives of John Cabot; Francis Drake, the first leader of an expedition to circumnavigate the world (Magellan died before he completed his voyage); and of James Cook, who, two centuries later, charted the waters of the St. Lawrence and won the vast Continent of Australia, at the Antipodes, as a heritage for the English-speaking peoples.*

It is true that England lagged behind the Portuguese, the Genoese, and other Latin peoples in seeking to penetrate the secrets of the unknown world. The city of Bristol, however, can certainly claim to have looked westward from an early date; a dozen years before the voyage of Columbus, John Jay's expedition set out from the Avon to discover "the island of Brazil." John Cabot came to Bristol because it would serve as a good starting point for his western venture.

Roger Bacon Influences Columbus

Roger Bacon, "the prince of medieval thought," was born in the year before Magna Carta; he may be regarded as the direct forebear of the explorers of the Renaissance. His *Opus Majus* treated "of the westward passage round the sphere to Asia."

Two hundred years later Cardinal Pierre d'Ailly printed extracts from Bacon's work in his *Ymago Mundi*. As Professor Williamson observes, Bacon's volume, more than any other single work, was "the authority that inspired the trans-Atlantic voyagers. Columbus, in reading and rereading his copy, and enriching it with scribbled marginalia, was deriving instruction from a great English intellect." †

If England was slow to follow up Cabot's discovery of North America, she made up for lost time a hundred years later and gave to the world a group of navigators who have never been surpassed in daring and seamanship. The map of the northern half of the Western Hemisphere reminds us of the names of some of them, such as Martin Frobisher, John Davis, William Baffin, and Henry Hud-

* See, in the National Geographic Magazine: "Columbus of the Pacific," by J. R. Hildebrand, January, 1927.

† *The Ocean in English History*, by James A. Williamson, p. 11. Clarendon Press, 1941.

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Lloyd's Paid for Loss of the Stratosphere Balloon *Explorer I*, July 28, 1934

The great London association of underwriters put up the policy for bids by its members; and 835 individual British subscribers took shares in the risk. Through Lloyd's, each underwriter paid the National Geographic Society an average of $32 when the gas bag, inflated with hydrogen, ripped and exploded; the flyers saved themselves by parachute jumps. On a subsequent flight by *Explorer II*, November 11, 1935, noninflammable helium was used and no insurance was necessary. Albert W. Stevens and Orvil A. Anderson made the record ascension to 72,395 feet (page 525). The flights were sponsored by the National Geographic Society and U. S. Army Air Corps. The earliest known life insurance policy was issued in England in 1583.

King Arthur and His Knights May Have Sat Around This Round Table

For centuries the 18-foot board has hung in the Great Hall of Winchester Castle. It was mentioned in records of A. D. 1253. Around the rim are names of the legendary heroes, Lancelot du Lac, Galahad, and others.

son. Hudson, sailing under the Dutch flag, helped to establish New Netherland.

The adventurers of London and Plymouth were inspired by the writings of Richard Hakluyt, a promoter and recorder of the expansion of England beyond the seas. It is only during the last century that his great achievements have been appreciated at their true worth.

America owes a special debt to these empire builders and seamen, among whom were: Walter Raleigh, a promoter of Virginian settlement, although he never lived to set foot on its soil; Bartholomew Gosnold, George Weymouth, Martin Pring, Richard Grenville, and Christopher Jones of the *Mayflower*.

Among other promoters of colonization we think gratefully of Lord Southampton, Shakespeare's patron; Thomas West (Lord Delaware), who arrived at Jamestown in 1610, when the morale of the settlers was at a low ebb, and of whom Alexander Brown writes: "If any one man can be called the founder of Virginia . . . I believe it is this man."

We must list also Sir Ferdinando Gorges, "the father of English colonization in America"; William Bradford, Lord Baltimore and the other Calverts, Yorkshiremen; William Brewster and the Reverend John Robinson, the "beloved pastor of the Pilgrims," born in the adjoining county of Nottingham; John Cotton of Derby; Capt. John Smith and five of the Governors of Massachusetts, of Lincolnshire; the Reverend John White, "the patriarch of Dorchester" and the promoter of Massachusetts Bay. Indeed, there is not a county in England whose sons have not played a leading part in the epic story of the founding of English civilization in North America.

At the very moment when Puritanism was spreading throughout England and Scotland, at the beginning of the 17th century, our island became a colonizing power. Despite the fact that the first permanent English settlements on the North American Continent took place in the reign of insignificant James I, a firm believer in the divine right of kings, other powerful influences were fortunately at work.

England and Democratic Rule

The United States of America was founded in an era when liberal political ideas were circulating in England. How powerful they were becoming was soon to be demonstrated by the success of Cromwell and his Roundheads (page 476).

The first legislative assembly in the New World met at Jamestown in 1619, under the

British Information Services

On This Plate Penicillin Was Born

Sir Alexander Fleming noted the colony at the top with harmful bacteria degenerating around it. From its descendants came the miracle drug (page 534).

inspiration of a group of farseeing men, above all of Sir Edwin Sandys, who held views of religious tolerance far in advance of his age. These men of progressive outlook controlled the affairs of the Virginia Company, and, despite the subsequent opposition of the King, purposed to erect in the New World a free and popular State where the English colonists would have "no government . . . putt upon them but by their own consente."

Wherever the English colonists went, they based their institutions on those of the motherland. If we wish to measure our debt to these early founders of political liberty overseas, we have only to contrast the conditions in the English plantations with those that existed in the Spanish, Portuguese, or French colonies.

Heritage of English Literature

English literature is represented in the picture of Chaucer's Canterbury Pilgrims; of James I supervising the production of the Authorized Version of the Bible; of Shakespeare courting Anne Hathaway; of Milton, champion of the freedom of the press, dictating to his daughters (pages 459, 470, 479).

Other great figures include William Blackstone, author of the famous legal *Commentaries*, whose work had probably an even greater following in the American Colonies than in England; Charles Darwin, whose *Origin of Species* gave a new direction to man's thinking; Charles Dickens, who as the result of the appearance of the *Posthumous Papers of the Pickwick Club* became at the age of

Indians Hurried to Trade at Fort Charles, First Hudson's Bay Company Post, in 1668

Over the elevators in the lobby of the Hudson's Bay Company store in Winnipeg hangs this mural of the beginnings of business in Canada.

24 the most popular author of the day (pages 496, 520, 515).

To provide adequate representation of all the giants of English literature would require more space than is available. It is a stupendous theme, and only a few can be named: John Bunyan, the tinker, who wrote *Pilgrim's Progress* in the reign of Charles II; John Evelyn and Samuel Pepys, whose diaries take us behind the scenes in the 17th century; James Boswell, the prince of biographers; the immortal Dr. Johnson, whose wit and words dominated the literary circles of the day; John Locke, the philosopher, whose treatises of government had probably more influence on American thought in the Revolutionary age than those of any other writer, with the possible exception of Tom Paine; Adam Smith, author of *The Wealth of Nations;* Thomas Carlyle, John Ruskin, and Herbert Spencer.

The list of eminent historians is a long one. From the days of the Venerable Bede (British monk who wrote the earliest history of England, A.D. 731) down to Edward Gibbon, it includes such writers as T. B. Macaulay, W. E. H. Lecky, and in our own times James Bryce, author of *The American Commonwealth;* H. A. L. Fisher, and G. M. Trevelyan.

There was an amazing output of poetry and prose in the early days of the industrial age, which output continued throughout the Victorian era (page 506).

Of the English Poets in *Bartlett's Quotations,* 1948 edition, Shakespeare, of course, leads all the list with 1,118 inches devoted to him. Many of Shakespeare's quotations are uttered unconsciously in our everyday speech. The English-speaking person can scarcely read a novel or even a newspaper without encountering unintentional quotations, especially many phrases which we think are current slang.

It never occurred to an American high-school boy to see *Hamlet* until it came forth in the movies. Asked what he thought of it, he said, "Good stuff. I certainly didn't laugh myself to death, and the thing is full of quotations." Unconsciously, he was quoting Shakespeare in his verdict. ("Laugh myself to death" is verbatim from *The Tempest.*)

Some years ago a reporter was sitting in front of two teachers at a movie version of *The Taming of the Shrew.* Douglas Fairbanks had the line, "It is a lusty wench." One teacher said to the other, "Isn't it a shame how the movies vulgarize even Shakespeare!"

After Shakespeare in the Bartlett quotation poll comes the poet that few read and everybody quotes—Milton, with 224 inches.

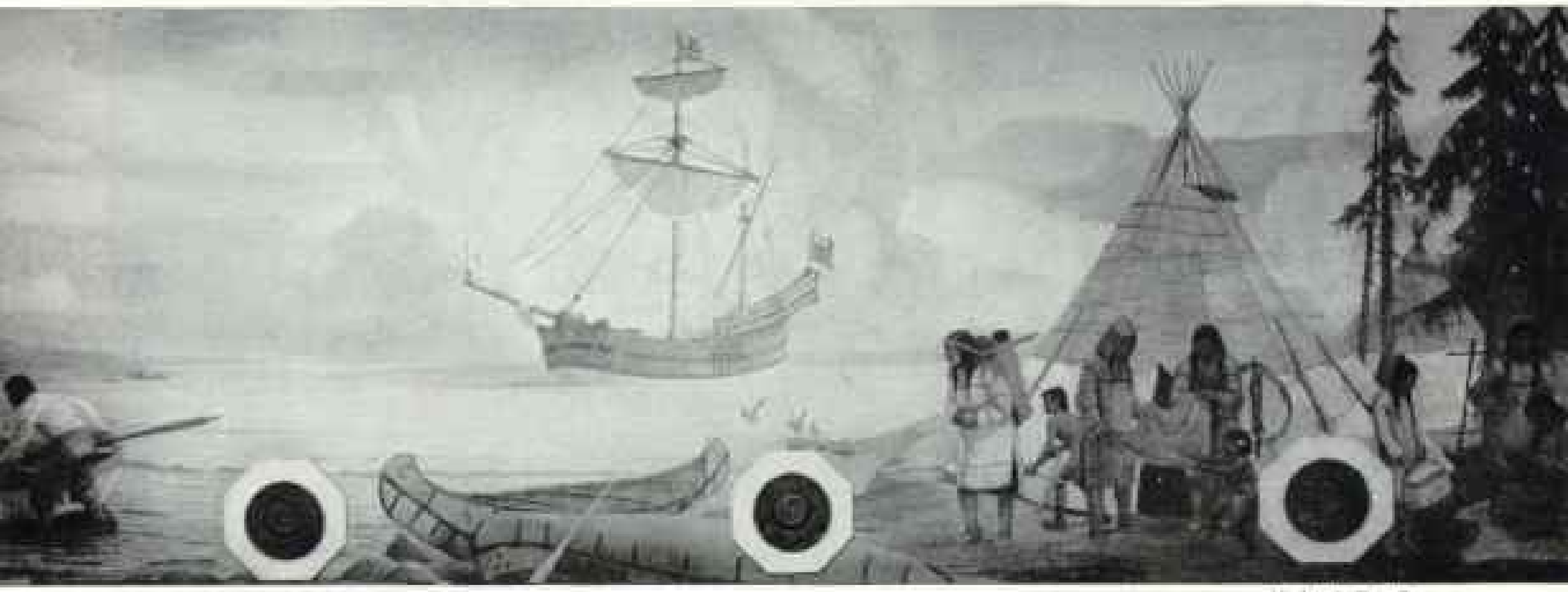
Then the score jumps to a modern—Rudyard Kipling, with 173 inches.

The following are next in linage in the Bartlett listing:

Tennyson	154⅝	inches
Byron	152½	"
Wordsworth	150¼	"
Browning	145	"
Coleridge	67¾	"
Burns	56½	"

Invention of the Novel

How many American visitors to London, I wonder, have ever penetrated into Salisbury



Hudson's Bay Co.

The Merchants Had Just Landed from the *Nonsuch*, and the Stockade Was Not Completed

Barter goods had been brought over from England on the 50-ton ketch standing offshore. Disks along the bottom of this picture are elevator up and down signals.

Square off Fleet Street—or, for a matter of fact, how many Londoners—to pay their tribute to the "fat little printer" who worked there, and whose invention of the novel was to intellectual life as epoch-making as the invention of railways to social life?

Samuel Richardson was a serious little boy, whose father, a London joiner, could not afford to give him a good education. Evidently, young Richardson planned his own line of study. He was devoted to female society and appears by degrees to have gathered an insight into the ways of the female heart.

In his fiftieth year he turned this knowledge to good account. From his printing press in Salisbury Square he produced in 1740 *Pamela; or, Female Virtue Rewarded;* and the novel, as we know it, came into existence. Subsequently, *Clarissa Harlowe* and *History of Sir Charles Grandison* appeared. Soon all Europe was raving over Richardson's novels. He presented to his public in his first work a study of the human heart, "set in a frame of contemporary middle-class manners."

Soon there were emulators. Henry Fielding decided to parody *Pamela* with its tale of female virtue rewarded, and, much to Richardson's annoyance, *Joseph Andrews* appeared, an example of masculine virtue. *Tom Jones*, Fielding's best-known book, was a better novel. It is still studied as a model in college classes. Within a quarter of a century of the blossoming of the English novel, such writers as Tobias Smollett, Laurence Sterne, and Oliver Goldsmith were making their special contributions to English fiction. Jane Austen in *Pride and Prejudice* and other novels set a new style for fiction.

Inventors Founded New Industries

In our series of paintings emphasis has been laid on British inventors and scientists. In no direction has Britain made a greater contribution to civilization. Without these men the rapid industrial expansion and scientific achievements of the United States would not have been possible.

"Near the end of the eighteenth century there appeared in England three inventions that ushered in a new industrial world and which have changed many of our social and political conceptions," writes Dexter S. Kimball, Dean of the famous College of Engineering of Cornell University.

"These were Hargreaves' spinning jenny, Watt's steam engine, and Maudslay's all-metal screw-cutting lathe.

"Many improvements quickly followed, but these machines are outstanding in that they were successful practically and were the forerunners of our modern era. Their character should be carefully noted.

"All tools involve what has been called 'transfer of skill.' That is, they enable a man of inferior skill to perform with their aid operations that without them would require a workman of superior skill.

"Almost anyone could spin with the Hargreaves machine. The Maudslay lathe made a similar advance in machine tools.

"The true significance of the Industrial Revolution is that prior to that time the tool was an adjunct to the skill of the worker,

National Geographic Photographer B. Anthony Stewart

"We Know More Geography than John Winthrop, Jr., Did When He Studied Here"

At the Edward VI Grammar School, Bury St. Edmunds, prefects examine a globe and recall that a colonial governor of Connecticut, in faraway America, had his early training in the old school. John Winthrop the Younger was the first member resident in America of Britain's Royal Society.

whereas the great inventions of this period carried transfer of skill to the point where the skill of the worker became an adjunct to the tool or machine. The steam engine supplied a very ancient need, namely, ample power that could be generated at any place."*

The Father of Railroads

George Stephenson certainly deserves a paragraph in a record of human progress. Last summer we celebrated the centenary of the death of Stephenson, the Northumbrian boy who up to the age of 17 could neither read nor write, but attained immortality as the "father of railways." He was the utilizer and developer of the ideas of others, rather than an inventor, though he could invent too. Richard Trevithick, the Cornishman, is regarded as "the founder of the locomotive engine."

Stephenson, realizing the vast possibilities of the locomotive, improved it; he was responsible for the construction of the Stockton & Darlington Railway. A few weeks ago on a research tour I saw one of his early engines on the platform of Darlington station. (A replica of Stephenson's famous "Rocket" is in South Kensington Museum.) When the project was under discussion, the question arose whether horses or steam engines should be used for hauling railed traffic.† Several years later, while the Liverpool & Manchester line was being constructed, the relative advantage of using stationary engines with cables or traveling engines, as advocated by Stephenson, was seriously debated.

A leading article in the *Times* of August 12, 1948, presents an amusing anecdote. Before an august Parliamentary committee Stephen-

* From "The Great Inventions of the Century," by Dexter S. Kimball, in *Centennial Celebration of the American Patent System, 1836–1936*, pp. 15–16.

† *An Economic History of Modern Britain*, by J. H. Clapham. Vol. I, pp. 382-386.

National Geographic Photographer B. Anthony Stewart

Jolly Working Girls Enjoy a Bank Holiday on Hampstead Heath

Though England is on a near-privation diet, nothing seems to damp the spirits of these young people. They even make a joke of the restrictions to show that they can "carry on" whatever happens.

son was asked to consider what would happen if a chance cow were to stray on the line and get in the way of one of the engines traveling "at the rate of nine or ten miles an hour." "Would not that, think you, be a very awkward circumstance?"

"Varry awkward, indeed," replied "Geordy," in his Northumbrian accent, "for the coo!"

The first great cotton mill was established by Richard Arkwright at Cromford, in Derbyshire, in 1771. The famous Etruria pottery works were opened by Josiah Wedgwood in 1769. Matthew Boulton, friend of Franklin's and partner of James Watt (page 493), organized the great Soho engineering works at Birmingham. Dr. William Small, after resigning his position as professor of mathematics at the College of William and Mary, in Virginia, joined Boulton.

London, Pioneer of Department Stores

Many of the early American visitors to Great Britain came to study our industrial progress. Henry Marchant, of Rhode Island, an observant traveler, visited in 1771 a factory of metal buttons, employing 800 hands at Bolton in Lancashire, and noted that it was lit by upwards of a thousand candles.

At Nottingham he was impressed by the modern machinery in use and wrote: "The wheels for spinning the cotton also were very curious, one woman drawing 24 threads at once. . . . In two rooms there were at work at least 130 girls, all briskly singing at their work." *

Thomas Jefferson, during his visit to England, always on the lookout for information which would be of use to the young Republic, wrote in April, 1786: "I could write you volumes on the improvements which I find made, and making here, in the arts. . . . One deserves particular notice . . . we know that steam is one of the most powerful engines we can employ; and in America fuel is abundant."

* *The Literary Diary of Ezra Stiles*, Vol. I, p. 304, Scribner.

The British visitor to the United States in the 20th century usually assumes that the American department store is of domestic origin. If he turns to John Griscom's *A Year in Europe* (1818-19), he will find this American's description of a great novelty of the day, one of the first department stores, the Soho Bazaar, in Soho Square, London:

"An extensive suite of rooms on two floors (formed by throwing several houses into one), in which are collected almost every kind of article, . . . in the way of ingenuity, delicacy, and taste . . . this is a new kind of establishment, of which there are, at present, but two in London. The term, as well as the plan, has been imported from India."

A Galaxy of British Scientists

From the founding of the Royal Society Britain has produced a succession of great engineers, astronomers, physicists, chemists, biologists, geologists, etc., hardly equaled and certainly not surpassed by those of any other country. Their work was not merely great—much of it was literally epoch-making.

Some have been of humble origin, like John Dalton, son of a poor weaver; others, like Henry Cavendish, were aristocrats who inherited immense wealth.

In the field of medicine, William Harvey, who published his great work early in the reign of Charles I, is included in our series, as are the Hunter brothers. John Hunter may be regarded as the founder of modern surgery. Edward Jenner, the conqueror of smallpox, studied under John Hunter at St. George's Hospital (pages 474, 500, 503).

Sir Patrick Manson is regarded as the father of tropical medicine. He was the first to discover that a "particular blood-sucking insect is a necessary intermediary in the propagation of a specific disease—a discovery of the utmost importance to medicine." *

Another pioneer whom we remember gratefully is Ronald Ross, who discovered the life history of malarial parasites in mosquitoes and laid down methods for large-scale malaria reduction.

Others who have enriched our knowledge are Faraday, the father of the age of electricity, and Lord Rutherford, the New Zealander, who, in the words of Sir Arthur Eddington, "introduced the greatest change in our idea of matter since the time of Democritus" (pages 511 and 527).

In the discovery of the 96 chemical elements, the fundamental "building blocks" of which everything in Nature is constructed, British scientists are generally credited with the finding of 19 (including hydrogen, oxygen, barium, calcium, potassium, argon, helium, and neon), more than have been discovered by the research workers of any other nation. Six other elements were discovered by Britons jointly with workers of other nations.

The number generally accredited to scientists of other nations is: Swedish, 17; French, 11; German, 11; American, 6; Austrian, 2; Swiss, Italian, Polish, Russian, Hungarian, Spanish, Finnish, 1 each. Ten elements are considered to have been discovered by the ancients.

Revolution in Farming Methods

Alongside the Industrial Revolution—indeed, preceding it—a revolution in methods of agriculture was taking place in England. In due course it helped make Great Britain the supplier of pedigreed livestock to America and many other lands. In the early days of the colonization of North America the Mother Country shipped cattle, horses, sheep, goats, poultry, and even peacocks to the New World.† In the reign of George III we learn that "all the world came to England for horses, from the race-horse to the hardly less noble cart-horse." ‡

Robert Bakewell, during the reign of this George, pioneered in the selective breeding of cattle and sheep to improve the quantity and quality of meat. Bakewell's methods were so successful and the reputation of his "fixed" breeds so high that in one year he made 1,200 guineas from the letting of one ram.

British experimenters produced the Shorthorn, Hereford, Aberdeen-Angus, and Devon breeds, which are the leading beef cattle today in the United States, Australia, and New Zealand. The Ayrshires, Jerseys, and Guernseys which are such large milk producers in American dairy herds originated in the British Isles.

As early as the 19th century British farmers had developed several breeds of sheep and pigs that were two or three times as efficient in meat production as the old unimproved stocks. They worked out principles of proper animal feeding from which stock raisers now benefit everywhere.

British investigators played a leading part in the study of agricultural chemistry and plant nutrition—what the plant draws from

* *A History of Tropical Medicine*, by H. Harold Scott, vol. 2, p. 1071, 1942. The Williams & Wilkins Company, Baltimore.

† An early reference to the sending of horses to Virginia is contained in a letter from Gabriel Archer, who records in 1609 that the vessel he sailed in took on six mares and two horses at Plymouth. *The Genesis of the United States*, by Alexander Brown. Vol. 1, p. 328.

‡ *English Social History*, by G. M. Trevelyan. Longmans, 1942. P. 378.

N. Y. Times-London Times

For the First Time Since the War Judges Parade to Open the Legal Year

This picture of the stately procession marching from a service in Westminster Abbey to the House of Lords was published in the London *Times*, October 16, 1946. Wearing robes of office and wig is Lord Jowitt, the Lord Chancellor.

the soil, water, and air—the basis for proper use of manures and other fertilizers.

They developed and perfected crop rotation as a means of preserving and increasing the fertility of the soil.

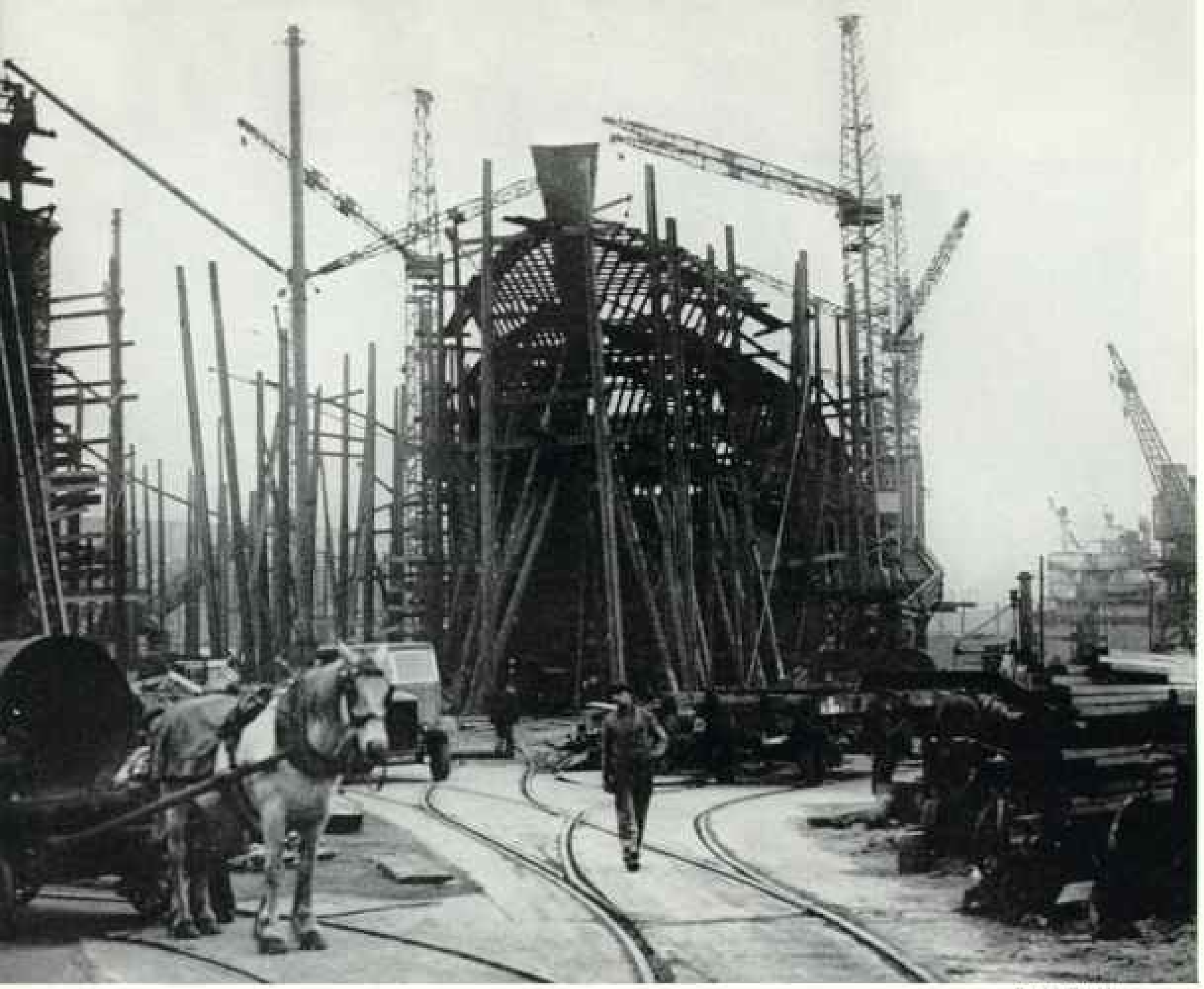
Two young Englishmen, J. B. Lawes and J. H. Gilbert, started a plant experiment station in 1843 and conducted experiments during 57 years of a unique partnership that revealed fundamental principles for plant feeding. At their famous Rothamsted Experiment Station a field plot, on which only wheat had been grown, yielded in 1943 the one-hundredth successive crop of wheat.

Lawes and Gilbert showed that the phosphate of natural rock deposits is soluble and can be fed to plants as artificial fertilizers. They started the fertilizer industry.

Even mechanized farming, so highly developed now in the United States, actually had its origins in Britain. James Small's cast-iron moldboard plow, the drill for planting, the horse hoe (predecessor of the horse cultivator), and the threshing machine—all were British inventions which were the forerunners of modern farm machinery.

Ingenious Britons of Kew Gardens, London, imported from Brazil seeds of the wild rubber tree and from seedlings raised at Kew started and developed the rubber plantation industry of Southeast Asia that by 1941 was supplying 1,491,410 tons, 97 percent of the world's rubber.

In the New World, Americans of British stock have inherited the marvelous inventive genius of the British race. The ten inventions honored at the Centennial Celebration of the American patent system in Washington, 1936, as the greatest made in the United States were achieved by men of British ancestry: Alexander Graham Bell, telephone; Thomas Alva Edison, electric light; Charles Goodyear, rubber; Charles Martin Hall, aluminum; Elias Howe, sewing machine; Cyrus Hall McCormick, reaper; Samuel Morse, telegraph;



British Combine

Though Orders Are at a Peak, British Shipyards Cling to Custom Building Methods

This vessel in the yards of William Gray & Co., Ltd., West Hartlepool, is being constructed with the traditional care that has made true the proud boast, "Britannia rules the waves." Looking askance at labor-saving innovations, the builders continue to put old-time handwork into their production. It takes more time, but pays dividends in seaworthiness.

George Westinghouse, air brake; Wilbur and Orville Wright, airplane; Eli Whitney, cotton gin.

Sir Edward Salisbury, Secretary to the Royal Society, has made the good point that the shared language and common tradition of technical training, research organization, and outlook between British and American scientists have made it inevitable that any discovery on one side of the water would be immediately confirmed or improved upon on the other side.

It is almost impossible to name a recent scientific advance which has not been in its exploitation a *joint* British and American achievement.

Most Valuable Cargo Ever Brought to the United States

By checking each other and prompting each other, the English-speaking scientists have accomplished a total greater than their separate parts. Atomic energy, the jet engine, high-speed air flight, radar, and penicillin are excellent examples.

"There is no question that in the early days of the scientific interchange the British gave more than they received," says James Phinney Baxter 3rd, *Scientists Against Time* official historian of World War II achievements of the U. S. Office of Scientific Research and Development. "The greatest of their contributions," continues Dr. Baxter, "was the development of the resonant cavity magnetron, 'a radically new and immensely powerful device which remains the heart of every modern radar equipment.' This revolutionary discovery, which we owe to British physicists, was the first tube capable of producing power enough to make radar feasible at wave lengths of less than 50 centimeters.

"When the members of the British Mission brought one to America in September 1940, they carried the most valuable cargo ever

brought to our shores. It sparked the whole development of microwave radar and constituted the most important item in reverse Lease-Lend."*

But Sir Henry Tizard, head of the British Mission, emphasizes the fact that while "the magnetron, which contributed more to the success of the Allies than any other single invention, was a product of British science, it had to be redesigned in America for economical manufacture.

"Penicillin, the greatest practical achievement of medical research during the war, also originated in Britain, but unless American skill in large-scale manufacture had been available, many thousands of men, who now enjoy a healthy life, would have died."†

Among British social reformers we have been able to include but few, among them Florence Nightingale, who revolutionized our methods of nursing (page 513). To this great company rightly belong John Howard and Elizabeth Fry, prison reformers; Lord Shaftesbury, the seventh Earl, who fought the abuses of the industrial age; and, above all, William Wilberforce, one of the greatest benefactors of humanity.

A Turning Point in History

When the British Empire was expanding rapidly during the Napoleonic Wars, it had increasing contacts with the colored races. Fortunately, the conscience of the nation was stirring, and, as Dr. G. M. Trevelyan points out, "a turning point in the history of the world" occurred when Wilberforce and his friends, Evangelicals and Quakers, persuaded Parliament to put a stop to the slave trade in 1807 and to abolish slavery throughout the Empire in 1833.‡

At the Congress of Vienna, after the defeat of Napoleon, Great Britain through Lord Castlereagh, in a spirit of altruism rare in those days, persuaded the European powers to agree to the suppression of the slave trade in their territories. However great Britain's share in the slave trade and in the horrors of "the Atlantic passage," she was making amends for the past. She paid the slave owners £20,000,000 in compensation.

Henceforth the Union Jack became the symbol of freedom for the black man. Throughout the 19th century the Royal Navy policed the seas and hunted the slavers in their lairs east of Suez.

In the present century, Robert Baden-Powell founded the Boy Scout movement, which has profoundly influenced the youth of many nations.

Another Englishman who has influenced the life of our times is Wilfred T. Grenfell, who gave his life to the service of the inhabitants of Labrador. His example fired many thousands of young men throughout the universities of the English-speaking world.

The World of the Spirit

In the world of the spirit, British contributions to the common heritage have been great. John Wycliffe laid the foundations of the Puritanism that was to be Britain's special contribution to religious thought. He translated the Bible with the help of a band of "poor priests" and brought Christ's teaching to the humblest villager.

Britain's impact on America was made through such men as Robert Browne, founder of the Brownists, whose doctrines inspired the Pilgrim Fathers, and John Knox, Scottish divine and follower of Calvin.

George Fox, founder of Quakerism, was the son of a Puritan weaver; among those whom he influenced was William Penn.

In the following century John Wesley transformed the very nature of his generation (page 491).

In the 19th century William Booth and his wife established the Salvation Army and ministered to the unfortunates in the slums of industrial England. Subsequently they extended their work throughout the world.

Britain and Its Stewardship in India

With the granting of independence to India and Pakistan, on August 15, 1947, a great event in world history took place. Great Britain, which for a couple of centuries had ruled the Indian subcontinent, containing a sixth of the human race, passed to its peoples of her own free will the control of their own destiny.

Never in history had a great empire, in a moment of victory, relinquished its control over its fairest dependency and passed on the torch of freedom to the inhabitants.

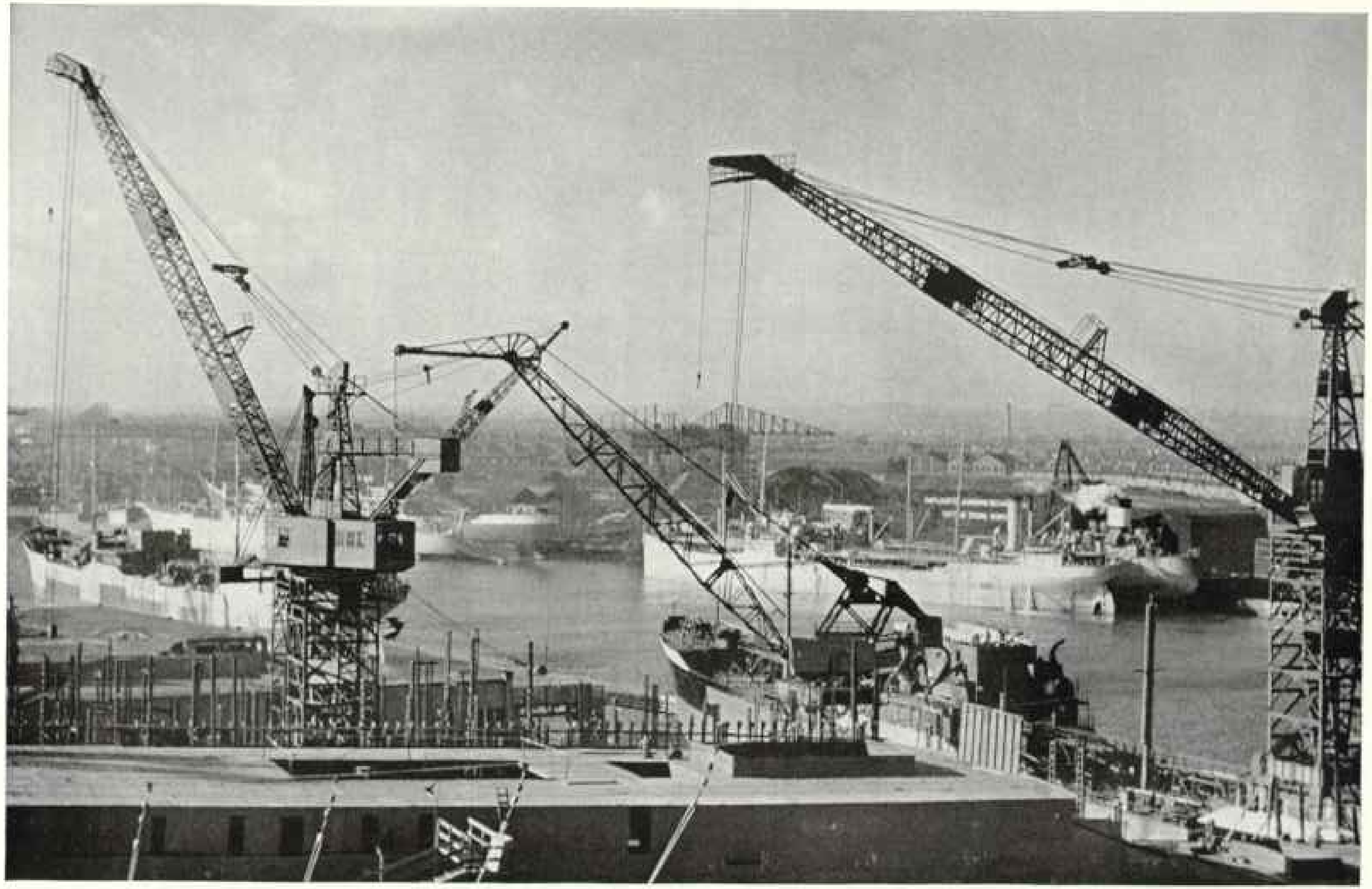
That the peoples of India would one day be free to decide their future was in fact inevitable from the passing of the India Bill in 1833.

Thomas Babington Macaulay, speaking in the House of Commons on the measure, predicted "that the public mind of India may expand under our system until it has outgrown that system; that by good government we may educate our subjects into a capacity for

* From *Scientists Against Time*, by James Phinney Baxter 3rd, pp. 141-142—"Radar and Loran."

† From the Presidential Address to the British Association for the Advancement of Science, *The Passing World*, by Sir Henry Tizard, September 8, 1948.

‡ *History of England* (Longmans), 1947; p. 590.



J. Allan Cash

Britain Is Making More than Half the Merchant Ships Being Built in the World Today

According to statistics published by Lloyd's Register of Shipping, she is turning out some 2,114,730 gross tons; all other countries about 2,000,000 tons. The River Tyne is a scene of ceaseless activity, with vessels in all stages of construction on the stocks and newly completed ones afloat while they are being fitted out for their maiden voyages.

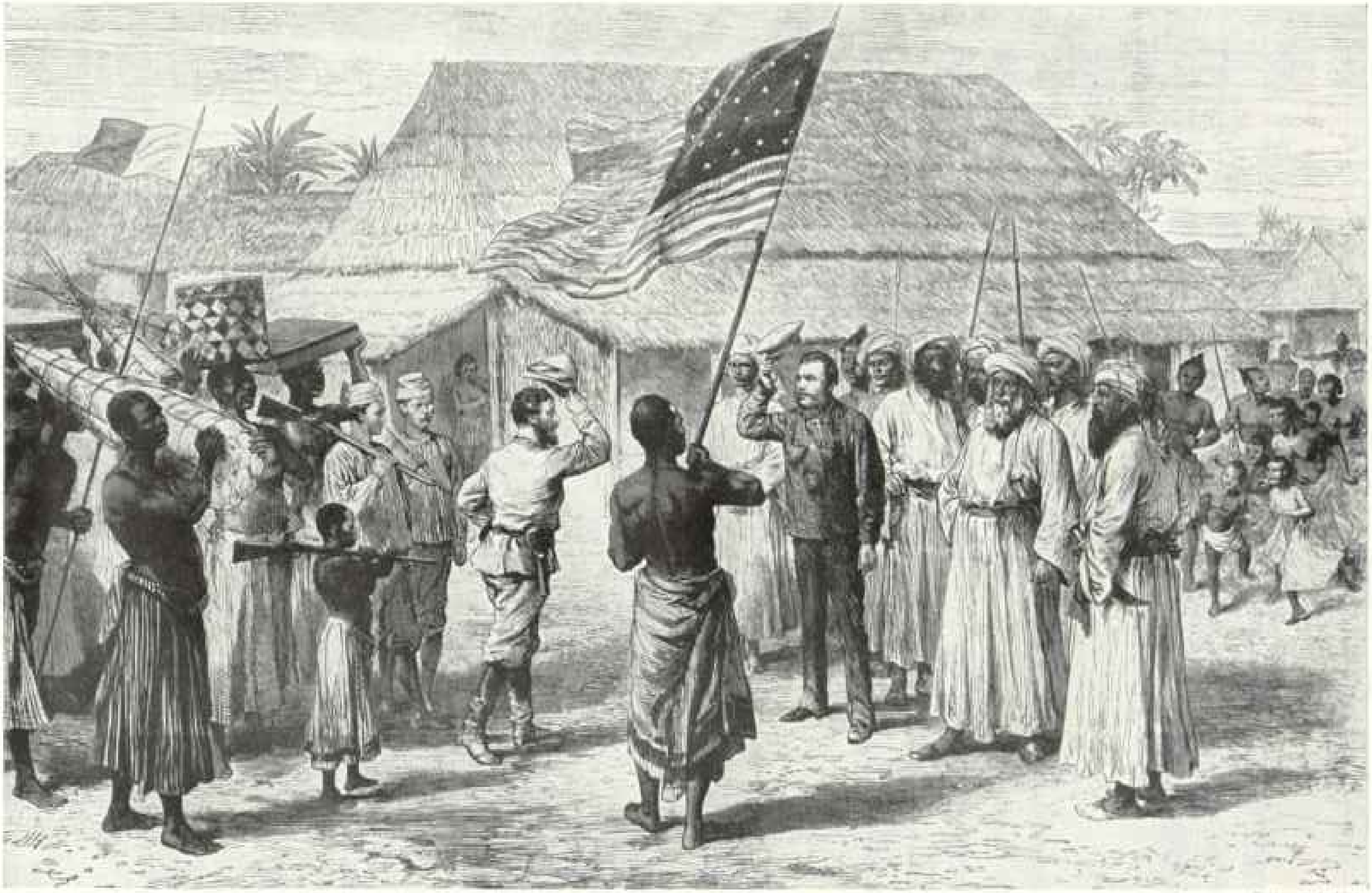
Wide World

On Thanksgiving Sunday, May 13, 1945, after V-E Day, Throngs Cheer the King and Queen from Buckingham Palace to St. Paul's Cathedral

National Geographic Photographer B. Anthony Stewart

In Old Hingham, School Children Learn the Story of the Founders of New England at Its Source

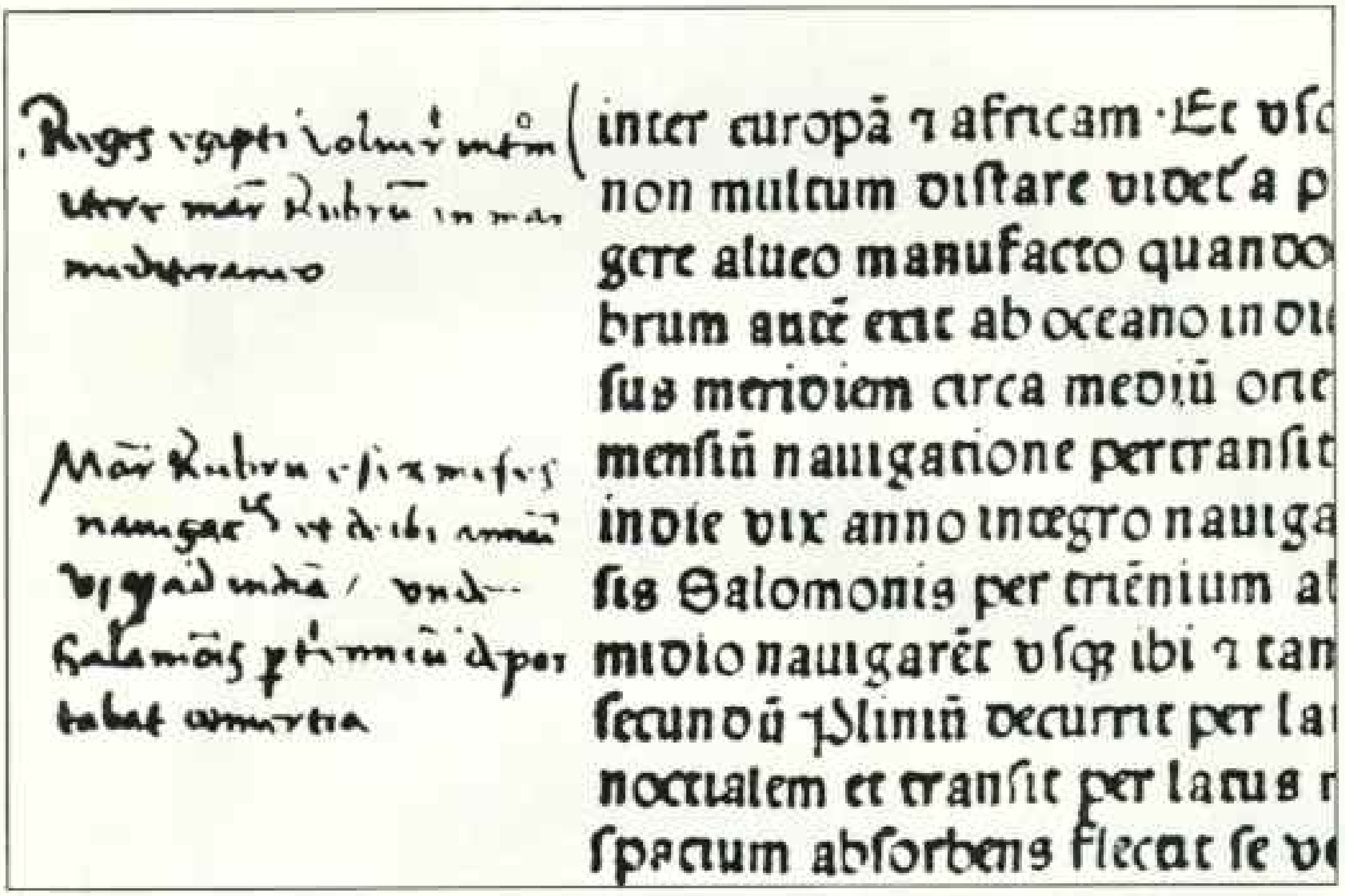
The model of a Puritan enables them to envisage their ancestors of *Mayflower* days and makes vivid the history of their village recorded in copies of day-by-day entries on the wall behind them. Of particular interest to Americans is the note about the naming of the town of Hingham, Massachusetts.



Bettmann Archive

"Dr. Livingstone, I Presume?" Said H. M. Stanley When He Found David Livingstone in Darkest Africa, November 10, 1871

The historic meeting of the emissary sent out by James Gordon Bennett of the *New York Herald* to rescue the famous Scottish medical missionary and explorer took place at Ujiji on Lake Tanganyika. According to Stanley, the original drawing, reproduced here, "is as correct as if the scene had been photographed."



Columbus Himself Wrote These Marginal Notes on Pierre d'Ailly's Map Treatise
The illustration is from Edmond Buron's edition of the *Ymago Mundi*, by permission of Maisonneuve Frères, owners of the French copyright.

better government . . . They may in some future age demand European institutions."

Such an event would, in Macaulay's words, "be the proudest day in British history."*

We are still too near the events which led to the granting of independence to the peoples of India and Pakistan to be able to form a final estimate of the rule of the British Raj. During our 300 years of association with India, Great Britain has no doubt made mistakes. No impartial critic, however, can study the record of British supremacy in India during the last century and a half without experiencing a sense of deep admiration at the amazing transformation which followed the death of the Mogul Empire and gradually witnessed the establishment of the Pax Britannica.

British Art

Britain's contributions to art are not so important as in other fields. Thanks to Holbein, the Bavarian portrait painter, who spent many years in England during the reign of Henry VIII, the features of the leading men are familiar to us. In our series is the picture of the King, begun by Holbein, although he did not live to complete it, confirming the charter to the barber-surgeons (page 463).

In the reign of Elizabeth an English school of miniature painting flourished, but our national art may be said to have begun with Hogarth after the decline of ecclesiastical painting in Europe. Hogarth's photographic memory enabled him to capture in the studio scenes from the life around him (page 489). He was to painting what Dickens was to the novel.

If British art was slow in starting, the following two centuries witnessed great developments in portrait and landscape painting. The picture of Edwin Landseer at work on the lions in Trafalgar Square shows the painter-sculptor in his studio (page 516). Many American galleries contain some of the graceful portraits of Reynolds, Gainsborough, and Romney. In landscapes Turner and Constable occupy an enduring place in English art.

Benjamin West, the Quaker from Pennsylvania, after a sojourn in Italy, came to live in London early in the reign of George III. He was one of the founders of the Royal Academy, becoming on the death of Sir Joshua Reynolds its second president. His home in

* See "India—Yesterday, Today, and Tomorrow," by Lord Halifax, National Geographic Magazine, October, 1943.

Newman Street became the mecca of every young American artist, who always retained grateful memories of his unfailing kindness.*

Thanks to the Royal Navy, the Pax Britannica was unchallenged during the greater part of Victoria's reign (page 508). British influence and trade penetrated to remote parts of the globe, and London, the financial center of the world, provided capital for the construction of railroads in North and South America and in India and for immense harbors and docks, as at Hong Kong and Singapore.

Thomas Cook, who started life as a gardener's helper, may be said to be the father of the tourist industry. He developed cheap excursions by train in Great Britain and in 1863 "opened up" Switzerland as a tourist resort. On the conclusion of the Franco-Prussian War the firm organized the visit of a party of American Freemasons to Paris; they were precursors of the American tourist traffic to Europe.

Acme

An Iowa Girl's Hereford Steer Is a Grand Champion

At the International Live Stock Exposition in Chicago Phyllis Bonnater, 15, of Keswick, Iowa, won the junior feeding contest with this 1,200-pound animal. British experimenters developed this breed and the Shorthorn, Aberdeen-Angus, and Devon as well, now the leading beef cattle in the United States, Australia, and New Zealand (page 434).

But "the nation of shopkeepers" had another side to its character, and in addition to its traders, engineers, and planters, sent missionaries to all the continents to preach the Gospel. The British businessman, for the most part, established a reputation for fair dealing, and such was the confidence reposed in him that throughout South America the words *palabra inglés* (the word of Englishmen) were and still are used to signify the conclusion of a binding contract.

The First American "Liner"

In view of New England's role in constructing clippers, it is not without interest to record that probably the first American-built ship that crossed the Atlantic was constructed by master carpenter Digby, of London, on the banks of the Sagadahoc (Kennebec) in Maine, in 1607. She was named the *Virginia of Sagadahoc*. On June 2, 1609, she sailed from Plymouth, in Devonshire, in the Somers and Gates expedition, and arrived safely in Virginia, having survived the storm during which the commander's vessel, the *Sea Venture*, was wrecked on the coast of Bermuda, immortalized by Shakespeare in *The Tempest*.

Britain's contributions to navigation are

* See, in the National Geographic Magazine: "Old Masters in a New National Gallery," by Ruth Q. McBride, July, 1940; and "American Masters in the National Gallery," by John Walker, September, 1948.

British Combine

Kenny the Shetland Draws a Litter Cart in Kensington Gardens

Because English people are extremely fond of pet animals and will invariably gather around one, the Ministry of Works hit upon a plan of having waste depositories hauled about the public parks by ponies. The crowd comes to see the fun and tosses rubbish as ordered into the receptacle.

many. The problem of finding the position at sea with accuracy was not finally solved till the 18th century, but we should think gratefully of Charles II, for in 1675 he founded the Royal Observatory at Greenwich. Its purpose was thus defined: "to take new observations of the heavens; that so no help might be wanting to our sailors for correcting their sea charts, or finding the places of their ships at sea."

Simon Newcomb, the American astronomer, thus referred to the work of Greenwich Observatory fifty years ago: "The most useful branch of astronomy has hitherto been that which is practically applied to the determination of geographical positions on land and sea. The Greenwich Observatory has been so far the largest contributor in this direction as to give rise to the remark that, if this branch of astronomy were entirely lost, it could be reconstructed from the Greenwich Observatory alone." *

The problem of finding exact longitude at sea remained long insoluble. In 1714 Parliament offered a prize of £20,000 to the man who should invent a practical method of so doing. After a long life of research John Harrison devised a chronometer and won the prize.

Every seafaring nation owes a debt to British pioneer work in charting the oceans, in providing aids to the mariner, and in erecting lighthouses on dangerous shores. Benjamin Franklin owed his life to a lighthouse off the Cornish coast. Lloyd's signal stations are familiar landmarks throughout the world.

British Drama in America

Following American independence and for a long while thereafter, the American stage was dependent on British talent. Many leading British actors sooner or later made a tour of the American States. Some became so popular that they remained in America and helped to build up its stage.

On the variety stage Harry Lauder had an enormous American following. Operettas of Gilbert and Sullivan as *H.M.S. Pinafore*, *Pirates of Penzance*, *The Gondoliers*, and *The Mikado* are as popular as at home (page 539).

British influence in the world of sport has been great. Certainly during the 19th century our sportsmen fired the Western World with their enthusiasm for football, lawn tennis, soccer, and golf. The origins of these

* Sir Harold Spencer Jones, in the *Listener*, October 16, 1947.

games go back, of course, to very ancient times; it is stated that the original inhabitants of this island learned how to play football from the Romans, although our friends across the Irish Sea claim that they played a form of the game in Ireland before Julius Caesar set his foot on British soil.

Edward II forbade the game in consequence of "the great noise in the city caused by hustling over large balls." Philip Stubbs, two and a half centuries later, in his *Anatomie of Abuses* (1583), refers to football as "a develishe pastime . . . and hereof groweth envy, rancour, and malice, and sometimes brawling, murther, homicide, and great effusion of blood, as experience daily teacheth." Certainly the Elizabethans were lusty fellows.

The Heritage of Sport

Modern football became widespread in the middle of the 19th century. There is a good description of the game as played at Rugby in *Tom Brown's School Days*. Association football was first played at Cambridge University. The first football contest between Britain and the United States was played at Yale University between a team of old Etonians and Yale. English Rugby was first played at Harvard.

The "Royal and Ancient Game of Golf"—"gowff," it was called long ago—is apparently of Dutch origin, but it reached the United States from Scotland only toward the end of the 19th century. Two years before the *Mayflower* sailed, James I (James VI of Scotland) was evidently concerned that his Scottish subjects were spending too many "bawbees" in importing large supplies of golf balls from Holland; he caused legislation to be passed to protect the home industry, for he wrote from Salisbury, on August 5, 1618, "Na small quantitie of gold and silver is transported zeirly [i.e., yearly] out of his Hienes' kingdom of Scoteland."

James IV and James V of Scotland, great-grandfather and grandfather of James I of England, were golfers, and so, apparently, was his mother, ill-fated Mary Queen of Scots. Her enemies asserted that such was her indifference to the fate of Darnley, her husband, that a few days after his death she "was seen playing golf and pall-mall in the fields beside Seton."

Americans took up the game so enthusiastically that Walter Travis won the British Amateur Championship at Sandwich in Kent in 1904. Many other Americans have since won this prize.

Lawn tennis was invented in 1874 by Maj. Walter Clopton Wingfield, who took out a patent for a pastime called Sphairistike, described as "a new and improved portable court for playing the ancient game of tennis." Its popularity grew so rapidly—it was now called lawn tennis—that in the following year a committee met at Lord's Cricket Ground and drew up a code of rules. In 1877 the all-England championships were played at Wimbledon, where the international contests still take place. In the United States lawn tennis was played at Nahant, near Boston, within a year of its invention in England; in 1881 the United States Lawn Tennis Association was formed and adopted the English rules.

Comrades in Arms

When in April, 1917, the people of the United States of America decided to fight alongside the Allies on the battlefields of Europe, another great moment in history had arrived. For the first time the two English-speaking Commonwealths were fighting side by side; some people, among them Walter Hines Page, held that the greatest outcome of World War I was the coming together of the English-speaking peoples.

In the second World War the cooperation between our nations was even closer. In Delhi, in 1943 and 1944, when going to discuss problems with the Southeast Asia Command, under Lord Mountbatten, I never knew in advance whether I should be dealing with an American or a Briton. The Allied sailors, soldiers, and airmen sat together, they worked together, they planned together, they suffered together, and they died together that right might triumph.

Tennyson Sounds the Keynote of the British Way

Tennyson sums up the British Way in parts of two poems, "You Ask Me Why" and "To the Queen":

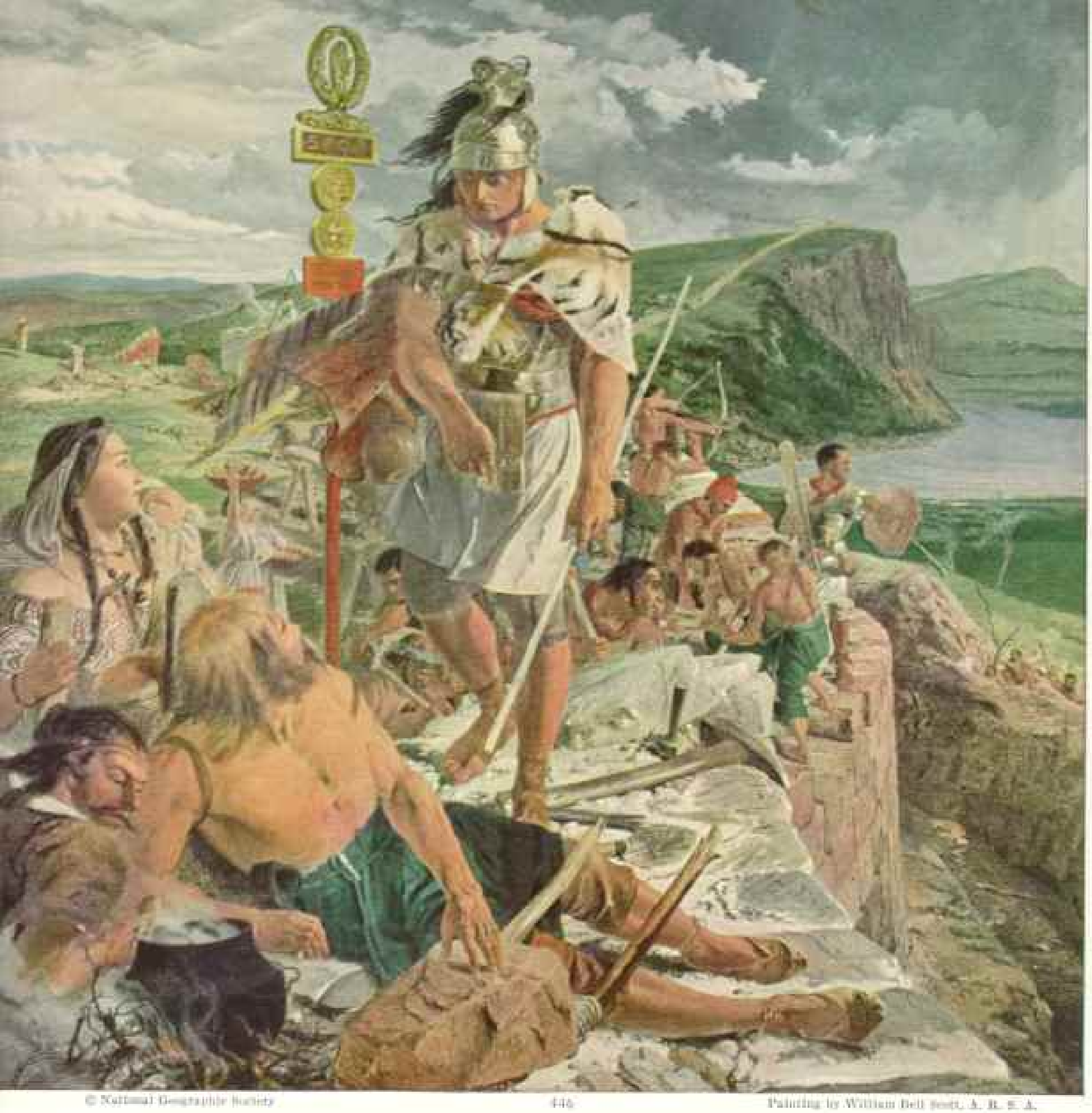
It is the land that freemen till,
That sober-suited Freedom chose;
The land, where girt with friends or foes
A man may speak the thing he will;

A land of settled government,
A land of just and old renown,
Where Freedom slowly broadens down
From precedent to precedent:

* * * * * *

And statesmen at her council met
Who knew the seasons when to take
Occasion by the hand, and make
The bounds of Freedom wider yet

By shaping some august decree,
Which kept her throne unshaken still,
Broad-based upon her people's will,
And compass'd by the inviolate sea.



Painting by William Bell Scott, A. R. S. A.

First Engineering Works in Britain Were Walls Built by Roman Conquerors

OF THE CELTIC people who inhabited England, Scotland, and Wales before the Christian era little is known except that they were courageous fighters and friends of the Gauls whom Julius Caesar was subduing on the European Continent. They so annoyed Caesar by constantly skipping across the Channel in cockleshell boats to harry his legions that he led punitive expeditions into their country in 55 and 54 B. C.

Wild, blue-eyed barbarians, they wore garments of hides and carried skin shields so tough that an arrow could hardly pierce them. Caesar found them living in thatched huts in heavy forests and swampland near the site of present-day London. Nearly a hundred years later the Emperor Claudius overcame them and made southern England a province of Rome. Later the Romans continued their northward advance.

The occupation forces, however, were never able to keep peaceful the land they had won. To hold back the fierce Picts and Scots who from northern mountain fastnesses made frequent surprise raids, they erected high barriers across the island—one 73 miles long from Bowness to Wallsend, and a second 36 miles between the Firths of Forth and Clyde.

South of the ramparts the Romans built a network of roads and some 56 walled towns. They taught the Britons to grow barley, oats, and wheat, and introduced Christianity to some extent, after stamping out the native Druidical worship. Though the Britons were under Roman influence for more than three centuries, few save those who lived in the towns learned the Latin language. In the beginning of the fifth century when the Roman legions withdrew, Germanic peoples, Angles, Jutes, and Saxons, invaded the country. It was against these heathen hordes that legend says King Arthur and his knights of the Round Table fought.

The picture "Building a Roman Wall," by William Bell Scott (1811–90), is from a mural owned by Sir Charles Trevelyan, Bart., who gave permission for its reproduction. The original is in Wallington Hall, Northumberland.

The Roman Wall (A. D. 121–211)

A TOUR of Britain might well start with a visit to the Roman Wall, which stretches 73 miles from the mouth of the Tyne to Solway Firth; for the Roman occupation was virtually the beginning of British history. About the Celtic ancestors who lived in the island before the coming of Julius Caesar little is known.

Most schoolboys know that Julius Caesar paid two visits to Britain, in 55 and 54 B. C. He came to punish "the interfering islanders" for coming to the help of their kinsfolk in Gaul. Then ensued "a long forgetfulness of Britain" till Claudius came, A. D. 43, and incidentally massacred a number of troublesome Druids. A triumph was staged on Claudius's return to Rome, and he was hailed as "Britannicus."

The Romans built walled towns and baths; they constructed virtually indestructible highways . . . along which English motorists still drive in comfort despite the fact that the roadbeds have been in use for 18 centuries; they drained fenlands and cut down some forests. In the Roman settlements the leading officials and warriors had their pleasant villas with "central heating." The home of a prominent Roman probably was much better heated than the houses of the majority of present-day Englishmen.

In Roman Britain the total population was probably no more than half a million. The largest city was London, first mentioned by Tacitus, a Celtic name but a Roman foundation. Scholars who have studied excavations of numerous sites believe that London in Roman times had more stone and brick buildings than at any subsequent time until after the Great Fire, which laid waste the city in 1666.

We may regard Agricola as the sponsor of the Wall, for although it was left to Hadrian to construct it, the builder received his inspiration from Agricola. Agricola foresaw that the inhabitants on the south of the border would have to take strong measures against the Scots and Picts, and therefore he built a chain of forts from Tyne to Solway.

There were in fact two walls, the first built by Hadrian, A. D. 121-26; the second by Severus 85 years later.

Hadrian visited Britain several years before he began his construction. In the British Museum can be seen the head of a colossal statue of him which was dredged from the bottom of the River Thames below the site of London Bridge.

Hadrian's wall consisted of a "great ditch between mounds, called a *vallum*." Between the vallum and the wall ran a military road. Severus rebuilt Hadrian's wall, A. D. 211, and replaced the turf ramparts by solid masonry.

The Wall represents the limit of effective Roman occupation. It is true that under Severus, who, "racked with gout, traveled in a litter," the legionaries penetrated as far north as Moray Firth; but Severus wisely left the inhabitants of Scotland to their own devices and decided that the Wall should mark the northern boundary between the Empire and the "barbarians."

Like the Great Wall of China, our Wall curls up hill and down dale. At irregular intervals there were great forts which served as camps, barracks, storehouses, and baths. At the fort of Borcovicus can be seen the wheel ruts of Roman chariots, similar in measurement to those at Pompeii. The sight, strangely moving, reveals how far-reaching were the tentacles of Imperial Rome.

In some places the vandal has been at work, and the stones of the Wall have been used in the construction of farmhouses and buildings. In other stretches the Wall stands as it was in Roman times, climbing up lonely and lofty heights.

It is not easy to estimate the exact influence which the Roman occupation has had on Britain. Probably its permanent effect has been much less than that caused in France and Spain by the presence of Caesar's armies. Nevertheless, there are today many British families with some Roman blood in their veins, for many of the imperial legionaries who came under Caesar's banner took to themselves native wives.

Apparently all but a few signs of the Roman occupation had vanished by the time of Alfred the Great. Vikings and Norsemen had wrought havoc throughout the land.

By 1066 the islanders had become a mongrel race, described by Defoe, in his *True-Born Englishman*, as

> Your Roman-Saxon-Danish-Norman-English . . .
> A True Born Englishman's a contradiction!
> In speech an irony, in fact a fiction! . . .
> A metaphor invented to express
> A man akin to all the universe!

Under Hadrian British levies were recruited to serve the Roman Empire. It is highly probable that the recruits were offspring of the unions between Caesar's men and the fair-haired daughters of Albion.

The end of the Roman occupation of Britain came early in the fifth century, when Rome had her troubles nearer home and the Emperor Honorius decided that the Britons could no longer rely on the Empire to protect them.

Painting by Kenneth Riley

To Hold the Sea Against the Danes, Alfred Created the First British Fleet

He developed naval power until in his son's reign a hundred ships insured English mastery of the Channel. Kenneth Riley's painting shows in battle the King who wrote, "So long as I have lived, I have striven to live worthily."

Alfred the Great (848?–901)

Alfred found learning dead and he restored it.
Education neglected and he revived it.
The laws powerless and he gave them force.
The Church debased and he raised it.
The land ravaged by a fearful enemy
From which he delivered it.
Alfred's name will live as long
As mankind shall respect the past.

A STATUE BEARING this inscription commands the main street in the little town of Wantage, Berkshire, where Alfred, justly called the Great, was born about 848. Although for part of his reign Alfred ruled over only Wessex, he laid the foundation for a unified England and before the close of his life wrested London and Canterbury from the Danes.

Fourth and youngest son of King Æthelwulf, he succeeded to the West Saxon throne in 871 when his brother Æthelred was slain in battle. The blackest hour in the early annals of England struck in 876 when the Dane Guthrum, usurper of the kingship of East Anglia, invaded the south coast, overwhelmed Dorsetshire, and took Exeter.

Caught unprepared by this treacherous violation of a truce, Alfred retreated to the Somerset fens and threw up an island fort in the well-nigh impenetrable marshes, where, unseen, he could watch the movements of the enemy. He recruited an army of Hampshire, Wiltshire, and Somerset men, using the Danish peril to unite his people. When his troops were ready, he made a surprise attack on the Danes at Ethandun (now Edington) in Wiltshire and defeated them in a pitched battle.

So signal was his success that in the Peace of Wedmore (879) he forced King Guthrum and some of Guthrum's followers to receive baptism into the Christian faith, and to withdraw from the West Saxon land. Wessex was cleared of the Danes, and also Mercia west of the Roman Watling Street. Not since the Vikings' first invasion of England had the English scored so decisive a victory.

Alfred and his kingdom of Wessex now stood forth as the only English power in Britain which was stronger than the invaders, and he was regarded by the people as their champion and deliverer. He had saved his kingdom from Scandinavian domination and safeguarded English Christianity.

Alfred constructed a new kind of ship better able to withstand the Vikings. To him is due the conception that England is an island realm and must be defended at sea and not on land. He regarded the North Sea and the English Channel as the national frontiers.

There was no end to his activities. Drawing on Mosaic experience, he codified the nation's laws; comparing the low state of culture in Wessex with that of the Continent, he determined to make his capital the greatest seat of learning in the island.

When he came to the throne, he found that "not a single priest south of the Thames was acquainted with Latin." He became his own translator and editor, and made available to his people the treasures of Latin manuals in their own tongue. The *Anglo-Saxon Chronicle* compiled in his reign remains the first vernacular history of any Teutonic people. To him also was due the survival of the first English epic, *Beowulf;* the Venerable Bede's *History;* and other priceless books.

His zeal for religion and scholarship probably had its beginning when as a child he was taken by his father to Rome and to the court of Charles the Bald, King of the West Franks. Confirmed by Pope Leo IV who, legend says, "hallowed him to King," he had opportunities to observe the measures taken by the pontiff for protecting the Eternal City from the Saracens and to meet many literary characters of the age, both in Rome and in France.

He established a school at his court and insisted that "those whom it is proposed to educate further and promote to a higher office should be taught Latin," which at the time was the only well-established literary language. Lamenting his own lack of learning, he studied assiduously and asked that "all the youth of England of free men . . . be set to learn . . . until they are able to read English writing."

J. R. Green places him among the world's greatest men because of "the moral grandeur of his life." "He is the first instance in the history of Christendom of a ruler who put aside every personal aim or ambition, to devote himself wholly to the welfare of those whom he had ruled."

Methodical in the use of his time, he devised a candle covered by a lantern to measure the hours of his busy day. He had infinite patience with his subjects and was ever willing to hear complaints.

I like to think of him carrying in his bosom "a little hand-book in which he jotted down things as they struck him, now a bit of family genealogy, now a prayer, now a story. . . . The writer of English history may be pardoned if he lingers over the figure of the King in whose court, at whose impulse, it may be in whose very words, English history begins."

When Alfred died in 901, his body was brought by the monks to the New Minster at Winchester, though exactly where he lies in the old city is not known.

Painting by Sir Edwin Landseer, R. A.

"Then She Rode Forth, Clothed on with Chastity"

Tennyson, waiting for a train in Coventry, shaped into a famous poem "the city's ancient legend" of Lady Godiva's ride naked through the streets to save the folk from cruel taxation.

When Sir Edwin Landseer was more than 60 years of age, he turned aside from hunting scenes to do this painting of "Lady Godiva's Prayer." It is used by courtesy of W. H. Bassett-Green, who presented it to the New Art Gallery of Coventry.

Although the artist caught the true spirit of the old story, the setting he gave the picture is full of anachronisms. The cathedral spire in the background was not built until several centuries after the heroine's death, and the foot-stool is mid-Victorian.

In the disapproving but resigned expression of the maid speaks the outraged modesty of English womanhood.

Lady Godiva (1040–80)

THE SEAL of approval has been set on the story of Lady Godiva by the poet Tennyson, by the great English artist Sir Edwin Landseer, whose painting is reproduced in our plate, and by many learned scribes. Why question such authority?

The boundary line between history and legend is sometimes hazy. If rationalists were permitted to work their iconoclastic will, much of the romance of the past would be lost. Critics say that there never was a King Arthur who established a Round Table and that the legend of Lady Godiva is pure moonshine. Nevertheless, modern readers who care more for imagination than cold facts are inclined to agree with the Victorian poet R. B. Brough:

> Godiva! Not for countless tomes
> Of war'rs and kingcraft's leaden hist'ry
> Would I thy charming legend lose
> Or view it in the bloodless hues
> Of fabled myth or myst'ry.

Godiva is said to have married Leofric a quarter of a century before the arrival of William the Conqueror in England; she died some years before the Domesday survey (1085-86). Her husband was ruler of Mercia and one of the three great earls of the realm. Both husband and wife were liberal benefactors of the Church.

The earliest narrative of the famous ride through the streets of Coventry (the skeptics say there was no city of Coventry in the 11th century), which has eclipsed her fame as a benefactress, is given in the *Flores Historiarum* of Roger of Wendover (died 1237), but he relied for his information on a mid-12th-century writer. Roger represents Godiva "as begging the release of the villa of Coventry from a heavy bondage of toll."

Leofric replied, in the oft-quoted words: "Mount your horse naked, and pass through the market of the villa, from one end to the other, when the people are assembled, and on your return you shall obtain what you ask."

Attended by two soldiers, Godiva, as Tennyson says, "rode forth, clothed on with chastity," her flowing tresses serving as scant covering. Leofric was overcome with admiration of her selfless act and granted the release by charter —so runs the tale.

The writer of the article on Leofric in the *Dictionary of National Biography* comes to the defense of the supposedly cruel husband of the heroic lady. Citing evidence of Leofric's seemly behavior on other occasions, he declares that the man's character alone proves that the tale of his boorish conduct is an absurdity.

In a travel report written in 1634, the "white steed" is introduced. "She purchased and redeemed their lost infringed liberties and freedoms, and obtained remission of heavy tributes imposed upon them, by undertaking a hard and unseemly task, which was to ride naked openly at high noon day through the city on a milk-white steed, which she willingly performed, according to her lord's strict injunction. It may be very well discussed here whether his hatred or his love exceeded. Her fair long hair did much offend the wanton's glancing eye."

Another 17th-century story says: "But about the midst of the Citty her horse neighed, whereat one desirous to see the strange Case lett downe a Window, and looked out, for which fact or for that the horse did neigh, as the cause thereof, Though all the Towne were Franchised, yet horses were not toll-free to this day."

Concerning "peeping Tom," a Latin epistle published in the *Gentleman's Magazine* a a century or so later reports: "A groom of the countess dared to violate her commands. The countess's horse, on discovering its trainer through the windows, set up neighing, and so betrayed the scoundrel."

An obliging traveler in 1782 supplies yet further information: "Legend says that, previous to her ride, all the inhabitants were ordered, on pain of death, to shut themselves up during the time; but that the curiosity of a certain taylor, overcoming fear, took a single peep; which is commemorated even at present, by a figure looking out of a wall in the great street. To this day, the love of Godiva to the city is annually remembered by a procession; and a valiant *fair* still rides in silk, closely fitted to her limbs, and of colour emulating their complexion."

In the 19th century skepticism about Lady Godiva was rife; perhaps neighboring cities were jealous of Coventry's proud heritage as the place where "the perfect model of an Anglo-Saxon lady" acquired immortal fame.

Moncure D. Conway, the American preacher and author who saw the Landseer painting at the Royal Academy in 1866, wrote of his impressions:

"The Lady's elderly duenna is represented turning her head aside from the nude lady and shutting her eyes tightly. There is a look on this domestic's face which says plainly, 'I wash my eyes clean of all such improper conduct; and before I would do such a thing, every man, woman, and child in Coventry should broken be on the wheel!' Everyone who looks at the picture smiles; but all see in her, rather than the mounted lady, the representative of the womanhood of England."

Painting by Kenneth Riley

William the Conqueror Fathered the Jury System by Calling "Twelve Lawful Men" to Determine Taxes Due

To make certain that every person liable should pay a just share of the Danegeld, he appointed a committee in each district who acted as fact finders and heard witnesses on matters connected with the levy. Such bodies later became judges of evidence. In Kenneth Riley's painting the King is receiving reports for the *Domesday Book*.

William the Conqueror (1027–87)

RIDING IN FALAISE one day, Duke Robert of Normandy, father of William the Conqueror, chanced to espy Arlotta, daughter of a tanner, washing her linen in a little brook, and so "loving her made her the mother of his boy." The circumstances of William's birth gave rise years later to the contemptuous title William the Bastard and to insulting display of drying hides on walls of towns he advanced to attack.

When William was eight, Duke Robert died on a pilgrimage, and the son found himself the boy ruler of the most turbulent baronage in Christendom. Surrounded by treason and chaos, he soon learned how stern was the task of ruling Normandy. He served as a bridge between two worlds: that of the Vikings and pirates, who lived by pillaging their neighbors, and that of the epoch just dawning when the concept of kingship and statesmanship was taking shape. Even his enemies admired him, and one of them said, "No knight under heaven was his peer."

He invaded England and on the battlefield of Senlac (Hastings), in Sussex (1066), he denied a grave to Harold, the English king. Surrounded by his men, Harold had fought stubbornly, but as the sun went down an arrow pierced his right eye.

William's victory was due to the Normans' superiority over Harold's forces in the use of cavalry and bowmen. To a generation accustomed to the gigantic scale of battles in World War II, it seems incredible that William's army, victor in one of the decisive battles of the world, numbered only about 12,000 men, transported across the English Channel in small sailing craft.

William had chosen for his attack the very moment when a Norwegian army had invaded northern England, and Harold had therefore to fight on two fronts.

William received the title of Conqueror, not through defeat of Harold, but because of his successful suppression of the national revolt during the first years of his reign. He was not only a great warrior and a great statesman, but a born leader of men. On the winter march to Chester he showed his genius for winning loyalty when he walked at the head of his dispirited troops and helped with his own hands to clear a passage through snowdrifts.

Upon William's victory England became once more a province of the Latin world, and it adopted the theology, architecture, literature, law, and political organization of Rome. "Under the Normans," H. A. L. Fisher writes, "vast cathedrals rose to the heavens, erected by the labour of a subject peasantry, and in scale as novel to the Saxon ploughman as is the first towering vision of modern New York to a poor lad fresh from a humble cabin in Connemara."

The feudal system introduced by William as a means of retaining what he had won differed from the feudal system that existed on the Continent. Not only the great nobleman who received large estates swore loyalty to the King, but his lowly dependent as well.

In all feudal practice the retainer, "kneeling without arms and bareheaded, placed his hand within those of his superior," and swore, "Hear, my lord, I become liege man of yours for life and limb and earthly regard, and I will keep faith and loyalty to you for life and death, God help me." In England the subtenant also swore fealty *direct to the Crown;* thus every Englishman pledged himself personally to be loyal to the King, and the country was saved from the worst evils of feudalism.

William ordered compiled the *Domesday Book*, which is on view in the Public Record Office in London. Shrewd man that he was, he desired to know the exact amount of the Danegeld (a royal tax which could be levied at the King's discretion) that he would receive from each estate. He therefore appointed commissioners to make a survey throughout the land of the estates and possessions of every landowner.

In each district a jury of twelve "lawful" men, with local knowledge, and sworn to tell the truth, was summoned. They were, in fine, a fact-finding commission, and insured that the information supplied by each witness was correct. The village priest, reeve, or other local magnate would soon point out any inaccuracy. Two centuries later trial by jury was adopted, when the sworn twelve became, not the witnesses to fact, but the judges of evidence.

William summoned a great assembly, or moot, of the landowners, in 1086, when each one of them swore allegiance to him. The King must have looked back with satisfaction on his work of twenty years.

The American illustrator, Kenneth Riley, who painted our picture of William the Conqueror, painted also for this series: Florence Nightingale, page 513; Alfred the Great, page 448; King John and the Magna Carta, page 457; Canterbury Pilgrims, page 459; Shakespeare and Anne Hathaway, page 465; King James and the Bible, page 470; and the scene from *Iolanthe*, page 539.

Richard the Lionheart (1157–99)

RICHARD, COEUR DE LION, born at Oxford in 1157 and crowned at Westminster in 1189, was the king who never stayed at home. In the nearly ten years of his reign, his longest sojourn in England was only from March, 1194, until May of the same year. No sooner was his coronation over than he set off on the Third Crusade.

His chief ambitions were to shine in battle against the Saracen and to kneel before the Holy Sepulcher after winning it for Christendom. To further these aims, he was ready to sell all he possessed—castles, villas, and farms. Everything went into the pot—the treasures of England, Normandy, Scotland, Sicily, and Cyprus. In a wry jest too serious for humor he once remarked, "I would sell London itself could I find a purchaser rich enough."

He and Philip Augustus of France were bad allies, and despite Richard's bravery and good generalship the Crusade failed. The Lionheart's greatest triumph was the capture of Acre, five weeks after his landing (July 12, 1191). Even when he was ill, his ardor was undimmed. He had himself carried out to superintend the efforts of his crossbowmen, and, propped upon silken cushions, plied a crossbow with his own hands.

Given the title "Lionheart" in his lifetime, he was a romantic hero to his overtaxed subjects, who twice ransomed him from imprisonment in Germany. The American artist-writer Howard Pyle tells in his *Merry Adventures of Robin Hood* how King Richard came to Sherwood Forest incognito and feasted with Robin Hood and his outlaw band. For once, the legend goes, Robin lost an archery contest, and King Richard gave him as penalty a buffet that knocked him rolling on the sward. The physical prowess of the adventurous monarch was the subject of many a ballad and tale.

Richard, says Sismondi, was "a bad son, a bad father, a bad husband, and a bad King." But this was only one side of the picture; he was rather "a splendid savage, with most of the faults and most of the virtues of the semisavage age in which he lived." The ruthless warrior was also the knight-errant who could show courtesy to women. In him we see a mixture of the barbaric age of the 12th century and the virtues of chivalry combined.

He was honest about his vices and admitted that pride, rapacity, and luxury were "his three daughters." Not in the least vindictive, he contemptuously forgave his brother (later King John), who had been intriguing in his absence, and permitted the traitor to retain his property.

The man of blood was also a lover of music and took a deep interest in the services of his chapel, where he was often seen walking up and down the choir beating time with his hand and encouraging the choristers to sing out.

On the Crusade Richard found a worthy foe in Saladin, the Turk, who represented the best traditions of Moslem culture. Saladin was not behind Richard in yearning to annihilate the "unbeliever." "Let us purge the air of the air they breathe" was his aim for "the demons of the Cross."

This intensity of sentiment Richard could understand. To Saladin, more than to any other man, was due the stemming of the tide of Western conquest. In *The Talisman* Scott describes the famous incident when Saladin, disguised as a physician, visited Richard on his sickbed. Richard, though warned by his staff to beware of poison, was so familiar with the chivalrous nature of his foe that he accepted the healing potion from his hands.

The three motives of chivalry were honor, gallantry, and religion. In his book *Chivalry* F. W. Cornish says: "The whole idea of a gentleman was included in the idea of chivalry." With the finding of the Holy Grail a magnificent goal, the young knight was taught to consecrate himself to the service of God, his lord, and his lady. Chivalry made a strong appeal, not only to the emotional side of the initiate but to his highest spiritual feelings.

The ritual and ceremonies of initiation to knighthood were evolved in a pious age. After taking a ritual bath, the young knight passed a night in solitary prayer, and then, confessing his sins, received the Sacrament. The greatest moment in his life had come, and he undertook "to protect the Church, the widows, the orphans, the desolate, and the oppressed." The era has been summed up as marking the elevation of women from a condition hardly better than that of slaves to enthronement as near goddesses.

There is no evidence that Richard and Saladin ever came face to face in battle, as represented in the painting by Abraham Cooper, R. A. (1787-1868). By permission of the owner, Dr. Robert Bembridge of London, the picture is used.

Magna Carta (June 15, 1215)

TWO STONE portals at the field of Magna Carta at Runnymede where in 1215 the barons forced King John, brother of Richard, to have the Royal Seal of England affixed to the great document, tell the story in simple words:

In these meads on 15 June 1215
King John at the instance
Of Deputies from the whole
Community of the Realm granted
The Great Charter the earliest
Of Constitutional Documents
Whereunder Ancient and
Cherished Customs were
Confirmed. Abuses redressed. The
Administration of Justice
Facilitated new provisions
Formulated for the preservation
Of Peace and every individual
Perpetually secured in the free
Enjoyment of his life and property.

In recent times critics have pointed out that the Magna Carta presented no new political ideal when it was signed but merely reaffirmed in more precise terms the earlier charter of Henry I. They argue that the only freedom it guaranteed was that of the upper classes and that the barons who forced its signature would have been horrified had they been told they must not tax their underlings without the latter's consent. The expression *free man* did not apply in the 13th century to *villeins*, the serfs of a class whose status only gradually changed to that of free peasants.

When critics have done their worst, however, we still regard Magna Carta "as a great constitutional compact . . . stipulating for the essential bases of fair dealing and just government, not as only between Crown and subject, but also between subject and subject." Justice was not to be sold, or delayed, or refused to any man, and no free man "was to be taken, imprisoned or outlawed, or in any way destroyed, except by the lawful judgment of his peers." Great concepts these, even in our own times.

Fortunately for posterity, King John returned to England in chastened mood after his defeat at Bouvines, in France. He was now confronted by a united nation. Under the pretense of taking part in a pilgrimage, the barons had assembled at Bury St. Edmunds in Suffolk, where today a stone tablet records the names of those who drew up the petition.

The barons were in a stern mood; they had suffered long from the King's subterfuges and procrastinations. For the first time since the Norman Conquest baronage and commons were united in opposition to the Crown. John agreed to the demands for liberty, no doubt intending later on to find some way of escape. In Stephen Langton, leader of the barons, the nation found a champion of the old English customs and law against the personal despotism of the kings.

John did not long survive the charter, and his attempts at evasion came to nought. At King's Lynn, in Norfolk, he was attacked by dysentery due to a rash indulgence in a supper of peaches and new cider. He directed that he should be buried at Worcester.

Curiously enough, John, who in his lifetime had flouted the laws of God, desired that he should be laid to rest "in the habit of a monk." "Foul as it is, hell itself is defiled by the fouler presence of John," was the judgment of his contemporaries.

The meadows of Runnymede are now a national possession. America is closely associated with the gift of this historic site, for it was presented to the nation by his widow and two sons as a memorial to Lord Fairhaven (Urban Hanlon Broughton), who at the age of 30 went to the United States and there for 25 years engaged in engineering, manufacturing, mining, and railroad work. He was a staunch upholder of the cause of friendship between the English-speaking peoples.

There are four copies of the Magna Carta in existence, two in the British Museum, one at Lincoln Cathedral, and one at Salisbury Cathedral. It is estimated that 15 million Americans saw the copy that was exhibited at the New York World's Fair.

When I revisited Runnymede soon after V-J Day, this little piece of English soil, virtually within the shadow of Windsor Castle, appeared to me to symbolize the Anglo-Saxon way of life. Magna Carta, the Bill of Rights, the Declaration of Independence, and the Atlantic Charter—these, I reflected, were milestones in a march to a better and freer world. Runnymede stands for something which in my youth, during the golden age of Victoria, I took for granted—the fundamental rights and freedoms of the individual man.

Forced by the Barons to Yield, King John Set the Great Seal on the Magna Carta at Runnymede

He had tried by every trick of evasion to avoid the issue, but once his seal was on the document he was powerless to void it. To this day it is regarded as the first milestone of the march to English democracy. The American artist, Kenneth Riley, has re-created for us this historic scene.

Geoffrey Chaucer (1340?–1400)

GEOFFREY CHAUCER was the first writer to discover and show to the world the poetic possibilities of English speech. Through his immediately popular *Canterbury Tales* he had powerful influence in establishing as the literary language of England the Midland dialect instead of the Latin and French used by his predecessors and most of his contemporaries.

He was, moreover, the first teller of tales to turn aside from the gods and goddesses of Greek and Roman mythology, the incredibly puissant knights and immaculately virtuous ladies of metrical romance, and the ethereal saints of religious literature, and to invest with romantic interest the real human beings who were his friends and neighbors. Of Chaucer's Canterbury pilgrims Dryden wrote two centuries later: "I see all the Pilgrims, their humours, their features and their very dress, as distinctly as if I had supped with them at the Tabard in Southwark."

Because of changes in words, spellings, and pronunciations that crept into English after Chaucer's time, the lilting music of his verse is not apparent to readers unfamiliar with the speech of his day. Modern scholars, however, have found that if his lines are read as he would have declaimed them himself, the rhythm is perfect.

Born about 1340 in Thames Street near the London water front, the son of a well-to-do vintner, Chaucer was not of the nobility: yet at the age of 17 he became a page in the court of Edward III and at 19 went with the King to France on one of the expeditions of the Hundred Years' War. He was taken prisoner at the unsuccessful siege of Reims and ransomed, old records indicate, with money from the King's purse.

A few years after his return to England he was made a squire in the royal household, the personal attendant and confidant of Edward III. He married a maid of honor to the Queen. Although records do not mention his wife's name, it is probable that she was Philippa Roet, sister-in-law of John of Gaunt, who for many years was the poet's patron.

Until Chaucer was 30 years old, his literary work was in the manner of the French school. His major poem of the period was a translation of the metrical romance, *Romaunt of the Rose*. The next 15 years of his writing took inspiration from the Italian masters, notably Boccaccio, with whose works he was familiar when he was sent about 1372 to arrange a commercial treaty with Genoa. In 1386 he was elected a member of Parliament from Kent, and during the last 15 years of his life he devoted himself to the English scene. Using some French and Italian stories, to be sure, he gave them all English characters and setting.

He held many political appointments, being sent on several missions abroad and serving between times in posts at home. Most important of his home positions was that of Comptroller of Customs at the port of London. By his extensive travels he came to know the world abroad; and while serving in political offices in England, he had opportunity to study all the classes of people he gathered into his group of Canterbury pilgrims.

John Dryden (1631-1700), the greatest literary figure of the Restoration, wrote of Chaucer:

"In the first place, as he is the father of English poetry, so I hold him in the same degree of veneration as the Grecians held Homer, or the Romans Virgil . . .

"He must have been a man of a most wonderful comprehensive nature, because, as it has been truly observed of him, he has taken into the compass of his *Canterbury Tales* the various manners and humours of the whole English nation in his age. Not a single character has escaped him. All his Pilgrims are severally distinguished from each other: and not only in their inclinations, but in their very physiognomies and persons . . .

"Some of his persons are vicious, and some virtuous: some are unlearned or (as Chaucer calls them) lewd, and some are learned. Even the ribaldry of the low characters is different: The Reeve, the Miller, and the Cook are several men, and distinguished from each other, as much as the mincing Lady Prioress and the broad-speaking gap-toothed Wife of Bath . . .

"We have our forefathers and great grandames all before us, as they were in Chaucer's days; their general characters are still remaining in mankind, and even in England, though they are called by other names than those of monks and friars, and canons, and lady abbesses, and nuns: for mankind is ever the same, and nothing lost out of nature, though everything is altered."

The *Tales* have been translated several times into modern English, but no translation can give the genuine rhythm of the originals. As stories they are among the world's classics—some a bit broad for the fastidious taste, but human, kindly, and full of good humor.

Chaucer's Pilgrims on Their Way to Canterbury While Away the Time with Merry Tales

Besides the host and the poet there were 30 in the group. Each was supposed to tell four stories, two going to the shrine of Thomas à Becket and two coming back to the Tabard Inn. Unfortunately, only 24 narratives were written. Kenneth Riley's painting presents the Reeve, the Knight, the Prioress, and the Monk.

Painting by Kenneth Riley

Cabot's Discovery of North America, 1497

UNFORTUNATELY John Cabot, unlike Columbus, kept no diary, nor had he a biographer in his son Sebastian, who accompanied him on his voyages. He has become, therefore, a mystery man.

Though his voyages are rightly regarded as among the fundamental transactions of human history, the main facts about him are being learned by slow degrees, thanks to painstaking research, particularly that conducted by Prof. J. A. Williamson. Dr. Williamson tells in his book *The Voyages of the Cabots* the story which he has picked up bit by bit—from a stray fact here and there, a letter from Milan perhaps, or a reference in some ancient map.

The only contemporary accounts of John Cabot's first voyage come from the letters of two Italians, then resident in London. On August 23, 1497, two weeks after the explorer's return, Lorenzo Pasqualigo wrote to his brothers in Venice about the voyage, making the first mention of Cabot by name. Further corroborating facts are furnished by Raimondo de Soncino, the Milanese Minister in London. The world map of Juan de la Cosa, compiled in 1500 and known in Spain at the opening of the 16th century, shows the English exploration of the North American coast from Cape Breton, Nova Scotia, to Long Island.

Dr. Williamson points out that the map is good evidence of the second voyage, for it obviously deals with more than the "hasty reconnaissance of 1497." The facts concerning the second voyage can have been supplied only by someone who had been on the voyage, which is believed to have followed the North American coastline from Cape Breton as far south as the Tropics.

John Cabot "enters history from the void" on March 29, 1476, when he was granted Venetian citizenship. He is presumed to have been born at Genoa, and one authority suggests, since he was little younger than Columbus, that the two boys may have played together.

In the 15th century men's minds were stirring, especially around the shores of the Mediterranean, where lived mariners undoubtedly possessed of a practical knowledge of navigation in advance of all others. The theory that the earth was spherical had been familiar as early as the eighth century to the Venerable Bede, "the father of English history," and to Roger Bacon at Oxford in the 13th century.

In the latter half of the 16th century scholars were certainly familiar with Pierre d'Ailly's *Ymago Mundi*, written about 1410 and published just as Bartholomew Columbus was petitioning Henry VII to aid in his brother's project. The author quoted from Aristotle and Seneca "to prove that by crossing the Atlantic westwards from Europe the coast of Asia may be reached." Eagerly studying this work, Columbus made marginal notes upon it. Cabot, Hakluyt tells us, had "made himself very expert and cunning in knowledge of the circuit of the world and islands of the same, as by a sea-card and other demonstrations." Familiar with the eastern Mediterranean, and having visited Mecca, he must have been acquainted with the work of Marco Polo.

He probably settled in Bristol about 1486. For Atlantic exploration he could not have chosen a better jumping-off point. Bristol merchants traded extensively with Iceland and would have been familiar with the saga recording the voyage of Leif Ericsson to Vinland in 1000.

From the entries in Bristol's customs records we learn that on July 15, 1480, John Jay promoted "the first recorded English discovery of unknown lands in the Atlantic," and an 80-ton vessel sailed from the Avon "in search of the island of Brazil, thought to lie west of Ireland." True, the voyage ended in failure.

In 1498 Pedro de Ayala, the Spanish envoy, reported to Ferdinand and Isabella, "for the last seven years the people of Bristol have sent out every year two, three, or four caravels in search of the island of Brazil and the seven cities according to the fancy of these Genoese."

After years of patient waiting the great moment in Cabot's life came when in March, 1496, cautious Henry VII granted him the charter—the earliest surviving document referring to the project of establishing an English colony overseas. Henry must often have regretted his refusal to back Columbus some years earlier. Cabot received permission "to sail to all parts, regions or coasts of the eastern, western, and northern sea, under our banners, flags and ensigns . . . and to set up our aforesaid banners and ensigns in any town, city, castle, island or mainland whatsoever, newly found by them . . ."

On May 2, 1497, Cabot sailed from Bristol and on June 24 reached Cape Breton, which he assumed was the eastern coast of Asia. He took possession of the discovered land in the name of Henry VII.

The Art Gallery at Bristol gave permission for use of its fine painting by Ernest Board (1877-1934) of the Cabots setting out on their voyage to America.

Henry VIII (1491–1547)

HENRY VIII, whom the painting after Holbein shows confirming a charter to the company of barber-surgeons, has been described as the "most remarkable man that ever sat on the English throne." Because his matrimonial affairs have tended to obscure his great ability and sagacity, we think of him as "Bluebeard" and forget how much we owe to his foresight.

He is rightly regarded as "father of the British Navy." Without him no expansion of the English to America would have been possible.

At the beginning of his reign his chief interests were theology, the New Learning, and his Navy. Convinced that strength on the sea was essential to England, he pored over plans for the expansion of the Navy, constructed ships capable of oceanic adventure, built dockyards, fortified the southern coast, and drew up the constitution of the Navy. He realized the importance of gunpowder, and encouraged the planting of timber necessary for shipbuilding. He knew the speed, the tonnage, and the armament of every ship in his Navy, and from his palace at Greenwich proudly watched his vessels sailing down the Thames.

In the early years of Henry's reign, Erasmus wrote of him: "What a hero he now shows himself, how wisely he behaves, what a lover of justice and goodness, what affection he bears to the learned. . . . All the world here is rejoicing in the possession of so great a Prince. . . . Our King does not desire gold or gems, or precious metals, but virtue, glory, immortality."

The Tudors were descended from a Welsh family of humble origin. Henry VII's great-grandfather was steward or butler to a bishop. Despite his six wives, only three of Henry VIII's children survived. His son Edward VI died at 15; Mary, daughter of Catherine of Aragon, died childless at 42; and the Tudor dynasty ended with Elizabeth.

Prof. A. F. Pollard, summing up Henry's reign, says: "It exhibits the continual development of Henry's intellect and the deterioration of his character."

Henry's passion for a son was his undoing. Seven months after his marriage to Catherine of Aragon she had a stillborn daughter; twelve months later she was delivered of a son, and great was the rejoicing. In a few weeks the infant was dead.

An evil fate pursued Catherine. Two years later she had a stillborn son, followed by yet another son who died no sooner than he had been christened. Peter Martyr ascribes the premature birth of a fourth son to the Queen's worries and the King's "brutality."

Catherine had other worries too. When Membrilla, the Spanish emissary to England, was withdrawn, Catherine's father, Ferdinand, appointed her Ambassador at Henry's court. It was an impossible position from the outset: a wife serving her father as Ambassador to her husband! Ferdinand died in 1516, but even before then Henry was preparing to cast off not only the Spanish alliance but his Spanish wife.

In 1525 Catherine was 40, while Henry was only 34, and the last hope of offspring by her had now vanished. Mary was her only living child. Divorce seemed to Henry the only way out. Henry wanted a son, and he was determined also to be master in his own realm.

In the early years he had been in high favor with the papacy as a loyal son of the Church and a skilled theologian. His book attacking Lutheran heresies had won him much praise in Rome. The English Ambassador had presented Leo X with a copy bound in gold, and as reward Henry had been granted the title of "Defender of the Faith." Now, however, a new Pope was in power.

With the passing of the years, Henry had become more dominating, and desired Clement's sanction for his divorce. Every legal quibble and casuistry was employed by the King. Henry's demand for divorce was heard at Blackfriars in 1529 by the two papal legates.

There are few more moving pictures than that of Catherine flinging herself at the King's feet and saying: "I have been your wife for years, I have brought you many children. God knows that when I came to your bed I was a virgin. . . If there be any offence that can be alleged against me, I consent to depart with infamy; if not, then I pray you do me justice." The appeal met with no response; for the King's heart was hardened, and he was enamored of Anne Boleyn.

However much Henry's subjects may have sympathized with Catherine's misfortunes, the divorce proceedings became interwoven with the larger question of papal jurisdiction in England. On this vital matter the majority of the people were behind the King.

The Church, no longer a branch of the universal Church governed by Rome, became the *Church of England* under the control of Henry, the Englishman. Skillfully indeed had the King played his cards: he possessed powers in the realm such as no Pope had ever exercised.

When Barbers Were Bloodletters, Henry VIII Gave a Charter to the Barber-Surgeons

England's most married King, progressive and popular with his subjects, was ever ready to hear petitions by organizations. By permission of the President and Council of the Royal College of Surgeons we present the painting "Henry VIII and the Barber-Surgeons, After Holbein," which hangs in the College.

William Shakespeare (1564–1616)

THOMAS CARLYLE declared that the British would rather lose India than the writings of Shakespeare. Recently India gained control of its own destiny, but what Carlyle esteemed the greater treasure still belongs to England.

The current British film industry finds, in *Henry V* and *Hamlet*, that Shakespeare is still its best box-office script writer. Taken together, the films, the publishers of Shakespeare editions, London's Old Vic and other theaters, and the Shakespeare festival and memorabilia at Stratford on Avon make Shakespeare—believe it or not—Britain's biggest dollar-earning export industry.

Shakespeare today is definitely an industry, nothing less. One team of German scholars prepared a *select* bibliography of Shakespeare studies which alone contained more than 4,000 monographs. If the serious student could digest one of these a day, eleven years of constant study would be required before one could even be said to have surveyed the *select* field covered by Shakespearean scholarship. Of the bibliography not considered select no one has ventured an estimate.

Dr. Samuel Johnson saluted this phenomenon even as long ago as the 18th century, in prefacing a lazily prepared but still distinguished edition of Shakespeare.

"The poet, of whose works I have undertaken the revision," writes the literary czar of his day, "may now begin to assume the dignity of an ancient, and claim the privilege of established fame and prescriptive veneration. He has long outlived his century, the term commonly fixed as the test of literary merit.

"Whatever advantages he might once derive from personal allusions, local customs, or temporary opinions, have for many years been lost; and every topic of merriment, or motive of sorrow, which the modes of artificial life afforded him, now only obscure the scenes which they once illuminated.

"The effects of favor and competition are at an end; the tradition of his friendships and his enmities has perished; his works support no opinion with arguments, nor supply any faction with invectives; they can neither indulge vanity, nor gratify malignity; but are read without any other reason than the desire of pleasure, and are therefore praised only as pleasure is obtained; yet, thus unassisted by interest or passion, they have passed through variations of taste and changes of manners, and, as they devolved from one generation to another, have received new honours at every transmission."

Three and a half centuries of such popularity have made Shakespeare far more important than Basic English as both a language-maker and a language-spreader. G. D. Willcock puts it well: "The part of Shakespeare as language-maker has naturally been more closely studied than that of any other Elizabethan author. Our debt to him in new words, new adaptations, new phrases, has been estimated again and again, and the tale is not yet told."

Shakespeare was the master of the English language when it was near its best. He, of course, is far more than a language-maker, though that is the readiest aspect in which to emphasize his contribution. As an Elizabethan, he is also supreme as a dramatic analyst of character.

The theme of Shakespeare and America is fascinating.

Two years before his last play, *The Tempest*, was produced, Sir George Somers and Sir Thomas Gates had made their voyage to America, and their ship the *Sea Venture* had been wrecked on the coral reefs of Bermuda. The famous charter defining the rights of the Virginia colonies was on the *Sea Venture* and was wrecked on the coast of the "still-vex'd Bermoothes," immortalized in *The Tempest*.

William Leveson, who was trustee of Shakespeare's theater, was also manager of the Virginia Company's lotteries.

Shakespeare's friend and patron, Henry Wriothesley, the Earl of Southampton, had been interested in exploration even before the sailing of the Jamestown expedition, for he was a backer of George Weymouth, who in 1605 brought back several redskins to London. Talking of his countrymen, Shakespeare wrote: "When they will not give a doit to relieve a lame beggar, they will lay out ten to see a dead Indian."

In our painting Kenneth Riley pictures Shakespeare reading some of his poems to Anne Hathaway as he courts her in her home at Stratford on Avon. She was several years older than he, but their marriage seems to have been a happy alliance.

Today the largest and richest collection of Shakespeareana in the world is housed in the magnificent Folger Shakespeare Library, Washington, District of Columbia. The $2,000,000 marble building and a large endowment were left by Mr. and Mrs. Henry Clay Folger in trust to the trustees of Amherst College, as a gift to the Nation.

Queen Elizabeth (1533–1603)

BECAUSE QUEEN ELIZABETH was interested in everything new, the Elizabethan Age marked for England the most rapid progress in its history in exploration, discovery, and literature. Hers was the age of Drake and Raleigh, of Spenser and Shakespeare.

In her reign, too, English scientific investigation had its beginnings with William Gilbert's work on electricity and magnetism. Gilbert gave us the word "electric" to describe the force that attracts objects to amber when it is rubbed, deriving it from the Greek word for amber, *elektron*.

Historian James Anthony Froude quotes a contemporary on the dark prospect for England at the beginning of Elizabeth's reign (1558): "The queen poor; the realm exhausted; the nobility poor and decayed; good captains and soldiers wanting; the people out of order; justice not executed; all things dear; excesses in meat, diet and apparel; division among ourselves; war with France; the French king bestriding the realm, having one foot in Calais and the other in Scotland; steadfast enemies, but no steadfast friends. . . . If God start not forth to the helm, we be at the point of greatest misery that can happen to any people, which is to become thrall to a foreign nation."

In 1589 Hakluyt in his *Voyages* wrote: "Which of the Kings of this land before her Majesty, had their banners ever seen in the Caspian sea? Which of them hath ever dealt with the Emperor of Persia, as her Majesty hath done? . . . Who ever found English Consuls & Agents at Tripolis in Syria, at Aleppo, at Babylon, at Balsara, and, which is more, who ever heard of Englishman at Goa before now? What English ships did heretofore ever anchor in the mighty river of Plate? Pass and repass the . . . strait of Magellan, range along the coast of Chili, Peru, and all the backside of Nova Hispania . . . travers the mighty breadth of the South Sea, land upon the Luzones, enter into alliance, amity and traffic with the Princes of the Moluccaes, & the isle of Java, double the famous Cape of Bona Speranza, arrive at the isle of Santa Helena, & last of all return home richly laden with the commodities of China?"

The difference between the gloom of the first quotation and the braggadocio of the second is a tribute to the "Elizabethan" accomplishment, the work of the lusty generation of political and religious schemers, seamen-pirates, and incipient capitalist-gamblers who ranged around the "public virgin" in laying the foundations for Britain's overseas empire.

Elizabeth was Henry VIII's daughter in many more ways than one, inheriting his anticlericalism as well as some of his illnesses. With her minister Cecil she would feel much at home among today's Gestapos, NKVD's, Peoples Courts, and purges. The Machiavellian combination of popular showmanship and secretiveness, terror and counter-terror were her stock in trade, which she and Cecil matched against both religious and secular enemies at home and abroad.

Her trumps were her sea captains; but she made the joker of her marriageability a trick-taking ace in the finesses of Europe's politics. With her half-thief, half-businessmen courtiers she launched English commerce on centuries of world dominion.

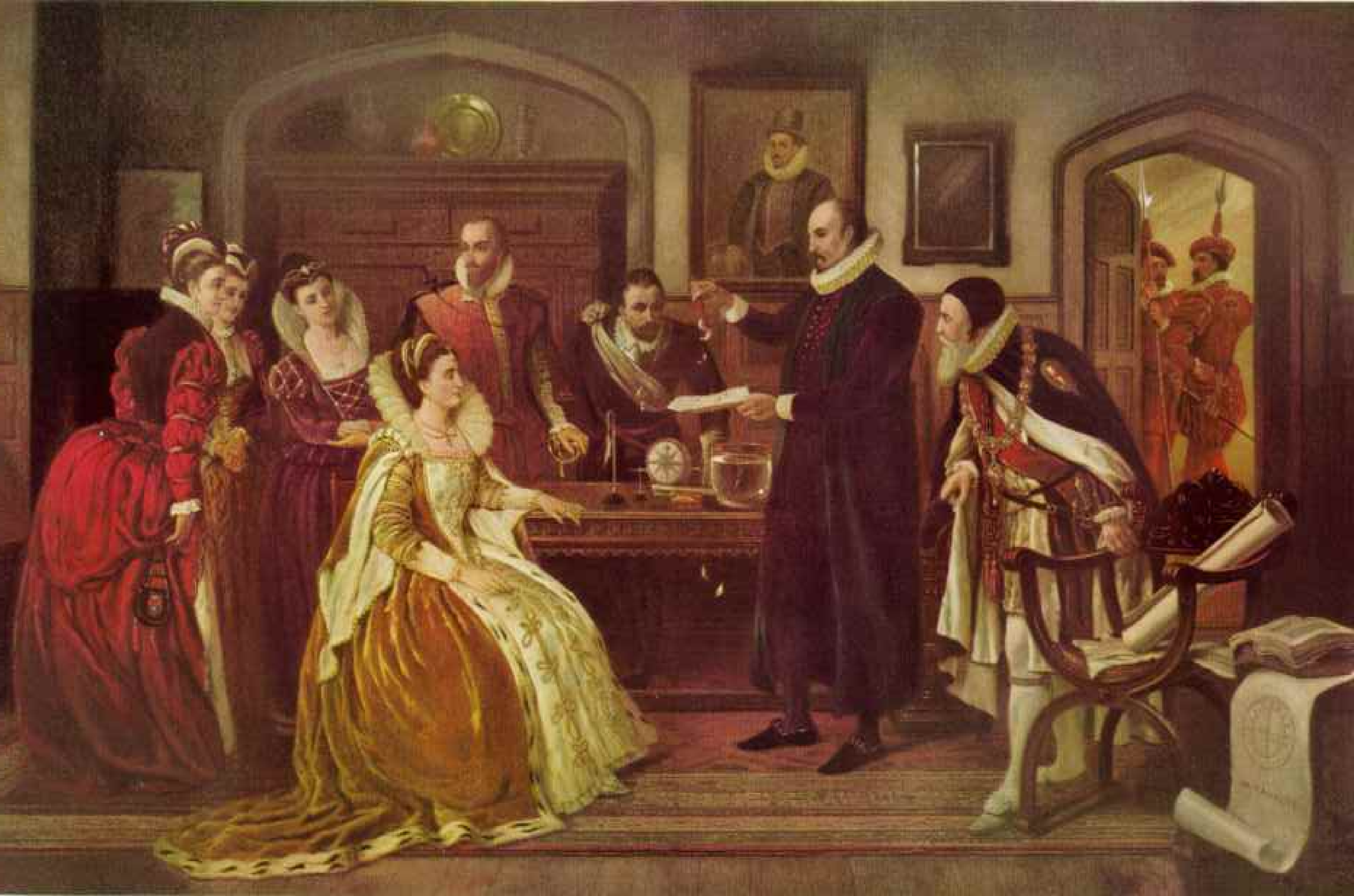
Drama was mixed with Elizabeth's earliest years. Before she was three, her mother, Anne Boleyn, was beheaded for alleged infidelity—poor "Madame Anne" with her "middling stature, swarthy complexion, long neck, wide mouth, bosom not much raised," and black and beautiful eyes. The description is that of a contemporary Venetian who failed to understand Anne's fascination for Henry VIII.

During the reign of her sister Mary, Elizabeth suffered five years of anxiety. She was thrown into the Tower of London when she was 21. As heir presumptive, she went through many anxious moments and must often have wondered whether she might not end her days like her mother.

While Mary was busy burning heretics at the stake, Elizabeth retired to Hatfield to read Demosthenes and the classics with her Protestant tutor, Roger Ascham. She became familiar with Latin, Greek, and Hebrew and could converse in several modern languages. As she was sitting under a tree at Hatfield, the news reached her that her reign as Queen of England had begun.

Strangely, the Queen who sent her seamen forth to search for the Northwest Passage and explore the inhospitable expanses of the Arctic Ocean was one of the least traveled monarchs in history. She never left her island kingdom; nay, more, she never visited Scotland or even Wales. One of her longest journeys was to Bristol (112 miles from London) in 1574, and when she got there she rendered thanks to Almighty God "for her preservation on that long and dangerous journey"!

In the town hall of Colchester, England, hangs Arthur A. Hunt's painting of William Gilbert demonstrating his researches in magnetism to Queen Elizabeth. The replica we use was given by the British Institution of Electrical Engineers to the American Institute of Electrical Engineers at the International Electrical Congress held in St. Louis in 1904.



Painting by John Seymour Lucas, R. A.

Francis Drake and the Elizabethan Seamen (1588)

SPAIN hoped by means of the Armada, most powerful fleet ever assembled at the time, to crush once for all "a wicked Princess and a wicked people." But the islanders were buckling on their armor.

On the evening of July 27, 1588, Sir Francis Drake went below deck to read prayers to his ship's company. With the winds of Heaven giving a helping hand the following morning, the bravery and dash of Elizabeth's sailors defeated the mighty Armada. The great victory was gained without the loss of a single English vessel.

Apart from the superior seamanship of Drake and his men, the English ships were lighter and easier to handle than the great lumbering Spanish galleons. The defeat of the Armada was due in part to the English invention of improved methods of using the wind.

The English were slow to develop their sea sense, but when the great moment came, and Philip II of Spain made his bid for world mastery, the nation was ready. In the middle of the 16th century, West Country fishermen went in large numbers to the Grand Banks of Newfoundland. Later on, when the Elizabethans sought to discover the Northwest Passage to Asia, experienced seamen were available. The superb seamanship which defeated the Armada was acquired in the North Atlantic, and the result of this was the expansion of the English-speaking people overseas.

The words "no land uninhabitable and no sea innavigable" expressed the outlook of the Elizabethans and their successors. On the map of the northeast American coast will be found their names—Frobisher, Baffin, Davis, Hudson, and others.

But it was not only to the inhospitable north that they sailed in their tiny vessels. Wherever the Spaniards had been, they went, and chief among them was Francis Drake.

A later age has called them mere pirates, but political necessity was the justification for privateering. Elizabeth was determined to keep a war of religion away from English shores; she knew too much of its horrors and was aware that, if war came, her brother-in-law, Philip, would stir up trouble for her at home.

She encouraged her seamen to sail afar. When her enemies burned English Protestants and tortured her seamen, Elizabeth was ready to retaliate to any extent—short of war. Tip-and-run raids became popular with her subjects. The Spanish treachery at San Juan de Ulúa, in Mexico, gave Elizabeth ample excuse for "singeing the King of Spain's beard" thereafter; but it did more—it implanted in Francis Drake a burning hatred of Spain that never left him.

Perhaps the greatest moment in Drake's life occurred when he climbed a tree on the Isthmus of Panama, caught his first sight of the Pacific, and "besought Almighty God of His goodness to give him life and leave to sail once in an English ship on that sea." Probably the incident occurred near the spot where in 1513 Balboa had desired "Almighty God and the Blessed Virgin to give him good success to subdue these lands to the glory of His name and the increase of the true religion."

It was a proud moment when Elizabeth visited the *Golden Hind* at Deptford and on April 4, 1581, knighted the greatest sailor of the age for his feat of circumnavigating the world, "the first man of any nation who had commanded throughout in such a voyage." (Magellan did not live to complete his attempt.)

Drake had visited California in 1579, and in sight of the Golden Gate had received the homage of the Indians in the name of the Queen. A stone cross commemorates the fact that he and his men took part in the first service in English, in accordance with the rites of the Church of England, on the Pacific coast of what is now the United States.

Drake paid a second visit to North America in 1586, on his return from the Spanish Main. He reached Roanoke Island, just in time to bring back the dispirited colonists of Raleigh's second expedition.

The story of Walter Raleigh belongs to the reigns of both Elizabeth and James. Nothing can detract from the part "the shepherd of the seas" played in forwarding English colonization in North America. His first expedition, under Arthur Barlowe and Philip Amadas, sailed in 1584 to spy out the land. Had their landfall been a few hundred miles northward, Raleigh's venture probably would have been successful.

His second expedition in the following year, under Richard Grenville and Ralph Lane, ended in failure. Two years later, undeterred by misfortune, he sent out his third and final expedition, under John White.

At Plymouth in the City Museum Art Gallery hangs the John Seymour Lucas picture of Sir Francis Drake receiving the sword handed to him hilt-first by Don Pedro de Valdés, commander of the Andalusian flagship, in token of the surrender of the Armada. The painting is used by permission of the museum authorities and the artist's son.

Painting by Kenneth Riley

James I Superintended the Revision of the Bible

For the National Geographic Kenneth Riley painted this picture of the misshapen little son of Mary Queen of Scots examining proof of the King James Version, which to this day is the authorized text in the Church of England and in hundreds of other churches throughout the English-speaking world.

James I and the Translation of the Bible (1611)

IN THE REALM of English letters the reign of James Stuart will always be associated with two mighty events, the translation of the Authorized Version of the Bible, and the final fruition of Shakespeare's genius.

It is strange that so insignificant an individual as the son of Mary Queen of Scots and Darnley should have been placed by destiny on the throne of England at so proud a moment in its history. James was born in Edinburgh Castle in 1566 and proclaimed King of Scotland at the age of 13 months. He was a delicate, good-tempered, but clumsy boy. His tongue was too large for his mouth, his head was too large for his body, and his legs were rickety.

He became King of England in 1603 at the death of Elizabeth.

Few monarchs had less personal dignity, few were more pleasure-loving, but James had a real appreciation of learning and possessed much shrewdness. Henry IV of France called him "the wisest fool in Christendom." His common sense enabled him to steer a middle course in politics and religion, for "he had no love for either Papal or Presbyterian despotism."

The keynote to his reign was his belief in the Divine Right of Kings. Once in the Star Chamber he said: "As it is atheism and blasphemy to dispute what God can do, so it is presumption and high contempt in a subject to dispute what a King can do, or to say that a King cannot do this or that." This idea of monarchy contained the germs of the struggle between the King and Parliament in the reign of Charles I.

The decision to undertake the revision of the Bible was made by James at the conference held at Hampton Court in the first year of his reign to investigate "things pretended to be amiss in the Church." The gathering was convened as a result of the Millenary Petition in which the Puritan clergy pressed for reform.

They had hoped that the new King, with a Scottish background and upbringing, would be pliable, but they reckoned without their host. James said to the Puritans, "If you aim at a Scottish Presbytery, it agrees with the monarchy as God with the devil." And, turning to Archbishop Whitgift, he added, "If you were out, and these men in, I know what would become of my supremacy—for no Bishop, no King."

It was indeed fortunate that the monarch who presided over the gathering happened to be a scholar. As a young man James had hoped to achieve fame through poetry and prose. At the age of 18 he published *Essays of a Prentice in the Divine Art of Poesie*, and before he succeeded Elizabeth he had written several books on theology. He proposed that a uniform translation of the Bible be made by the leading classical scholars of the day. When it had been reviewed carefully by the leaders of the Church, it was finally to be ratified by the King himself.

Forty-six revisers were appointed under the presidency of Bishop Lancelot Andrewes, the most learned churchman of the age, for whom, according to Thomas Fuller, "the King had so great an awe and veneration that in the Bishop's presence he refrained from the uncouth and unsavoury jesting in which he was accustomed to indulge."

The revisers were divided into six committees, which met in London, Oxford, and Cambridge. Very wisely James decided that the revisers should be chosen without reference to party, and "at least as many Puritan clergy as of the opposite party" were placed on the committees.

The Authorized Version drew inspiration from all its predecessors: its translators adhered to the injunction that the ordinary Bible, read in the Church, commonly called "the Bishops' Bible,"* be followed, "and as little altered as the truth of the original will permit."

In an age of verse that produced little lasting prose, the Authorized Version became the prose masterpiece of the English tongue. Its language is not wholly Elizabethan or Jacobean, but at bottom English of the 14th century. Few will dissent from the verdict of Dr. Richard Garnett in the history of *English Literature* that the English Bible "in its glory is due to no one man or set of men; it grew in the 80 years† of its evolution like a cathedral."

James I's reign covered the sailing from the Thames, on December 20, 1606, of the three little vessels, the *Sarah Constant* (100 tons), the *Goodspeed* (40 tons), and the *Discovery* (20 tons), under three doughty mariners, to establish English civilization at Jamestown. In this reign also, nearly 14 years later, the *Mayflower* sailed.

* In 1564 the Archbishop of Canterbury, Dr. Parker, entrusted its translation to fifteen learned men, and it became the version used in the churches during the rest of Elizabeth's reign.

† Actually, the literary history of the English Bible may be said to have begun two centuries earlier with John Wycliffe, who burned "with desire to bring the Scriptures within reach of the humblest folk," and initiated the first translation into English, translating himself most of the New Testament, published 1388.

Painting by Edward Moran, A. N. A. D.

The Pilgrim Fathers (1620–25)

THE STORY OF THE PILGRIMS is an epic of the time, the place, and the persons. With the exception of Holland (and it should be remembered that the Pilgrims lived there 12 years before going to America in 1620), the thought of democracy could only have come out of England in the 17th century; and of the nationals of the period, none but the English could have cared enough about keeping their identity to brave the hardships of a primeval wilderness.

Only in an entirely new land, free from precedent, far away from the hampering activities of European governments, could these ideas have worked. And only a people schooled alike in self-discipline and in the rudiments of democracy could have made it work.

"The plain facts will doubtless lead the candid reader to the conclusion that the Pilgrim Fathers were great in their goodness and wise beyond their generation," concludes J. A. Goodwin in *The Pilgrim Republic;* "that in an era of superstition they groped not unsuccessfully for something better; and however small their own advance, they bequeathed to their successors the spirit of inquiry and progress."

The limited number of contemporaries who knew about the Pilgrims at all regarded them with dislike. Their ideas differed too radically from those on which the *status quo* was based. "No Bishop, no King," thoughtfully commented James when a demand for reorganization of the Church was made. And the Bishops remained in full force.

He was interested enough, however, in hearing the Pilgrims' case to ask from what source profits could be derived in New England. Being told "Fishing," he replied, "So God have my soul, 'tis an honest trade; 'twas the Apostles' own calling!"

Only 70 merchants were found who were willing to take a chance on the Pilgrims' fishing, however (in contrast with the hundreds who had jumped to buy up Virginia stock and others who were even then investing in the East India Company). Indeed, the Pilgrims' capitalization was so far inadequate that they were forced to sell a large amount of butter to pay the port charges on leaving Southampton, thereby laying the foundation for the severe epidemic of scurvy which so decimated the group during their first winter in New Plymouth.

No doubt the idlers on the Plymouth and Southampton docks, watching the *Mayflower* and *Speedwell* hoist sail, thought their occupants—as the Puritan Isaac Johnson recorded of his own experience some 10 years later—"cract braines." Bradford's story of the departure (referring actually to the leave-taking at Leiden) ends with this sentence which explains the use of the term "pilgrims":

"So they lefte that goodly & pleasante citie which had been their resting place near 12 years; but they knew they were pilgrimes, & looked not much on those things, but lifted up their eyes to ye heavens, their dearest cuntrie, and quieted their spirits."

It is curious that the two expeditions which founded Virginia and New England, respectively, should have been almost equal in numbers—102 emigrants on the *Mayflower*, and 105 on the Jamestown expedition. The district where the three counties of Nottinghamshire, Yorkshire, and Lincolnshire meet, containing Scrooby, Austerfield, and Babworth, will always be regarded as the "Pilgrim country," because William Brewster and William Bradford were born there, and there Richard Clyfton (Clifton) ministered. Nevertheless, the majority of the Pilgrims and their families came from southeast England.

The story of London's association with the *Mayflower* is only gradually coming to light; there are still many gaps. It is believed the vessel was built on the Thames; both Rotherhithe and Canvey Island claim that honor. Only in 1904 did a search in the records of the Admiralty reveal the fact that Christopher Jones, the skipper of the *Mayflower*, died in his native Rotherhithe in March, 1622. Several of the crew are said to have been Rotherhithe men, and the last authoritative account of the *Mayflower* records her as lying at Rotherhithe, in poor condition, her total value being £138.8.0., with "one suit of worn sails." In all probability she was broken up at Rotherhithe, within sight of the Tower of London.

The voyagers on the *Mayflower* represented a cross section of early 17th-century England with their good qualities and their failings. Their departure caused little comment at the time, but posterity has placed them among the immortals, because of their mastery over trials and tribulations, their tenacity, and their deep faith. They will ever remain an inspiration to "the whole Anglekin."

"Embarkation of the Pilgrims," by the American artist Edward Moran, showing the *Mayflower*, a 180-ton vessel, leaving Southampton on August 5, 1620, was presented in 1940 to the U. S. Naval Academy Museum, Annapolis, Maryland, by Paul E. Sutro of Philadelphia.

Dr. William Harvey Shows How Blood Circulates

Reproduced here by permission of the Royal College of Physicians in London, which owns the canvas, is Robert Hannah's painting of the famous physician demonstrating his researches on a deer to his friend and patron, King Charles I, and Charles's son, the boy prince.

So rife was superstition at the time that the scientist had been obliged to conduct his experiments in secret for years before making his findings known.

Painting by Robert Hannah

William Harvey (1578–1657)

WILLIAM HARVEY discovered and announced to the world the circulation of the blood. In 1628 he published his *Anatomical Disquisition on the Motion of the Heart and Blood of Animals.*

As a young man Harvey had traveled widely and had studied at the University of Padua for four years. His biographer, Robert Willis, says: "We take nothing from his glory when we own that, but for professional education he received at Padua, Harvey would, in all likelihood, have passed through life not undistinguished indeed, but without having his name for all time associated with the great discovery of the general circulation of the blood."

The famous physician, born at Folkestone and educated at King's School, Canterbury, took his B.A. degree at Cambridge at the age of 19, before setting out for Padua. In the 16th century there was no finer medical school in Europe, and we can picture young and eager Harvey listening attentively to the candlelight lectures of the great anatomist, Fabricius of Acquapendente, in the curious anatomical theater lined with carved oak.

Soon after his return to London, Harvey married Elizabeth, daughter of Dr. Lancelot Browne, previously physician to Queen Elizabeth, and took a house in the parish of St. Martin-Extra-Ludgate. Unfortunately, little is known about Harvey's personal life. His father was a Kentish yeoman; his mother, according to the sentiment her son penned for an inscription in Folkestone Church, was endowed with "all the virtues." Aside from the reference in his will to his "deare deceased wife," there is only a casual mention of his spouse as the possessor of a pet parrot, which must also, if we may infer so much from the pains he takes in specifying its habits and accomplishments, have been a favorite of Harvey's.

Within five years of his marriage (no doubt his father-in-law's influence was useful) Harvey was appointed physician to St. Bartholomew's Hospital, and was given the customary admonition to prescribe only such medicines as should "doe the poore good," without regard to the pecuniary interest of the apothecary. Seven years after his appointment he began the famous series of lectures at the College of Physicians, in Knightrider Street, near St. Paul's.

In these lectures he first made public his ideas on the circulation of blood—ideas which had long been germinating in his mind. Harvey explained how the heart is what we should call the "pumping station" of the entire human frame. The heart sends the blood, he asserted, to the lungs where it is purified by the air we breathe, and then drives it by means of the arteries throughout the entire system.

Harvey did not publish his book until 12 years after he had made the first statement concerning his discovery. James I, always alive to new ideas, selected Harvey as one of his "physicians extraordinary," and Charles I appointed him court physician.

According to John Aubrey, Harvey's discovery gave "a decided check to his professional prosperity . . . 'twas believed by the vulgar that he was crack-brained, and all the physitians were against him."

After the surrender of Oxford, Harvey returned to private life and passed most of his time with one or another of his brothers in the City of London, at the "suburban village of Lambeth," or at Roehampton.

A picture of Harvey in earlier life is given by Aubrey, who tells us that he was wont to visit his patients "on horseback, with a foot-cloath, his man following on foot, as the fashion then was."

We also obtain this description of Harvey: "Round-faced; olivaster (like wainscot) complexion; little eye, round, very black and full of spirit; his hair black as a raven, but quite white twenty years before he died. . . . In his younger days, he wore a dagger, as the fashion then was, which he would be apt to draw out upon every occasion"—apparently used merely by way of gesticulation!

Long before coffeehouses became fashionable in London, Harvey used to drink his favorite beverage with his brother Eliab. He evidently paid much attention to the making of his coffee, for in his will he specially leaves his "coffey-pot" to Eliab. To his friend, Dr. Scarborough, he left his "silver instruments of surgery and his best velvet gown."

When we read the story of Harvey's life, we have constantly to remind ourselves that he was an Elizabethan—he was 25 when the Virgin Queen died. Even after the death of Elizabeth the belief in witches was widespread. Harvey had the satisfaction of saving the lives of four poor Lancashire women accused of witchcraft, who had been sent to London for trial. He superintended their physical examination by ten midwives and seven surgeons and found that there was nothing unnatural in their bodies.

Painting by Ernest Crofts, R. A.

Cromwell (1599–1658)

ERNEST BARKER gives in his *Oliver Cromwell and the English People* "the real core of Cromwell's achievement and his essential significance in the history of his country. He was the incarnation—perhaps the greatest we have had—of the genius of English Nonconformity, which is the peculiar and (it may even be said) the cardinal factor in the general development of English politics and English national life. He was the expression of the great Free Church movement which runs through our modern history, and therefore, fundamentally—because the two things are intimately and irrevocably inter-connected—he was also the expression of what I would call the great Free State movement which also runs through our history."

We may regard Oliver Cromwell as the last of the great Elizabethans. Such was his fame in Europe at the time of his death that Clarendon said, "Not even Elizabeth herself, of famous memory, had ever made England's friendship so desirable or her enmity so much feared."

Cromwell's life covers a period of mighty events, the founding of English civilization in North America at Jamestown, the sailing of the *Mayflower*, and the great Puritan migration. Under Cromwell, as Lord Protector, the links between Old England and New England were many. The Puritans on both sides of the Atlantic corresponded.

Cromwell, in humble mood, wrote on one occasion to John Cotton, at Boston, Massachusetts, "I am a poor weak creature and not worthy of the name of a worm," yet he rejoiced "to serve the Lord and His people." Cromwell certainly held New England in his thoughts and, at one time, is said to have thought seriously of settling there.

Oliver was born at Huntingdon, in the heart of England, and finished his studies at Cambridge. He matriculated at the age of 17 at Sidney Sussex, regarded by Archbishop Laud as a "nursery of Puritanism." Though royalist writers stated that Cromwell attained no proficiency in his studies, Edmund Waller asserted that he was "well read in the Greek and Roman story." When Protector, he talked to foreign ambassadors in Latin. James Heath tells us that young Oliver "was more famous for his exercise in the fields than in the schools, being one of the chief matchmakers and players at football, cudgels, or any other boisterous sport or game."

In 1636, on the death of his uncle, a farmer, to whose estate he succeeded, Cromwell moved to Ely. While working on his farm he was thinking deeply, and, as he tells us, after a long period of religious depression he was finally "given to see light."

As late as January, 1643, he was still only a captain of a troop of horses; at Edgehill, the first battle in the Civil War, he distinguished himself. He had always been interested in military problems—it is said that he had studied the methods of Gustavus Adolphus—and soon applied himself in earnest to improving the Roundhead cavalry.

Cromwell threw his energies into the task of military organization in East Anglia, and before long the pious countryfolk were turned into first-rate fighting material and a match for Rupert's cavalry.

After Marston Moor, when Cromwell reported the victory over the Cavaliers in the famous phrase, "God made them as stubble before our swords," he was recognized as the best cavalry leader in the Parliamentary army. Henceforward he was not only a great warrior but a political leader, known as "the great independent."

"The famous praying, preaching, fighting, victorious Ironsides" were recruited chiefly in East Anglia, the Midlands, and London, while the King, Charles I, drew his chief support from the West Country, Wales, and the North. With the fall of Oxford (June, 1646) the war was virtually over. The lenient terms offered to the enemy proved that Cromwell could be moderate in the moment of victory.

Having refused the title of King, Cromwell was installed as Protector in December, 1653. In all he did he was convinced that he was fighting "the Lord's battles."

Cromwell's last years were overshadowed with the consciousness that he had failed to give stability to his rule. In addition to his public burdens, the death of his favorite daughter, Elizabeth Claypole, and his attendance on her during her illness, hastened his end.

After the terrible winter of 1657-58, when a malignant fever raged throughout the land, Cromwell sickened while staying at Hampton Court. On his physicians' advice he was removed to Whitehall. There he died on September 3, the anniversary of two of his greatest victories.

Our illustration by Ernest Crofts (1847-1911) shows Cromwell as a victorious general at the head of his troops after the Battle of Marston Moor. The canvas is owned by the town of Burnley, Lancashire. Accurate in the most minute details of costume and accessories, Crofts devoted himself almost entirely to military and historical subjects.

John Milton (1608–74)

JOHN MILTON, the one great literary figure of the Puritan Age, produced some of the most exalted poetry ever written and in prose the most famous plea in English for the freedom of the press.

In his time nothing could be published legally until it was endorsed by the official censor, and many books were suppressed merely because they did not please an official who owed his position to political favor. Milton, opposed to every form of tyranny, protested against this unjust censorship in his *Areopagitica*. John Fiske, historian, calls it "one of the immortal glories of English literature." To Milton's plea in November, 1644, the world owes the preservation of many great works that almost certainly would have been destroyed had the censors had their way.

Milton's father had hoped that his son would take holy orders when he finished his studies at Cambridge; but the keynote to Milton's outlook on life was his independence of thought, and, finding in no sect the marks of the true church, he prayed to God alone without needing others' help. His choice was to be God's minister as poet.

With a mind extraordinarily rich in classic learning and highly skilled in music, the young poet returned to his father's estate at Horton, a sylvan Buckinghamshire village close to Runnymede. There in six years he wrote five immortal poems.

Milton set out in April, 1638, soon after his mother's death, to seek further inspiration from a sojourn in Italy and Greece. Wherever he went, he made friends. His brilliant scholarship and his remarkable personal beauty won acclaim everywhere. Of interest, in view of his subsequent loss of sight, is his visit to the blind and aged Galileo.

News of the break between the King and Parliament caused Milton to give up his travels and literary ambitions and return to England. "I thought it base," he wrote, "to be traveling at my ease for intellectual culture while my fellow countrymen at home were fighting for liberty."

For 20 years he turned aside from poetry to write prose denunciations and arguments in support of the Puritan cause. His *Tenure of Kings and Magistrates* consoled the people, who were terrified after the crisis of 1649 because they had sent a King to the scaffold.

Milton was appointed Secretary of Foreign Tongues in the new government, and from that time until the end of the Commonwealth he led the people in thought as Cromwell led them in action.

In poor health at the time of his appointment, Milton had already lost the sight of one eye. When he undertook to write a reply to Claude de Saumaise's *Royal Defense of Charles I*, he knew that the result would be the loss of sight in his remaining eye. Nevertheless, he was ready to make the sacrifice. His reply gained him a European reputation, but, as he feared, he became completely blind.

It is strange that his greatest work should have appeared in the reign of frivolous Charles II. He had lost his property at the Restoration and had to go into hiding to escape being put to death. He was actually taken into custody but never prosecuted, gaining his release by the payment of large fees. To earn a living, he conducted a school. For *Paradise Lost*, his great epic on the fall of man, he received but £10! One of the first events in the new reign was the burning of two of his books by the public hangman.

Though *Paradise Lost* and *Paradise Regained* were Milton's major works, they have less appeal to modern readers than some of his other poems. *Lycidas*, written in memory of a college friend, is regarded by some critics as the most perfect poem in the English language. Of the shorter poems, *Comus*, *L'Allegro*, and *Il Penseroso* are enduring favorites.

In 1643 he had married Mary Powell, daughter of a Cambridge friend, a convinced Cavalier. Mary, 17 at the time, was half Milton's age. Whatever the cause, within a few weeks Mary fled to the parental roof and ignored the poet's repeated pleas to rejoin him.

With the defeat of Charles I at the Battle of Naseby, the Powell family found themselves in difficulties, and after the two-year parting—during which Milton had written his treatise on *The Doctrine and Discipline of Divorce*—Mary appeared suddenly kneeling at her husband's knees to implore forgiveness. Her request was granted, and she went back to her husband's home. To this union were born the three daughters shown in our painting and a son. The son died in infancy. Mary died in 1653. A few years later Milton married a second time and in 1663 a third.

The last years of Milton's life were passed in Bunhill Row, save for a brief sojourn at Chalfont St. Giles, whither he went to escape the plague. His daughters read to him and took his dictation of his later poems, as shown in our illustration. The painting, by the Hungarian Michael von Munkacsy (1844-1900), is owned by the New York Public Library, to which it was given in 1879 by Robert Lennox Kennedy.

Daniel Defoe (1661?–1731)

TO DEFOE'S genius newspapers owe the discovery of two features used to this day—the interview and the lead editorial. He was in fact the first real news reporter in the modern sense. With a remarkable "nose for news" he collected stories wherever he went.

Daniel Defoe's masterpiece, *Robinson Crusoe*, is one of the few books in any language to remain popular for more than two centuries. At the time of its publication in 1719 it went through four editions in as many months, and new and ever more elaborate editions have been coming out at frequent intervals ever since. One of the more recent is illustrated with paintings by the late N. C. Wyeth, American artist, whose picture of Crusoe's raft is reproduced in our plate. The story has been translated into virtually all modern languages.

Despite its dime-novel plot, boresome moralizing, and total lack of love interest, it stands out as one of the most vivid and gripping adventure tales ever written. It is not, however, as some enthusiasts have called it, the first English novel; for it does not, like a true novel, subordinate incident to character portrayal. In it the exciting adventures are of paramount importance, and observations on the hero's character are confined to pious soliloquies.

The story is founded on the experiences of the sailor Alexander Selkirk, who, after being marooned for five years in the Juan Fernández Islands off the coast of Chile, was picked up by a British vessel and brought back to England in 1709. According to Selkirk's own statement, he lent his notes to Defoe, but the shifty Defoe denied this, averring that he had written the story of Crusoe in 1708 before Selkirk's return. Defoe's romance—incidentally, it covers 35 years instead of the five of Selkirk's experience—reads nevertheless as if it had been taken right out of a sailor's log.

As proved in the *Journal of the Plague Year* and *Memoirs of a Cavalier*, Defoe had the newspaper reporter's knack of giving apparent eye-witness details of all events and scenes he recorded, even though he was describing things he had never seen. He doubtless borrowed from Selkirk's notes, but most of Crusoe's adventures were pure fiction.

The chief charm of the story lies in the fact that it is absolutely true to life. Putting himself in the place of an English sailor marooned on a desert island, and luring the reader to do likewise, Defoe made Crusoe live like an Englishman wresting from harsh Nature with his own hands all the things necessary to comfortable living. Rousseau called the book the best treatise on education ever written.

Son of a London butcher named Foe, the author of *Robinson Crusoe* retained his family name until he was about 40 years old, when he began to sign himself Defoe. He lived a varied and turbulent threescore and ten years, passing from poverty to riches and back to penury, from wealthy tile manufacturer to penniless hack writer, from jailbird to popular newspaper editor, from fugitive from justice to secret agent of the Crown. Whether Whigs or Tories were in the ascendancy, he usually contrived to find employment with the ruling power; but his duplicity was made public at length.

He published in 1702 *The Shortest Way with the Dissenters*, a violently satirical pamphlet supporting rights of free churches against the "high flyers," as he called Anglicans and Tories. So characteristically realistic was the satire, recommending that all dissenting ministers be put to death and their followers exiled, that both factions took it literally. Defoe was promptly arrested for seditious libel and sentenced to be fined, exposed in the pillory for three days, and imprisoned for an indefinite term.

Making copy out of his misfortune, he wrote his doggerel *Hymn to the Pillory*, which begins:

> Hail hieroglyphic state machine,
> Contrived to punish fancy in.—

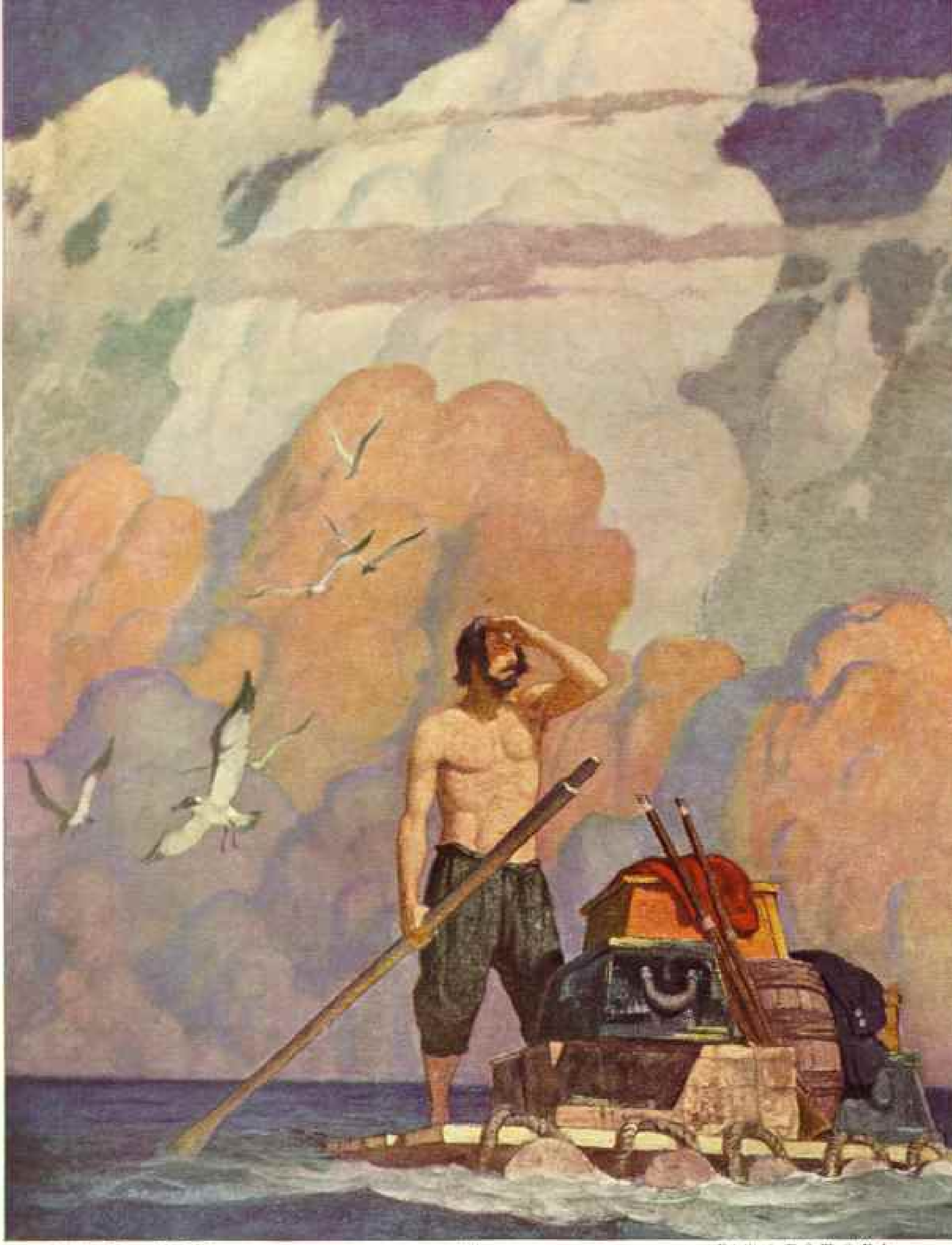
and had it scattered over London as a handbill. It won him instant acclaim and brought about his transfer to Newgate Prison, where forthwith he started a popular newspaper.

Until he was nearly 60 years old, he confined his writing principally to political pamphlets, satire in both prose and verse, and polished essays on economics and government.

Defoe scored with *Robinson Crusoe* a success that made him famous and well to do. He wrote stories from then on with amazing rapidity—*Captain Singleton*, *Duncan Campbell*, and *Memoirs of a Cavalier* in 1720; and in 1722 *Colonel Jack*, *Moll Flanders*, and *The Journal of the Plague Year*.

No other British writer save perhaps Sir Walter Scott has approached Defoe in volume of literary output. In his more than 200 works there is an astonishing variety of theme and treatment; but all are written in the newspaperman's simple narrative style, and all are distinguished for intense realism.

Jonathan Swift, brilliant contemporary of Defoe, published his original *Gulliver's Travels* in 1726.



Painting by N. C. Wyeth, N. A.

"For a Mile or Thereabouts, My Raft Went Very Well"

Defoe's *Robinson Crusoe* has been for more than 200 years a favorite adventure story because it represents puny man drawing upon his own unaided resources to wrest a livelihood from sea and land. Told like a newspaper report, the tale is absolutely convincing. The hero does just what any reader would do under the same circumstances, even making the human mistake of building a boat too large for his strength to launch. When he finds the wrecked ship, he lashes planks together to float the spoils to his place of refuge. Our illustration is reproduced by permission of the David McKay Company, Philadelphia, from the Wyeth edition of *Robinson Crusoe*.

Christopher Wren (1632–1723); Robert Boyle (1627–91)

CHRISTOPHER WREN has been called the English Leonardo da Vinci. Besides being our architect of greatest achievement, he was philosopher, astronomer, prolific inventor, and skilled mathematician.

He will always be remembered with gratitude for the part he played in rebuilding London after the Great Fire which swept away the city as it was in Shakespeare's time.

America as well as England benefited by his work; for he designed the oldest academic building in the United States, at the College of William and Mary, Williamsburg, Virginia, and his ideas largely influenced William Penn's plan for Philadelphia.

It has been suggested by some scholars that the radiating street plan adopted for Annapolis, Maryland, and incorporated into the L'Enfant plan for Washington, D. C., owed its inception to the tradition of Wren's work.

Because of delicate health, Wren received his early training at home. His father, the rector of East Knoyle, Wiltshire, possessed some skill in designing buildings; but the son at first showed no desire to take up architecture as a profession. He was professor of astronomy at Gresham College when Charles II induced him to turn his back on his studies of the sky and become assistant surveyor general.

As a child Wren possessed exceptional brain power. When he was 15, learned mathematicians conversed with him as with an equal.

His versatility was amazing. John Evelyn tells us of a visit to Oxford, where he found "that prodigious young scholar" at work on the production of "a pavement, harder, fairer, and cheaper, than marble."

The Great Fire which raged from September 2-6, 1666, and destroyed "Shakespeare's London" gave Wren, as virtual surveyor-general, his great opportunity. On September 12, almost before the embers had ceased to glow, Wren laid before the King his plan for the rebuilding of the city—perhaps the greatest conception of his life.

To this day Londoners are paying for the sins of omission of their forefathers, who failed to seize so unique a chance of making the capital the best laid out city in Europe. Wren introduced entirely new ideas in town planning; his scheme provided for a series of wide streets radiating from a central space.

Only a Napoleon would have been able to force through so great a project. Alas, it was too much to expect of a generation that had suffered from the Civil War, the Great Plague, and the Great Fire. Only a few of Wren's proposals were carried out.

London had to put up with second best, and Wren threw himself with enthusiasm into the tremendous undertaking of rebuilding St. Paul's, 50 parish churches, 36 halls of city companies, and much else besides. For the task of planning and supervising the building of St. Paul's and the churches he asked a stipend of only £300 per annum, preferring public service to any private advantage.

His greatest year was 1669, for he was involved in the plans for St. Paul's and with the designs of 17 churches. As late as 1710, at the age of 78, he still had himself pulled up in a basket to the dome of St. Paul's, and there he would sit for hours supervising the work. He was 90 when he crowned his career with the tower of St. Michael's.

Wren passed most of his time during his last years in a house at Hampton Court.

He was accustomed to drive to St. Paul's from time to time, and while sitting under the great dome to reflect upon the many hopes and disappointments involved in the completion of his mighty undertaking.

On his last visit, in his ninety-first year, he caught a chill. His servant found him after his return home apparently asleep in his chair; the great heart of Christopher Wren had ceased to beat. It was a peaceful end for the "loving, gentle, modest" genius whom contemporary testimony leaves spotless.

On his tomb in St. Paul's his successor caused an epitaph to be engraved, ending:

"Si monumentum requiris, circumspice." (If you require a monument, look around.)

Contemporary with Wren was Robert Boyle, who has been called the founder of modern chemistry. In the English-speaking world he is credited with discovery of "Boyle's law"—that the volume of a gas varies inversely as the pressure exerted on it in a closed chamber at constant temperature. A son of Richard Boyle, Earl of Cork, he and Wren were leaders in founding the Royal Society. Boyle studied the part played by air in the propagation of sound, the expansive power of freezing water, crystals, electricity, and specific gravities and refractions. During the reign of Charles II he helped raise Britain to a foremost place among European nations in experimental science.

Though busy with science, Boyle studied enough theology to earn church orders had he elected. He read Scriptures in Hebrew, Greek, and Syriac and bought costly Biblical translations. His will provided for the Boyle lectures to prove Christianity against unbelievers, but forbade mention in them of controversies between Christians.

Painting by John Seymour Lucas, R. A.

Sir Christopher Wren Shows Charles II Plans for Rebuilding London

Less than a week after the Great Fire, September 2-6, 1666, had destroyed most of the city Shakespeare knew, the master architect invited the King to inspect drawings of edifices that would cause it to rise Phoenix-like from its ashes. Our illustration, from the painting by John Seymour Lucas, R. A., hangs in the Laing Municipal Art Gallery, Newcastle, England. It is used by permission of the officials of the gallery.

Isaac Newton (1642–1727)

WAS THERE EVER ANOTHER such story as that of young Isaac Newton, the schoolboy with no liking for books, whose mind ten years later was wandering with complete assurance among the problems and enigmas of the heavenly bodies, and who was to achieve thereby immortal fame?

He made known to a world which still believed in witchcraft the laws of gravitation, and by his experiments with the spectrum discovered that light consists of rays differently refrangible. His amazing intellect worked out as if by magic astronomical problems that had puzzled the astronomer Edmund Halley.

Isaac Newton, a puny and premature infant, was born on Christmas Day at Woolsthorpe Manor near Colsterworth, Lincolnshire, in the year that witnessed the outbreak of the Civil War between Cavalier and Roundhead. Newton's father, a substantial yeoman farmer, died before his son's birth. The house is now preserved as a national heritage, thanks to the Pilgrim Trust, founded by the American philanthropist, the late Edward S. Harkness.

Three years after her husband's death Newton's mother married the Reverend Barnabas Smith, whose parish lay in another part of the county, and little Isaac was left in the charge of his grandmother.

At the age of twelve he was sent to Grantham Grammar School, a shy and retiring boy. When a school bully taunted him, however, the unexpected happened. Young Newton thrashed the bully. That scrap was the turning point in his career. Within two years he was head of the school.

At sixteen he left school to become a farmer like his father, and to look after the family estate. Fortunately for mankind, Isaac did not like country pursuits. He was sent back to school to prepare for Trinity College, Cambridge. There his interest in mathematics was quickened by Isaac Barrow, whom he was destined one day to succeed.

When the plague brought learning at Cambridge to a standstill, Newton, then 22, returned home and in two wonder years began his series of great discoveries in physics.

"I began," he wrote, "to think of gravity extending to the orb of the Moon . . . having thereby compared the force requisite to keep the Moon in her orb with the force of gravity at the surface of the earth, and found the answer pretty nearly. All this was in the two plague years, 1665 and 1666, for in those years I was in the prime of age for invention, and minded Mathematicks and Philosophy more than at any time since."

Prof. Sherwood Taylor says that in these years Newton arrived at the binomial theorem, the differential calculus (or "fluxions" as he called it), the principle of universal gravitation, and the connection of color and refraction —although he did not publish his discoveries for many years.

Halley visited Newton at Cambridge and reported to the Royal Society that Mr. Newton had showed him a curious treatise concerning motion, and that he had requested Newton to communicate with the Society. This Newton did the following year.

The incident was the beginning of the Royal Society's interest in Newton's monumental work, *Philosophiae Naturalis Principia Mathematica*, which was printed by Samuel Pepys, then president of the Society.

His most important contribution to scientific thought was his exposition of the plan of the solar system and the principles by which it was to be understood. Copernicus was responsible for the heliocentric system in 1543. Galileo "had given visual evidence that supported this view." Kepler "had discovered the ellipticity of the planetary orbits and the laws that govern their motions." Newton drew inspiration from all these seers and in *Principia* completed their work.

At Cambridge he had delivered the lectures describing his optical experiments, made on a prism he bought at Stourbridge Fair in 1666—the discoveries which led to his theory of light.

When Newton gave up his Cambridge professorship, he came to live in London, and, in 1703, he was elected president of the Royal Society. This position he filled with great profit to it until his death 24 years later.

His investigations into the order of Nature deepened his reverence for God. At the height of his fame he modestly said: "To myself I seem to have been as a child picking up stones on the sea-shore and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, while the great ocean of truth lay all undiscovered before me."

Although Newton's three great laws of motion are still as accurate as ever for the purposes of our workaday world, Einstein's theories of relativity have altered somewhat our concept of the universe as a whole. Newton's laws showed the universe to be a vast interlocking machine which obeyed the universal "force" of gravitation. Space was a fixed frame of reference through which motion of a heavenly body could be measured absolutely, as a ship's motion can be measured through the sea.

Einstein has shown that nothing in the universe is fixed and immovable, that the motion of any one body is merely relative to other bodies which also are in motion.

By Means of a Prism Bought at a Fair Newton Discovered Secrets of Light

His experiments with the spectrum revealed to his extraordinary intellect that the rays are capable of being differently refracted and that "to the same degree of refrangibility ever belongs the same color and to the same color ever belongs the same degree of refrangibility." From his observations also he developed the corpuscular theory that light is due to a host of tiny particles emitted by a luminous body and moving in space at 190,000 miles a second.

He sent his findings on February 8, 1672, to the Royal Society, of which he had just been elected a fellow, and the paper caused an immediate storm of controversy that continued for years. In 1675 he wrote: "I was so persecuted with discussions rising out of my theory of light that I blamed my own imprudence for parting with so substantial a blessing as my quiet to run after a shadow."

By permission of the owner, the Bausch & Lomb Optical Company, Rochester, New York, we take our illustration from a painting by William F. Soare (1896–1929).

The Mother of Parliaments (1295)

THE GREATEST CONTRIBUTION of the English race to civilization has been the gift of parliamentary institutions. The evolution of Parliament has been a slow and, at times, a painful process.

It is strange that Simon de Montfort, the Earl of Leicester, who played so important a part in our political evolution, was a Frenchman. He championed the rights of the English people against Henry III, and insisted that the King return to France the Poitevin favorites with whom he had surrounded himself.

De Montfort is therefore venerated as one of the founders of our liberty. His chief claim to our gratitude is that he promulgated the "Provisions of Oxford" in 1258, which ordered two knights from each shire and representatives from certain boroughs to meet the barons and clergy at Oxford.

Edward I, in his Parliament of 1295, put into operation the principles of De Montfort. This assembly, known as the "Model Parliament," represented King, Lords, and Commons, and may be said to be the precursor of Parliament in its present form.

In early times the King was advised by a Council of persons of influence whom he summoned to assist him. The Council and Parliament formed what is known as the "Crown." Out of the Council gradually emerged the Parliament; but only by slow degrees did it become first the colleague of the sovereign, then later in conflict with him, a means of permanent intervention in the Government.

By degrees Parliament came to differ from nearly all the legislative assemblies in continental Europe, which were split into the three estates of clergy, nobles, and bourgeois. At an early date the English Parliament was divided into Lords and Commons.

Under Edward III the House of Commons met in the Chapter House of the monks of Westminster, which still stands and may be regarded as the "cradle of representative and constitutional government throughout the world." It continued to assemble there until 1547, when it moved to St. Stephen's Chapel. In St. Stephen's it met until the great fire of 1834. The present building was completed nearly a hundred years ago.

Elizabeth inherited from her father, Henry VIII, a knack of handling her legislators, but during the reign of her two successors Parliament got out of hand—the Stuarts did not possess the adroitness of the Tudors. The Long Parliament (1640-53) overhauled the English Constitution and introduced such reforms as a regular session of Parliament and the prohibition of duties without the consent of Parliament—the latter an important milestone in English history.

Many of the debates in Parliament are naturally of deep interest to Americans. Since the days of Henry VII such subjects have been discussed within its walls as the fishing rights off the Newfoundland coast, the quest for the Northwest Passage, the settlement of Virginia and New England, the ethics of tobacco smoking, the capture of New Amsterdam, the triumphs of the Seven Years' War, the stages of the American Revolution, the War of 1812, and finally British and American cooperation in two World Wars.

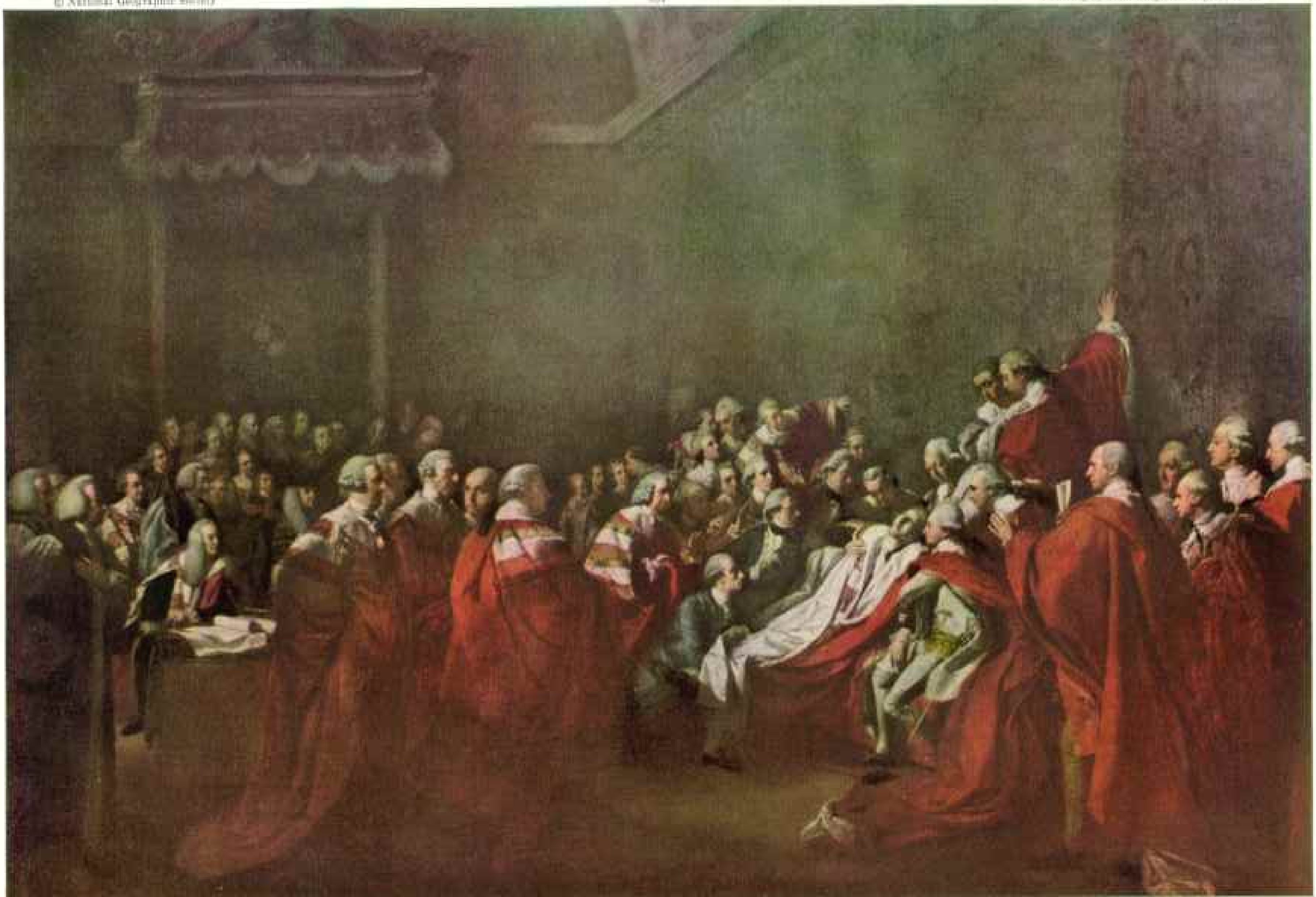
William Pitt, the "Great Commoner," later Lord Chatham, took a deep interest in the welfare of the American Colonies. When war became inevitable, he withdrew his son from the Army rather than that he should fight against American fellow subjects.

Some of the most eloquent speeches ever made at Westminster were before and during the American War; Burke has described how "the western horizon was in a blaze with his [Chatham's] descending glory" when, because of ill health, he absented himself at crucial moments. Chatham had a great following and, when he emerged from the House, was greeted with thunderous cheers. His sedan chair was rendered conspicuous by a projecting leather boot which eased his gouty foot.

Chatham's last, and unexpected, appearance in the House of Lords was on April 7, 1778. Copley's portrait is so accurate in detail that Lord Mansfield, who had a grudge against Chatham, can be seen remaining seated while the others stood. It was a dramatic scene. Chatham was dressed in rich black velvet, his legs swathed in flannel. His face, with its aquiline nose, appeared pale and emaciated under the large wig, but the eyes flashed with erstwhile fervor. He was helped to his feet by his son, William Pitt, and began to speak almost inaudibly, but he soon warmed to his theme—the future of Anglo-American relations. Taking one hand from his crutch, and raising it with his eyes lifted to Heaven, he solemnly thanked God that he had been enabled to come there that day and perform his duty. Thirty-four days later the great statesman breathed his last.

The Tate Gallery of London permitted use of the painting "The Death of Pitt" by the American, John Singleton Copley (1738-1815).

Painting by John Singleton Copley, R. A.



William Hogarth (1697–1764)

THE TRAGEDY of William Hogarth, one of the greatest creative artists of England, was that the critics of his day denied him the recognition he yearned for, while Englishmen of wealth filled their homes with second-rate imported paintings representing an outworn tradition.

Born in London, Hogarth worked in London and died in London. The single word "action" sums up his art. Supremely interested in life, he did for art what Samuel Richardson did for literature, telling in his pictures a serial story which everyone could understand. His idea, as expressed in his own words, was "to compose pictures upon canvas similar to representations of the stage."

Hogarth was not a reformer. His purpose was to portray the life around him with its crudities, obscenities, and tragedies. With great skill he put on canvas scenes from the life of the harlot, the snob, and the drunkard—anything of human interest. He has been called with some justification the father of cartooning, for many of his character representations have extraordinary satirical force.

Equipped with a remarkably retentive memory, he wandered about the streets taking mental snapshots as he went. His mind recorded color, form, and dramatic incident—almost as if it were a motion picture camera. When he returned to his studio, he merely, to speak figuratively, unrolled the film of his mind and transferred to canvas the things he had seen.

Among his "morality" series are "Marriage à la Mode," "A Harlot's Progress," and "A Rake's Progress." One of his difficulties was that his brain was too retentive; he was apt to overload his pictures with detail. A century earlier Vermeer, member of the Dutch school, had painted wonderful "conversation pieces," pictures in which a group of portraits is held together by a slender dramatic or psychological thread. None of the Dutch masters had quite the liveliness of Hogarth.

His father was a hedgerow schoolmaster from Westmorland, who maintained a precarious livelihood by writing Latin dictionaries, giving lessons, and proofreading. William, his only son, was apprenticed to a silversmith but soon tired of the employment. At the age of 23 he set out for himself as an engraver and obtained plenty of work.

Young Hogarth possessed several gifts useful to an artist: a quick pencil, the art of mimicry, and an eye for the absurd. He was of small stature but aggressive and, despite his love of pleasure, a hard worker.

He subsequently wrote of these early days: "I remember the times when I have gone moping into the City with scarce a shilling in my pocket; but having received 10 guineas there for a plate, returned home, put on my sword and a bag wig, and sallied out again with the confidence of a man who has 10,000 pounds in his pocket."

It was a lucky day for William when he entered the little academy for the study of painting maintained by Sir James Thornhill, near his house in Covent Garden. Sergeant painter to the King, Sir James was regarded as the leader of the historical school of painting. Before long William had won the affection of Sir James's only daughter, "a good, charming, and stately young woman with blonde tresses."

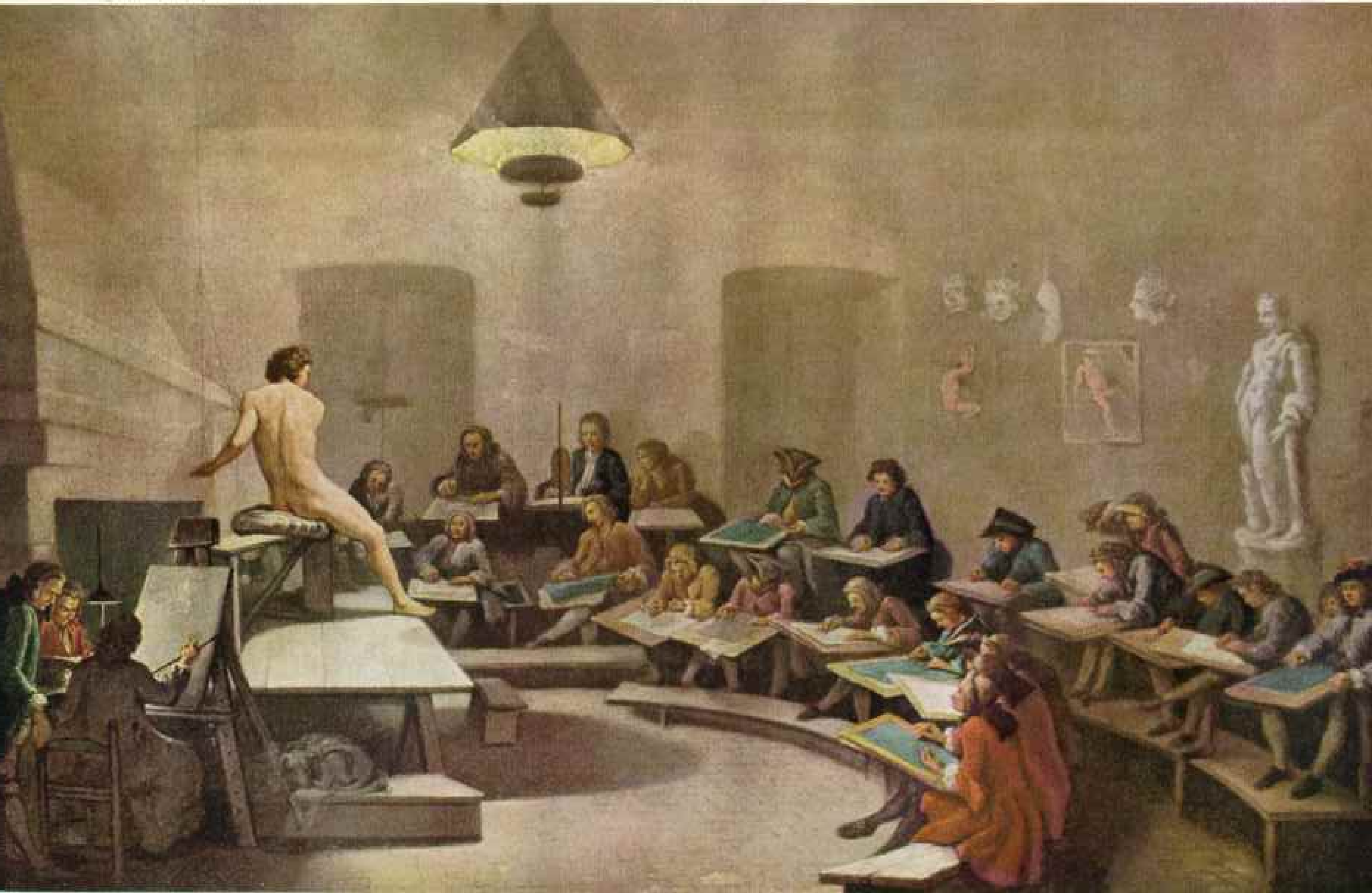
Sir James certainly would not have approved of the marriage of his daughter to a young man so inferior in rank. Fortunately for the young couple, however, their growing affection was little suspected until they were ready to elope.

On a March morning in 1729 Jane and William were married clandestinely in the church on the green of the village of Paddington. Before his death four years later, Sir James was reconciled to the young couple, who had established themselves in Leicester Fields, then the artistic center of London.

Jane, patient, cheerful, loyal, and unselfish, was well suited to be the wife of a moody genius, who, with the passing of the years, nourished a burning grievance that his worth was not appreciated. They passed an eminently happy married life of 35 years together, a devoted couple.

Hogarth's end is of special interest to Americans. The painter, now infirm, had just returned from his "Villakin" at Chiswick to his home in Leicester Fields, and was overjoyed by the receipt of a letter from Benjamin Franklin, then in America. He at once made a rough draft of his reply, but the effort exhausted him, and he retired early to rest, leaving his wife and her cousin downstairs by the fireside. Soon afterward the bell rang loudly. He was found speechless on the bed, in his hand the broken bellrope. Two hours later he was dead.

In Burlington House, London, hangs the original Hogarth painting, "Hogarth's Life School in Peters Court, St. Martin's Lane," from which our illustration is taken.



John Wesley (1703–91)

JOHN WESLEY and his brother Charles—John was the 15th child of the Reverend Samuel Wesley and his wife Susanna, and Charles was the 18th—formed at Oxford in 1729 a mutual improvement organization from the efforts of which sprang the tremendous revival known as Wesleyanism, or Methodism.

Though he never broke with the Church of England, the elder Wesley was the real organizer of the new sect. Charles was the poet of the Revival, writing more than 6,000 hymns, many of which are in use to-day. Among the most familiar of Charles' hymns are "Jesus, Lover of My Soul," "Hark, the Herald Angels Sing," and "Love Divine, All Love Excelling."

To Charles Wesley belongs the honor of actually initiating at Oxford "the spiritual adventure" which resulted in the establishment of Methodism. It is with John, however, that its rise will always be associated, for he was its mainspring and heart.

A few undergraduates—notable among them the brilliant popular preacher George Whitefield—joined in the attempt to live by method: hence Methodism. The requirements of membership were prayer, meditation, study of the Scriptures, keeping of fasts, weekly attendance at Holy Communion, control of bodily desires, active charity, and visits to the poor. The young men were nicknamed "Biblemoths," or "The Holy Club," or the "New School of Methodists."

In 1735 John and Charles Wesley were taken to America by General Oglethorpe, the founder of Georgia, to convert the Indians, but friction and squabbling ensued. John had an unfortunate love affair and returned to England in 1738. On his way home he wrote, "I went to America to convert the Indians; but oh! who shall convert me? Who, what is he that will deliver me from this evil heart of unbelief?"

The real conversion of John Wesley took place on May 24, 1738, three months after his return from Georgia. Lecky, the historian, asserts, "It is scarcely an exaggeration to say that the scene which took place at that humble meeting in Aldersgate Street forms an epoch in English history."

Prior to that momentous event Wesley felt that he had been only half alive spiritually; now he went through the experience of rebirth. From this event came not only the establishment of Methodism in Great Britain and America, but, thanks to his ministry and example, the Church of England, spiritually then at a low ebb, was revivified, and there emerged a wave of idealism the effects of which are still felt.

The "New Room," the first Methodist Chapel where John Wesley began his ministry in 1739, still stands in Bristol. Providentially it escaped the devastation caused all around it by Nazi bombs. In the little courtyard is the statue of John Wesley on horseback.

The evangelist traveled 250,000 miles throughout the Kingdom, mostly on horseback, visiting almost every village and hamlet in the land; preached 42,000 sermons, at the rate of 15 a week; visited Ireland 42 times. Horace Walpole thought of him "as evidently an actor as Garrick." Walter Scott regarded his sermons as "vastly too colloquial"; but they achieved their purpose.

For Wesley every moment of the day from 4 a.m. till late at night had its duty, and he did most of his reading as he went from place to place on horseback. How his eyes, "the brightest and most piercing that can be conceived," withstood the strain for 40 years remains a mystery. When he was nearly 70, he wrote: "Near 30 years ago, I was thinking 'how is it that no horse ever stumbles while I am reading?' History, poetry, and philosophy commonly read on horseback (having other employments at other times)."

As long as Wesley lived, the indomitable will in the small, frail body permitted no relaxing in his self-imposed tasks. In his eighty-fifth year he was still getting up at 4 a.m. daily. Twelve months later he was in the west of Ireland, setting out on a long journey at dawn, and in the evening preaching at Killchrist to so large a congregation that he was obliged to go out of doors despite the rain.

His last open-air sermon was preached at Winchelsea in 1790, and the last sermon he ever delivered was in the dining room of a friend at Leatherhead, on February 23, 1791, within ten days of his death.

The Wesley brothers were born at Epworth Rectory in Lincolnshire. When John was five years old, the house burned down and the future religious leader had a miraculous escape, which he always spoke of as an act of Divine Providence. The church, reached by a long flagged pathway guarded by a row of pollarded limes on each side, remains as it was in Wesley's day. From the churchyard I looked two years ago across waving fields of ripening grain, golden in the sunshine, and reflected on the wonderful results of his ministry.

To Reach the Multitudes, John Wesley Preached Many of His Sermons on the Streets

The famous evangelist traveled all over England, Wales, Scotland, and Ireland carrying his message to the common people. In our picture he is shown addressing a group beginning to gather in the open at Sandhill, Newcastle. The throng later was augmented to more than 1,500 people. The original painting by Wilson Hepple is owned by Sir Arthur Sutherland of that city, who graciously gave his permission for its reproduction.

Painting by Wilson Hepple

Painting by Martin Rico, R. A.

James Watt (1736–1819)

AS A BOY in the fishing town of Greenock, Scotland, James Watt, who was destined to give to the world the modern steam engine, was too sickly to attend school regularly. He was permitted, therefore, to choose his own studies and amusements. Fortunately his interests turned toward experiments in natural science. The familiar story of his fascinated study of the lifting power of steam under the lid of a tea-kettle is told by his cousin and companion, Mrs. Campbell, in a memorandum written in 1798.

Son of a well-to-do carpenter and dealer in marine stores, Watt had excellent opportunities to learn the use of tools. He became so skillful that the workmen in his father's shops were wont to say, "Wee Jamie hae a fortune in his fingers an' anither in his heid." They little dreamed, however, that the ideas developing in the mind of the boy would one day transform their little village on the Clyde into a major port and shipbuilding city where Cunard and other ocean liners are constructed.

Watt's father had planned to send his son to Glasgow University to prepare for a professorship in physics, but financial losses put an end to that ambition. In 1755, at the age of 19, young Watt made a 12-day, 400-mile horseback trip to London where he was to learn the trade of instrument making.

After learning the trade, he obtained an appointment as mathematical instrument maker at Glasgow University. Watt possessed extraordinarily sensitive hands. He was an expert maker of models, with a magic touch when it came to dismantling or reassembling engines.

After seven years of hard application Watt was asked by the authorities of Glasgow University to repair a Newcomen engine, which had hitherto never given satisfaction. This he accomplished successfully, and in the process was impressed by the urgent need for economy in the use of steam. His greatest invention was therefore based on the knowledge that steam, "the gas into which water turns when we boil it," expands more than 1,600 times and can work wonders if admitted into a practically "enclosed cylinder by means of a small tube."

Watt did not invent the steam engine—the use of steam to do work dates from the experiments of Hero (Heron) of Alexandria in the second century B. C.—; but he improved it. Drawing on the discoveries of his predecessors, he developed them and made the engine quick-acting, powerful, and economical. It was used at first only for pumping; not until 1781 was it made to turn a wheel. In 1782 Watt solved the problem of obtaining rotary motion from a reciprocating engine.

In 1825 George Stephenson, son of a fireman who worked for 12 shillings a week tending a colliery pumping engine in a poor village near Newcastle, England, improved Watt's engine and developed and ran one of the earliest locomotives. Stephenson and his son lived to see their locomotives revolutionize transportation.

Of his first great success Watt wrote: "One Sunday morning when I had gone for a walk in the Green of Glasgow, the idea occurred to me that, as steam is an elastic vapor, it would expand and rush into a vacuum. The separate condenser would take care of the exhaust, and the steam-jacket keep the cylinder hot. I rushed back to the university and broke in upon Dr. Robison, lecturer on chemistry, and cried: 'You needna fash yoursel' aboot that ony more, mon; you shall have steam boiling hot, in a boiling hot cylinder, and not waste a single particle.'"

At the very time when Watt's steam engine was being perfected, first at Kinneil, near Linlithgow, with the help of John Roebuck, and later at the Soho Works, Birmingham, other inventors were extremely active. The decade before the Declaration of Independence witnessed the invention of the spinning jenny of James Hargreaves, the weaver (1764), the spinning machine of Richard Arkwright, the barber (1769), and the "mule" of Samuel Crompton, the weaver (1779). Without efficient steam power these inventions would have been of little use.

Largely through the experiments and discoveries of these men, Great Britain was able to overcome Napoleon's bid for world dictatorship. Watt epitomizes the Industrial Revolution, which made England the workshop of the world—a position it held for nearly a hundred years.

Watt's later years were passed at Heathfield, within 20 minutes' walk of the Soho Foundry, where he and his efficient business partner, Matthew Boulton, had made their fortune. In the background there was always, as refuge, his workshop in the garret, with his bench, his foot lathe, and the stove on which he could melt metals.

When Heathfield was pulled down in 1927, his workshop, just as he left it, with jobs unfinished, was presented to the nation. It is now one of the prized possessions of the Science Museum in South Kensington.

Our painting by Marcus Stone, R.A. (1840-1921) is privately owned.

Painting by Andrew Wyeth

James Wolfe (1727–59)

ON SEPTEMBER 13, 1759, General James Wolfe took Quebec from the French General Montcalm and by his victory insured the supremacy of the English-speaking race in North America. Both Wolfe and Montcalm lost their lives in that battle, which some historians call the most important ever fought on American soil.

Born in 1727 in the village of Westerham, Kent, Wolfe became a soldier before he was fourteen; his commission as second lieutenant in his father's old regiment, the Marines, was signed by George II in 1741. Soldiering was in his blood. At the age of 16 he fought at Dettingen, where his horse was shot under him and, as he tells us, he had "to do the duty of an adjutant all that and the next day, on foot in a pair of heavy boots."

Wolfe, who was tall and slight and had reddish hair, admitted that he was "a whimsical sort of person." As a commanding officer he was just, although a believer in discipline. His nature was a mixture of method and dash. All through his short career he was an omnivorous reader of military history. He successfully developed a form of guerrilla warfare in the capture of Louisburg, and smilingly explained his tactics by saying he had learned the tactics from the reading of Xenophon.

Once when the Duke of Newcastle ran to tell George II that Wolfe was mad, the king, endowed with shrewdness in addition to a sense of humor, remarked, "Mad is he? Then I hope he will bite some of my generals."

On Wolfe's return to England after the capture of Louisburg, Pitt offered him the command, with the rank of major general, of the expedition to be sent up the St. Lawrence, and he selected Guy Carleton and Isaac Barré as his chief staff officers. Barré at the time of the American Revolution, 20 years later, championed the cause of the Colonies in Parliament.

Wolfe sailed from Spithead on February 14, 1759, to achieve a feat that would change the destinies of a hemisphere. Three armies were to converge on eastern Canada, and Wolfe's part was to capture Quebec, a practically impregnable fortress, thanks to its towering position on the St. Lawrence. Not only natural difficulties of great magnitude confronted him; but, like Napoleon in Russia, he was fighting with "General Winter," for the St. Lawrence becomes icebound early.

Time was the dominating factor. The weeks passed; Wolfe made two attempts, but they ended in failure. He fell ill and was despondent. As late as August 19 the omens were unfavorable, and news of his illness spread dismay among his men. There were even rumors that he was dying.

"I know perfectly well you cannot cure my complaint," he said to his surgeon, "but patch me up so that I may be able to do my duty for the next few days."

On August 31 he wrote to his mother: "My antagonist has wisely shut himself up in inaccessible entrenchments so that I can't get at him without spilling a torrent of blood, and that perhaps to little purpose."

On September 9 he wrote in a dispatch to the Government in England: "My constitution is entirely ruined, without the consolation of having done any considerable service to the State, or without any prospect of it."

No wonder that the dispatch cast gloom over Whitehall. The Duke of Newcastle wrote, "Mr. Pitt, with reason, gives it all over, and declares so publicly."

Without confiding in anyone, however, Wolfe had conceived a plan. He had been examining with a telescope the plateau behind the city of Quebec, upstream, and espied a narrow path by which men could climb up the cliffs from the river bank.

Never suspecting that an attack from this quarter was feasible, Montcalm had stationed only a hundred men at the post there; yet the enterprise could hardly have been more risky. Wolfe had written to a colleague two weeks before: "My ill health hinders me from executing my own plan; it is of too desperate a nature to order others to execute."

On September 12 he wrote to his troops. "The officers and men will remember what their country expects from them"—a forerunner of Nelson's Trafalgar message.

In the dead of night, Wolfe led his men stealthily up the path from L'Anse au Foulon, and by zero hour on September 13 they were drawn up on the Heights of Abraham, a force of 4,500, ready to give battle. The victory was complete, but both Wolfe and Montcalm were mortally wounded.

Wounded three times—the final bullet pierced his breast—Wolfe was helped to the rear by some grenadiers. An officer, standing by his dying leader, exclaimed, "They run! I protest, they run!"

Wolfe murmured, "Who run?"

"The enemy, Sir," was the reply. "Egad, they give way everywhere!"

Turning on his side, Wolfe exclaimed, "Now, God be praised, I die happy!"

Andrew Wyeth, son of the famous illustrator N. C. Wyeth, painted especially for our use his striking portrait conception of Wolfe on the Heights of Abraham above Quebec.

 406 Painting by Sir Joshua Reynolds, P. R. A.

Sir William Blackstone Codified English Law

Although his famous *Commentaries* are regarded today more as a handbook for laymen than as a comprehensive and authoritative legal treatise, they constitute the first book of the kind issued in England. His definitions of the civil rights of Englishmen express in clear and simple language political convictions that probably are still the most cherished opinions of the majority of the British electorate. When Blackstone, as was his wont, took the ministerial side in a controversy in Parliament over the Middlesex election, one of his opponents answered him with arguments from his own book and effectively silenced him. Our picture of the famous jurist, from a portrait by Sir Joshua Reynolds, is among the treasures of the National Portrait Gallery, London.

William Blackstone (1723–80)

WILLIAM BLACKSTONE'S greatest contribution to the English-speaking peoples is his codification of English law, which at the time he began his work he found "a huge irregular pile, with many noble apartments though awkwardly put together." In 1753 he began to deliver the series of lectures responsible for his success, and from them ultimately emerged his *Commentaries,* undoubtedly one of the most influential books in the English language.

Blackstone's influence has been greater in the United States than in England, because the book appeared at a psychological moment in American history. Abraham Lincoln read the four volumes in 1835 and said: "The more I read, the more intensely interested I became; never in my whole life was my mind so thoroughly absorbed. I read until I devoured them."

Blackstone was born in Cheapside, London. His Wiltshire-born grandfather, an apothecary in Newgate Street, married the daughter of a Wiltshire squire. Blackstone's mother died when he was twelve, and at an early age he was sent to Charterhouse, and subsequently to Oxford University. When he was twenty, he was elected a fellow of All Souls—"The College of All Faithful Departed Souls," a unique foundation established in the reign of Henry V to pray for the souls of those who fell in the wars of Henry and his son against France.

A fellow Middle Templar, Charles Viner, had endowed a professorship of the laws of England at Oxford. Blackstone's chance came when he was appointed to the Vinerian professorship. In his first lecture he declared that the Englishman "better be a stranger to the Roman than to the English Institutions; that the laws of England should be taught to all Englishmen and not merely to law students."

Blackstone's lecture attracted immediate and wide attention. To the future George III, then Prince of Wales, they were read by his mentor Lord Bute. They soon became well known in the American Colonies and were mentioned in correspondence between John Adams and Jonathan Sewall.

In 1761 Blackstone married Sarah Clitherow, "with whome he passed near nineteen years in the enjoyment of the purest domestic and conjugal felicity."

After his marriage he purchased Priory Park in the pleasant little town of Wallingford on the Thames, of which he had been recorder since 1749. His family was reared there. Sir William does not quite fit into the setting of an 18th-century squire, for he disliked any form of outdoor exercise and devoted most of his time to reading. Small wonder that he suffered from gout.

Blackstone's interest in prison reform is, naturally, not so well known as his authorship of the *Commentaries.* His experience of the law aroused in him a passionate desire to improve the conditions of English prison life. Unlike the majority in his day, when there were 200 capital offenses, he did not regard severity of punishment as a deterrent of crime. When John Howard published his famous report on prison reform, Blackstone strongly supported him.

The fourth and final volume of the *Commentaries,* which appeared in 1769, met with the approval of George III because Blackstone exalted the royal prerogative and "held that the American plantations were subject to the control of Parliament."

Blackstone has been accused by some critics of being ultraconservative in outlook. He was rather a firm believer in the British Constitution and "an advocate of moderate reform based on experience."

"The indictment of George III in the Declaration of Independence is well supported," writes the American biographer, David A. Lockmiller, "by Blackstone's description of the rights of Englishmen, and it was for these rights . . . that the patriots were contending . . . Regardless of his personal sentiments, he had acquainted the Americans of their rights as Englishmen, and the patriot leaders, apparently forgetting or ignoring other parts of the *Commentaries,* asserted these rights against George III, and his fumbling Ministers . . . Although the Revolutionary War freed the United States from British control, the law of England remained to protect and to serve the people of the new country."

In 1924, when the American Bar Association presented to the British bar a statue of Blackstone, George W. Wickersham, chairman of the English-Speaking Union of the United States, made a speech which has special meaning for us today. After referring to the reverence of the English-speaking peoples "for liberty regulated by law," he concluded: "Let it" [the statue] "stand here" [in the Law Courts in London] "as a symbol of that law and justice upon which rests the entire fabric of civil liberty. Let it stand here as the symbol of the ties which unite the peoples of our respective countries in devotion to the common ideals of free men of English speech."

Painting by Emanuel Phillips Fox

James Cook (1728–79)

JAMES COOK was the real discoverer of Australia. Though the continent had been seen and reported by earlier voyagers, it was Cook who first surveyed its fertile eastern coasts and found that it was a land habitable by white men.

He was the first in history to cross the Antarctic Circle and to disprove the existence of a continent which up to his time had been supposed to lie not far south of Australia. Because he did not proceed far enough into the southern icefields, he did not find the real Antarctic Continent; but he circumnavigated it, located several islands, and changed the map of the southern Pacific Ocean to virtually that which is in use today.

In 1778 he rediscovered the Hawaiian Islands, which had been found earlier and forgotten, and named them the Sandwich Islands after the Earl of Sandwich, First Lord of the Admiralty. He sailed north along the coast of North America as far as Bering Strait in search of a "northwest passage," but turned back when confronted by a wall of ice.

The son of a farm laborer, who subsequently became a bailiff, Cook was born in 1728 in a little two-room cottage at Marton in Cleveland, Yorkshire. He received his first schooling from Miss Mary Walker, a lady living in the village.

After serving in a shop at Staithes, a fishing hamlet, for a year and a half, he was apprenticed to a Whitby ship owner who exported coal to the Baltic. He remained in this employment for nine years. When the Seven Years' War with France broke out, he was offered command of a ship.

At the age of 27 Cook enrolled himself as an able seaman in the Royal Navy, thereby starting a fresh life at the bottom of the ladder. His progress in the Navy was rapid, and before long he was appointed master of the *Solebay*, doing valuable survey work which attracted the attention of the Admiralty.

Famed for their accuracy, his charts of the Canadian Atlantic coast and of the approaches to the mighty St. Lawrence River can still be used.

As a result of observations Cook made of a solar eclipse at one of the Burgeo Islands, he achieved fame as an astronomer and obtained the great chance of his life, his appointment by the Admiralty, at the instance of the Royal Society, as leader of the expedition to prosecute researches in the South Pacific and to make observations of the transit of Venus due in 1769. His first voyage to the Pacific was in 1768-71, his second in 1772-75, his third in 1776.

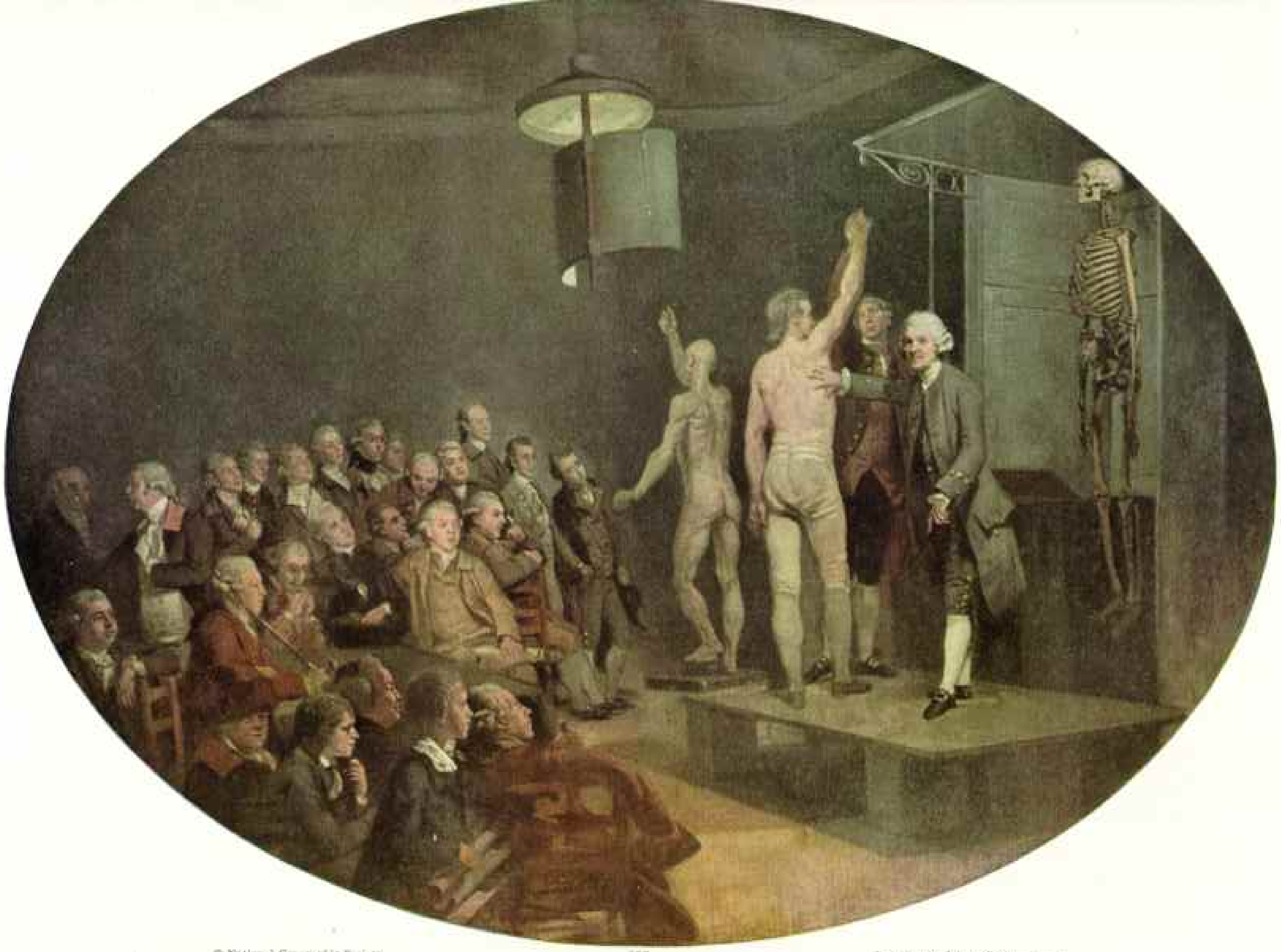
Cook has many claims to fame, but surely none greater than his victory over scurvy, which before his time was regarded as even a greater enemy than storms, exposure, starvation, or the likelihood of shipwreck. We now know that the cause of the malady is the deficiency of vitamin C in food, but two centuries ago knowledge about dietetics was elementary.

No one could have had greater opportunities for studying the health of the sailor at sea than Cook during his many years afloat. When he set out on his voyage to the South Pacific, he concentrated his attention on the problem of providing a balanced diet for his crew. He practiced what he preached; when his sailors were at first suspicious of his newfangled methods, he and his officers were served at every meal with sauerkraut, which he knew to be very efficacious. The rations of salt meat, cheese, and suet were gradually reduced, and dried fruit was substituted. He was a firm believer in the plentiful use of onions, oranges, and lemons, and at every port of call laid in large supplies.

He experimented with such preparations as "marmalade of carrots" and salted cabbage, and after long periods at sea made the crew drink quantities of broth "boiled with wheat . . . every morning for breakfast." When Cook arrived at Batavia he had made history, for not a member of his crew was suffering from scurvy. When he reached England, after a voyage of more than a thousand days, he had lost but one man out of 118. Cook's pioneer work was gradually taken to heart, and the regular administration of lime juice in the Royal Navy was begun in 1795.

Cook met his tragic end at Kealakekua Bay, where a monument to him now stands to mark the place where he was murdered by the islanders. Cook is rightly regarded as having laid the foundations of Australia and New Zealand. He has, therefore, the unique honor of being responsible for the establishment of the English language throughout Australia, the only continent which is entirely English-speaking. It is fitting that his remains should rest in the Territory of Hawaii.

Our picture of Captain Cook was painted in 1902 for the National Gallery in Melbourne by the Australian-born Emanuel Phillips Fox (1865-1915), and is used by permission of the gallery officials.



Painting by Johann Zoffany, R. A.

William Hunter (1718–83); John Hunter (1728–93)

THE BROTHERS, William and John Hunter, the great anatomists, both reached the top of their profession, both were enthusiastic collectors, and both died at virtually the same age. William, the elder of the two, was an eloquent and attractive lecturer; John, much the more famous, was tongue-tied, his dislike of lecturing so intense that he would take a draught of laudanum before beginning an address.

Upon coming to "darling London" in 1741 from his native Scotland, William Hunter lodged with a fellow Scot, Dr. Smellie, an apothecary and accoucheur practicing in a shop in Pall Mall, and within four years had contributed a paper to the Royal Society. He began his famous anatomical lectures in a house in Covent Garden three years later. Subsequently he gave up surgery for obstetrics and gained an enormous practice. He was appointed physician extraordinary to Queen Charlotte, who was busy increasing the family of George III. An enthusiastic collector and antiquarian, he left his famous collection to the University of Glasgow.

In his papers and lectures William gave less recognition to John's creative work than John considered due, and there resulted between the gifted brothers a breach that was barely healed when William lay on his deathbed.

As a youth, John Hunter loved sport and outdoor life and had toward books an aversion which he never overcame. His biographer says of him, "Few men have ever done so much with so little book learning."

At 17 he went to stay and work with his brother-in-law, a cabinet-maker in Glasgow. The mechanical skill he acquired served him well later. At 20 he traveled to London on horseback and joined his brother, who employed him on the work of dissection. "Resurrection men," undercover suppliers of corpses for anatomists of the day, were among his friends.

Ten years before John Hunter died, he told an interviewer who ventured the opinion that he had dissected more human bodies than any other man in Europe, "I have dissected some thousands during these 33 years."

His dissections of animals were also reckoned in thousands. Before breakfast each day he would devote two or three hours to dissecting. The rest of the morning was reserved for visiting patients in his consulting room. In the afternoon he visited his outdoor and hospital cases; at 4 he dined abstemiously, slept for an hour, and then worked hard till midnight. Five hours' sleep sufficed him.

Everything in his life revolved around his dissecting work. Although small in stature, 5 feet 2 inches tall, he possessed extraordinary vitality and concentration of purpose. The suffering that preceded his death did not deter him, Stephen Paget tells us, from writing to Africa "for swallows, ostrich-eggs, a camel, cuckoos, a young lion, everything respecting the bee tribe, chameleons, and any other beast or bird."

Among his pupils was Edward Jenner, who lived in his house for two years. Jenner was one of the friends who called him "the dear man."

At 43 Hunter married a poetess, Anne Home, 29, whose parties became celebrated and who numbered among her friends Fanny Burney and Mrs. Elizabeth Montagu. The biographers all tell how the anatomist, returning home one evening to find the drawing room thronged with "musical professors, connoisseurs, and other idlers," astonished everyone by saying, "I knew nothing of this kick-up, and I ought to have been informed of it beforehand; but as I have now returned home to study, I hope the present company will retire."

Hunter, lavish with his earnings, set up an extraordinary establishment close to the site now occupied by Earl's Court Station of the London underground. On a tract of two acres he had a fashionable villa, farm, menagerie, and laboratory, all in one.

When Hunter died, his widow was left virtually penniless, for he had spent £70,000 in collecting the contents of his museum.

He was prepared to resort to almost any means to advance knowledge. Learning that Byrne (or O'Brien), the seven-foot-seven Irish giant, was seriously ill, Hunter sought to obtain so unique a specimen for his museum. The giant on his sickbed heard of the intention, and, having a horror of being dissected, determined to outwit "the doctors." He gave strict injunctions that his body, to be encased in a leaden coffin, was to be carried out to sea and sunk in deep water.

By resorting to bribery, Hunter's emissary obtained the corpse from the undertaker's men. It was taken to the Earl's Court Farm, where Hunter, who was waiting for it, skeletonized it forthwith.

Our picture of William Hunter lecturing before a class in anatomy is from the Johann Zoffany painting hanging in the Royal College of Physicians in London, officials of which permitted its publication.

Edward Jenner (1749–1823)

EDWARD JENNER conquered smallpox, the scourge more dreaded than the Black Plague, the loathsome disease that had killed or disfigured countless victims. The son of a Gloucestershire clergyman, Jenner did most of his work as a respected and beloved physician in the county where he was born.

Deeply interested as a boy in natural history, he had made a collection of the nests of dormice before he was 10 years old. He passed his leisure hours in searching for fossils. When his schooling was completed, he studied under a surgeon at Sodbury, in Gloucestershire.

The young medical student had his greatest stroke of good fortune when the opportunity came to him to work in London under John Hunter. With the family of the famous surgeon and anatomist he resided for two years.

Hunter was surgeon at St. George's Hospital, and his "menagerie," where he studied the habits of animals and made experiments, was close at hand. There young Jenner passed as much time as he could spare.

In 1771 Capt. James Cook, who had just returned from his first great voyage of discovery, brought to Hunter for study the specimens collected by Sir Joseph Banks, naturalist of the expedition. Jenner was assigned the task of sorting and arranging.

As a result of the meeting with Cook, Jenner was offered the post of naturalist on the navigator's next trip. Most young men would have jumped at such an opening, but Jenner refused the offer, electing to remain in Gloucestershire as a practicing physician. He discussed with Cook, however, the latter's enlightened views on dietetics and prevention of scurvy.

In the opinion of his colleagues of the local scientific society, Jenner had a bee in his bonnet; for during meetings at the Ship Inn at Alveston he would talk incessantly on a subject that bored them. The members declared they would expel him from their gatherings if he insisted on harassing them on the prophylactic virtues of cowpox!

A milkmaid who had come to consult him when he was studying surgery at Sodbury had said of smallpox, "I cannot take that disease, for I have had cowpox." This chance remark had made an indelible impression on the young man.

As a general practitioner in Gloucestershire, Jenner found a strong local tradition that those who had contracted cowpox, an infectious, pustular breaking out on the udders of cows, were rendered immune from smallpox. Methodical in his way, he worked for nearly a quarter of a century before he was ready to put his theories to the test. He "gave" a large number of persons cowpox and found that only on the rarest occasions did those who had had cowpox contract smallpox.

On May 14, 1796, a date famous in the history of medicine, Jenner vaccinated a little boy named James Phipps, aged eight, with lymph taken from the vesicles of cowpox from the hand of the milkmaid Sarah Nelmes. The milkmaid had been infected by one of her master's cows.

As expected, the boy had cowpox, and had barely recovered on July 1 when Jenner inoculated him from a case of smallpox.

In a letter to a friend soon afterward Jenner wrote: "Now listen to the most delightful part of my story: the boy has since been inoculated for smallpox, which, as I ventured to predict, produced no effect. I shall now pursue my experiments with redoubled ardor."

Medical men in the young United States followed Jenner's experiments with interest. Prof. Benjamin Waterhouse, of Cambridge, Massachusetts, described the discovery in the *Columbian Sentinel* of March 12, 1799, in an article with the title, "Something Curious in the Medical Line." Dr. Waterhouse's first attempt to obtain cowpox lymph was unsuccessful, but he finally received some from Dr. Haygarth of Bath.

Among those who took a deep interest in the new discovery was Thomas Jefferson, who did not think it beneath him to set an example to his fellow citizens. In the course of July and August he and his sons-in-law vaccinated in their own families and in those of their neighbors nearly 200 persons.

Jenner was granted a diploma of membership by the American Academy of Arts and Sciences signed by John Adams, and he also received a Doctorate of Laws from Harvard University.

An Indian chief, by name Little Turtle, and nine or ten of his warriors, inhabitants of the Washington area, were vaccinated by the Reverend Dr. Gantt, chaplain of the U. S. Congress, in 1802.

Before he died, Edward Jenner had the supreme gratification of knowing that his discovery had saved the lives of millions.

Ernest Board's painting of Edward Jenner vaccinating James Phipps against smallpox hangs in the Wellcome Historical Medical Museum, London. It is published by permission of the museum authorities.

Nelson (1758–1805)

NAPOLEON at the height of his power said, "Let us be masters of the Channel for six hours and we are masters of the world." He might have achieved his ambition to control the English Channel had it not been for Horatio Nelson, the hero of Trafalgar, who proved to the world that "Britannia rules the waves."

Horatio Nelson, born in 1758 at Burnham Thorpe, where his father was rector, entered the British Navy at the age of twelve. Two years later he went as captain's coxswain on a north polar expedition. His next term of service was in the Indian Ocean. There his health broke down, but he was soon back to duty off the coast of Honduras, protecting British trade against privateers during the American Revolution.

After the outbreak of the war with France he fought in the Mediterranean, losing the sight of his right eye in the Corsican campaign. He distinguished himself in the Battle of Cape St. Vincent in 1797. Later in the year he lost his arm at Santa Cruz de Tenerife.

The Battle of the Nile in 1798 upset Bonaparte's grand attempt to seize Egypt as a first step toward wresting India from the British. On August 1 Nelson sighted his quarry in Abu Qir Bay. Luck was on his side, for he arrived unexpectedly when the crews of the French ships were on shore watering. Convinced that where there was room for a ship at single anchor to swing there was room for him to attack, Nelson discussed his plans in great detail with his officers. "I had the happiness," he wrote, "to command a band of brothers."

When the signal came, every commander knew his exact task. The British ships went in between the French fleet and the shore, and in less than four hours Nelson had achieved complete victory. All the French warships save two frigates were put out of action or captured. All Napoleon's hopes were blasted.

At Naples Nelson was greeted with delirious joy as "nostro liberatore." Emma, Lady Hamilton, wife of the British Minister, accompanied her husband to the ship. On espying the conquering hero, she exclaimed, "Oh, God, is it possible?" and fainted on Nelson's arm.

In a letter to his wife Nelson commented, "Tears, however, soon set matters to right."

From poor Lady Nelson's standpoint, matters were soon very far from right. Nelson dallied in Sicily with his *inamorata* and in 1800 returned across Europe with Sir William Hamilton and Emma. Small wonder that Lady Nelson received him with "chilling coolness" and marks of disapproval when he reached London. The Nelsons were formally separated soon after his return, and save for one short interview they never met again.

Not till Hitler's mastery of Europe in 1940 did the threat of invasion become more real to the people of Great Britain than in the years 1803-5. Napoleon was now Consul for life, and his fertile brain was full of schemes for bringing all Europe under his control. To achieve his purpose, he must deal first with England. "Fifteen millions," he said, "must give way to forty millions." But Napoleon, like Hitler, underestimated the staying power of his adversary.

Nelson was ceaselessly afloat, watching and pursuing the foe. When he anchored at Gibraltar on July 19, 1805, he went ashore for the first time in nearly two years. Three weeks' leave with Emma at Merton in Surrey ended when the news reached him that the Franco-Spanish fleet was at Cádiz. He rejoined the *Victory* at Portsmouth and was back with the British fleet by September 29.

His first objective was to entice the enemy out of port—an objective Napoleon had already accomplished for him by ordering Admiral Villeneuve to sail out. As before the Battle of the Nile, Nelson carefully explained plans to the senior officers. His intention was to sail in two columns at once to save time and to concentrate the whole force on the rear of the enemy.

At daybreak on October 21 the signal for attack was given, Nelson himself leading the northern column. At eleven he returned to his cabin and wrote a codicil to his will, leaving Lady Hamilton and his daughter Horatia as a "Legacy to my King and country."

A little before midday he hoisted the signal "England expects that every man will do his duty." The *Victory* broke into the enemy's center, passing slowly under the stern of Villeneuve's flagship, the *Bucentaure*, and poured in a terrible broadside.

Walking the quarter-deck with Captain Hardy, Nelson was mortally wounded. As he fell, he said, "They've done for me at last, Hardy."

Nelson fought off death for three hours. When Hardy brought him news that fourteen or fifteen ships had surrendered, he remarked, "That is well, but I bargained for twenty."

His last words were, "I have done my duty, thank God for that."

At Trafalgar British Sailors Nobly Responded to Nelson's Signal "England Expects That Every Man Will Do His Duty"

This was the battle that ruined Napoleon's plans to take command of the seas and proved to the world that "Britannia rules the waves." By permission of the United Service Club, London, for which William Clarkson Stanfield made the picture in 1836, the NATIONAL GEOGRAPHIC reproduces the famous painting "Battle of Trafalgar."

Painting by William Clarkson Stanfield, R. A.

Some British Poets (1716–1936)

GIANTS among the early English poets were Chaucer, with his inimitable *Canterbury Tales;* Spenser, who flattered Queen Elizabeth in his *Faerie Queene;* the inspired Shakespeare, both dramatist and lyrist; and Milton, famed for his epic *Paradise Lost.* In the 220 years from the birth of Thomas Gray in 1716 to the death of Kipling in 1936, England produced another galaxy of poets who in number and genius are not approached in any other land. This period witnessed the births of Wordsworth, Scott, Coleridge, Byron, Shelley, Keats, Mrs. Hemans, Elizabeth Barrett Browning, Tennyson, Robert Browning, the Rossettis, and Rudyard Kipling.

Gray's *Elegy Written in a Country Churchyard,* said to be "the best known poem in the English language," has given Stoke Poges immortal fame. William Cowper, born 15 years after Gray, is also associated with Buckinghamshire. The old brick house, now the Cowper Museum, still stands at Olney, where the poet composed *The Task* and *John Gilpin.*

London was the birthplace of William Blake, seer, mystic, poet, painter, and etcher, whose *The Tiger* and *The Lamb* are considered nearly perfect childhood lyrics and are almost as well known as the old nursery rhymes.

Two years after Blake's birth was born Robert Burns, the son of a Scottish gardener. Much of his best verse took shape when he was plowing at Mossgiel; in the evenings when he returned home he would commit his thoughts to paper.

William Wordsworth was "a searcher for a new and better world," whose young heart "leapt with enthusiastic hope" when the Bastille fell. Samuel Taylor Coleridge threw in his lot with Wordsworth and lived near Wordsworth and the latter's sister at Alfoxton. Here English poetry may be said to have been born again. Here Coleridge completed his masterpiece, *The Ancient Mariner.*

There has rarely been a more popular poet than Walter Scott, "the sweet-tempered bairn," as Wordsworth describes him, who leaped into fame at the age of 34 with the publication of *The Lay of the Last Minstrel.*

Childe Harold's Pilgrimage won for George Gordon, Lord Byron, international fame when Byron was only 24 years old. *The Prisoner of Chillon* was written four years later. Byron gave his life, as he had previously given much of his fortune, to liberate Greece from Turkish rule. While drilling Greek insurgents at Mesolóngion (Missolonghi), Greece, he was stricken and died on April 19, 1824, age 36.

Shelley and Keats are thought of together because their short span of life was almost coterminous. Shelley lived till he was 30, Keats till he was 26. Keats's period of output was less than four years. His first notable work, *Endymion,* opens with the well-known line, "A thing of beauty is a joy forever." Among his best-known poems are *The Nightingale* and *Ode on a Grecian Urn.*

Shelley wrote *The Revolt of Islam, Prometheus Unbound,* and superb lyrics, such as the *Ode to the West Wind.*

Among fine women poets was Felicia D. Hemans, author of the familiar *Casabianca* and many other poems.

Elizabeth Barrett Browning published her first poems at the age of 17. The friendship between Elizabeth Barrett, aged 39, and Robert Browning, aged 33, grew out of some comments of the former's in which she expressed her admiration for Mr. Browning's poetry.

This led him to write to her in January, 1845, "I love your books, I love you too." Theirs was a runaway marriage at Marylebone Church, September 12, 1846. They went to live in Italy.

Under Italian skies Elizabeth showed her husband her *Sonnets from the Portuguese,* regarded by many as the greatest love poem in English.

During his married life, Browning remained just "the man who married Elizabeth Barrett"; it was not till the appearance of *The Ring and the Book,* eight years after her death, that he was generally recognized as a *great* poet.

Tennyson's greatest poem, *In Memoriam,* was published in 1850, the year of his marriage and of his appointment to the Poet Laureateship in succession to Wordsworth. His *Idylls of the King,* in 1859, achieved immense popular success. He is probably the best loved and most widely read of English poets.

Dante Gabriel Rossetti's best-known poem is *The Blessed Damozel.*

Rudyard Kipling's greatest period of output was between the ages of 20 and 30 when he produced his *Departmental Ditties* and *Barrack Room Ballads,* and, in prose, the two *Jungle Books* and other stories.

Francis Breese Davis, Jr., owner of the painting commemorating Lord Byron's visit to the U.S.S. *Constitution* at Leghorn, Italy, 1822, permits the National Geographic Society to use this historic picture.

Queen Victoria (1819–1901)

AS A YOUNG MAN, I watched Queen Victoria's funeral from the roof of St. James's Palace. That gloomy winter day seemed to me the end of the world in which I had lived. Among the chief mourners was Kaiser Wilhelm II, who, I knew, from a nine-month visit to Germany, desired to play the chief role on the European stage.

While Victoria lived, all was well; for her descendants were to be found at every court in Europe. She could summon her grandson, the impetuous Kaiser, in case of trouble and bend him to her will. One of her granddaughters was married to Nicholas II, Tsar of All the Russias. But now, after the longest reign in British history, what lay ahead?

Victoria, only child of the Duke of Kent, fourth son of George III, was born at Kensington Palace on May 24, 1819. When she was three months old, her cousin Albert was born at Rosenau, near Coburg. The same midwife attended the entry into the world of both children, and in Saxe-Coburg circles the names of the two were always linked together.

At 2:12 a. m. June 20, 1837, William IV died at Windsor Castle. The Archbishop of Canterbury, who had performed the last religious rites, and Lord Conyngham, the Lord Chamberlain, drove to London and arrived at Kensington Palace before 5 a. m.

Victoria being soundly asleep, the faithful Lehzen refused at first to awaken her; but Lord Conyngham said firmly, "We are come on business of state to the Queen, and even her sleep must give way to that." Soon Queen Victoria appeared—a shawl over her loose white nightgown, her feet in slippers, her nightcap thrown off, and her hair falling down her back. There were tears in her eyes, but she was cool and collected.

At 11 the Privy Council met at Kensington Palace. The Queen, who was less than five feet in height, was graceful and had a dignity all her own. In the words of the Duke of Wellington, "She not merely filled her chair, she filled the room."

The Queen's uncle, King Leopold of the Belgians, who had arranged a visit of the Duke of Saxe-Coburg and his two sons to England in 1836, had been biding his time in respect to Victoria's marriage, a project close to his heart. At his suggestion Albert and his brother were invited to Windsor in October, 1839, and he wrote openly to his niece, "May Albert be able to strew roses without thorns on the pathway of life of our good Victoria! He is well qualified to do so."

Everything went according to plan. Victoria wrote to her uncle, "Albert's beauty is most striking, and he is most amiable and unaffected—in short, very fascinating."

One evening the Queen presented to the Prince a flower she had been wearing on her bosom. Albert slit with a penknife the breast of his tight-fitting German tunic and placed the flower next to his heart. The following day Queen Victoria formally proposed marriage.

For twenty years the Queen enjoyed married happiness such as is rarely found. She shared many tastes with Albert and as years passed relied more and more on his judgment. On May 1, 1851, she presided over the opening of an exhibition in the newly erected Crystal Palace in Hyde Park, an undertaking steered to success by her husband. It was a great peace festival to unite the industry of all nations.

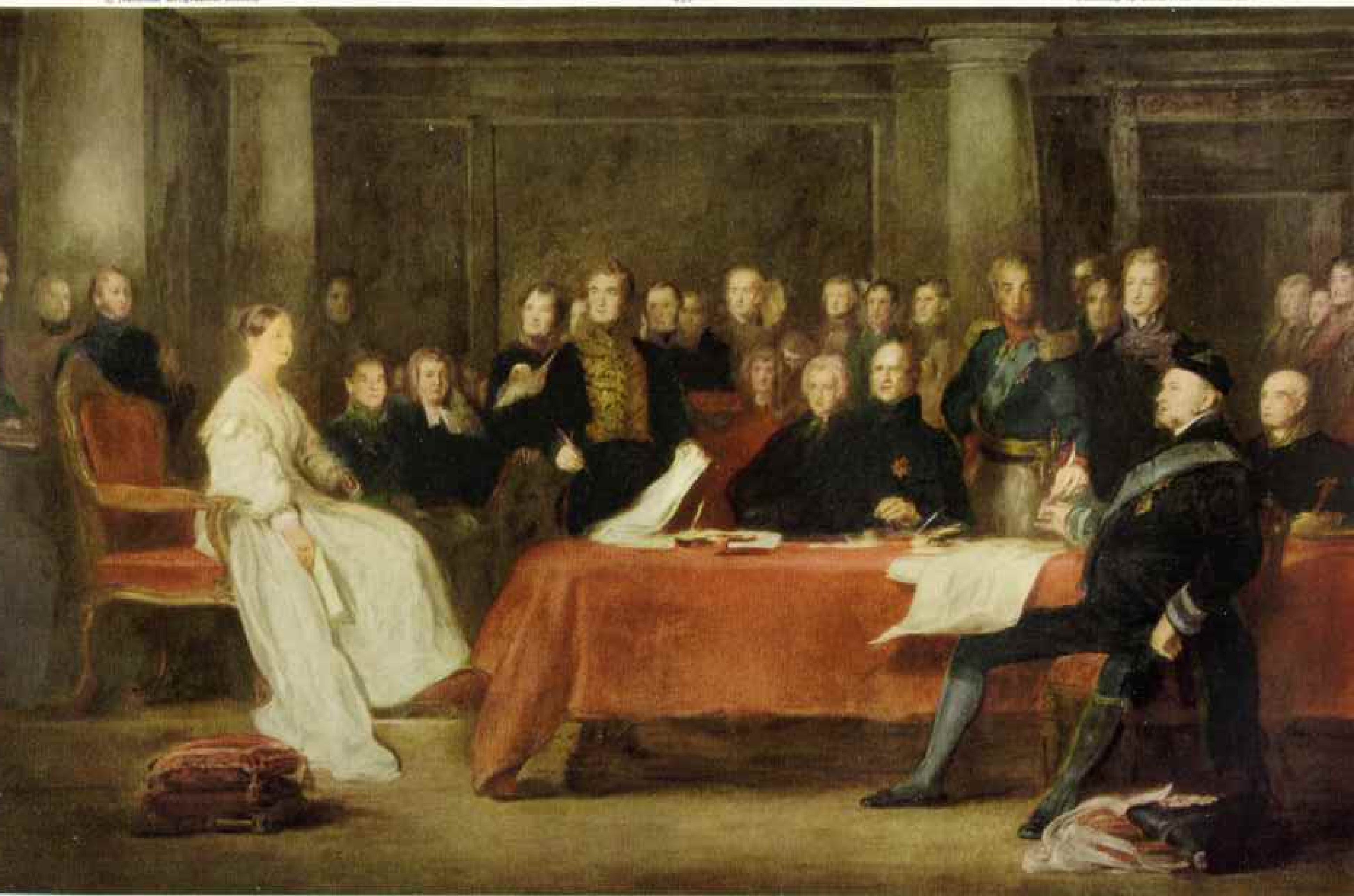
Poor Victoria, the decade ahead contained much sorrow and anxiety for her. First came with its tragic suffering the Crimean War, which both she and Albert had opposed; then the Indian Mutiny. The greatest sorrow of her life was the sudden death of the Prince Consort on December 14, 1861. She carried on through 40 years of widowhood.

During the last year of Albert's life the American Civil War broke out; and the British Government issued its proclamation of neutrality in April, 1861. On November 9 the two southern delegates, Mason and Slidell, who had embarked on the British vessel *Trent*, were seized by Capt. Charles Wilkes and taken aboard a Federal warship. A crisis developing between Great Britain and the United States, Palmerston drafted a dispatch which would certainly have led to war.

Prince Albert wrote to Palmerston for the Queen, urging him to recast the dispatch and "assume that an overzealous officer of the Federal fleet had made an unfortunate error which could easily be repaired by the restoration of the passengers and a suitable apology." This letter, last thing written by the Prince Consort, preserved peace.

The world of Victoria was a stable world. At its heart was a Queen who was the dominating influence of her time through her living faith, her indomitable character, and her devotion to duty.

Sir David Wilkie's painting of the young Queen presiding at her first Council is "Reproduced by gracious permission of His Majesty the King."



Michael Faraday (1791–1867)

"FATHER OF THE AGE OF ELECTRICITY" is a title that may be properly conferred upon Michael Faraday. In 1831 he gave to the world the epoch-making discovery that an electric current can induce another current in a different circuit.

Every electric motor and dynamo in use today operates upon this principle, electromagnetism. When a bar magnet is moved near or through the center of a coil of wire, a current flows through the wire, although the wire and magnet are not connected. When the magnet is moved back and forth, the current in the wire changes its direction of flow accordingly. Likewise, if a coil of wire through which a current is flowing is moved in the vicinity of another coil, a current will flow momentarily through the second coil.

Faraday was born at Newington Butts, now a part of London, the son of a blacksmith. He once said, "I love a smith's shop and everything related to smithery. My father was a smith."

Young Faraday was apprenticed to Riebau, a news agent and bookbinder for whom he at first delivered papers. A customer, a Mr. Dance, enabled the boy to hear a lecture by Sir Humphry Davy at the Royal Institution, and Faraday was enthralled. He kept notes of the lectures, which he illustrated and bound and, on his employer's advice, sent to Davy.

In afterlife Faraday wrote: "When I was a bookseller's apprentice, I was very fond of experiment, and very averse to trade . . . My desire to escape from trade . . . induced me at last to take the bold and simple step of writing to Sir Humphry Davy."

On December 24, 1812, a knock on the door announced Davy's coachman with a note asking Faraday to call at the Royal Institution the next day, and he was hired by Davy at a weekly wage of 25 shillings.

Six months later Davy took Faraday as his secretary-assistant on a European tour, during which he consorted with the leading scientists of the day. This tour, priceless to Faraday, took for him the place of a university training.

Faraday worked out his problems for the sheer joy of solving them, leaving to others any practical application. Once, after he had given a public demonstration of the induction of electric currents, a lady inquired what useful service could come of it. In reply, the physicist asked, "Can you tell me what is the use of a newborn baby?"

It is interesting that the American Joseph Henry, Secretary of the Smithsonian Institution, working independently, had made the same basic discovery as Faraday and perhaps even earlier, though Faraday was the first to publish his findings. Years later, on a visit to England, Henry's superlative laboratory technique drew from the watching Faraday the spontaneous and delighted tribute of a shout, "Hurrah for the Yankee!"

In proving the definite and measurable chemical action of electricity, Faraday coined a vocabulary, including such words as "electrode," "electrolyte," "anion," "cation," "anode," and "cathode," which, indispensable today, suggest the vast results of his research.

His discovery of benzene in 1825 gave to subsequent organic chemists the first of a series of coal-tar hydrocarbons.

The concept of the "magnetic field," the lines of force surrounding a magnet, also was worked out by Faraday. He studied steel alloys, produced new kinds of optical glass, and did important work on the liquefaction of gases. Faraday was associated with the Royal Institution for 54 years, becoming director of the laboratory in 1825. He refused a knighthood, preferring to remain "plain Michael Faraday to the last."

Closely associated with Faraday are the names of two other British scientists of first rank, Sir Humphry Davy (page 527) and James Clerk Maxwell.

Davy (1778-1829), as professor of chemistry at the Royal Institution, recognized Faraday's genius and opened the world of science to him. Born at Penzance, Cornwall, he first was apprenticed to a surgeon-apothecary before becoming interested in chemistry.

He is most noted for his invention of the miner's safety lamp, which put an end to the disastrous explosions of firedamp gas set off by the open flames of lamps in mines. He found that a metal screen with small apertures placed over the flame would prevent explosions from being touched off. Lamps of this type are still in general use in mines to test for the presence of firedamp.

Davy also discovered the anesthetic properties of nitrous oxide, known as "laughing gas," by experimenting with its effects upon himself. He was the first to isolate potassium and sodium by running electrical currents through solutions. This laid the groundwork for the process of electrolysis, the tearing apart of substances by electricity, in wide use today.

Davy discovered five new elements.

James Clerk Maxwell (1831-1879) was the first to show theoretically that electromagnetic waves are propagated through space at the speed of light. All radio communication, television, and radar are based in essence on work inspired by Maxwell's pioneering theories. Born in Edinburgh, Maxwell directed the founding of the Cavendish Laboratory at Cambridge University, where he was professor of experimental physics.

Painting by A. R. Thomson, R. A.

To Michael Faraday the World Owes Its Electric Lighting

His discovery in 1831 of the induction of currents was the beginning of what has developed into one of the mightiest of modern industries. Through Sir Walter Lamb, Secretary of the Royal Academy of Arts, A. R. Thomson was engaged to paint the picture for the NATIONAL GEOGRAPHIC MAGAZINE.

Florence Nightingale (1820–1910)

FLORENCE NIGHTINGALE gave up the comforts of a luxurious home to become an angel of mercy to the wounded and dying in the Crimean War. To her great-hearted sacrifice and her remarkable powers as an organizer the whole world owes everlasting gratitude. Her name today stands as a virtual synonym for the word "nurse."

Conscious of a world of pain beyond the circle of her family at Embley, she dedicated her life from the beginning to the relief of suffering. In later years she wrote, "The first thought I can remember, and the last, was nursing work."

"I am thirty, at the age at which Christ began His mission," reads an entry made in her diary in 1850 after she had passed two weeks at the Institution of Protestant Deaconesses at Kaiserswerth on the Rhine. "Now no more childish things, no more vain things, no more love, no more marriage. No, Lord, let me think only of Thy Will."

When Florence told her mother and sister that she proposed to study the methods of nursing, they shuddered. Mr. Nightingale consulted his friends, and was shocked by what he heard of nursing conditions.

In the London *Times* of October 9, 1854, appeared a dispatch of W. H. Russell telling a tragic story of disgraceful unpreparedness, of lack of surgeons, and of inadequacy of supplies in the Crimean campaign. "What will be said when it is known that there is not even linen to make bandages for the wounded?" Russell asked. The *Times* published a leading article entitled "Why have we no Sisters of Charity?"

Two days before the appearance of Russell's dispatch in the *Times*, Florence Nightingale had made her plans. She wrote to Sidney Herbert, Secretary of War, stating that a small private expedition of nurses had been organized to go out to Scutari and that she had been asked to command it.

This letter crossed with one from Herbert to her in these terms: "There is but one person in England that I know of who would be capable of organizing and superintending such a scheme. . . . My question simply is, would you listen to the request to go and superintend the whole thing?"

Five days after the interview between Florence and Sidney Herbert her expedition left London.

In due course she and her nurses arrived at the huge, gaunt yellow barracks with accommodations for 2,000 persons at Scutari. The place had been handed over by the Turks when the well-run British general hospital proved inadequate after the Battle of Alma.

There were five miles of beds, floors were packed with wounded, and at half an hour's notice fresh shiploads had to be received from Balaklava. "I think," Florence Nightingale wrote, "we have not an average of three limbs per man."

Gradually she got the dreadful hospital in order. Hers was no soulless organization, however. She was always at hand, to whom the dying soldier could entrust his cares and send last messages home.

The slender, frail, highbred woman possessed extraordinary powers of endurance. On days of emergency she was known to work 20 hours without pause. An observer who accompanied her on a night round of the wards wrote: "It seemed an endless walk. . . . As we slowly passed along, the silence was profound; very seldom did a moan or cry from these deeply suffering ones fall on our ears. A dim light burned here and there. Miss Nightingale carried her lantern, which she would set down before she bent over any of the patients."

The ordeal of the Crimea left a deep mark on the heroic nurse. She nearly succumbed to an illness in 1859. Thereafter she was virtually an invalid. Her bedroom in her London home at 35 South Street, Park Lane, where she went to live in 1865, was lined with shelves of bluebooks and volumes of official reports. Karl Pearson called her "the passionate statistician." Here she promoted Army reform and wrote her *Notes on Nursing*.

She became a recognized authority on problems of irrigation in India, on methods of combating famine and drought, and even on the stranglehold of the native moneylender on the peasant. Though her position was unofficial and unpaid, her influence was such that each successive Viceroy, before taking up his duties, consulted her. It has been said that her cooperation with Sir John Lawrence did as much for the British Army in India as her work of reform at home after the Crimea.

On August 13, 1910, "the Lady of the Lamp" breathed her last. A gracious American tribute is afforded by the account of the work of the U. S. Sanitary Commission, appointed during the American Civil War. It is dedicated to Florence Nightingale in these words: "All that is herein chronicled you have a right to claim as a result of your own work."

Kenneth Riley painted our picture for NATIONAL GEOGRAPHIC.

Charles Dickens (1812–70)

ENGLAND HAS PRODUCED many other novelists—Scott, Jane Austen, the Brontë sisters, Thackeray, George Eliot, Meredith, and Hardy, to mention but a few—but not one of them has equaled Dickens in human appeal or been read and reread by so many of all classes.

Dickens did for literature what Hogarth did for art; he wrote action characterizations of real people as the father of cartooning drew pictures of them. Unquestionably, many of the characterizations were caricatures, but they were vivid, human, and unforgettable.

Like a musician, Dickens played on human heartstrings. He was the first writer to use common people as characters in fiction and to make them speak and act with such perfect naturalness that readers felt that they were personal acquaintances.

Prof. George Saintsbury writes of Dickens: "It is probably safe to say (here making no exception at all and giving him no companions) that no other author in our literary history has been both admired and enjoyed for such different reasons; by such different tastes and intellects; by whole classes of readers unlike each other.

"The uncritical lover of the sentimental, of the melodramatic; the frank devotee of mere 'fun'; the people who simply desire to pass their time by witnessing a lively and interesting set of scenes and figures; the respectable yearners for social and political reform; the not quite so respectable seekers after scandal and satire on the upper and wealthier and more accomplished classes; these and a dozen or a hundred other types all fly to Dickens as to a magnet. . .

"There must be more than one person living who has read Dickens through night after night and week after week as if the whole were one book—a thing almost impossible to do with some novelists and a terrible task with all but two or three."

The career of Charles Dickens reads like a fairy tale to struggling authors. His first sketches of London life were accepted by the *Old Monthly Magazine*, when he was not yet 22. His first book, *Sketches by Boz* (1836), received very favorable reviews. The first number of *The Posthumous Papers of the Pickwick Club* was published on March 31, 1836, when he was 24, and two days before his marriage to Catherine Hogarth at St. Luke's Chelsea.

By the time Sam Weller was introduced into the pages of *Pickwick*, Dickens had taken England by storm. When Queen Victoria came to the throne, he was 23, and "all the world" was reading *Pickwick*—surely enough to turn the head of any ambitious young man.

Charles Dickens was born at Landport, in Portsmouth. His father, described as "an old buck," with no sense of the value of money, was a clerk in the Navy pay office. Charles's paternal grandfather was a footman who married a housemaid. This background explains his attitude toward the governing classes.

Few writers have had such a haphazard education as Charles Dickens, but what he lacked in scholastic training he obtained in the greatest school of all, the school of life. He became the interpreter of London's backwaters and underworld to his generation. When *Oliver Twist*, regarded by many as his greatest novel, appeared, it was obvious that here were drama and tragedy written with firsthand experience, for he himself had been an underdog.

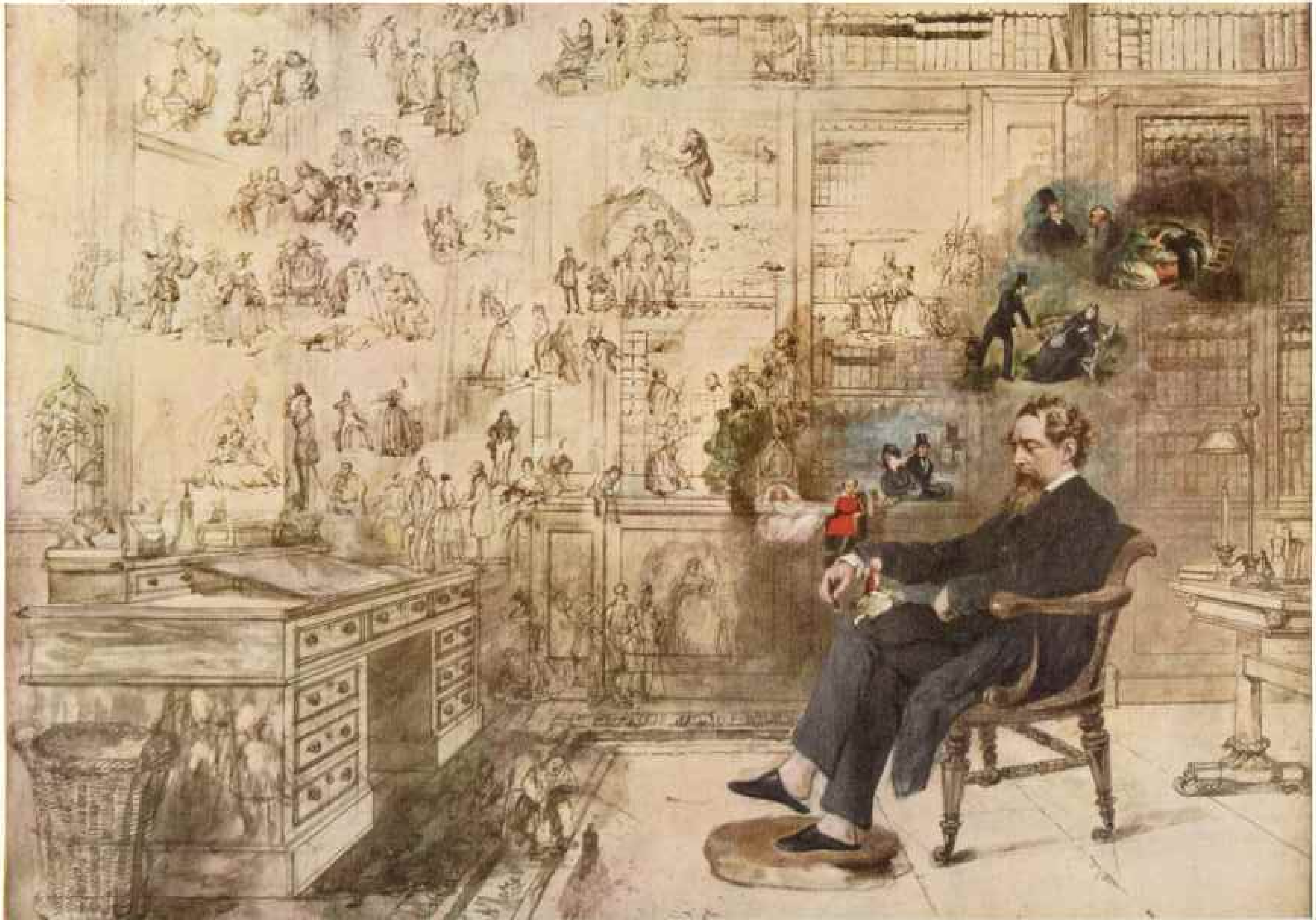
On his twelfth birthday life took a grim turn when Charles was placed with a blacking firm at Hungerford Stairs at the weekly wage of six shillings. Two weeks after his joining the blacking firm the family fortunes reached their nadir, with the incarceration of his father in the Marshalsea prison.

Into the next dozen years was crowded a whole gamut of experiences. He returned to school for two years, became an office boy and clerk to two firms of solicitors, studied shorthand, and was appointed reporter in the Consistory Court of Doctors' Commons. He worked for four years as a reporter in the House of Commons, became the "fastest and most accurate man in the Gallery," acquired contempt for "the great dustheap of Westminster," and learned much about world affairs.

Dickens made two trips to America, the first in 1842 and the second a quarter of a century later. On his first visit there was trouble about some remarks he made in a speech about the copyright law.

Near the end of his life Dickens came again to America to deliver the famous readings from his works. The visit was highly successful financially, but it shortened his life. Two years later, when engaged on *Edwin Drood*, he died of a sudden seizure at Gad's Hill Place.

By courtesy of Dickens House, London, we present this painting by R. W. Buss of Dickens seated in his library at Gad's Hill surrounded by sketches of the characters he created. The artist depicts the great novelist dreaming out the plot of a new story to be written.



Painting by John Ballantyne, R. S. A.

Edwin Landseer (1802–73)

DURING MUCH of the 19th century Sir Edwin Landseer, the versatile artist who turned his hand to sculpture in carving the famous lions in Trafalgar Square, London, was the most popular British painter. Engravings of his pictures of dogs, stags, and scenes in Scotland adorned the walls of thousands of homes in Victorian England. Probably best known of his many works is the "Monarch of the Glen," painted in 1851. One of my earliest recollections is of that magnificent stag looking out from an engraving above my father's dining room table.

Edwin Landseer was the third and most distinguished son of John Landseer, painter and engraver. The eldest son, Thomas, was a highly successful engraver who devoted most of his life to reproducing Edwin's works. Charles, the second son, was a historical painter. Also an artist was a daughter, Jessica, ten of whose pictures were exhibited at the Royal Academy.

Edwin Landseer never married, and Jessica kept house for him in St. John's Wood all his working life. Algernon Graves describes her as "a meek, amiable little body, who looked after her brother's house in a very quiet, unostentatious way."

John Landseer, recognizing the early signs of genius in his youngest son, decided that no ordinary education would be necessary. He sent the lad on sketching excursions into the fields, which in those days stretched from Marylebone to Hampstead. In later years, standing by an old stile, he would point with pride to "Edwin's first studio," the meadow where he had sketched his first cow. South Kensington Museum has on display some of the clever work of the child prodigy of six.

The sketching of domestic animals did not satisfy Edwin for long, and he soon turned his attention to the study of wild beasts. He was often to be found, either at the menagerie at the Tower of London, where wild animals had been kept since the 13th century, or nearer at hand at Exeter 'Change, in the Strand, the home of Polito's Wild Beast Show. Before he was 12 years old he could draw in chalk and pencil, etch, and paint both in water colors and in oils.

In 1815 two of Edwin's paintings were shown at the Royal Academy—a success which was quite enough to turn the head of a boy of thirteen. B. R. Haydon, a well-known painter, strongly urged the boy to study anatomy, in the manner of the old masters, saying the artist would paint better who knew what underlay the surface. Young Landseer seized the first opportunity of dissecting the carcass of a lion, and he produced several large pictures of lions.

In company with his friend, C. R. Leslie, an American artist, Landseer went to Scotland in 1824. The two young painters stayed at Abbotsford with Sir Walter Scott, Leslie having been commissioned by George Ticknor, a Boston publisher, to paint a portrait of the famous writer. To the untraveled young Landseer Scotland was a dazzling and romantic world. He listened delighted to the skirl of the pipes and the tales of Highland gillies. At a real Gaelic gathering he watched brawny Scots tossing the caber and throwing the hammer.

His first Highland picture, "The Deerstalkers' Return," appeared in 1828, and in the following year "An Illicit Whisky Still in the Highlands." During the next two decades his output was immense.

In 1839 he painted his first portrait of Queen Victoria, the portrait which the Queen gave to Prince Albert before their marriage. Landseer became a close friend of the royal family and taught both the Queen and Prince Albert to etch.

In 1855 at the Universal Exhibition in Paris he was awarded the Gold Medal, the only British artist to be so honored. He was now at the zenith of his career, but soon his eyesight began to fail.

In the following decade he suffered from mental depression, which tended to obscure his reason. He became oversensitive, and when he did not receive an expected invitation was apt to look upon the omission as a personal slight. Nevertheless, instead of withdrawing from society and husbanding his declining powers, he continued to attend fashionable functions and took more brandy than was good for him. He rallied, however, and in 1865 was offered the presidency of the Royal Academy, an honor which he declined.

The old vigor sometimes returned. From 1859 onward he was engaged on the work of sculpturing the lions for the Nelson Monument in Trafalgar Square. These were placed in position in 1867.

During the last years of his life he was confined to his home as an invalid. He died on October 1, 1873, not in his studio as he had wished, but in bed, holding his brother's hand.

John Ballantyne's picture of Sir Edwin Landseer sculpturing the lions of Trafalgar Square hangs in London's National Portrait Gallery.

Painting by O. F. Schmidt

Lord Lister (1827–1912)

JOSEPH LISTER, the founder of antiseptic surgery, was a philosopher-physician, wholly consecrated to the task of reforming the methods of surgery and of abolishing the appalling conditions existing in infirmaries and hospitals a century ago. He ranks with Edward Jenner as one of the truly great benefactors of the human race. In common with Jenner also, Lister had the deep satisfaction of witnessing the triumph of his methods in his lifetime.

At the coronation of Edward VII in 1902, the King conferred an award on Lister with the remark, "I know well that, if it had not been for you and your work, I would not have been here to-day."

The coronation of Edward had been set for the previous year, but had been postponed because the King had undergone an operation for "appendicular abscess."

Lister was born in 1827 in an old house in London's dreary East End, then "a village, set amidst pleasant meadow-lands," a favorite resort of well-to-do Quakers. His father, a member of the Society of Friends, was a wine merchant and a skilled microscopist. After completing elementary studies at the Quaker School, Grove House, Tottenham, the future surgeon went to University College, London.

From the outset of his medical career he applied himself to the study of the baffling problem of the disease known as "hospital gangrene."

When Lister was 26 years old, his teacher, William Sharpey, professor of physiology, gave him a letter of introduction to the famous Edinburgh surgeon, James Syme. An immediate friendship sprang up between the two men, and Lister became Syme's house surgeon in the Edinburgh Infirmary. For 25 years he lived and worked in Scotland. His marriage to Syme's daughter, Agnes, was "a lifelong honeymoon" which lasted 37 years.

A century ago the infirmaries of Edinburgh and Glasgow were no worse than hospitals elsewhere; but Lister was appalled by what he saw. The stench of the wards, where the windows were invariably kept shut, tested the strongest stomach. He soon realized that the hospital, instead of being a place where health was restored, was far too often merely a deathtrap for surgical cases.

Through statistics taken from London, Edinburgh, and Glasgow, Lister learned that two out of every five amputations resulted in death. Patients who underwent amputations in the country, he found, stood four times more chance of survival than in cities. Even modern buildings in the towns soon became "as pestiferous as the old."

Lister proved that it was not in the hospital that the causes of mortality lay hidden, but in the operator himself, his tools, and his assistants. He had carefully studied Pasteur's work, and was the first to apply its lessons.

Lister's great discovery was that it might be practicable to protect wounds from microbes. Quite apart from the scrupulous cleanliness so essential, Lister ascertained that one of his greatest foes, in an industrial area like Glasgow, was the lowered vitality of the inhabitants, who had none of the resisting power of countryfolk.

In 1860 he was appointed professor of clinical surgery in the University of Glasgow, where the death rate from amputations was 39 percent. He tried new methods day by day and for years waged a ruthless campaign against microbes.

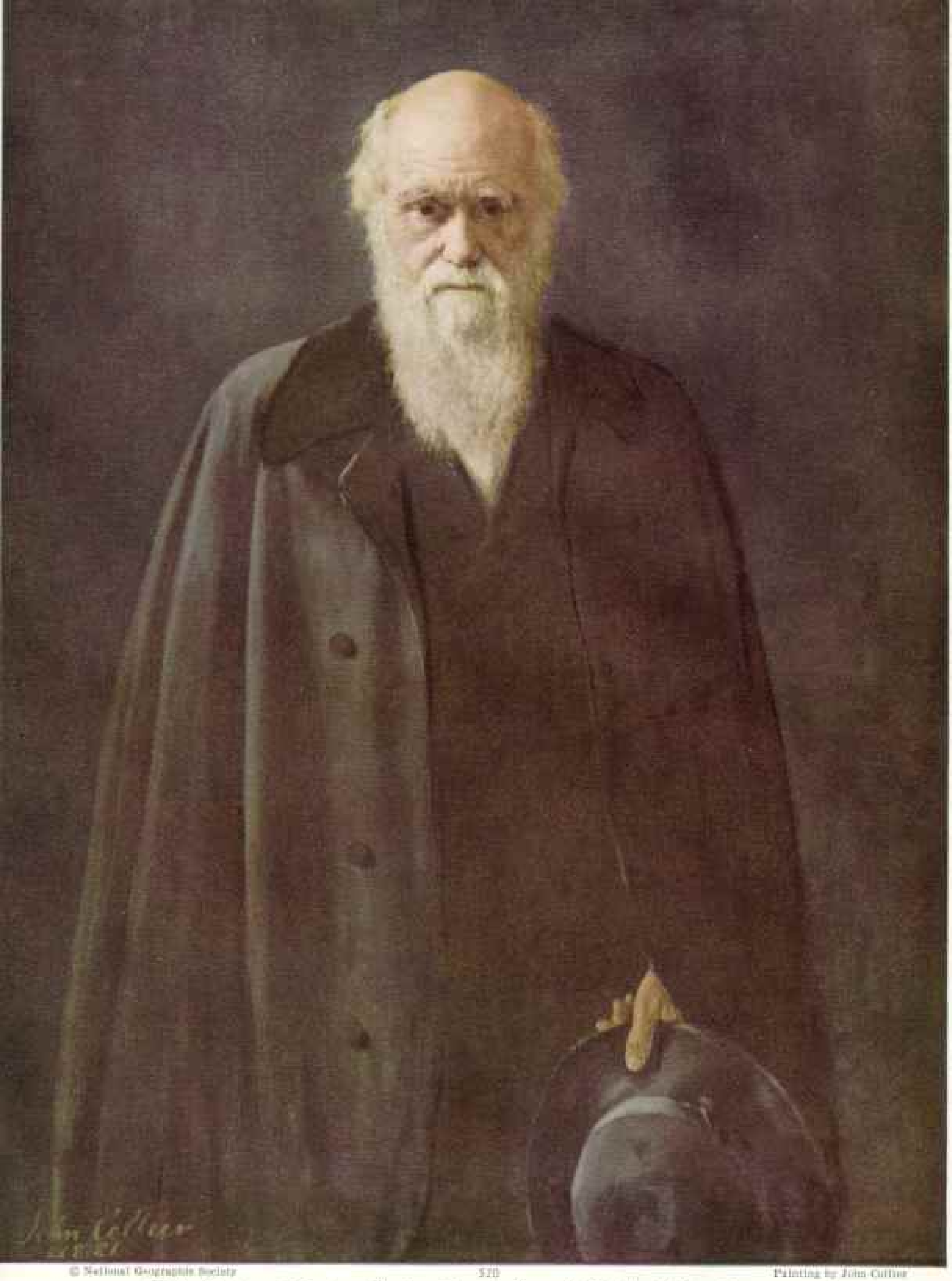
At first he pinned his faith to carbolic acid in full strength, but subsequently diluted the antiseptic and had all wounds bathed with the solution. After five years, he introduced absorbable ligatures.

"The antiseptic system," he wrote in 1870, "has now been in operation sufficiently long to enable us to form a fair estimate of its influence upon the salubrity of a hospital. Its effect upon the wards, lately under my care in the Glasgow Infirmary, were in the highest degree beneficial, converting them from some of the most unhealthy in the kingdom, into models of healthiness."

Recognition of the miracle he was achieving soon spread to the Continent. Denmark and Germany were among the first countries to appreciate the immense significance of his work, and he was the recipient of a great ovation when he visited Germany in 1875. Among the last to give him tardy recognition was his native London.

He received during the later years of his working life many honors and world-wide recognition. In these gracious words U. S. Ambassador T. F. Bayard addressed him at a banquet of the Royal Society: "My Lord, it is not a profession, it is not a nation, it is humanity itself which, with uncovered head, salutes you."

The Lambert Pharmacal Company granted permission for our use of the picture of Lord Lister, father of antiseptic surgery. The American illustrator, O. F. Schmidt, painted this scene of Lister operating.



 520 Painting by John Collier

With *Origin of Species* Charles Darwin Started World-shaking Controversy

Through courtesy of the Linnean Society of London we take our illustration from John Collier's portrait of the great naturalist. The original painting, which hangs in the Society's headquarters, was paid for by subscription among the Fellows. On consenting to sit for the picture, Darwin wrote: "It tires me a good deal to sit to anyone, but I sh'd be the most ungrateful and ungracious dog not to agree cordially."

Charles Darwin (1809–82)

THE REMARKABLE FACT about Darwin is—how un-Darwinian? This frail, scholarly scion of two famous families (his grandfathers were the scientist Erasmus Darwin and Josiah Wedgwood, the great English artist-potter) was far removed indeed from any conception of a creature that could fight its way up from the jungle.

Darwin proved beyond reasonable doubt that man, like all living things, is a product of natural selection through what he called "survival of the fittest."

How troubled Darwin must have been when the whole structure of theology was shattered by his simple thesis that man was a child of animal evolution, subject to the same processes of modification as other of Nature's animals: not fallen from Adam, but risen—if such could be the right word for evolutionary descent—from the ape.

Darwin the patient naturalist, as the resultant of the Darwin and Wedgwood breed lines, exemplified in his own person the fact that, unlike the wild animals, man *can* consciously control his own evolution if he so wishes.

After taking his degree at Cambridge in 1831, Darwin volunteered to accompany a surveying expedition on H.M.S. *Beagle* to circumnavigate the Southern Hemisphere. He felt he was too physically sensitive to follow his father's profession of physician (an unanesthetized child bound to the operating table drove him from the building with its shrieks); the only possible useful knowledge he possessed was a grounding in geology and the sense of geologic time.

And his strength proved barely able to survive the five years at sea, which marked him for a lifetime of pain. Nature would have culled him as a mistake if it had not been for his cousin-and-wife Emma's constant sacrifice. Every sentence written into Darwin's notebooks marked an hour or a day which Emma had given to guarding his failing strength.

Thus sheltered in infinite leisure and care, the invalid Darwin confided to a private notebook and even-more-private letters the evolving theory which the island-isolated life on the Galápagos group had first set stirring within him, a theory which he knew would murder many established scientific concepts.

He might well have died without the world generally ever being the wiser if in 1858 he had not received suddenly in his country retreat at Downe House in Kent a letter from a professional plant collector, Alfred Russell Wallace, written from Ternate in the Malay Archipelago. In this letter Wallace had set down some theses: "There is no limit of variability to a species, as formerly supposed. . . . The life of wild animals is a struggle for existence. . . . Useful variations will tend to increase. . . . Superior varieties will ultimately extirpate the original species." He asked for comments.

Darwin wrote to his friend, the famous geologist Charles Lyell: "Wallace has today sent me the enclosed. . . . I never saw a more striking coincidence; if Wallace had my MS. sketch written out in 1842, he could not have made a better short abstract!"

Had Darwin been the king of a scientific jungle, here he should have felt it necessary to forestall the young challenger by hastening into print for the prize of "prior publication." But Darwin was most un-Darwinian. He wrote: "I should be extremely glad now to publish a sketch of my general views in about a dozen pages or so; but I cannot persuade myself that I could do so honourably. . . . I would far rather burn my whole book than that he or any other man should think that I had behaved in a paltry spirit."

Acting on their own responsibility, Darwin's friends, Lyell and Joseph Hooker, presented before the Linnean Society on July 1, 1858, and then published, the joint papers of Wallace and Darwin. A year later Darwin filled in the details in his book *Origin of Species*. It cleaved the thought of Britain and the traditional civilized world in twain. Nothing about Nature would ever look quite the same again.

The author of *The Descent of Man* was not too proud to make his last published book the study of how each inch of the earth's surface loam has passed and will pass again through the bowels of earthworms. No life was too lowly for him to learn from.

Darwin's account of his voyage, with his descriptions of the people, natural history, and geology of South America and of Pacific and Atlantic islands, makes his *Voyage of the Beagle* even today a most entertaining narrative. He concludes: "A traveller should be a botanist, for in all views plants form the chief embellishment."

During the years that Darwin was putting the finishing touches on his theories, Gregor Mendel, an obscure Austrian monk, was discovering in his experiments with hybrid peas the mechanism of heredity which was unknown to Darwin.

This forced abandonment of some of Darwin's ideas and modification of others, but modern geneticists have placed on an even sounder basis the central concept of evolution.

  Painting by James Gunn, R. P.

Cecil Rhodes, the Diamond King, Founded the Rhodes Scholarships

Through his great gift hundreds of young Americans have studied and will study at Oxford. Our picture is from a recent portrait done for the Rhodes Trust by James Gunn.

Cecil Rhodes (1853–1902)

AS A DIAMOND "digger" at the age of 24, Cecil Rhodes passed many months on a solitary trek, on foot or on an ox wagon, exploring the hinterland of Cape Colony. He was thinking out, as he toiled in South Africa, both his own future and the future of mankind. Before he had amassed his great fortune, he made a will disposing of it!

In his will Rhodes makes his "Confession of Faith": "It often strikes a man to inquire what is the chief good in life; to one the thought comes that it is a happy marriage, to another a great wealth, and as each seizes on the idea, for that he more or less works for the rest of his existence. To myself, thinking over the same question, the wish came to me to render myself useful to my country. . ."

The young Englishman had two main objects: to promote the welfare of the British Commonwealth, and to unite the whole English-speaking race, which he regarded as "one of the chief of God's chosen engines for executing coming improvements in the lot of mankind." To him it was a matter of indifference whether the capital of the English-speaking world was in Washington or London; as *modus vivendi* he suggested alternating terms of five years for Washington and London as the supreme seat of government.

The son of a country vicar, of yeoman stock, Rhodes was born at Bishop's Stortford, in Hertfordshire. His health broke down when he was only 16 years old, and he suffered from heart trouble all his life. In 1870 he was sent out to Natal to join his eldest brother, Herbert, who was growing cotton. Diamonds had just been discovered near Kimberley, and Herbert Rhodes joined the rush for the diggings, leaving his young brother to wind up affairs on the farm.

Just a year after his arrival, Rhodes, a tall, shy youth, set out for Kimberley with an ox-drawn Scotch cart, a pickax, a shovel, a Greek lexicon, and a well-thumbed copy of Marcus Aurelius. Diamonds as a means of obtaining wealth were the lure, but at the back of his mind was the hope that he would earn enough money to enable him to complete his education at Oxford. Once at Kimberley, Rhodes soon found himself in possession of his brother's claim. Herbert returned to England.

The dry air of the high veld agreed with Rhodes, and he prospered. Two years after his arrival at Kimberley he achieved his ambition of going to Oxford, and matriculated at Oriel College. For eight years he divided his life between the rough surroundings of the diamond diggings and the cultured environment of scholastic life at Oxford. Despite the increasing calls of South Africa, he took a pass degree at Oxford in 1881.

Rhodes crammed into 20 years' accomplishments what few other men could have attained in half a century. At 21 he was one of the most successful diggers, and by 1880 he controlled the De Beers mines, named after the original Dutch owner of the land. He made his first will after a serious heart attack in 1877. In 1889 his sixth and last will left his fortune of six million pounds to promote great causes. The will established the Rhodes Trust which provides at Oxford 100 scholarships for students from the United States and 60 for students from the British Empire. The year before he took his degree he was elected as a member for Barkly West in the Cape Parliament, a seat which he retained all his life.

Rhodes was largely responsible for securing the hinterland of Cape Colony. He became Prime Minister of the Colony in 1890 and resigned in 1896. Thanks to him, German plans to halt British expansion northward were checked. With the establishment of Rhodesia, a vast and fertile area was added to the Empire.

He had genius for handling men. In the Matabele campaign when the rebels had been driven into the impregnable fastnesses of the Matopo Hills, warfare which might drag on for years seemed inevitable. Rhodes caused word to be sent to the Matabele that he was there, to have his throat cut if necessary, but he was ready to have it out with them, and would come to them, undefended, to hear their side of the case.

Accompanied by an interpreter, he met the chiefs in the heart of the Matopos. During the discussions some younger chiefs got out of hand. Rhodes's companion advised him to escape, but he stood his ground and shouted to the Matabele, "Go back, I tell you!"

They withdrew, and Rhodes asked the assembled chiefs, "Is it peace or is it war?"

Such was his magnetism that the answer was, "It is peace."

After the South African War, Rhodes, who was in England early in 1902, was called back to South Africa on business. He was now completely broken in health as a result of terrible hardships endured during the long siege of Kimberley. On his return his condition became worse. He was moved from his beloved Groote Schuur at the foot of Table Mountain to a little cottage by the sea at Muizenberg. There, after three weeks of great suffering heroically borne, he died at the age of 49. His last words were: "So little done, so much to do."

Painting by Sir Philip Burne-Jones

Everybody Who Buys Electric Light Bulbs Is Indebted to Lord Rayleigh

In 1894 he and Sir William Ramsay (page 527) identified the mysterious substance argon. Our illustration is from Sir Philip Burne-Jones's original portrait, which hangs in the Rayleigh family house in Essex.

Lord Rayleigh (1842–1919); Sir William Ramsay (1852–1916)

GAS-FILLED electric-light bulbs, used by the millions today to furnish efficient illumination, trace their origin in a sense to the discovery of the gas called "argon" by John William Strutt, third Lord Rayleigh.

Equally important, the finding of argon led to Sir William Ramsay's work in identifying other new gases in the earth's atmosphere, including helium and neon, which now have important commercial uses.

Argon is a colorless, odorless gas comprising 94-hundredths of one percent of the air. It is used commercially, mixed with nitrogen, in electric-light bulbs. Such lamps, filled with gas under pressure, give more light than the vacuum type, because the filament can be kept hotter without breaking down.

The discovery of argon resulted from a painstaking effort by Rayleigh and Ramsay to learn why nitrogen released from ammonia by a chemical process had a slightly smaller atomic weight than nitrogen obtained from the air. A trace of an inert gas mixed with the latter accounted for the difference, they found, and it was named "argon."

Born November 12, 1842, Rayleigh was an aristocratic landlord scientist like Robert Boyle, and succeeded to his father's title as baron in 1873. He was educated at Trinity College, Cambridge, where he distinguished himself in the 1865 Mathematical Tripos.

Rayleigh received the Nobel prize in physics in 1904, was elected President of the Royal Society a year later, and in 1908 became Chancellor of Cambridge University.

One of Rayleigh's most famous works, his *Treatise on the Theory of Sound*, still a leading textbook on the subject, was begun during a cruise on the Nile. The trip was taken on a *dahabeah*, a sailing houseboat, following a severe attack of rheumatic fever which the scientist suffered soon after his marriage to Evelyn Balfour, sister of A. J. Balfour, later Prime Minister.

Rayleigh succeeded James Clerk Maxwell (page 510) as head of the world-famous Cavendish Laboratory of Physics at Cambridge in 1879. There he undertook research on the "redetermination of the electrical units (the ampere, volt, and ohm) in absolute measure," which resulted in a classical series of papers published by the Royal Society.

Most of Rayleigh's researches, however, were carried on in a stable loft laboratory on his estate, Terling (pronounced Tarling) Place, near Witham, in Essex, to which he retired after five years at the Cavendish Laboratory. There, in a somewhat crude and homemade workroom which no doubt would seem pitifully inadequate to the research workers of today, he continued his monumental contributions to physics for 35 years.

World-wide honors and distinctions came to him. He was one of the original members of the Order of Merit, instituted at the time of the coronation of King Edward VII. His genius was widely recognized in the United States. He was elected a member of the American Philosophical Society in 1886, and foreign honorary member, American Academy of Arts and Sciences, in 1888. In 1895 he and Sir William Ramsay received a Hodgkins Fund award of $10,000 from the Smithsonian Institution, the Barnard Medal from the National Academy of Sciences, and the Cresson Gold Medal in 1914 from the Franklin Institute. In 1884, at 42, Rayleigh presided over the Montreal meeting of the British Association for the Advancement of Science.

Sir William Ramsay (page 527) was so closely associated with the work of Lord Rayleigh that one can hardly be mentioned without the other. Born in Glasgow, Ramsay was primarily a chemist, and won the Nobel prize in this field in 1904, the same year that Rayleigh won it in physics.

Both men were deeply interested in abnormal psychology and members of the Society for Psychical Research, of which Rayleigh was a president.

Their work on argon led Ramsay and Prof. M. W. Travers to the finding of helium, neon, krypton, and xenon. These are chemically inert elements which exist in the earth's atmosphere, some in very small quantities.

Neon is the essential ingredient of the familiar "neon signs." The gas gives off a bright red glow when an electric current is passed through it.

Helium had been found in the sun in 1868, but Ramsay first discovered it on the earth. He found that it was given off by certain minerals when heated. Today, obtained in large quantities from natural gas, helium is widely used in dirigibles, since it is noninflammable and nonexplosive.

These qualities led to the choice of helium for inflation of the National Geographic Society-U. S. Army Air Corps stratosphere balloon *Explorer II*, which set a still unbroken altitude record for human flight, 72,395 feet, on November 11, 1935.

About 250,000 cubic feet of helium were used, expanding to 3,700,000 cubic feet at maximum altitude. Use of helium enabled Captains A. W. Stevens and O. A. Anderson to carry out the flight in safety, collecting data of great value to aeronautical science.

Lord Rutherford (1871–1937); Sir J. J. Thomson (1856–1940)

ERNEST RUTHERFORD was born near the little town of Nelson, in the north of the South Island of New Zealand. His grandfather had sailed from Dundee, Scotland, in 1842 with his family, among whom was James, a boy of three, Rutherford's father.

Rutherford's parents belonged to the best type of emigrant pioneer. His mother was a schoolteacher, and there was always a special link between her and her son.

Rutherford once said to a school friend that, had he not won from the country hamlet a scholarship which took him to Nelson College, he would have been a farmer and never realized his special gifts. From Nelson a second scholarship took him to Canterbury College at Christchurch, New Zealand.

He was digging one day when his mother came out to impart the joyous news that he had won a third scholarship which would take him to Cambridge. Flinging away his spade, he said, "That is the last potato I'll dig."

When he arrived at Cambridge, fortune smiled on him. He was welcomed to the Cavendish Laboratory by its distinguished director, Sir Joseph J. Thomson, who discovered the electron in 1897 and whose work on the structure of the atom paved the way for Rutherford's later great contributions.

Rutherford was only 24 years old, but he soon began to make a name for himself. Dr. Andrew Balfour wrote of him, "We've got a rabbit here from the Antipodes, and he is burrowing mighty deep."

Within four or five months Rutherford was dining at the Fellows' table at King's among the elect. His fame had spread rapidly on account of his experiments on the detection of electric waves for long distances. Rutherford succeeded in transmitting electric waves for half a mile. These experiments were made before Marconi began his investigations on signaling by electric waves.

After lecturing at Columbia University, in 1902, he wrote: "I am the only worker in the field of excited radioactivity in the English-speaking world."

Rutherford's professorships in Montreal, Manchester, and Cambridge may be said to "correspond roughly with the three major phases of the development of atomic theory which will always be associated with his name," as Prof. R. H. Fowler points out.

For his work at McGill University in unraveling the intricate phenomena of radioactive change and the chemistry of the natural radioactive elements, he received the Nobel prize for chemistry in 1908. His 12 years at Manchester University are associated mainly with the discovery of the nucleus and the development of the nuclear model of the atom.

He passed the last 18 years of his life at Cambridge as Cavendish Professor. This third period culminated in 1932, the year which saw the discovery of artificial disintegration by protons, of the positron and of the neutron, the first and third Cavendish contributions.

These fundamental contributions of Rutherford and his associates helped to lay the foundations of nuclear physics, a new branch of physics, out of which grew the release of atomic energy and the atomic bomb.

As the representative of Britain beyond the seas, no more distinguished figure could have been chosen than Rutherford. His lack of formality assured him friends wherever he went.

Within a few years the subject of radium had captured men's minds, and Rutherford's services were in great demand. He received offers of professorships from Yale, Columbia, and Leland Stanford. He was awarded the Rumford Medal of the Royal Society, the Barnard Medal, the Franklin Medal, and many honorary degrees.

The career of Rutherford was launched under happy auspices through the friendship of Sir Joseph J. Thomson, who developed the Cavendish Laboratory which later was headed by Rutherford. Thomson won the Nobel prize in physics in 1906.

Today's electronic age, with its "electric eyes," radio, radar, television, and countless other devices controlled by electronic tubes, is founded on Thomson's discovery that the electron is a negatively charged particle, a "corpuscle of electricity" as he called it.

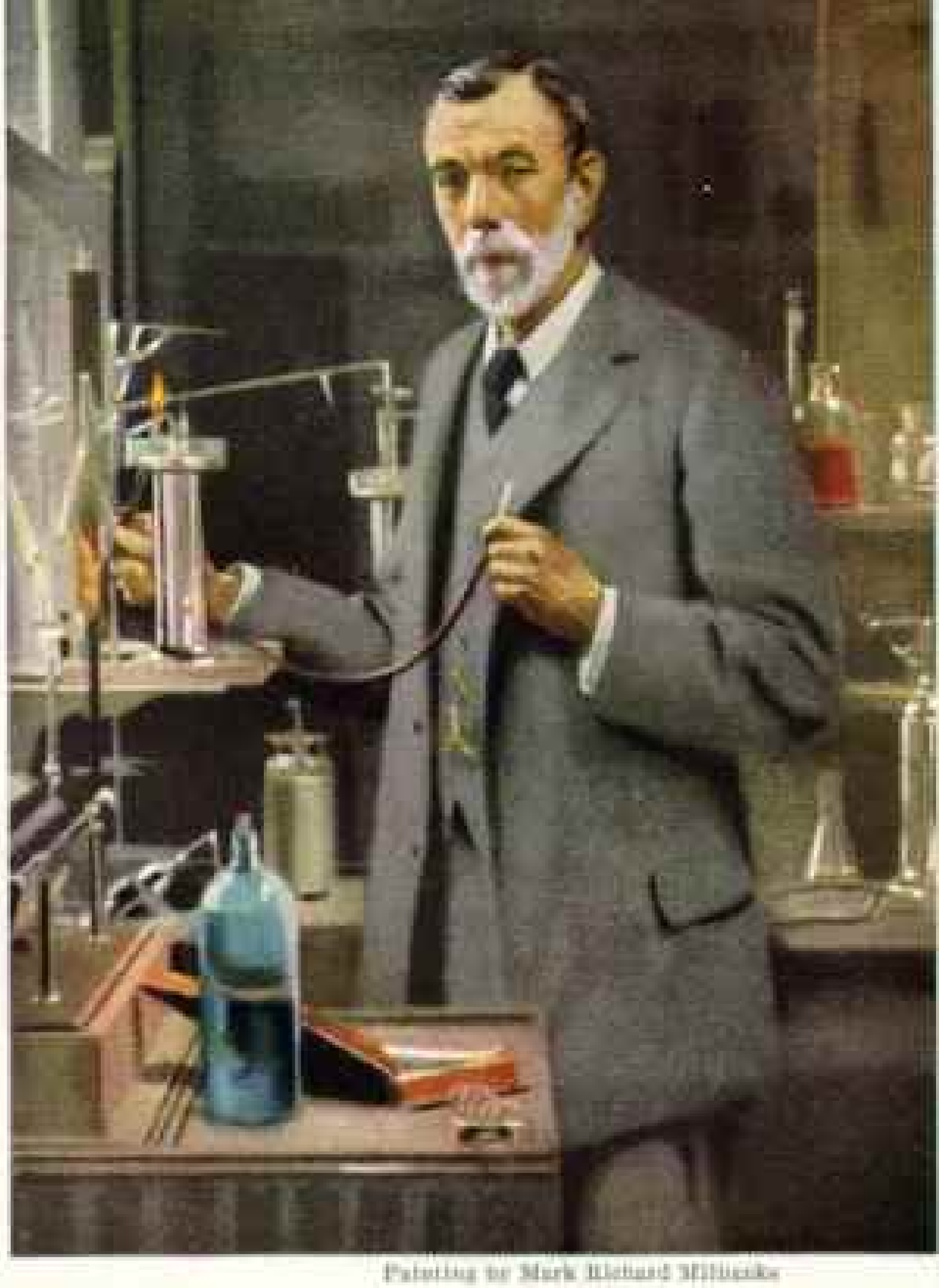
Thomson was the first to show that the atom is made up of particles of positive and negative electricity, the nucleus having a positive charge while electrons with negative charges rotate around it. His work revolutionized the sciences of chemistry and physics.

One of Thomson's great contributions was his tremendous influence in the training of young physicists at the Cavendish Laboratory. During his tenure it was a mecca to which young men flocked from all over the world to sit at the feet of this great teacher.

When only 27, he was elected to the Royal Society. He is buried in Westminster Abbey.

The portrait of Sir Humphry Davy (page 510), by Sir Thomas Lawrence, and Oswald Birley's painting of Lord Rutherford are used by permission of the Royal Society; that of Sir William Ramsay (page 525), by Mark Milbanke, is from the University College, London, and Arthur Hacker's Sir Joseph J. Thomson is in the Cavendish Laboratory.

© National Geographic Society Painting by Sir Thomas Lawrence, P. R. A.



Painting by Mark Richard Millmoss

Three of These British Pathfinders of Science Won the Nobel Prize

Sir William Ramsay, upper right, was a co-discoverer of helium, neon, and argon (page 525); and Lord Rutherford and Sir J. J. Thomson, lower left and right, helped lay the foundations for nuclear physics. Sir Humphry Davy, upper left, inventor of the miner's safety lamp, lived before the award was offered (page 510).

Painting by Oswald Birley, R. O. I.

Painting by Arthur Hacker, R. A.

Cowes: Cradle of Yachting

NO PLACE is more closely associated with the growth of yachting than Cowes, the Isle of Wight village which, since Queen Elizabeth's time, has been a favorite seaside resort for Britons.

Though Britain has done more than any other nation to popularize the sport, the word "yacht" itself originated in the Dutch language. From *jaghten*, or *jachten*, "to hurry," "to hunt," came *jaghtschip*, meaning "swift vessel."

England's introduction to the word came in 1660, when the Dutch presented the yacht *Mary* to King Charles II. Samuel Pepys noted in his diary that the King rose at 5 o'clock on the morning of August 15, 1660, to inspect his new toy on the Thames.

Seventy-two years earlier, during Elizabeth's reign, a pleasure boat launched at Cowes appears to have been the first English vessel constructed for a purpose other than warfare or commerce.

Three months after Charles received his gift from the Dutch, Pepys reported that Commissioner Phineas Pett planned to build a vessel, also for the King, which would outdo the Dutch craft.

The second yacht was afloat by the following spring. Then came a third, launched for the Duke of York. Meantime, another Dutch vessel, the *Bezan*, had appeared; so by 1661 the Thames boasted four yachts.

Pepys's diary entry for September 6, 1662, contains the first record of a yacht race. In this contest the King, sailing the Dutch *Bezan*, defeated the Duke of York's English-built *Anne* for a prize of £100.

More and more yachts were built for the King and for others of the royalty, nobility, and aristocracy of England, Ireland, Wales, and Scotland. To its roles of shipbuilding center and fashionable watering place, Cowes added that of yachting capital.

On June 1, 1815, forty distinguished sailing enthusiasts met in a London tavern and launched the Yacht Club, with headquarters at Cowes. In later years the roster was to include Bourbons, Hohenzollerns, Bonapartes, and others of Europe's ruling families.

When a prince regent became a member in 1817, the organization was renamed the Royal Yacht Club. Sixteen years later it became the Royal Yacht Squadron. After it came hundreds of other yacht clubs scattered throughout the world.

Early events at Cowes bore little resemblance to the regatta in our picture. Most owners of vessels regarded sailing merely as a pleasant incident of their annual stay at the seashore. Biggest event of the year was Regatta Week, in August, when royalty attended.

The first regattas, rather than races, were stately processions in the Solent, with yachts gaily dressed in bunting and their decks crowded with famous and fashionable people. At night there were fireworks and elaborate parties ashore and afloat.

In the meantime, however, growing numbers of more spirited amateur sailors were racing off Cowes and elsewhere. Across the Atlantic, yachting was undergoing similar development, and in 1844 the New York Yacht Club, first in the United States, was organized.

The first world's championship race was arranged as a feature of the Great Exhibition in London in 1851. The Royal Yacht Squadron offered the One Hundred Guinea Cup (worth about $500) to the winner of a 60-mile race around the Isle of Wight.

Representing the New York Yacht Club and the United States was the rakish 94-foot centerboard schooner *America*.

The race was sailed August 22, 1851, and *America* won by 18 minutes. The trophy, known since then as the America's Cup, was taken home to the New York Yacht Club, where it has remained despite repeated efforts to return it to Britain.

The *America* ended its career as a floating museum piece at the United States Naval Academy at Annapolis, where it was broken up in 1945.

One of the most famous America's Cup contestants was Sir Thomas Lipton, who vainly sailed his five *Shamrocks* against American yachts. After his *Shamrock V* was beaten in 1930, Sir Thomas vowed to try again, but he died the following year.

T. O. M. Sopwith, the English airplane manufacturer, twice attempted to lift the cup with his *Endeavour I* and *Endeavour II*, but was defeated in 1934 by Harold S. Vanderbilt's *Rainbow* and again in 1937 by the American's *Ranger*.

Thus the America's Cup remains on the "wrong" side of the Atlantic, as English sportsmen view it. And the fantastic cost of building and sailing the tall, streamlined J-class sloops makes resumption of the America's Cup series an exceedingly dim possibility.

All over the world, however, sailing enthusiasts of all ages race and cruise in smaller, simpler craft. They all owe a debt to the Royal Yacht Squadron at Cowes.

"When the Big Boats Come Out of Cowes Roads"—In the Foreground Is *Endeavour II*, Last British Contender for the *America's* Cup

Others (left to right) are *Astra*, *Shamrock V*, *Velsheda*, *Britannia*, and *Candida*. The painting is by Charles Pears, Royal Institute of Oil Painters.

Painting by Charles Pears, R. O. I.

A Very Gallant Gentleman—Lawrence Edward Grace Oates (1880–1912)

THE TRAGIC STORY of Scott's second Antarctic expedition, which sailed from England in the *Terra Nova* in June, 1910, is one of heroism unsurpassed in the annals of polar exploration. Among the heroes who went with Scott and reached the South Pole on January 18, 1912, none deserves greater glory than that gallant gentleman, L. E. G. Oates, called by his companions "Titus" or "Soldier."

Oates was appointed by Scott to look after the 19 ponies to be used for sledge haulage. Reliable, good-natured, and imperturbable, he was the ideal choice for the job. He had conquered ill health as a youth and won distinction for bravery in the South African War.

The expedition established a base at Cape Evans on Ross Island, and finally in November, 1911, under Scott's leadership, the sledging party set off for the South Pole. Scott's four companions on the final adventure were Dr. E. A. Wilson; Lt. H. R. Bowers, Royal Indian Marine; Oates; and Petty Officer E. Evans. The journey southward was fraught with great difficulties; but all went fairly satisfactorily.

They arrived at the South Pole on January 18, 1912, only to find Amundsen's tent and the Norwegian flag. Amundsen had reached the South Pole on December 14, 1911.

The psychological effect on the English party when they realized that they were not the first to reach the Pole was overwhelming; but there was no time to lose, and they set off on the return journey on the same day. Progress was slow because of soft snow and extremely low temperatures. Soon Oates began to show signs of the effects of the severe cold, and Petty Officer Evans died on February 17. Next day the four survivors reached a depot, and their hopes rose temporarily. Weather conditions, however, continued to be very unfavorable.

Oates suffered greatly from frostbite, and despite his dauntless courage the speed of the party was much reduced.

Entries from Scott's diary tell the tragic story: "*Jan. 24.* I don't like the easy way Oates and Evans get frostbitten. *March 2.* Titus Oates disclosed his feet . . . *March 6.* Poor Oates is unable to pull, sits on the sledge."

In a letter to his wife Scott wrote, "The effort to get on his marching gear delayed the party by hours every day."

"*March 7.* He is wonderfully brave. We still talk of what we will do together at home. *March 10.* He has rare pluck and must know that he can never get through. *March 12 and 14.* Now with hands as well as feet pretty well useless, poor Oates . . . I shudder to think of what it will be like tomorrow. *March 17.* In spite of its awful nature for him he struggled on and we made a few miles. At night he was worse and we knew the end had come.

"Should this be found, I want these facts recorded. Oates' last thoughts were of his Mother, but immediately before he took pride in thinking that his regiment would be pleased with the bold way in which he met his death.

"We can testify to his bravery. He has borne intense suffering for weeks without complaint, and to the very last was able and willing to discuss outside subjects. He was a brave soul. This was the end.

"He slept through the night before last, hoping not to wake; but he woke in the morning—yesterday. It was blowing a blizzard. He said, 'I am just going outside and may be some time.'

"He went out into the blizzard, and we have not seen him since. . . . We knew that poor Oates was walking to his death, but though we tried to dissuade him, we knew it was the act of a brave man. We all hope to meet the end with a similar spirit, and assuredly the end is not far."

The three survivors fought on for another four days, covering some 20 miles, but the blizzard was too violent to permit them to move any farther, although they were but 11 miles south of One Ton Depot.

Scott wrote at the end of his last message: "Had we lived, I should have had a tale to tell of the hardihood, endurance, and courage of my companions which would have stirred the heart of every Englishman. These rough notes and our dead bodies must tell the tale, but surely, surely, a rich country like ours will see that those who are dependent on us will be properly provided for."

A generous tribute was paid to the memory of Scott and his followers by Helmer Hanssen, a member of the Norwegian party: "It is no disparagement to Amundsen and the rest of us when I say that Scott's achievement far exceeded ours . . ."

The memory of Oates is perpetuated by a strip of Antarctica named Oates Coast. Late in 1912 the relief expedition under Capt. E. R. G. Evans built a cairn near the spot where Oates died.

The painting "A Very Gallant Gentleman," by John Charles Dollman (1851-1934), is used by permission of London's Cavalry Club.

"Greater Love Hath No Man Than This, That a Man Lay Down His Life for His Friends"—John 15: 13

Painting by John Charles Dollman, R. B. C.

The Battle of Jutland, May 31, 1916

TERMED the greatest naval battle in modern times, the Battle of Jutland, or the Battle of the Skagerrak, as the Germans know it, was fought 80 miles west of Denmark. In it 250 ships contested for mastery of the seas.

Both sides claimed it as a victory, but after it was over the German Fleet was forced to seek its base and never again in World War I ventured a general battle with the British Navy.

In fact, Jutland was the only occasion when the rival fleets met in the course of 51 months of war. They were in contact for eight hours and actually engaged only 30 minutes. The British suffered 6,945 casualties, the Germans only 2,921.

Preceded by his scouting forces, Admiral Reinhard Scheer, in command of the German High Seas Fleet, set out from Wilhelmshaven in the direction of the Norwegian coast in the early hours of May 31. The British Admiralty, thanks to its efficient secret service, was aware that something unusual was taking place in Helgoland Bight and ordered Vice-Admiral Sir David Beatty to make a scouting sweep. Admiral Sir John Jellicoe, British Commander-in-Chief, kept his Grand Fleet out of touch some 70 miles to the north.

It was lucky for the Germans that the long running fight between the scouting forces did not take place two hours later when the Grand Fleet would have been in the area.

During this opening battle cruiser action, the *Indefatigable* was blown up. Beatty's flagship, the *Lion*, would have shared a like fate had it not been for the heroism of Maj. F. J. W. Harvey of the Royal Marines, who, although mortally wounded, saw to the flooding of the magazines and thereby saved his ship. *Queen Mary*, the next victim, was sunk in less than a minute.

Up to 6:20 p.m. the advantage was undoubtedly Scheer's, for he had destroyed or disabled five British ships for the loss of one light cruiser. Beatty, however, had brought the unsuspecting Germans within range of the Grand Fleet.

Suddenly, at 6:24, shells fell around Scheer's leading ships and he found he was heading into a trap set by Jellicoe. The British Fleet had crossed the "T" by massing battleships across the approaching German column.

Based on previous battles, an overwhelming victory would have been Jellicoe's. But Scheer signaled a daring new maneuver never before seen in naval tactics because of danger of collision. In it all the ships, steaming in column at full speed, made complete turns in unison. Within a few minutes his fleet had retreated out of range. Using conventional tactics, his ships, one by one, would have been destroyed as each made its turn at the head of the snakelike column and came under the concentrated British fire.

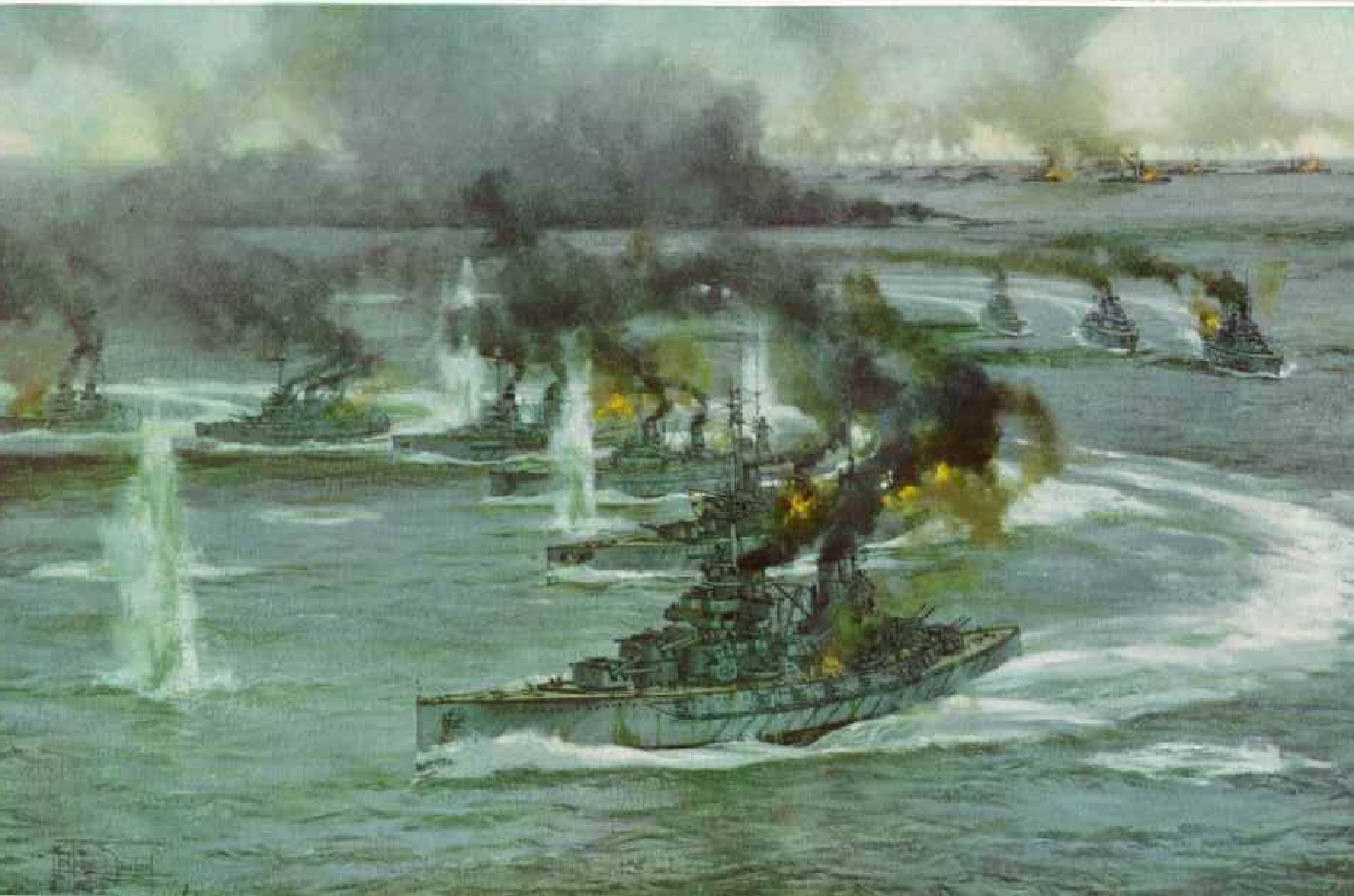
Again at 7:20 the German Fleet charged the Grand Fleet and again Jellicoe crossed the T, as shown in the sketch above.

Montague Dawson, English marine artist, painted this second dramatic incident for THE GEOGRAPHIC. In the foreground leading German ships are making their about-face maneuver behind the destroyers' artificial fog which screens them from the British gunners on the horizon.

Jellicoe refused to pursue the foe into waters erroneously believed infested with submarines and mines. Shortly before midnight the High Seas Fleet slipped through the British forces and escaped.

After Germany's defeat at Jutland, she attempted to crush Britain by ruthless U-boat action—a policy that caused the United States to declare war, April 6, 1917.

The German High Seas Fleet put to sea for the last time when 70 ships surrendered to the British Grand Fleet off the Firth of Forth, November 21, 1918. Seven months later the interned ships were scuttled or beached by their German crews in Scapa Flow.



Sir Alexander Fleming and Penicillin

ALL THE PENICILLIN used during the first years after its discovery by Sir Alexander Fleming was "descended" from a spore that blew in through a window at St. Mary's Hospital, near Paddington Station, in 1928.

Since scrupulous cleanliness is essential in a bacteriological laboratory, the contamination of a culture plate by spore—to use Fleming's own words—"is usually regarded as a reflection on the technique of the bacteriologist."

Fortunately for mankind, Fleming did not throw away the culture plate, on which he had noticed "a greenish-blue mold colony growing at the edge."

Chance and luck play a large part in human affairs, but, as Pasteur remarked, fortune favors the prepared mind. In this case there was an exceptionally well-prepared mind waiting for just such a stray spore.

When Fleming's attention was first arrested by the unknown mold spore, he had no suspicion that this was the beginning of the most powerful antibacterial agent which had yet come to light. He discovered that this mold produced something much more powerful than carbolic acid in retarding the growth of many of the common microbes, and yet was apparently harmless to human cells. This antibacterial substance, produced by a mold of the genus *Penicillium*, he called penicillin.

Medical science made great advances in the 1930's; and shortly before the outbreak of war in 1939 an Australian Rhodes scholar, Howard Walter Florey, Florey's wife, and Ernest Boris Chain, a German refugee in England, decided to undertake a systematic investigation of substances capable of destroying harmful microbes. Both Mr. and Mrs. Florey were medical graduates of Adelaide University.

Electing to concentrate on penicillin, they obtained some of Fleming's culture. The costly undertaking was beyond their means, but they were fortunate enough to obtain a grant of £350 from the Rockefeller Foundation.

They succeeded in concentrating the penicillin. By drying it was stabilized, so that treatment, first of mice and then of men, could be introduced. Astonishing results were achieved, and then the problem arose how to obtain adequate supplies for the fighting forces.

The story of the subsequent development of penicillin is a wonderful example—there were many such incidents in World War II—of what British-American cooperation can achieve for the human race. Fleming tells how it was that there was sufficient penicillin for the wounded when D-Day arrived: "It was largely due to American factories that this happy state of affairs was reached so soon. Without their help our wounded during the invasion of Europe would have been woefully short of penicillin."

In the summer of 1941 Howard Florey and A. D. Heatley, in response to an invitation, went to the United States and gave all their information to the authorities. The problem of large-scale production was at once tackled with energy by the National Research Council, the Department of Agriculture's research laboratories in Illinois, and other bodies.

Henceforth, information was exchanged freely between researchers on both sides of the Atlantic, and the production of penicillin became a major war effort.

Treatment with penicillin grew with extraordinary rapidity during the war years. In the summer of 1943 sufficient supplies were available to treat only 15 men in the Eighth Army. Within little more than a year supplies were available for the treatment of every man who needed it.

In addition to its wonderful effects on wounds, penicillin has achieved remarkable results in the fight against such major scourges as pneumonia, streptococcic infections, and especially venereal disease. It has also proved highly useful in dealing with such minor complaints as boils and sore throats.

Fleming has pointed out that penicillin is not a panacea. Nevertheless, its discovery merits a place alongside such great developments of medical science as those begun by Jenner, Pasteur, and Lister.

The saga of the development of penicillin into one of the most effective weapons in fighting disease is inspiring because of the spirit of altruism displayed by Fleming and his co-workers. They refused to regard their task in terms of personal gain.

Some time after its discovery, the penicillin mold, the *British Medical Bulletin* reported in 1944, was identified as *Penicillium notatum*, "a species which had been found by Westling in decaying hyssop." ("A low European mint" or "Aromatic herb formerly used medicinally.") It must have been stimulating to Fleming and his co-workers to recall the words of the Psalmist, "Purge me with hyssop, and I shall be clean."

Ethel Gabain's painting of Sir Alexander Fleming at work in his laboratory is in London's Imperial War Museum.

Sinking of the *Bismarck*, May 27, 1941

UNABLE EVEN TO VISUALIZE the possibility of Grand Fleet action again as at Jutland, the German Navy with the resumption of hostilities in World War II concentrated on commerce raiding with submarines and bombing planes and with such hard-to-catch and harder-to-kill 50,000-ton ships as *Bismarck* and *Tirpitz*.

The sensitivity of British intelligence was the one great advantage which the seawise, sleepless champion maintained over the challenger. The unusual amount of German air reconnaissance between Jan Mayen Island and Greenland in May, 1941, instantly had its effect on the British Home Fleet's dispositions and refueling plans.

The 50,000-ton *Bismarck* was sighted by a patrolling destroyer on the misty ice edge of the Denmark Strait, between Greenland and Iceland. The 21-year-old and most beautiful battle cruiser ever built, H.M.S. *Hood*, closed with *Bismarck*, but *Hood* was unlucky.

Suddenly, with a single straddle from *Bismarck's* guns, *Hood* was destroyed, 6 o'clock on the morning of Saturday, May 24, 1941.

After her tremendously successful hit, *Bismarck* disappeared in the Atlantic fog. Scheer at Jutland had the North Sea to hide in from Jellicoe; *Bismarck* had the whole North Atlantic, and the knowledge that near home again she would gain the protection of Hitler's submarines and planes. The hunt was on, in heavy weather and rough seas, seas so rough that the deck of the British aircraft carrier, *Ark Royal*, was rising and falling 56 feet at times, making landings-on extremely difficult.

Monday noon, May 26, a long-range Catalina scouting plane (a twin-engine American-built flying boat) spotted *Bismarck* making for the French ports. Soon wave after wave of bombers and planes from *Ark Royal* was off for the attack.

"When the aircraft came near the *Bismarck*," quoting Admiral Sir John Tovey's dispatch, "a thick bank of cloud with base about 700 feet and top between 6,000 and 10,000 feet was encountered. The torpedo attacks had therefore to be made by sub-flights or pairs of aircraft over a long period in the face of intense and accurate fire; they were pressed home with a gallantry and determination which cannot be praised too highly. One aircraft, having lost touch with his sub-flight, returned for a fresh range and bearing of the enemy and went in again by himself in the face of very heavy fire to score a hit on the port side of the *Bismarck*."

There is now no doubt that it was the fortunate hit by one of the aircraft from the *Ark Royal*, on the evening of May 26, which enabled the British Commander-in-Chief to bring the *Bismarck* to action next morning. The *Bismarck's* rudder had been damaged; she was out of control and kept turning in large circles. Her plight was now desperate.

For the first time in naval history, a carrier-based plane had mortally wounded a battleship.

It was announced on board that the Führer would confer "the Knight's insignia of the Iron Cross" on the man who succeeded in freeing the rudders. The strain now began to tell on the crew, many of whom had been without sleep for five days and nights. At that moment came this message from Hitler, "All our thoughts are with our victorious comrades."

His admiral's reply, "Ship unmaneuverable. We shall fight to the last shell," cannot have allayed the growing anxiety of Berlin.

After a night of heavy seas, rain squalls, and low visibility came the day of retribution—May 27. The *Bismarck* came in sight of the British at 8:43, and H.M.S. *Rodney* and *King George V* opened fire. The *Bismarck* was finally sunk by torpedoes from the cruiser H.M.S. *Dorsetshire*, some 550 miles due west of Brest at 10:37 a.m.

"The *Bismarck*," writes Admiral Tovey, Commander-in-Chief of the Home Fleet, "had put up a most gallant fight against impossible odds, worthy of the old days of the Imperial German Navy, and she went down with her colours still flying. *Dorsetshire* picked up four officers . . . and 75 ratings; *Maori* picked up 24 ratings; but at 11:40 *Dorsetshire* sighted a suspicious object which might have been a U-boat, and ships were compelled to abandon rescue. . . ."

The issue of the *London Gazette* containing Admiral Tovey's account of the sinking of the *Bismarck* makes moving reading. It records one of the turning points of the war. Not till the United States entered the war six months later was there such rejoicing in British hearts.

The Germans sent *Tirpitz* to Norwegian waters when completed in 1941. There she hid until RAF Lancasters with 6-ton Earthquake bombs sank her near Tromsö, November 12, 1944.

Montague Dawson's painting "Sinking of the *Bismarck*" was done for the Northern Pump Company of Minneapolis, Minnesota, from whose collection it was loaned for use in this series.

Sir William Gilbert (1836–1911) and Sir Arthur Sullivan (1842–1900)

ENGLAND has produced no immortal grand opera, no world-renowned symphonies, no considerable number of unforgettable folk songs; yet it has given to musical literature in the light operas of Gilbert and Sullivan an enduring contribution as peculiarly and distinctively British as roast beef and Yorkshire pudding or tea and tiffin.

Exemplifying the true Englishman's ability to laugh at himself, the Gilbert and Sullivan operettas lampoon without malice the foibles and frailties of the British and for that matter of all mankind. Their hilarity is so infectious and has such wide human appeal that, like Tennyson's brook, they go on forever.

Throughout the British Empire, the United States—in fact, wherever English is spoken, music and dramatic clubs, colleges and high schools keep the memory of Gilbert and Sullivan forever green by putting on periodic performances of *The Mikado*, *H.M.S. Pinafore*, *Pirates of Penzance*, *Trial by Jury*, *The Gondoliers*, *The Sorcerer*, and *Iolanthe*. Probably thousands of readers of this MAGAZINE have personal recollections of taking part in some production of Gilbert and Sullivan.

No more oddly assorted pair ever collaborated for the theater than the librettist William Gilbert and the composer Arthur Sullivan. Because of a caustic and often devastating wit, Gilbert got on rather badly with many people. He was a hard worker, crotchety and exacting, inclined to shun social affairs. On the other hand, Sullivan, easy-going and amiable, was popular in society.

Despite their differences of opinion, however, 13 of the 14 operettas they did together were successful. Sullivan gave Gilbert full credit for making the chorus for the first time in theatrical history an integral part of the opera, and Gilbert praised Sullivan as the only composer who could bring out with his music the real lilt and rhythm of English song lyrics. When either worked with another collaborator, the results were never up to the standards set by their joint efforts.

Sullivan was a wonderful melodist and he would have gained a measure of lasting fame even if he had never composed an operetta. His glorious tune *Onward, Christian Soldiers*, written when he was editor of the Church of England *Hymnal*, will be sung as long as churches stand. While sitting by the deathbed of his brother Frederic, he composed the music of the exquisite song *The Lost Chord*, perennial favorite of soloists.

In 1875 Richard D'Oyly Carte, then acting manager of the Royalty Theater, asked Gilbert to write him a libretto to be set to music by Sullivan, and Gilbert promptly responded. According to Sullivan's account, "The words and music were written, and the rehearsals completed, within the space of three weeks." The operetta *Trial by Jury* had its premiere on March 25, 1875. An immediate success, it ran for the rest of the year. The famous partnership of Gilbert and Sullivan and D'Oyly Carte was under way, and the phrase "Gilbert and Sullivan" became a trade-mark.

H.M.S. Pinafore; or, The Lass That Loved a Sailor, "An Entirely Original Nautical Comic Opera in Two Acts" by Gilbert and Sullivan, opened in 1878. *Pinafore* had an initial run of some 675 nights, and it has been running off and on somewhere ever since.

The Pirates of Penzance; or, The Slave of Duty, opened on December 31, 1879, in New York. When the *Pirates* had run about a year, it was succeeded by *Patience; or Bunthorne's Bride*. Carte, now prosperous, built the Savoy Theater especially for the Gilbert and Sullivan operettas and moved *Patience* there in the midst of its run of 408 nights. This theater was the first in London to be lighted with electricity, and Carte had to advertise that it was equipped also with gas for use in case the electric lights failed. It seated only 1,300; yet it proved a veritable gold mine.

Sullivan suffered for most of his life with a kidney ailment which put him to bed periodically with excruciating pain. His beloved mother died in May, 1882, when Sullivan was composing one of his gayest scores, *Iolanthe; or, The Peer and the Peri*. Moreover, as he went into the pit to lead the orchestra on the opening night of *Iolanthe*, he received word that his brokers had gone bankrupt and he was penniless. He conducted the performance as if nothing had happened.

Before *Iolanthe* had completed its 14-months run, Sullivan was knighted in May, 1883. Gilbert was passed over; he did not receive the honor until 1907. Undoubtedly the knighting of Sullivan was the beginning of the rift between the collaborators.

The Mikado; or, The Town of Titipu, opened at the Savoy on March 14, 1885, and ran for 672 nights. Since then it has been almost constantly on some stage somewhere.

In December, 1889, was presented Gilbert and Sullivan's *The Gondoliers; or, The King of Barataria*. About this time there was a quarrel over a new carpet which Carte had ordered for the Savoy. Sullivan sided with Carte. The librettist and the composer were hardly on speaking terms thereafter.

Painting by Kenneth Riley

"To Save My Life, It Is Necessary That I Marry at Once"

"How should you like to be a fairy guardsman?" Kenneth Riley depicts the Fairy Queen asking Willis, the sentry, for his hand before the jilted Lord Chancellor, Act II of *Iolanthe*. The brave fellow replies, "Well, ma'am, I don't think much of the British soldier who wouldn't ill-convenience himself to save a lady in distress."

Painting by Frank O. Salisbury, R. P.

"I Have Nothing to Offer but Blood, Toil, Tears, and Sweat"

With these words Winston Churchill, England's strong man of destiny, put iron into the souls of his countrymen in the dark days when it seemed inevitable that Hitler would cross the Channel and march on London. This portrait, "The Rt. Hon. Winston S. Churchill, P.C., M.P.," was painted by Frank O. Salisbury during the black months of 1942, when the fate of the world hung in the balance. The canvas was presented as a token of admiration by members of the Devonshire Club to Mr. Churchill, by whose gracious permission it is used.

Winston Churchill (1874——)

FITTINGLY, THE PORTRAIT of Winston Churchill which faces this page shows him in the "siren suit" he wore in World War II. It will remind later generations of Churchill, the embodiment of the fighting spirit of John Bull.

Whenever there was danger and destruction in the dark days of the Battle of Britain, he was certain to appear and to spread confidence by his presence. He flew thousands of miles to confer with his allies, to cheer the men at the front, to attend meetings of strategy boards.

In his flights he traveled in a pressurized chamber facetiously called the "Easter egg." It was designed for his use because his doctors warned him that it would be unsafe for him to fly at heights above 8,000 feet.

No one who was in London during the spring and summer of 1940 will ever forget those months. The swift Nazi moves when Hitler first set his war machine in motion and the withdrawal of the British forces from Norway, after the ineffectual efforts of the Government to stem the German rush, had caused gloom throughout the land.

English spirits soared when the rugged, fearless, outspoken Churchill succeeded Chamberlain as Prime Minister.

Churchill at once managed to put over his rugged and indomitable personality on the radio. In those first critical months I watched anxious groups gathered around the loudspeaker in England, in the United States, and in Canada. His audiences stood spellbound listening to his biting remarks about the Nazis and Hitler.

Surely no other leader in history has ever more successfully instilled into his hearers his own supreme confidence. Even in the grim months after Dunkirk, when England was expecting invasion at any moment, the British people shared Churchill's belief that our cause would triumph—though how we should pull through we did not know.

Winston Leonard Spencer Churchill was born on November 30, 1874, at Blenheim Palace, the home of his great ancestor, the Duke of Marlborough, victor at Blenheim (1704). At Cowes in the Isle of Wight his father had fallen in love at first sight with Jeannette, the daughter of Leonard Jerome of New York, proposed to her the following day, and married her after a short delay suffered impatiently by the young lovers but insisted upon by both families.

It was a happy stroke of fate that gave an American mother to the man who was destined to lead England in the trying time when that country and the United States joined arms against a common foe.

Winston's first venture outside the family circle was his sojourn at a private school at Brighton, where his schoolmistress described him as "the naughtiest small boy in the world." He had been sent to Brighton because of supposedly delicate health, yet the teacher found him far from lacking in liveliness. School years at Harrow followed Brighton.

After leaving the Royal Military Training College at Sandhurst, Churchill obtained a commission in the 4th Hussars, and within a year went out during leave to Cuba, where he obtained his first glimpse of war. He wrote articles at £5 each for the *Daily Graphic* and returned to England with the Spanish military medal.

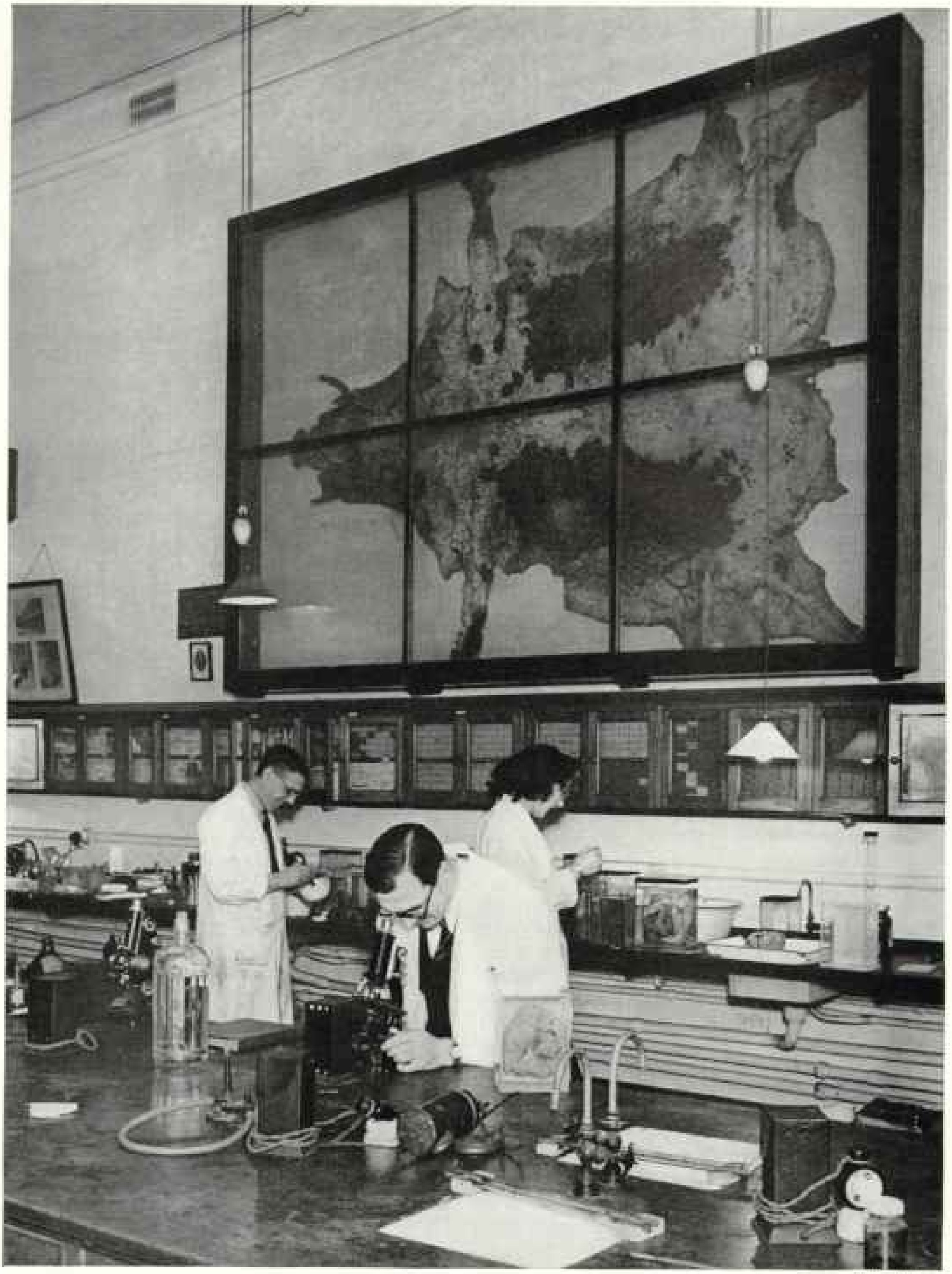
With periods of campaigning on the northwest frontier of India and in the Sudan behind him, he served conspicuously in the South African War. His adventures in that campaign and his dispatches to the *Morning Post* brought him into the limelight.

As First Lord of the Admiralty he helped to prepare the Royal Navy for World War I. The ups and downs of politics tossed him about for the next few years. With marked success he turned his hand to writing—his masterpiece was the life of his ancestor, the great Duke of Marlborough—to painting in oils, and even to bricklaying on his property in Westerham.

From the early days of flying Churchill took a keen interest in this new development. During the years of appeasement he continuously demanded a great expansion of the RAF to meet the German menace; but his warnings were unheeded. As Prime Minister he took every opportunity of identifying himself with the boys of the RAF and of visiting their messes. He was appointed honorary Air Commodore of RAF 615 Fighter Squadron Unit.

On August 20, 1940, when speaking of the small band of fighter pilots defending England, Churchill used these memorable words: "The gratitude of every home in our island, in our Empire, and indeed throughout the world, except in the abodes of the guilty, goes out to the British airmen, who, undaunted by odds, unwearied in their constant challenge and mortal danger, are turning the tide of world war by their prowess and by their devotion. Never in the field of human conflict was so much owed by so many to so few!"

For the crowning mercy of the victory of the Battle of Britain, humble and hearty thanks were rendered throughout the entire English-speaking world. It was Winston Churchill who heartened people to win that victory.



Topical Press

The Cow That Wore This Hide Helped Jenner Conquer Smallpox

In a glass case on a wall of a laboratory in St. George's Hospital, London, is preserved the relic of the victim of cowpox that provided for the famous physician the vaccine which ended one of the most terrible scourges in history (pages 502, 545).

Our Search for British Paintings

By Franklin L. Fisher

EARLY IN 1947 the National Geographic Magazine decided to present the highlights of Great Britain's contributions to Western civilization.

This amazing story follows naturally the earlier National Geographic portrayals of "Daily Life in Ancient Egypt," "Greece—the Birthplace of Science and Free Speech," and "Ancient Rome Brought to Life," which delved into the remoter sources of Anglo-Saxon and American institutions.*

To search the British Isles for authentic paintings of the subjects decided upon, I took ship for London in July, 1947. There I first conferred with Sir Evelyn Wrench, founder of the English-Speaking Union, who had been invited by Dr. Grosvenor to contribute the lead article.

Start of a Hunt for Pictures

With Mr. and Mrs. Thomas Garner James, who had been helping Sir Evelyn collect data for his article, I visited museums and galleries, ferreted out private collections, and consulted experts in English history and historical paintings. Among these was Sir Walter Lamb, Secretary of the Royal Academy of Arts, who introduced me to artists and paintings which seemed to him suited to our need.

In London I met also Mr. Frank O. Salisbury, R. P., whose famous murals of British historical subjects decorate the walls of the Royal Exchange. He has painted portraits of many important persons.

I was received by Mr. Salisbury in his combination residence, studio, and art gallery, which is one of the most extraordinary residences I have ever had the opportunity to see. The house faces Hampstead Heath in London and was built just before the last war. Designed by the architect to meet the artist's specifications, it has many unusual features, notably well-lighted wall space in all the main rooms for the exhibition of Mr. Salisbury's pictures.

The entrance with its grand stairway suggests a residence of a high government official. As might be expected, the color tones of rugs, walls, and decorations are combined for harmonious effect. At the top of the stairway is the formal drawing room and down a few steps to another level is the studio, which is especially well lighted and contains racks and cases for the storage of sketches and canvases.

Few pictures were in evidence here, but Mr. Salisbury brought out portrait studies of Franklin D. Roosevelt and President Truman and showed them one at a time on an elaborate easel. He also showed me a portrait study of the Princess Elizabeth for which he had been granted special sittings, but which at that time had not been completed. He was a most genial host.

Mr. Salisbury's latest portrait of Mr. Churchill appears as page 540 and shows him in the "siren suit" he wore in World War II. A thumbnail description reads as follows:

"The Rt. Hon. Winston S. Churchill, P. C., M. P., by Frank O. Salisbury, painted during the strenuous war days in 1942. Exhibited at the Royal Academy, Royal Portrait Society's Exhibition, November, 1942. Presented by members of the Devonshire Club to Mr. Churchill as a token of admiration. Replica presented to Harrow School."

In the Cavalry Club, 127 Piccadilly, I found the magnificent painting of Captain Oates, of Scott's South Pole expedition. The picture, carrying the modest title of "A Very Gallant Gentleman," was painted in 1913 by John Charles Dollman, R. B. C. (1851-1934), a prolific painter of historical subjects who exhibited at the Royal Academy from 1872 to 1904. It is reproduced by courtesy of the Cavalry Club and Thos. Forman & Sons, Ltd., Nottingham, owners of copyright.

Capt. Lawrence Edward Grace Oates was an officer of the Inniskilling Dragoons and a member of this club.

No picture could illustrate more effectively the story of Britain's intrepid explorers who for centuries have searched out the secrets of geography. It is an admirable canvas of large dimensions (page 531).

Another picture found in a London club was William Clarkson Stanfield's "Battle of Trafalgar," which hangs in the United Service Club at 116 Pall Mall (page 505). This artist (1793-1867), a sailor in youth, later painted theater scenery and eventually was elected to the Society of British Artists and the Royal Academy. He was commissioned to paint the picture for the senior United Service Club in 1836, when the club, first of London's organizations of this character, was 21 years old.

This is a large canvas, occupying one side of a great stair well surmounted by a glass dome. A companion canvas on the opposite

* See the National Geographic Magazine for October, 1941, March, 1944, and November, 1946, respectively.

side was destroyed by a bomb in the London blitz. Indeed, many paintings which had been considered suitable for this series were found to have been destroyed by the bombing during World War II.

Among the private individuals who gave access to their paintings was the Rt. Hon. Sir Charles Trevelyan, Bart., who owns the mural by William Bell Scott, A. R. S. A. (1811-90), "Building a Roman Wall." Sir Charles served 30 years in Parliament and is the elder brother of Sir G. M. Trevelyan, the noted Cambridge University historian.

This painting, page 446, opens the series as the earliest example of English accomplishment, although Britain then was under control of Roman invaders. The picture is in Wallington Hall, Northumberland.

Cherished Paintings Offered for Series

Many British institutions of learning lent their cooperation and cherished paintings for our project. The City Art Gallery at Bristol, through the courtesy of the artist's widow, allowed us to reproduce its fine painting by Ernest Board, R. W. A. (1877-1934), of the Cabots setting out on their voyage to America, which appears as page 461. The Royal College of Surgeons made available its picture of Henry VIII confirming the act of union to the Barbers and Surgeons, after Holbein, with only the request that we state that it hangs in the College and is reproduced by permission of the president and council (page 463).

Very appropriately at Plymouth hangs the picture of Sir Francis Drake receiving surrender of the Andalusian flagship. By John Seymour Lucas, R. A. (1849-1923), it is in the City Museum Art Gallery, Tavistock Road, Plymouth, through whose courtesy and that of the artist's son, who inherited most of his father's copyrights, it is reproduced as page 468.

Lucas was a constant exhibitor at the Royal Academy of pictures showing historical subjects, including many of the Tudor and Stuart periods. Another of his works, to represent British achievement in architecture, is the picture of King Charles II and Sir Christopher Wren (page 483), which hangs in the Laing Municipal Art Gallery, Newcastle, England.

The dramatic marine scene, "Embarkation of the Pilgrims," by the American Edward Moran, A. N. A. D. (1829-1901), shows the *Mayflower*, a 180-ton vessel, leaving Southampton on August 5, 1620. The artist was a weaver by trade, but developed his talent for painting at an early age. He especially liked to paint marine scenes and greatly admired the work of William Clarkson Stanfield, whose painting of the "Battle of Trafalgar" is shown on page 505.

I located Moran's painting at the U. S. Naval Academy Museum, Annapolis, to which it was presented by Mr. Paul E. Sutro of Philadelphia in 1940. It is on permanent exhibition in the main display room at the museum (page 472).

There are many pictures of Oliver Cromwell, but chosen for our plate, page 476, is the one by Ernest Crofts, R. A. (1847-1911), showing Cromwell as a victorious general at the head of his troops after the Battle of Marston Moor.

This is owned by the town of Burnley, Lancashire, and was exhibited at the Royal Academy in 1909. It is published by permission of Corporation Art Gallery and Museum, Towneley Hall, Burnley.

The most effective picture of blind John Milton I located in the New York Public Library, to which a wealthy patron, Robert Lennox Kennedy, had given it in 1879. It was painted by Michael von Munkacsy (1844-1900) and is one of this distinguished Hungarian artist's best pictures (page 479).

When located, the canvas was in a bad state of preservation. The library's trustees kindly arranged to have it cleaned and restored for reproduction. To accomplish this, the picture was removed to the restorer's studio in Brooklyn. I was pleasantly surprised to learn of this through a news photograph in the *New York Herald Tribune* last summer, which showed the huge canvas being carried out of the library for this operation. We were waiting patiently for word that the restoration had been accomplished when we saw this photograph (page 546).

The Late N. C. Wyeth Represented

To represent the work of the great English storyteller, Daniel Defoe, whose *Robinson Crusoe* is still a best seller at Christmas time, the painting by the late N. C. Wyeth (1882-1945) entitled, "For a Mile or Thereabouts, My Raft Went Very Well," was chosen. The picture is reproduced as page 481 by permission of the David McKay Company, of Philadelphia, from the Wyeth edition of *Robinson Crusoe*.

It hangs at present with a number of others by Wyeth illustrating the Crusoe story in the children's room of the Wilmington Institute Free Library, Wilmington, Delaware. This library purchased the collection from the artist some years before his recent untimely death in order to have examples of his art in the vicinity where he lived and worked.

Wyeth's home was at Chadds Ford, Penn-

sylvania, near by. He was a member of that great school of American illustrators who studied in Wilmington under Howard Pyle. Some of his fellow students were Thornton Oakley, Clifford Ashley, Maxfield Parrish, Harvey Dunn, Stanley M. Arthurs, George Harding, and Frank E. Schoonover.

London Galleries Yield Many Scenes

The great art galleries of London were a prolific source of the pictures we wanted. The Tate Gallery provided the painting by the American, John Singleton Copley, R. A. (1738-1815), of the collapse of William Pitt the elder (Lord Chatham) in Parliament, where he was arguing the cause of the American Colonies. The picture is called "The Death of Pitt," although Pitt did not actually die until some time later, at his country seat in Kent (page 487). Reproduction is by courtesy of the trustees of Tate Gallery.

To represent British painters, I chose a work by William Hogarth (1697-1764). The official title of this picture, which appears as page 489, is "The Life School in Peters Court, St. Martin's Lane." According to the records, it shows a scene in a school promoted by Hogarth which occupied a room in Peters Court beside Tom's Coffee House in St. Martin's Lane, London. This studio, or school, ceased to exist with the establishment of the present Royal Academy, which fell heir to its anatomical figures, busts, and statues in 1768. This painting now hangs in the Royal Academy, Burlington House, London, and is reproduced by its courtesy.

The portrayal of John Wesley preaching at Sandhill, Newcastle (page 491), was painted by Wilson Hepple (1853-1937) and is owned by Sir Arthur Munro Sutherland, Bart., K. B. E., distinguished shipowner and coal exporter of Newcastle-on-Tyne (page 438), of which he was former Lord Mayor. The picture hangs in the Laing Municipal Art Gallery at Newcastle.

English inventors gave much to the world by helping to harness natural forces. James Watt, the Scottish boy, is shown on page 492 experimenting with steam in the family teapot in this human-interest painting by Marcus Stone, R. A. (1840-1921). Watt helped make England a great manufacturing country.

The artist had a friend and patron in Charles Dickens and did the illustrations for *Great Expectations* and drawings for *Little Dorrit* and *A Tale of Two Cities*. He was known as a pictorial teller of short stories, and his pictures are valued as romantic and idealistic.

An example of a picture painted especially for this series is that of General Wolfe (page 494), whose military success at Quebec was responsible for the fact that most of North America speaks English instead of French. Andrew Wyeth, son of the famous illustrator N. C. Wyeth and a successful painter in his own right, conceived this striking portrait of Wolfe on the Heights of Abraham above Quebec. This spot proved to be the key to the otherwise impregnable city. Its capture was the turning point in the battle, and, although both Wolfe and his opponent Montcalm were mortally wounded there, Wolfe's victory was decisive and had far-reaching consequences.

The striking picture of Capt. James Cook was located in Australia, of which he was the real discoverer. In 1902 the trustees of the National Gallery in Melbourne commissioned the Australian-born Emanuel Phillips Fox (1865-1915) to execute this work, reproduced here through their courtesy as page 498.

The artist attended the National Gallery Schools in Australia before going to Paris to study at the Académie Julian and the Beaux-Arts under Gérôme. He was a portraitist, landscapist, and painter of scenes from everyday life. He was elected a member of the New Salon, Paris, in 1910, and is represented in all the Australian galleries.

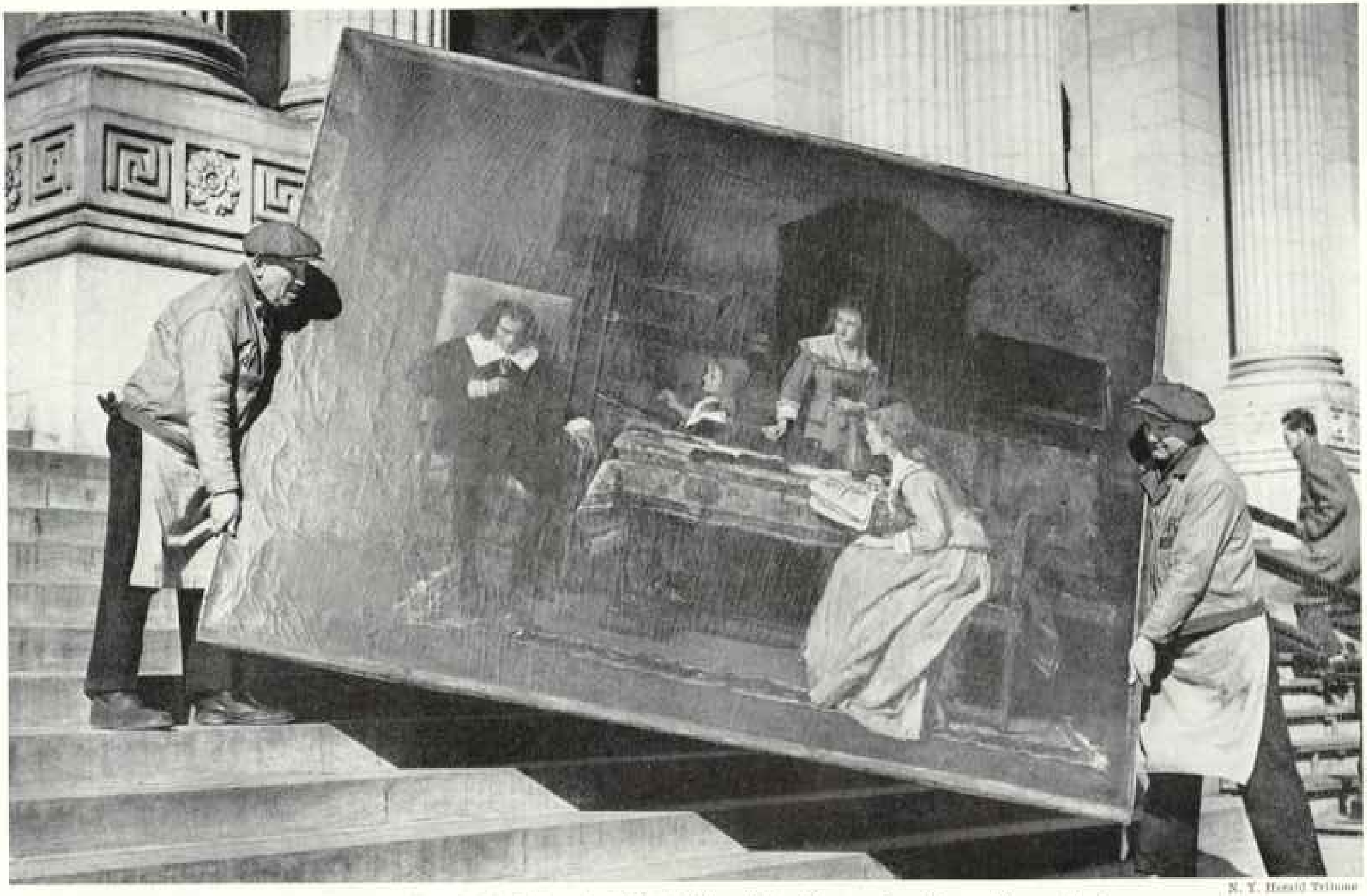
Famous Medical Men Included

The world owes a debt of gratitude to a long list of English medical men. Pictures of several of the eminent appear in this series. John and William Hunter were anatomists whose dissections of the human body left it with few secrets. Formal portraits of both brothers were available, but I chose the picture of William lecturing, by John, or Johann, Zoffany, R. A. (1733-1810), because of its illustrative quality (page 500).

Edward Jenner studied under John Hunter at St. George's Hospital, London. I visited this hospital for a vaccination and discovered on the wall of the laboratory, in a frame under glass, the well-preserved hide of the cow Jenner used to provide the vaccine for his first patient (page 542). The small boy, James Phipps, is shown with him in our painting of this event (page 503).

The artist, Ernest Board, was an English mural painter. He is represented also by the picture of the Cabots in Bristol (page 461).

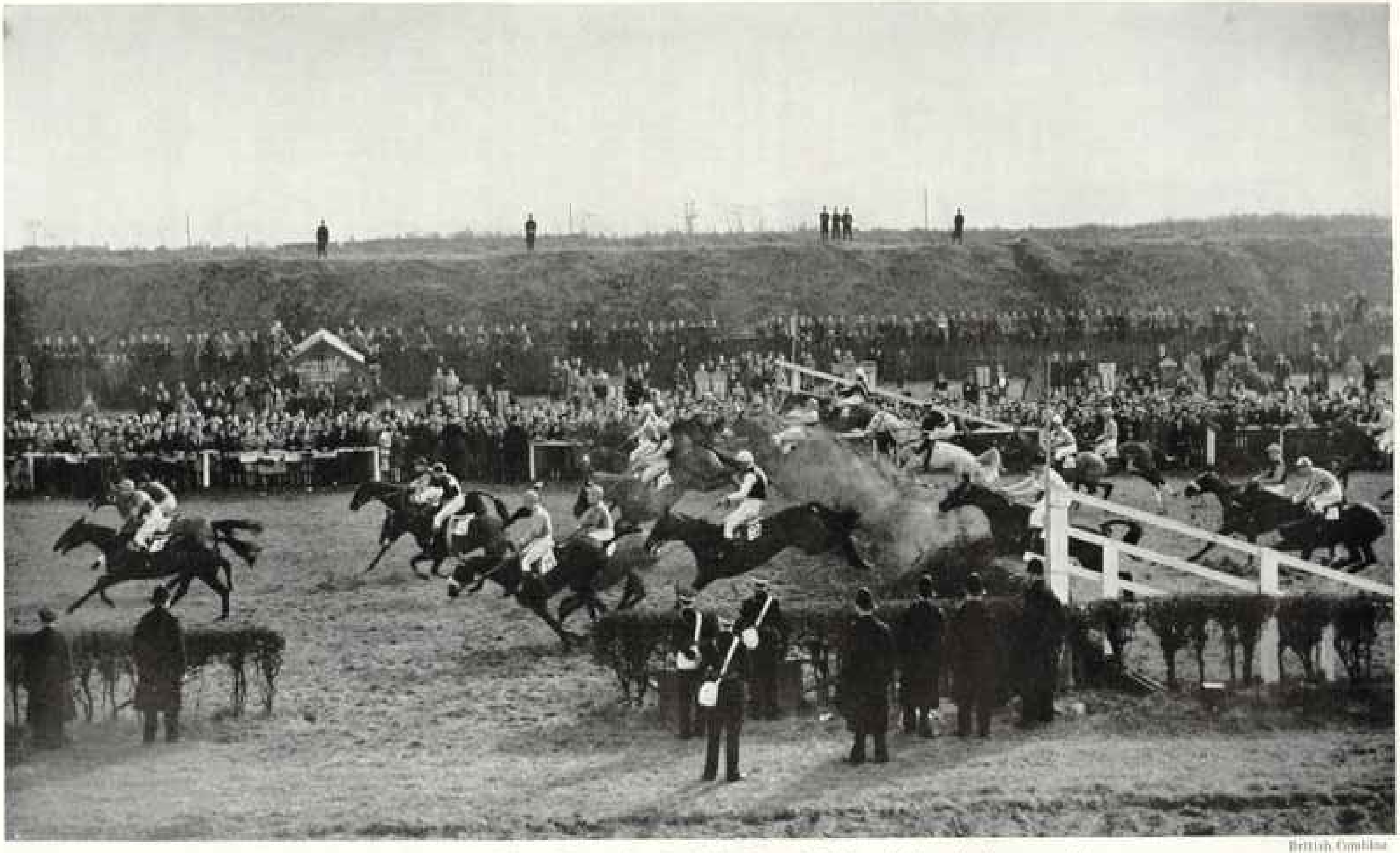
Chosen as a pictorial tribute to the English poets is the painting (page 507) commemorating Lord Byron's visit to the U. S. S. *Constitution* in the harbor at Leghorn, Italy, by William Edward West, N. A. (1788-1857). Mr. Francis Breese Davis, Jr., former chairman of the board of U. S. Rubber Company



N. Y. Herald Tribune

Removing the New York Library's "Blind Milton" for Restoration Was a Heavy Task

With its frame, Michael von Munkacsy's painting of the poet dictating *Paradise Lost* to his daughters weighs 400 pounds. It had been hanging on the second-floor landing of the building for about 30 years (page 544).



British Combine

They're Off! Over the First Fence in the 1948 Grand National Steeplechase at Aintree

In the center foreground is Sheila's Cottage (No. 22), which was the winner of the 1948 event, and First of the Dandies (No. 25), runner-up. The English are keen race enthusiasts, and from their breeding farms have come many world-famous speedsters.

Perhaps the most exciting horse race is a steeplechase, so called because the first chases had as their objective across hill and dale, fences, hedges, and brooks a distant landmark, often a church steeple. The outstanding steeplechase is the English Grand National, which has been run annually, except for war interruptions, at Aintree, near Liverpool, since 1839. The course is a little over four miles long, with 37 jumps hazardous to horse and rider. Many horses start, but only a few finish with riders up.

and a widely known industrialist, owns the painting. It hangs in his residence on a South Carolina plantation near Charleston.

In describing the painting, Mr. Davis said:

"Lord Byron visited the U. S. S. *Constitution* at Leghorn, Italy, May 21, 1822. At that time his thoughts were directed towards America. Some warm admirers of *Childe Harold* invited him to visit the frigate. When he went on board, he received a salute, and few compliments ever gratified him so much.

"Byron's companions at that time in Leghorn, several of whom might have been on the visit to the *Constitution*, were: Trelawny, Shelley, Williams, Leigh Hunt, and the Countess Guiccioli.

"The artist, William Edward West, was often referred to as 'Kentucky West' to distinguish him from Benjamin West. He was born in Kentucky. He studied with Thomas Sully in Philadelphia and later visited Italy to continue his studies. He excelled especially in portraiture and painted many notable persons: Lord Byron, Washington Irving, the Countess Guiccioli, Percy B. Shelley, and others.

"This picture is not wholly accurate so far as details of the ship and personages go, probably because West was not a marine painter and wanted, primarily, to depict the historical occasion."

Grace and Dignity of a Young Queen

Many pictures of Queen Victoria were considered, but none suited the purpose so well as Sir David Wilkie's painting of the young Queen presiding at her first council of state. This hangs in Windsor Castle and is the property of the English kings. It shows the Queen when at 18 years of age she held her first Council at Kensington Palace in 1837. Her grace and dignity on this occasion endeared her to all present.'

In this picture the Queen is represented as seated at the head of the Privy Council table. She holds in her hand the most gracious declaration addressed by Her Majesty to the Lords and others of the Council then assembled. Among those shown at the far right of the picture are the Archbishop of Canterbury and the Duke of Wellington.

Sir David Wilkie, R. A. (1785-1841), had many commissions for portraits of distinguished persons, although the ladies he painted were not always flattered by his presentation of them. The official credit line for this picture reads, "Reproduced by gracious permission of His Majesty the King" (page 509).

Through Sir Walter Lamb I met Mr. A. R. Thomson, R. A., whom I engaged to paint the picture of Michael Faraday (page 511). This artist is a most unusual man, in that he has become a noted painter in spite of the serious physical handicap of being unable to speak or hear. My mission with him was accomplished through Mrs. Thomson, who acts as her husband's interpreter. He and she talked together by finger signs, and then she told me what was said. He is a handsome man of fine physique whose appearance would command attention anywhere.

Dickens and His Characters

In London's Dickens House, where relics of this great English literary figure are preserved, I found the painting by Robert William Buss (1804-75), which shows the author in his study surrounded by sketches of the characters he created (page 507). A few weeks before the death of the artist he began this portrait of Dickens, seated in his library at Gad's Hill Place. Only the figure was entirely finished.

Many characters of Dickens's stories were only outlined on the walls. They give a dreamlike effect and suggest that the author is intent upon the plot for still another novel. Reproduction was arranged through the courtesy of the trustees of Dickens House, 48 Doughty Street, London.

John Collier's portrait of Charles Darwin hangs in the headquarters of the Linnean Society, which paid for it by subscriptions raised among its Fellows. A replica is in the National Portrait Gallery.

The Linnean Society, of London, through whose courtesy we reproduce this work as page 520, contributes an account of a letter which in May, 1881, Darwin wrote to one of its secretaries:

> It tires me a good deal to sit to anyone, but I sh'd be the most ungrateful and ungracious dog not to agree cordially, supposing that enough is subscribed, about which I have always felt very bashful. If I am to sit, it would be a pity not to sit to a good artist, and from all that I have heard I believe Mr. Collier is a good one. I should most *particularly* desire to sit to Huxley's son-in-law, if, as you say, he would like to paint me. Let me earnestly beg one thing of you, viz., that you will not permit any touting for subscriptions. I always understood that my agreement to sit was contingent on the subscriptions sufficing.

John Collier (1850-1934) was the author of several books on the technique of painting and was the son-in-law of Thomas Henry Huxley, noted English biologist and one of Darwin's colleagues in scientific work.

Just completed for the Rhodes Trust is the pleasant, informal portrait study of the great South African pioneer, Cecil Rhodes (page

522), by James Gunn, a well-known member in England of the Royal Society of Portrait Painters. It shows Rhodes against a background of the African veld, with a suggestion of Table Mountain in the distance. Artist Gunn's portrait of the late American Ambassador Winant was in last year's Royal Academy exhibition.

Sir Philip Burne-Jones's portrait of the great English physicist, Lord Rayleigh, shows him at work in his laboratory. A copy is in the possession of Trinity College, Cambridge University, where it honors both the scientist and the English artist (1861-1926) who painted it. Our reproduction was made from the original which hangs in the Rayleigh family house, Terling Place, in Essex (page 524).

Portraits of four English scientists are presented on page 527—Sir Humphry Davy and Sir William Ramsay, chemists; Sir Joseph John Thomson and Lord Rutherford, physicists.

Sir Thomas Lawrence, P. R. A. (1769-1830), who painted Davy, was one of England's most famous portraitists; examples of his work hang in the picture galleries of the world. Lawrence was trained in the schools of the Royal Academy and became its president. So highly was he regarded that he was buried in St. Paul's Cathedral. The picture is owned by the Royal Society, with whose consent it is here reproduced.

The portrait of Sir William Ramsay was painted by Mark Richard Milbanke (1875-1927). In the obituary published in the London *Times* for November 4, 1927, it was stated that he was the second son of Sir Peniston Milbanke, ninth Baronet, and younger brother of Sir John Milbanke, who gained the Victoria Cross in the South African War and was killed in action at the Dardanelles in 1915.

From early childhood Mark Milbanke had been passionately fond of drawing and of portrait painting and had studied art for some years at Paris, where at the Salon Exhibition he more than once gained distinction. His portraits, which were well painted and excellent likenesses, were frequently shown at the exhibitions of the Royal Academy and the British Portrait Painters.

The portrait of Sir Joseph John Thomson was painted by Arthur Hacker (1858-1919), another Royal Academician who portrayed many British personages. It was located in the Cavendish Laboratory at Cambridge.

Oswald Birley, R. O. I. (1880—), painted the portrait of Lord Rutherford which also hangs in the Cavendish Laboratory. It is on loan from the Royal Society, the officials of which made it available for reproduction here.

The artist was a student at Cambridge, but studied art in Dresden, Florence, and Paris. He is a New Zealander by birth, but has lived for many years in England, where he served in World War I as an intelligence officer. He is represented by pictures in the National Portrait Gallery, in Windsor Castle, and in the National Museum of Wales.

During the lifetime of Sir Thomas Lipton yacht races were a feature of British-American competition, and the public on both sides of the Atlantic took a keen interest in this rivalry. The waters around the Isle of Wight were the British center of such activities, shown by Charles Pears's painting, "When the Big Boats Come Out of Cowes Roads" (page 529).

Picture of World War II

Charles Pears, R. O. I., is president of the Society of Marine Artists and was an official British naval artist in both World War I and World War II. His work is well known in England, where it has been widely exhibited.

Montague Dawson, another distinguished English marine painter, prepared the picture of the "Battle of Jutland," World War I (page 533), especially for the NATIONAL GEOGRAPHIC MAGAZINE. It is diagrammatically correct and shows the unique naval maneuver carried out by the German ships that permitted them to turn about and escape. The artist has taken some license in showing the ships in closer formation than they actually were.

Mr. Dawson's other picture in this series, "Sinking of the *Bismarck*," World War II, was done for the Northern Pump Company of Minneapolis (copyright 1943), from whose collection it was lent for this reproduction (page 537). Some artistic license has been taken by the artist in this picture because the aircraft carrier *Ark Royal*, shown in the left distance, was 40 miles distant, and the Catalina aircraft had flown away when the explosion took place.

In London's Imperial War Museum we found Ethel Gabain's painting of Sir Alexander Fleming, discoverer of penicillin, at work in his laboratory (page 535). Mrs. Garner James, who went to call on the artist, found that she is Mrs. John Copley, a pleasant little lady employed by the Ministry of Information as a war artist at the beginning of World War II. She painted documentary pictures throughout the bombings of that period—the evacuation of the children from Gravesend, the girl lumberjacks in the north, ammuni-

Pictures Past

He Peeped at Godiva and Lost His Eyes

Before the November, 1940, blitz this figure of Peeping Tom adorned the King's Head Hotel in Coventry (page 451). At least three centuries old, it probably was originally a part of the effigy of St. George used in old city pageants. If the inn is restored, it will be put back in place.

tion workers, etc. The picture of Dr. Fleming examining his first penicillin spores was done about 1942.

Dr. Fleming is shown in his laboratory at St. Mary's Hospital, Paddington, London, and the culture which he holds in his left hand is the original from which all the other penicillin cultures sprang (page 429).

While Mrs. Copley was painting another picture in a hospital, a V bomb hit just in front of the building. No one was injured, although patients were knocked out of their beds by the blast. She was sent scuttling down the ward in one direction and her easel in another.

"I was a little shaken," she said, "but I just had to go on painting, because within ten minutes all the sick people were back in bed as if nothing had ever happened and trolleys of tea were coming through the ward." Mrs. Copley is represented in galleries throughout the world and has received special awards for her portraits.

Paintings to illustrate some of the selected subjects were not to be found. To meet this need, I was fortunate in securing the help of the gifted American illustrator, Kenneth Riley.

The National Geographic commissioned him to paint an appropriate picture of Florence Nightingale, the humanitarian, in which she would appear as an "angel of mercy" in the hospital at Scutari, on the Bosporus, during the Crimean War (page 513).

Riley has a flair for historical pictures and spends much time in careful research. He is entirely American-trained, having studied under Thomas Benton at the Kansas City Art Institute and later at the Art Students League of New York.

During World War II Riley served as a combat artist with the U. S. Coast Guard and participated in the landings on Tarawa, Kwajalein, Eniwetok, and Saipan. His official war pictures were exhibited at the National Gallery of Art, Washington, and elsewhere throughout the United States.

Mr. Riley painted for the National Geographic seven other scenes: pages 448, 452, 457, 459, 465, 470, and 539.

Collecting pictures for a series like this is a long, difficult, but interesting task. So far as can be determined, no similar series has ever been compiled. Its accomplishment is due to generous cooperation both here and abroad.

The Society's New Map of the British Isles

THE NATIONAL GEOGRAPHIC SOCIETY'S new Map of the British Isles, distributed to its 1,800,000 member-families as a supplement to this issue of their NATIONAL GEOGRAPHIC MAGAZINE, vividly brings to mind the key role of Britain in the epic struggle of World War II.*

Hundreds of place names on the new map recall episodes, great and small, of the days which found the "snug little isle" turned into a single base of operations against aggression.

London, Birmingham, Manchester, and Liverpool; Hull, Plymouth, and Bristol have added to their rich history the story of the Battle of Britain, in the late summer and fall of 1940. These cities unflinchingly endured one Nazi air raid after another, until angry swarms of Spitfires and Hurricanes screamed into the skies to beat off the Messerschmitts, Heinkels, and Junkers. The heavens above the whole stretch, from Hull and the Humber to Bristol and the Severn, were a scene of battle.

Coventry a Nazi Victim

Peaceful Coventry, previously distinguished chiefly for the adventure of Lady Godiva (page 451), suddenly became an object of Nazi terrorism on the night of November 14, 1940, when some 400 German bombers reduced it to rubble.

Widely separated place names on the new map recall scenes of heroic service by 2,000,000 volunteers who worked for 2,000 days and blacked-out nights fighting fires, rescuing wounded, and detonating unexploded bombs.

Thousands of Americans, looking at the new map, will recognize familiar names and recall pleasant associations. Two million Yanks trained at 77 separate bases in Britain between 1942 and 1945. GI Joes, entertained in British homes, formed lasting friendships. Some brought British wives back to the United States.

In compiling the new map, your Society's cartographers paid particular attention to all places which would strike a responsive chord with former members of the American Expeditionary Forces. Lists supplied by the United States Army and United States Air Force were consulted.

Some veterans, however, may have to think twice before they identify their former stopping places in Britain. Many a member of Eighth Air Force headquarters, for example, became so accustomed to referring to his base at Teddington by the code name of "Widewing" that the actual place name may sound strange. Eighth Bomber Command personnel invariably referred to High Wycombe, their headquarters, as "Pinetree." To Eighth Fighter Command members, "Ajax" was better known than Watford.

Every port in Britain worthy of that name is linked closely with June 6, 1944 (D-Day). On the new map the English Channel is represented by a strip of placid blue. But on D-Day 4,000 landing craft and 800 warships emerged from British ports and churned the Channel waters to carry Britons and Americans over to the soil of France.

Above the Channel that day 11,000 United Nations aircraft roared. Glider trains, some 50 miles long, bore paratroopers to their objectives over Normandy and Brittany.

Invasion Coast Names Familiar

The French invasion coast is mapped in detail, revealing names of towns splashed in headlines on the first pages of the world's newspapers in 1944. Thousands of Americans and British have vivid memories of Caen, Carentan, Bayeux, Cherbourg, Montebourg, Saint Lô, Arromanches, and Coutances.

Today farmers of Normandy and Brittany again till their hedgerow-framed fields and children play around rust-eaten invasion matériel on Omaha and Utah beachheads.

Dunkirk recalls those earlier days in May-June, 1940, when some 900 boats of every description, putting out from British ports, converged under an RAF "umbrella" to evacuate some 335,000 British troops stranded on the beaches.

The new map portrays the British Isles on the generous scale of 28.2 miles to one inch. It is primarily a travelers' map, but the student of literature or history will find it a clear and beautiful reference work on Great Britain and Ireland.

Ireland (not Eire) is shown as an independent republic, following its recent withdrawal from the British Commonwealth. The Gaelic *Eire* no longer is used as the official name of the country.

Distinctive symbols, listed and explained in the map legend, point out places of particular interest. Large crosses designate cathedrals; smaller crosses, notable churches in towns. Open squares identify, among other historic

* Members may obtain additional copies of the new Map of the British Isles (and of all standard maps published by The Society) by writing to the National Geographic Society, Washington 6, D. C. Prices, in United States and Possessions, 50¢ each on paper; $1 on linen; Index, 25¢. Outside United States and Possessions, 75¢ on paper; $1.25 on linen; Index, 50¢. All remittances payable in U. S. funds. Postage prepaid.

buildings, those structures in open country which are preserved under the National Trust.

Triangles of dots mark ruins or archeological sites, while crossed swords with dates show historic battlefields.

The map is elaborately decorated in the manner of British 16th- and 17th-century cartographers. The design is by National Geographic staff cartographer C. E. Riddiford.

In the four corners of the border, baroque cartouches bear the coats of arms of England, Scotland, Ireland, and Wales. Each is associated with its national flower: the rose for England, the thistle for Scotland, the leek for Wales, and the shamrock for Ireland.

Smaller cartouches, set in the border, frame the coats of arms of five major cities: London, Edinburgh, Dublin, Belfast, and Cardiff.

Portraits Embellish Border

Forty-four drawings, alternately depicting scenes from the islands and portraits, make up the rest of the wide border.

Portraits include those of English men and women eminent in the fields of literature, history, and science: Chaucer, author of the *Canterbury Tales;* Shakespeare, the immortal Bard of Avon; Elizabeth, the Virgin Queen; Victoria, great-great-great-grandmother of Charles Philip Arthur George, Britain's new baby prince; Newton, the celebrated mathematician and philosopher; and Darwin, the distinguished naturalist.

Scenes range from Canterbury Cathedral and Westminster Abbey to shipbuilding on the Clyde and golfing at St. Andrews.

The large cartouche framing the title and legend for the map bears the royal coat of arms and portraits of George VI and his queen, Elizabeth. The map scale also has a decorative frame.

The old-style designs embellish a map up-to-the-minute in geographical information.

The new shore line of The Wash between Wainfleet All Saints and King's Lynn includes 3,000 acres of rich Lincolnshire land which have been reclaimed from the sea. Two huge sea walls, each six miles long, brought about this addition to English soil.

As a help to travelers, the highways are shown in clear red lines, practical as a guide for motoring. Major railways are shown in black; rivers, streams, and other drainage features in conventional blue.

Striking decoration and wealth of historical reference material make the map, 26½ by 32½ inches in size, particularly desirable for wall display in homes, schools, or offices.

For countless Americans who never have been in Great Britain or Ireland, hundreds of place names will be familiar. Some of these names simply have been transplanted to America: Boston, Plymouth, Dartmouth, Princeton (Princetown), Portland, Swarthmore (Swarthmoor), or Chesterfield. Others are familiar in song: Penzance, from Gilbert and Sullivan's *Pirates of Penzance;* Tipperary, from the famous song of World War I; Loch Lomond, from the old Scottish ballad.

Nursery Rhyme Place Names

To New Yorkers, Gotham may suggest Manhattan, but to most Americans it will be associated with a nursery rhyme, as in the case of *Banbury Cross* and *Saint Ives.*

Place names familiar in poetry are legion. To mention only a few:

Inchcape, in Robert Southey's *The Inchcape Rock:*

> A sound as if with the Inchcape Bell
> The Devil below was ringing his knell.

Berkshire moors, in Matthew Arnold's *The Scholar Gypsy:*

> At some lone alehouse in the Berkshire moors.

The Thames, in Edmund Spenser's *Prothalamion:*

> Sweete Themmes! runne softly, till I end my Song.

Aghadoe, in John Todhunter's Irish ballad of the same name:

> There's a glade in Aghadoe, Aghadoe,
> Aghadoe,
> There's a green and silent glade in Aghadoe.

Then there are William Wordsworth's *Evening on Calais Beach;* Robert Burns's *Ye flowery banks o' bonnie Doon,* and George Fox's *The County of Mayo.*

William Butler Yeats, one of Ireland's most famous poets, who died in France in 1939 at the age of 73, had written his burial instructions not long before, in a poem which began:

> Under bare Ben Bulben's head
> In Drumcliff churchyard Yeats is laid.

The war prevented friends from carrying out his wishes until a few months ago, when his body was brought back to County Sligo and laid to rest in Drumcliff churchyard.

To Americans other place names have a humorous touch: Saltburn by the Sea, Much Wenlock, Spittal of Glenshee, Ballybunion, Mumbles, Bunny, and Giggleswick.

The many Welsh double l's seem curious and reach an all-time high with Llanfairpwll, which is short for Llanfairpwllgwyngyllgogerychwyrndrobwllllandysiliogogogoch.

The name is said to mean "Church of St. Mary in a hollow of white hazel, near to a rapid whirlpool and to St. Tysilio's Church, near to a red cave"!

NATIONAL GEOGRAPHIC SOCIETY

GEOGRAPHIC ADMINISTRATION BUILDING
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ORGANIZED FOR "THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE"

To carry out the purposes for which it was founded sixty-one years ago, the National Geographic Society publishes this Magazine monthly. All receipts are invested in The Magazine itself or expended directly to promote geographic knowledge.

Articles and photographs are desired. For material The Magazine uses, generous remuneration is made.

In addition to the editorial and photographic surveys constantly being made, The Society has sponsored more than 100 scientific expeditions, some of which required years of field work to achieve their objectives.

The Society's notable expeditions have pushed back the historic horizons of the southwestern United States to a period nearly eight centuries before Columbus crossed the Atlantic. By dating the ruins of the vast communal dwellings in that region, The Society's researches solved secrets that had puzzled historians for three hundred years.

In Mexico, The Society and the Smithsonian Institution, January 16, 1932, discovered the oldest work of man in the Americas for which we have a date. This slab of stone is engraved in Mayan characters with a date which means November 4, 291 B. C. (Spinden Correlation). It antedates by 200 years anything heretofore dated in America, and reveals a great center of early American culture, previously unknown.

On November 11, 1933, in a flight sponsored jointly by the National Geographic Society and the U. S. Army Air Corps, the world's largest balloon, *Explorer II*, ascended to the world altitude record of 72,395 feet. Capt. Albert W. Stevens and Capt. Orvil A. Anderson took aloft in the gondola nearly a ton of scientific instruments, and obtained results of extraordinary value.

The National Geographic Society-U. S. Army Air Forces Expedition, from a camp in southern Brazil, photographed and observed the solar eclipse of 1947. This was the seventh expedition of The Society to observe a total eclipse of the sun.

The Society cooperated with Dr. William Beebe in deep-sea explorations off Bermuda, during which a world record depth of 3,028 feet was attained.

The Society granted $25,000, and in addition $75,000 was given by individual members, to the Government when the congressional appropriation for the purpose was insufficient, and the finest of the giant sequoia trees in the Giant Forest of Sequoia National Park of California were thereby saved for the American people.

One of the world's largest icefields and glacial systems outside the polar regions was discovered in Alaska and Yukon by Bradford Washburn while exploring for The Society and the Harvard Institute of Exploration, 1938.

Remember

how he looked on his first school day?

Remember the set of his chin . . . the way his eyes said good-by?

Remember how he looked the day you took him to the circus . . . and those evenings when you read "Treasure Island" to him?

Remember his face when he saw his new bike under the Christmas tree . . . and that air rifle you gave him on his twelfth birthday?

Remember his eyes the time he hooked his first fish . . . and the morning you caught him shaving with your razor?

Remember his expression the night he went out on his first date . . . and the day he left for college?

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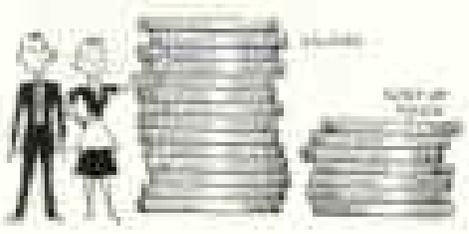
"ONE NIGHT over the dinner table, a few months ago, Alice and I were discussing the cost of food.

"Our budget showed that more than half of my salary was being spent for the table.



"We talked and talked about our problem but, like most people, we were stumped!

"Then, one Sunday afternoon, we visited some friends. Somehow, we got around to the subject of food, and our friends led us to their kitchen to see their General Electric Home Freezer.

"They had it stacked with a couple hundred packages of every fruit, vegetable, meat and berry imaginable.

"Bob told me that he saves plenty on every dollar they used to spend for meat. They simply buy part of a steer, lamb or pig—*at quantity prices*—and have it cut up into small-size steaks, chops and meat patties.

"They also buy the commercial sizes of frozen food—and showed me how he saves on each dollar, too. *He says anybody can get lower prices when they buy a lot of food at a time!*

"And they have a small garden. Now, in a couple of hours they can put up as much food in their freezer as they could by canning over a hot stove *all* day!

"Boy, what food"

"Later, we sat down to a 7-course dinner fit for a king and queen. Our hostess prepared it in less than one hour—and all of it came out of their home freezer. It was the finest food we ever tasted—bar none.

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See this remarkable and dependable home freezer soon! General Electric Company, Bridgeport 2, Connecticut.

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For storing the frozen foods you buy

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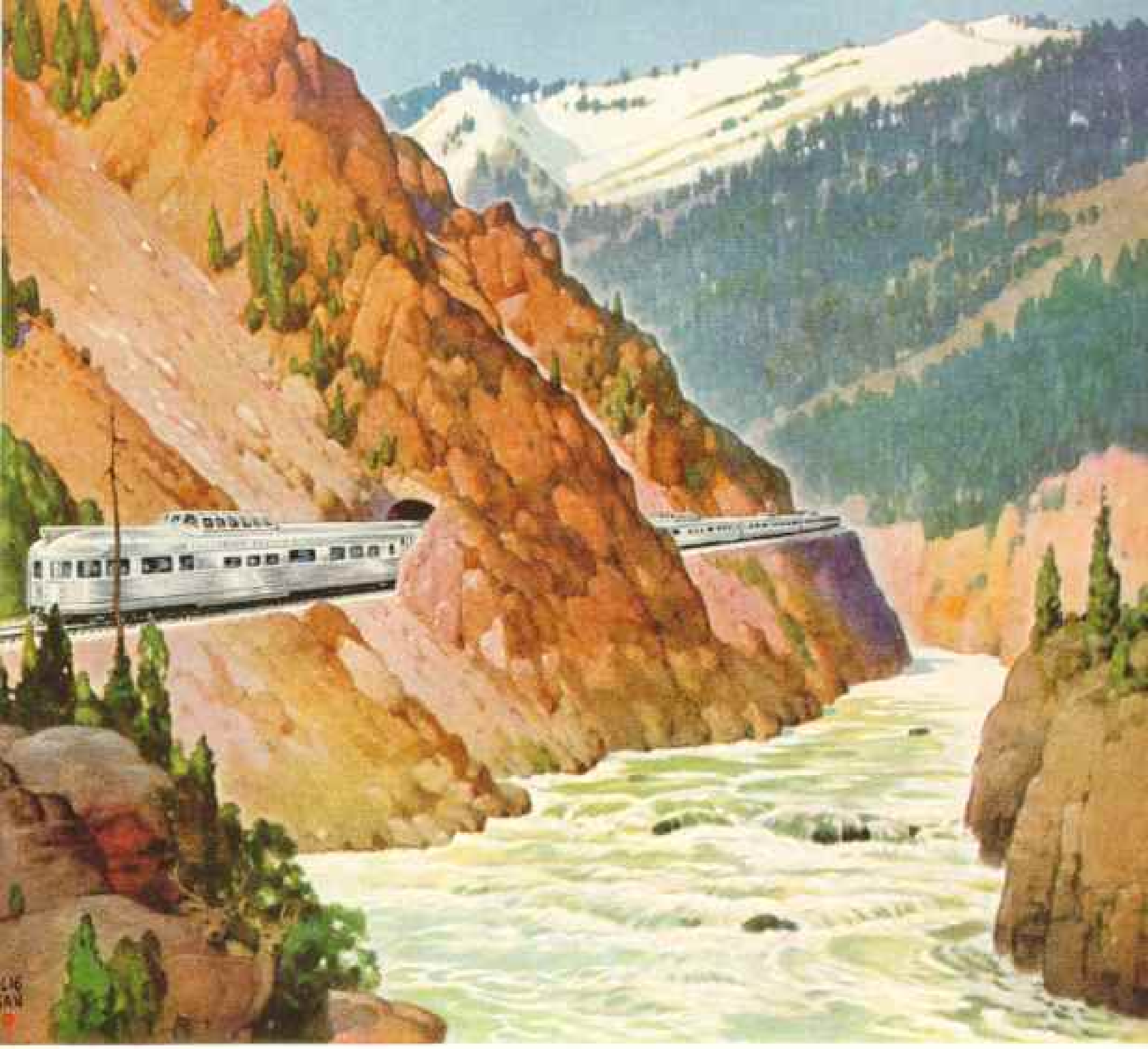

A great new train — THE CALIFORNIA ZEPHYR

Three railroads—the Burlington, the Denver & Rio Grande Western, and the Western Pacific—are placing in operation on March 20th six all-stainless steel trains built by Budd, to provide a new daily service between Chicago and San Francisco over a scenic route of incomparable grandeur.

These are the spectacular new California Zephyrs—trains of almost unbelievable beauty and luxury. Their Vista-Domes, de-luxe coaches, cars reserved for women and children, lounges, diners and most modern of all transcontinental sleepers offer travel enjoyment beyond your dreams.

The California Zephyrs traverse some of the finest scenery in the world, and their schedules, in both directions, permit you to enjoy the most exciting portions during daylight hours . . . the serried peaks of the highest Colorado Rockies . . . Gore and Glenwood Canyons . . . snowy Sierras . . . and California's fabulous Feather River Canyon of gold rush fame.

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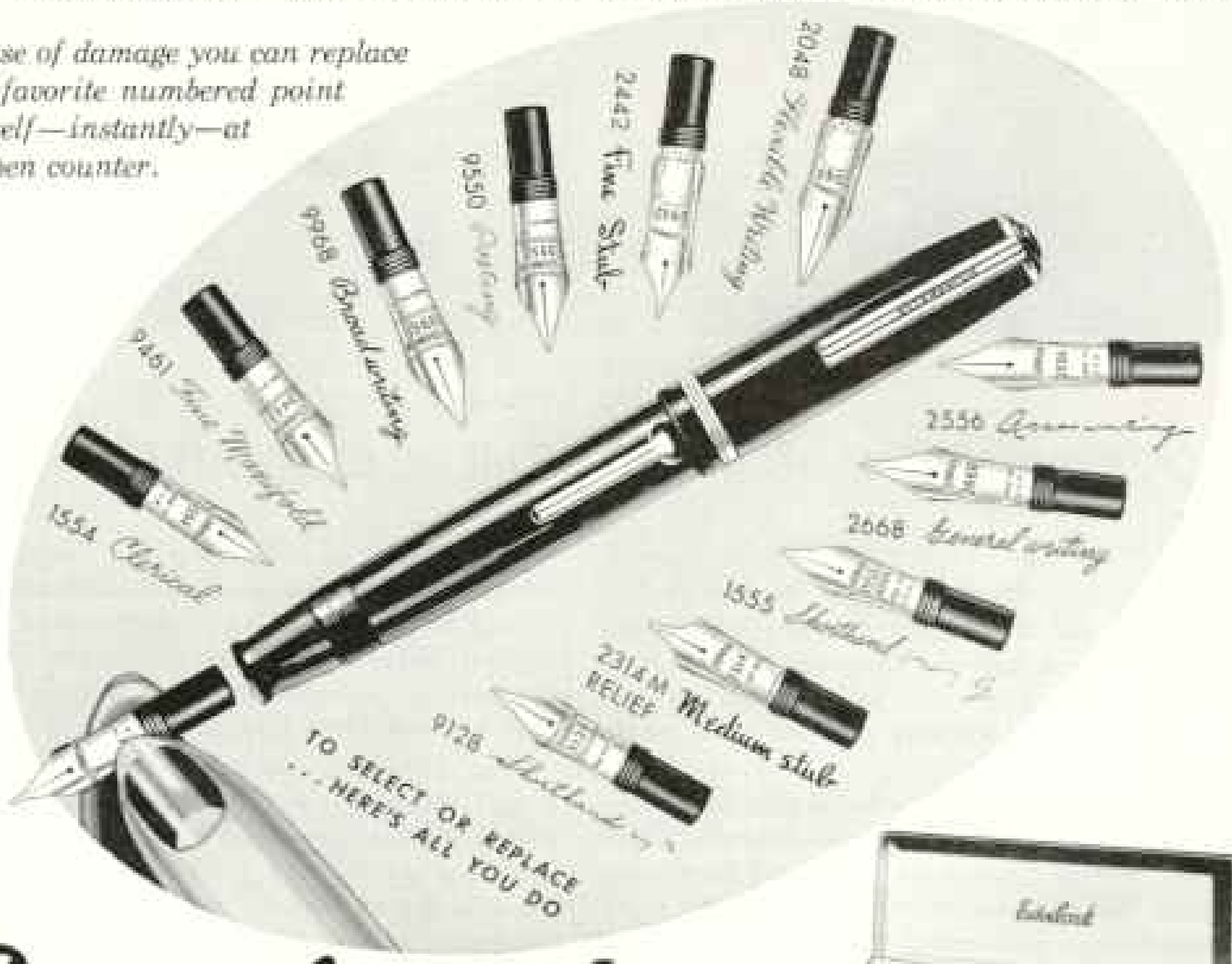

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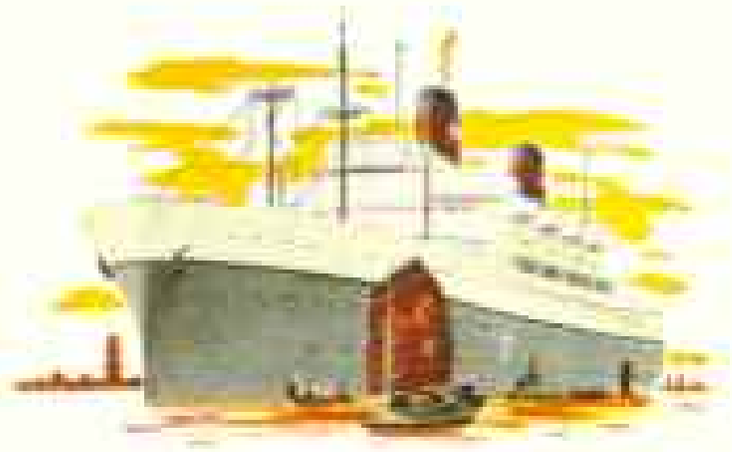

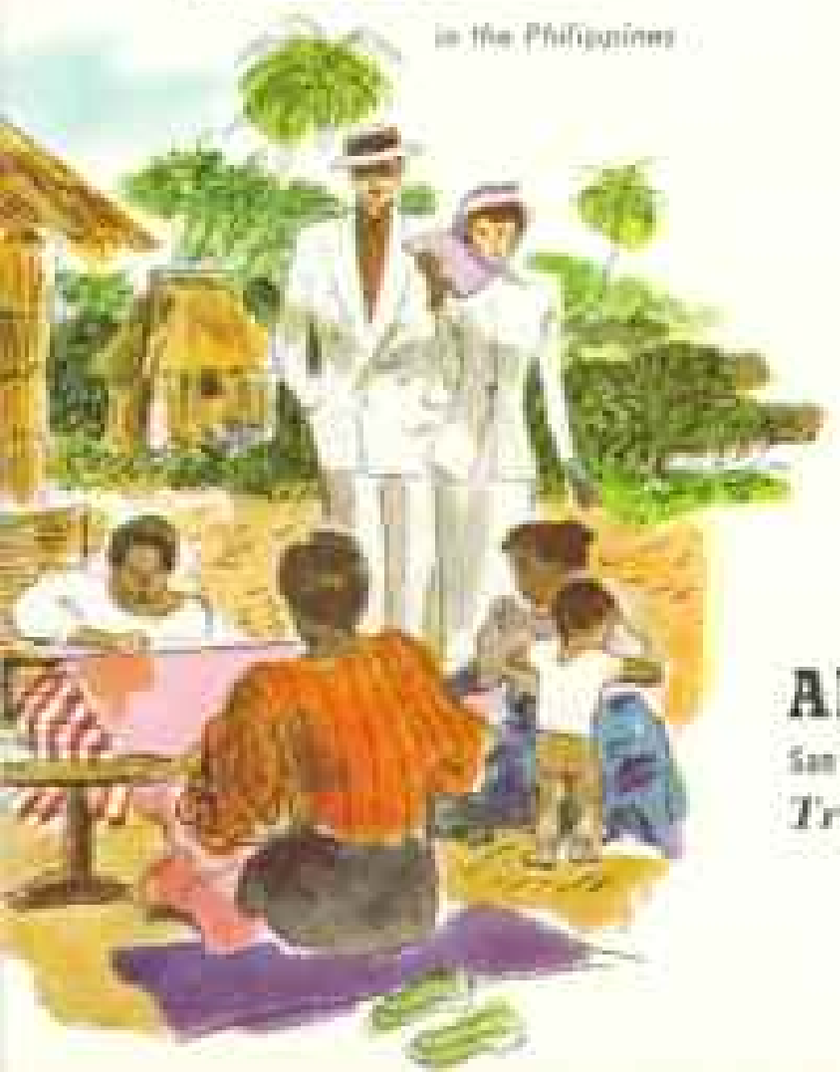

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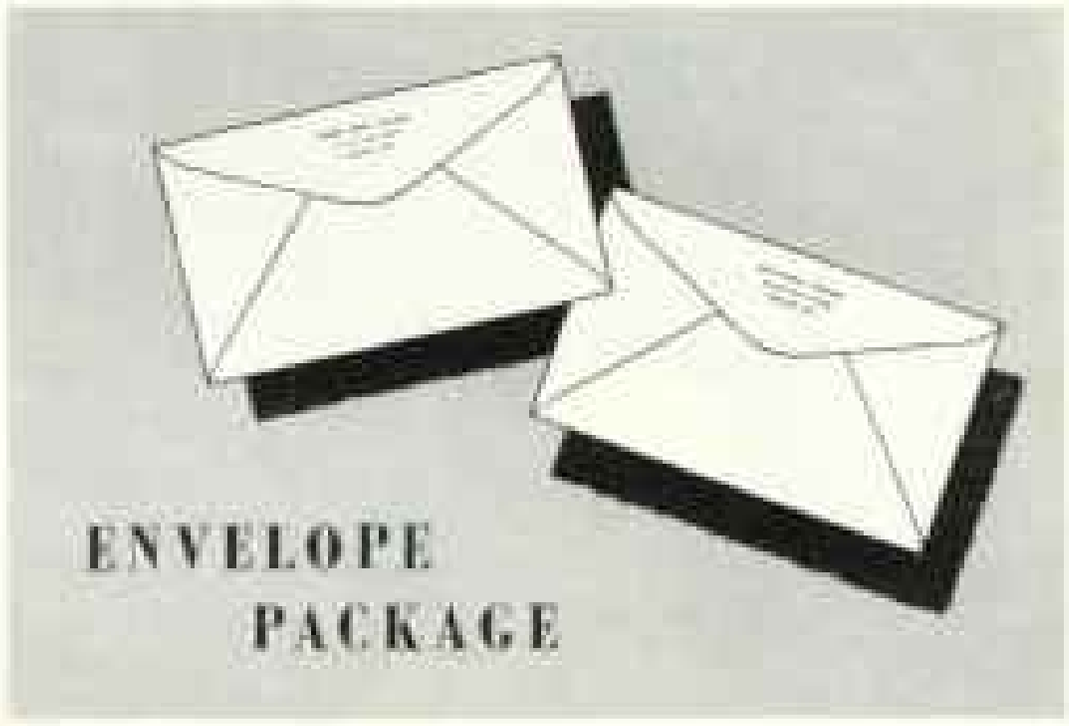

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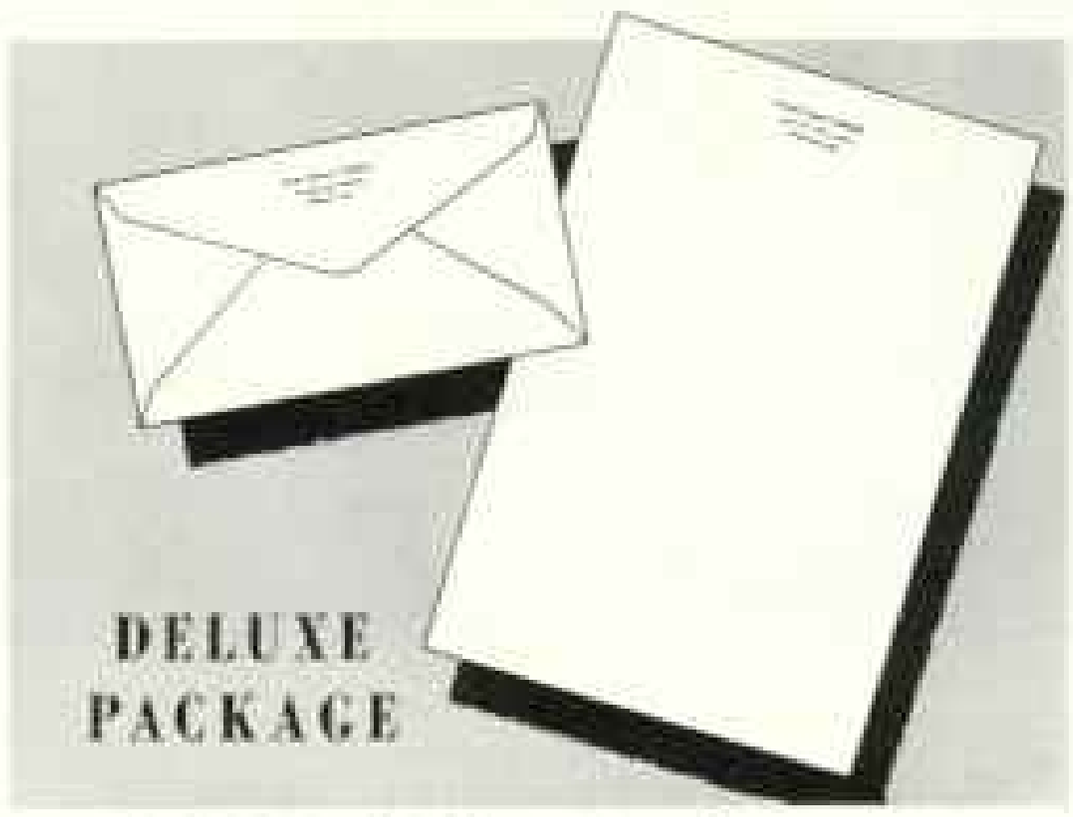

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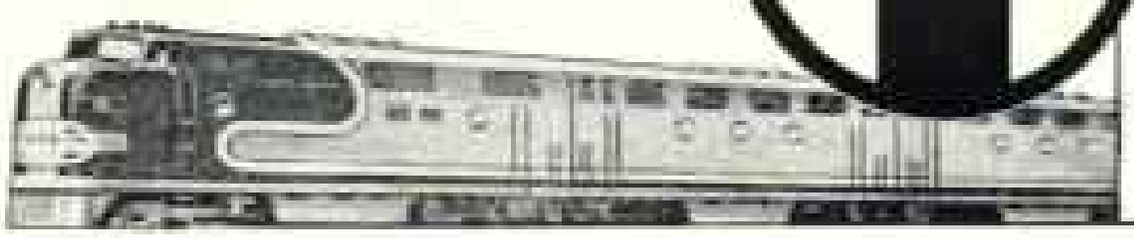

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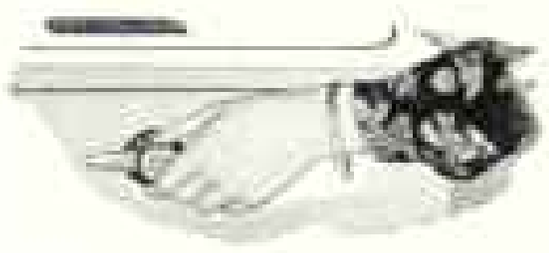

Can you turn a knob? That's all you do to "operate" the Dishwasher. So easy to load, to click on, to forget, while it does the dishes by itself. It's of convenient work-surface height, and provides additional work surface.

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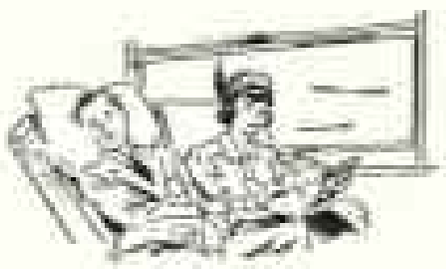

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You'd cycle through streets of old world charm.

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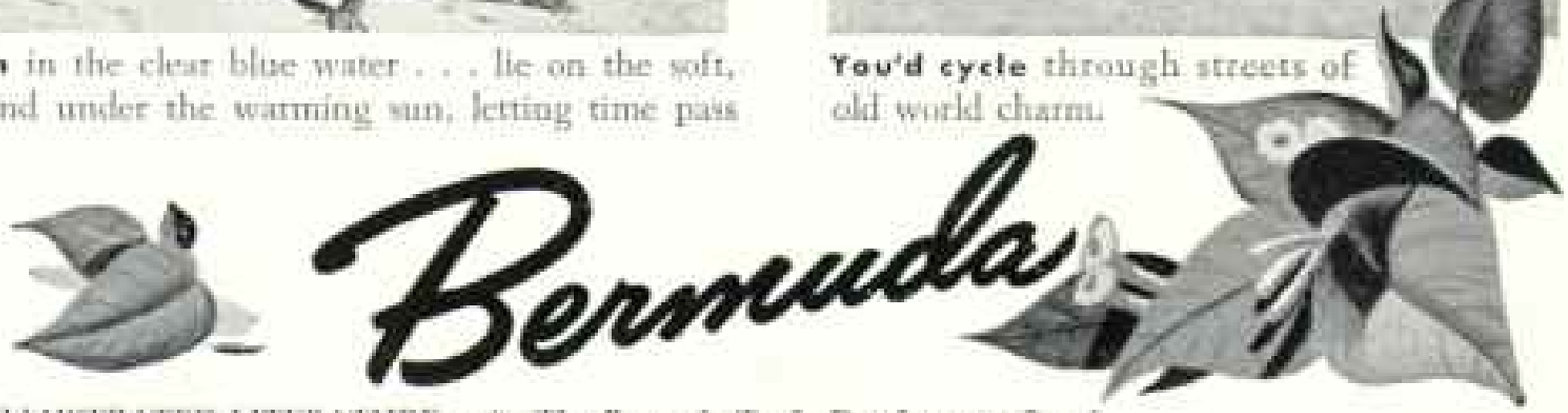

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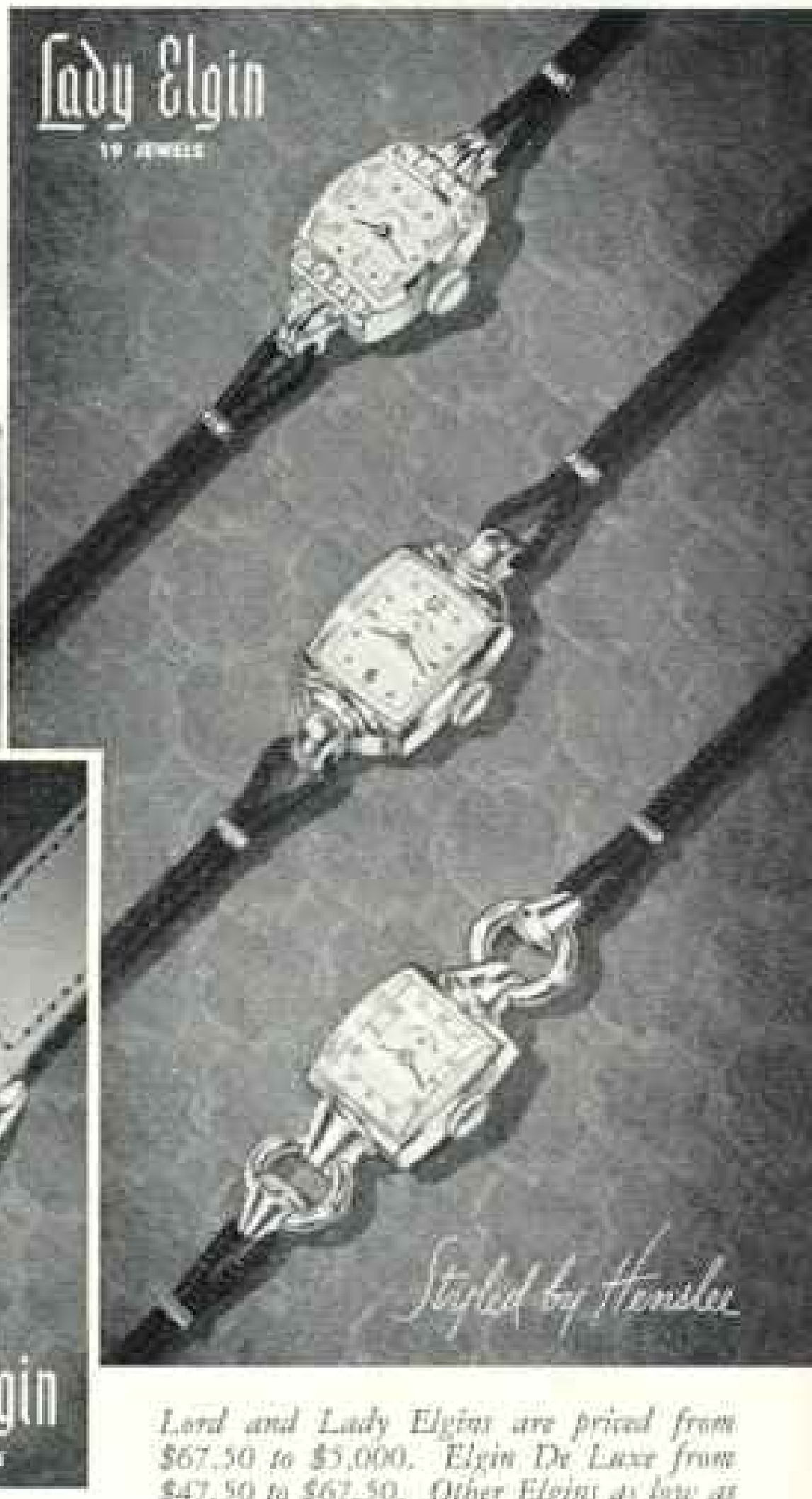

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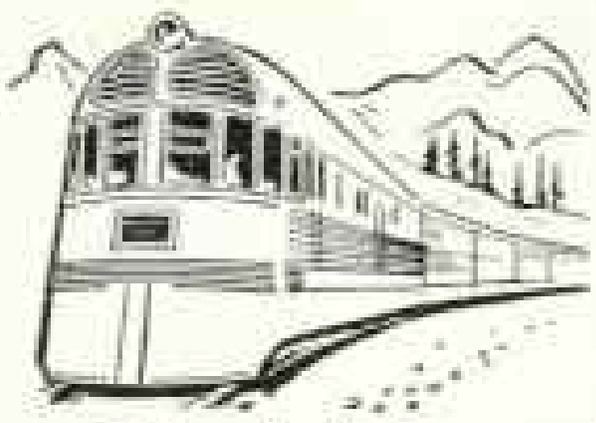

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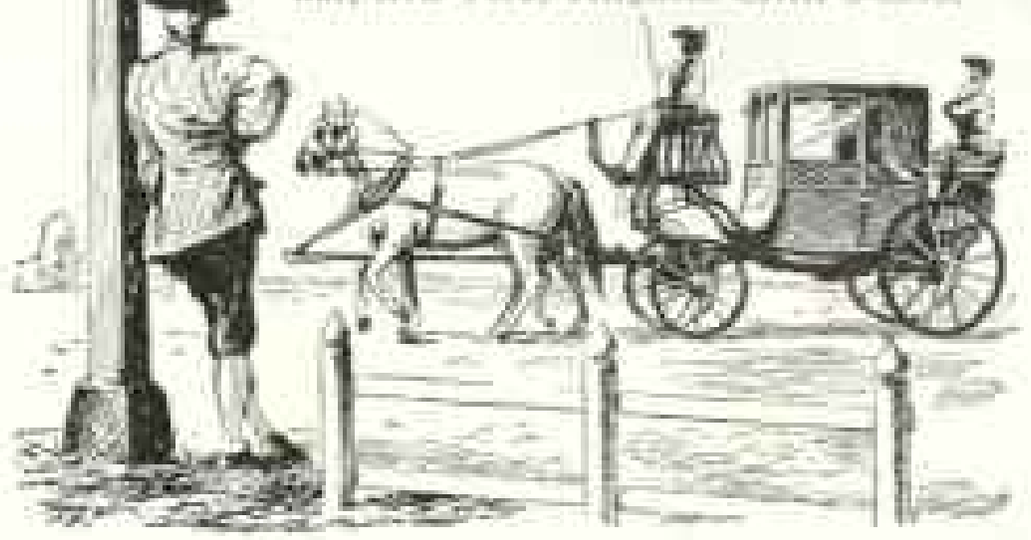

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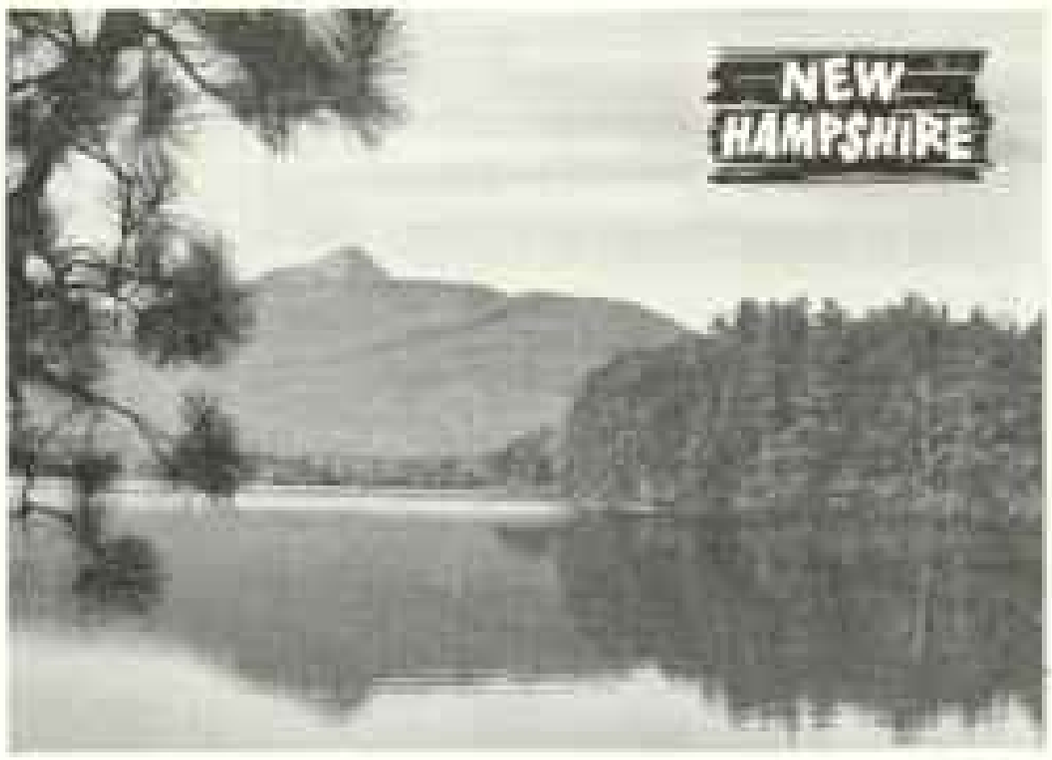

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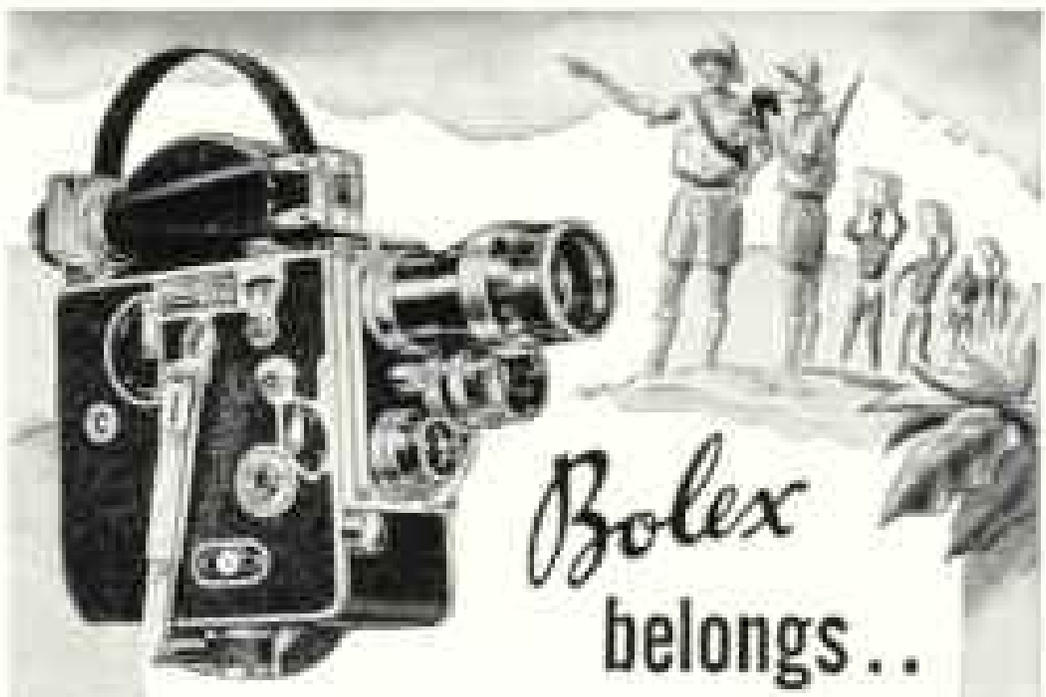

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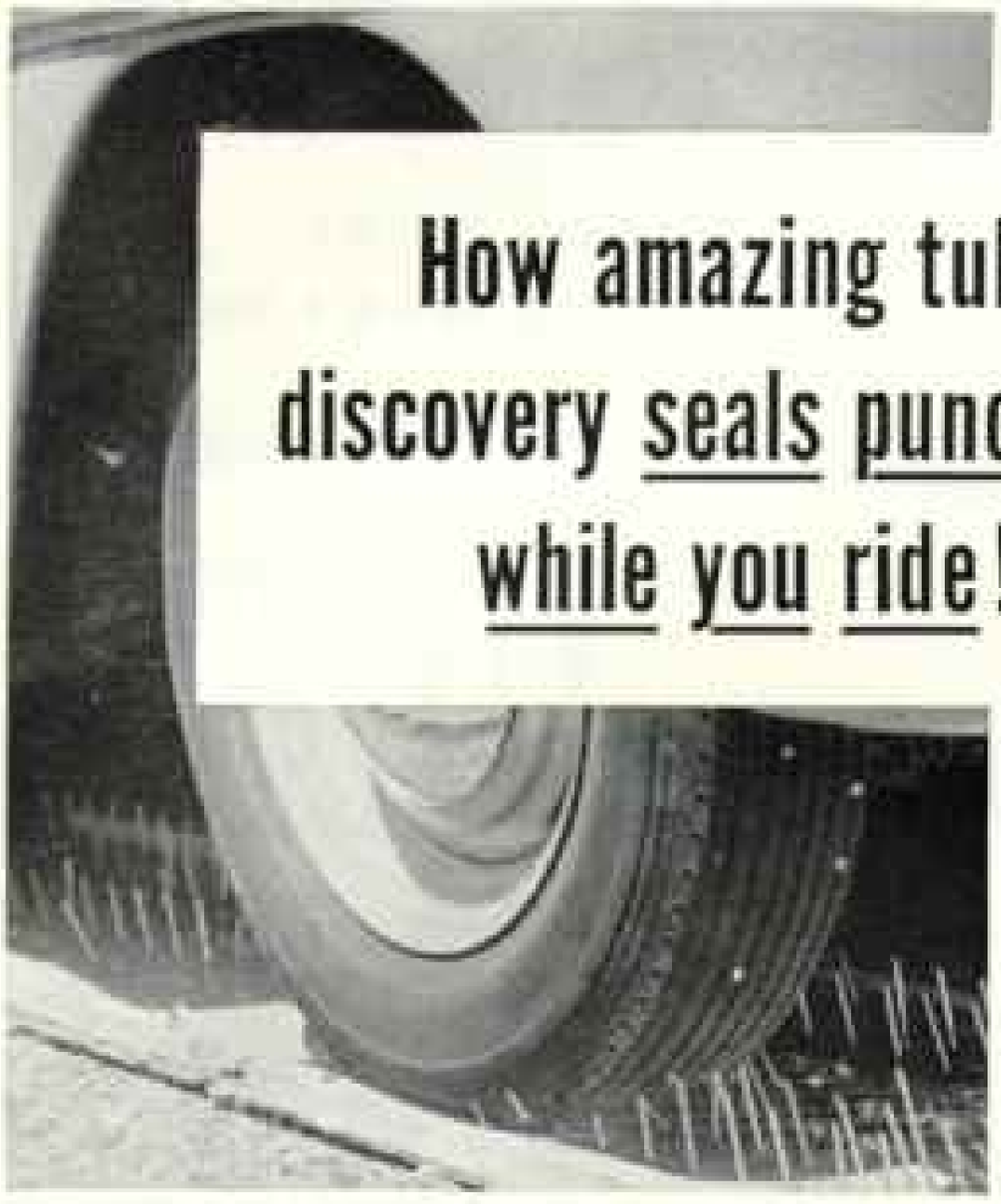

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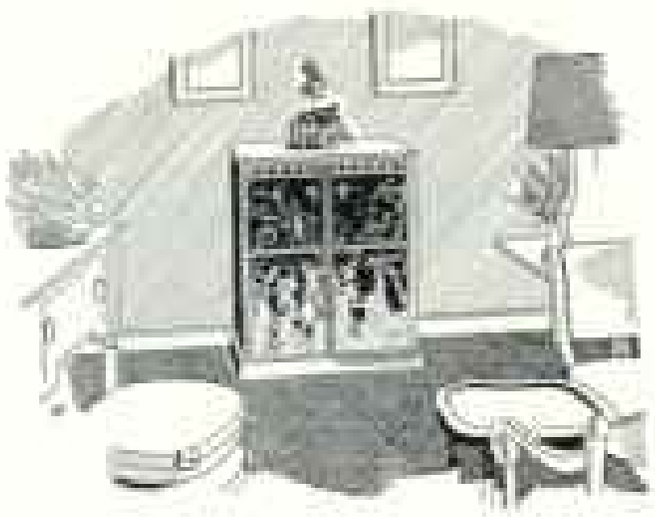

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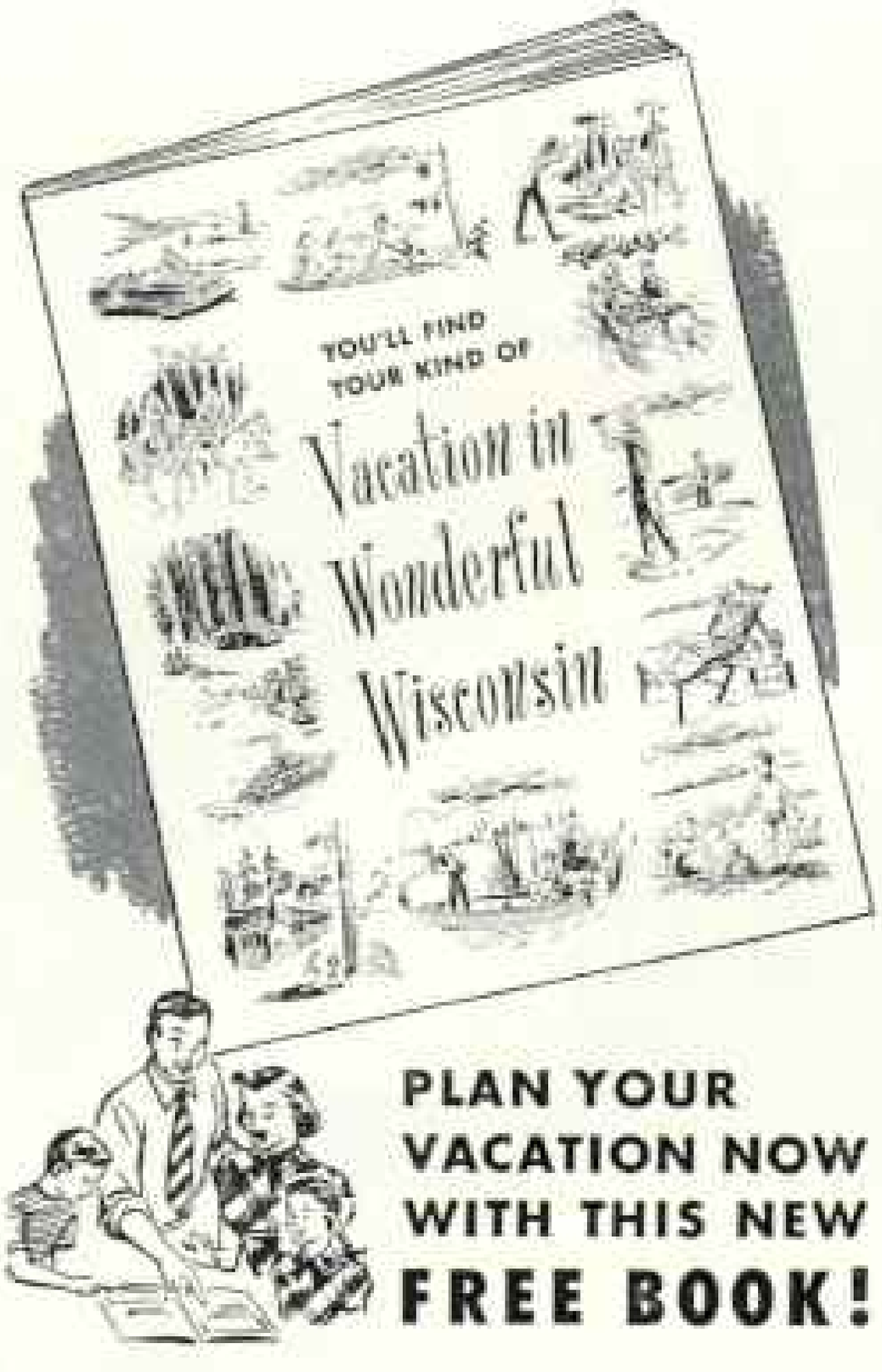

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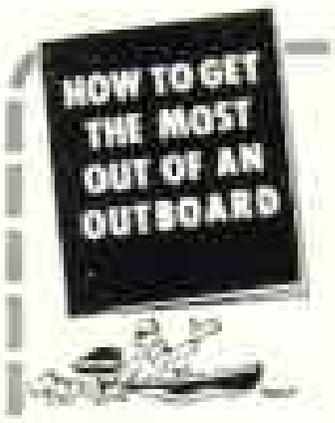

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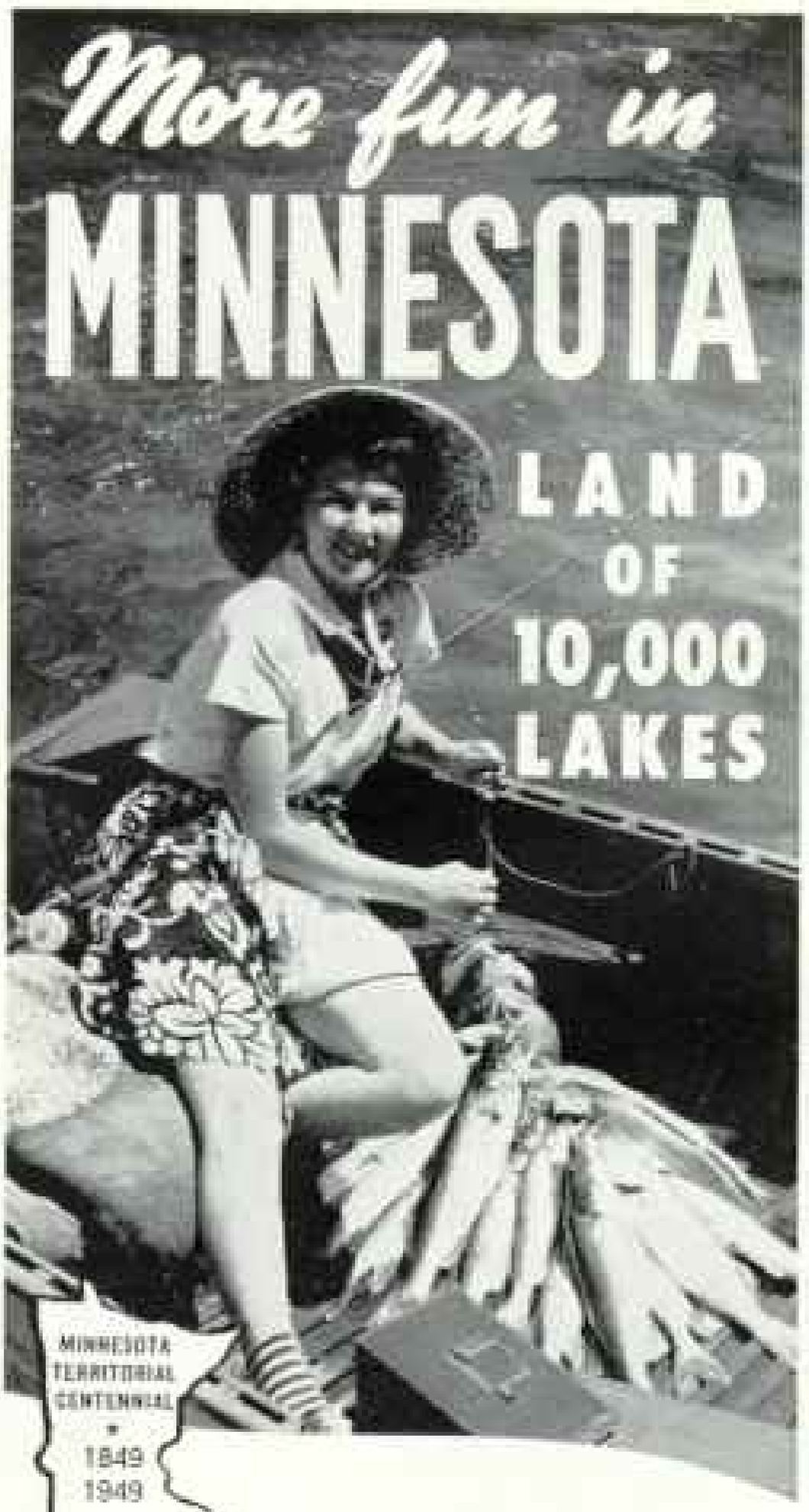

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What YOU Can Do About Cancer

Great strides have been made in diagnosing and treating cancer. While it is still the second major cause of death in the United States, the mortality rates from some forms are declining.

Medical science is constantly at work increasing its knowledge of this disease. Better techniques for diagnosing cancer exist today than ever before. For example, a recent development has raised the percentage of correct early diagnosis of one type of cancer from 36 to 95 per cent.

Advances in hormone and chemical therapy have proved valuable in relieving pain and prolonging life. Improved methods of treating the disease have cured, in some instances, cases that formerly were considered hopeless.

Present knowledge can be fully utilized only as more people learn the warnings of the disease and come for examination without delay. Cancer must be discovered early and treatment promptly started to get the full benefit from medical science.

1. Early Recognition

It is wise for everyone, and especially those past 35, to keep alert for cancer's danger signals. The American Cancer Society believes that many thousands of lives could be saved every year if cancer's warnings were recognized early and treated immediately.

2. Prompt Attention

When any of these warnings appear, prompt medical attention is advisable. The doctor may suggest a more complete examination at a Cancer Clinic or by a specialist. It is encouraging to know that the majority of these examinations reveal that cancer is not present.

3. Proper Treatment

If cancer is discovered, the specialist will explain that the best treatment is surgery or radiation. He will point out that patent medicines for cancer and so-called "cancer cures" are often dangerous, and may give cancer time to spread.

These Are Cancer's "Danger Signals"

1. Any lump or thickening especially in the breast, lip or tongue. **2.** Any irregular or unexplained bleeding. **3.** A sore that does not heal, particularly about the mouth, tongue, or lips. **4.** Noticeable changes in the color or size of a mole or wart. **5.** Loss of appetite or continued indigestion. **6.** Any persistent hoarseness, cough, or difficulty in swallowing. **7.** Any persistent change in normal elimination.

Pain is not usually an early symptom of cancer.

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On land, the goslings use even a trickier device to keep from being seen. They sometimes thrust their heads into holes in the ground or into rock crevices. Once his head is out of sight, the rest of Branta's body blends with the color of the earth or stones, camouflaging him completely.

And never do Branta's parents have to put food into his mouth, the way many birds feed their young. He feeds under their guidance but also is able to forage for himself.

From the way precocious young Branta takes care of himself, it's fairly plain that adult Canada geese with young families don't have many of the problems human parents do. Their fledglings are pretty well able to go it alone, while *you* have to care for yours for quite a few years.

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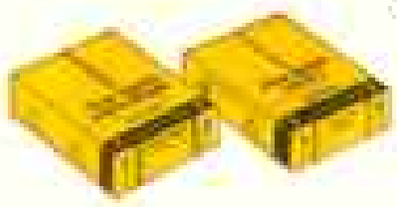

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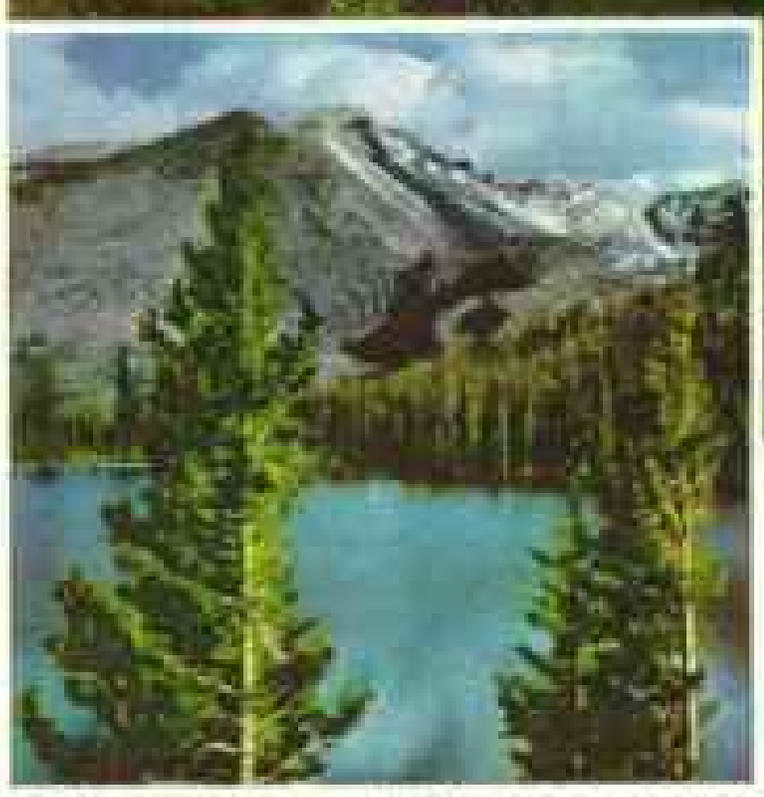

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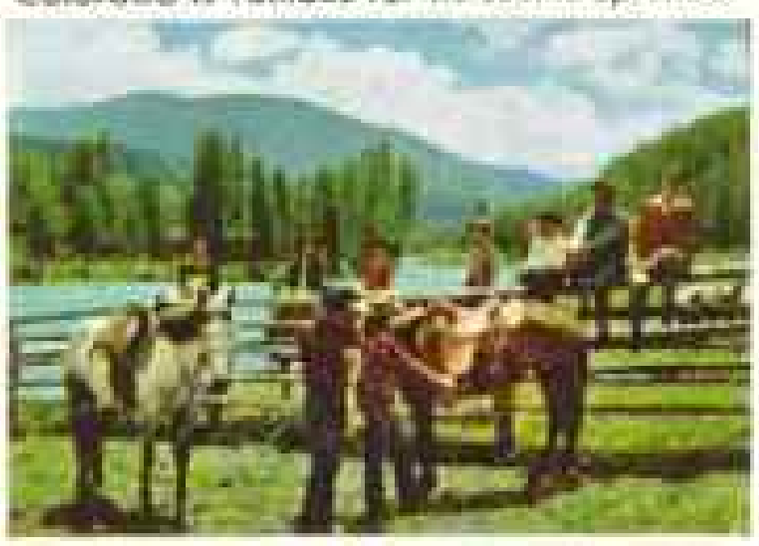

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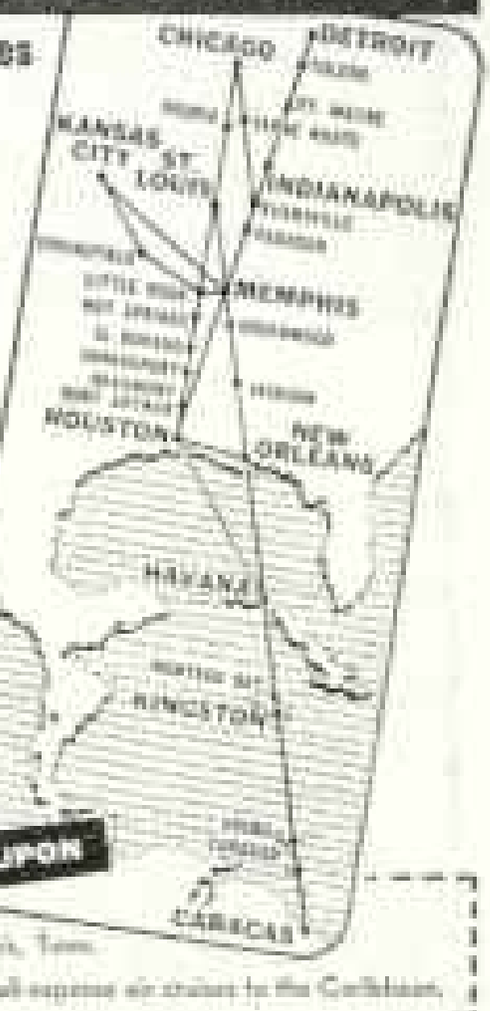

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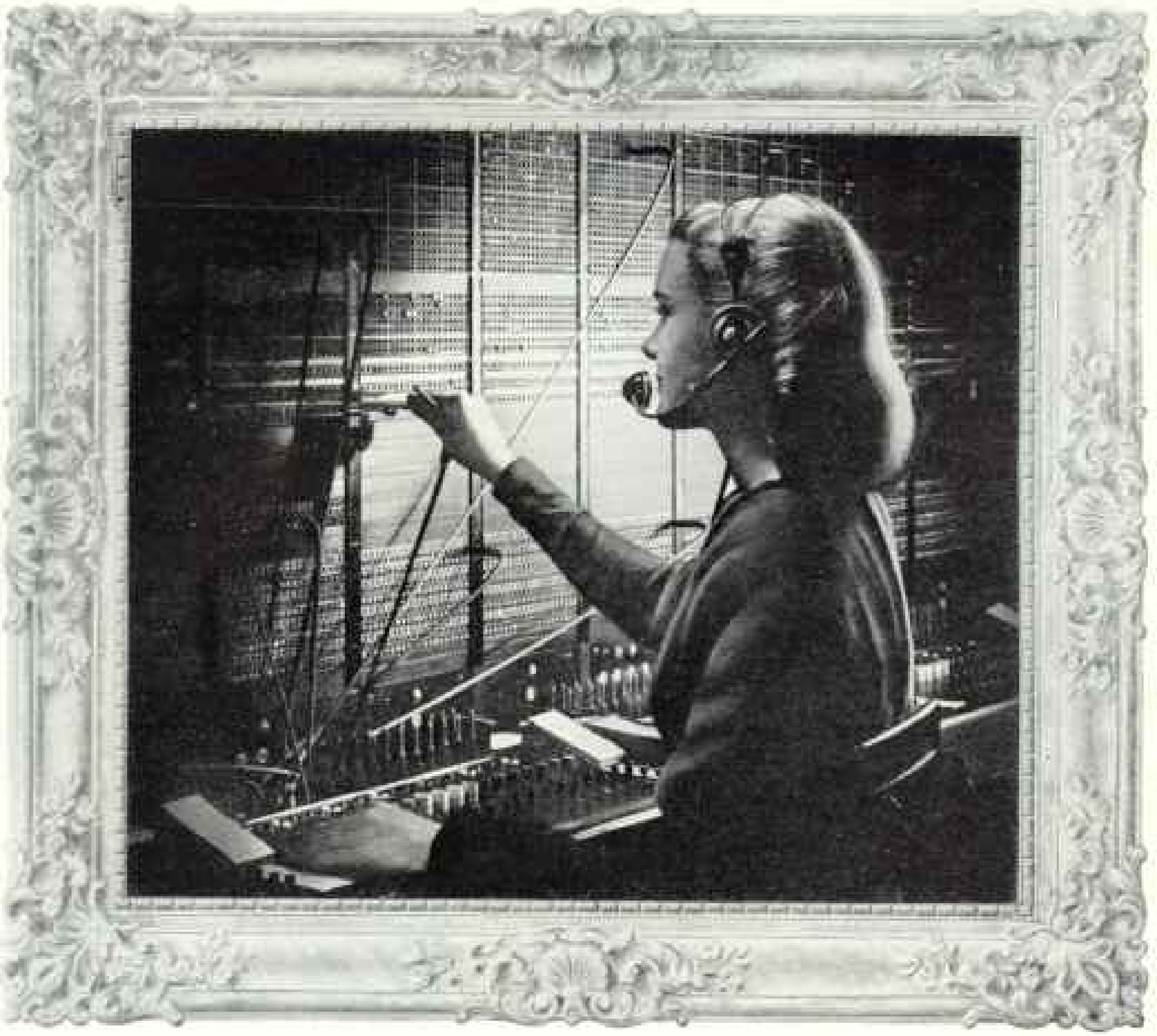

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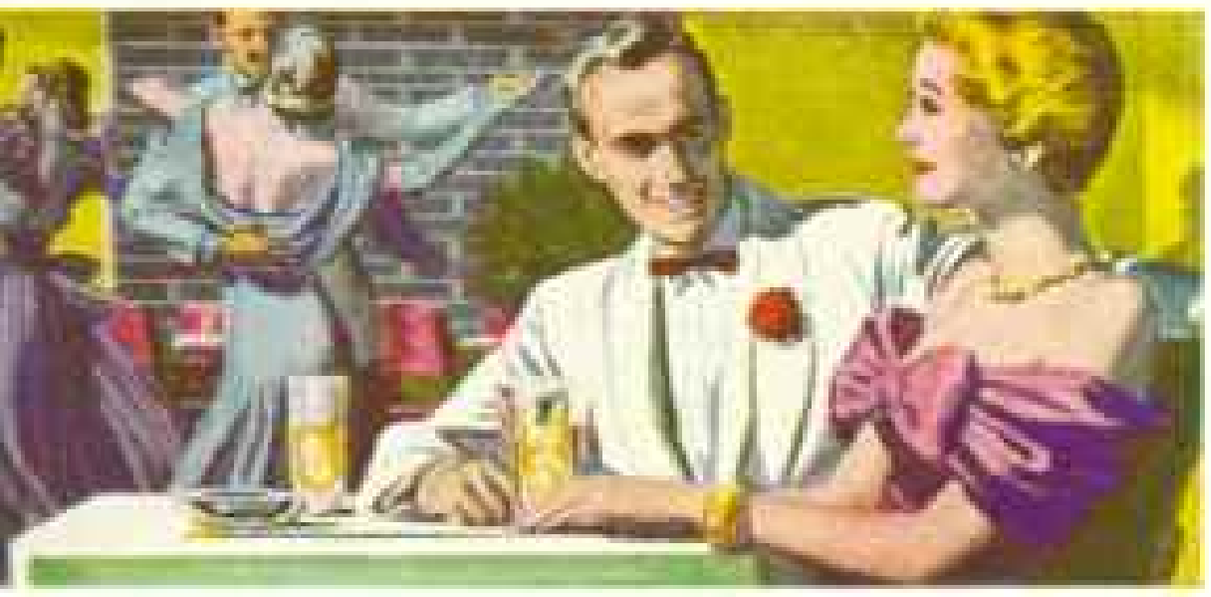

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