

Born a century ago was Antonio Caetano de Abreu Freire who was destined for medical fame as Egas Moniz. He earned the Nobel Prize for being the first to use lobotomy and as a pioneer in cerebral angiography.

He was also a prolific writer on a wide range of subjects, and for nearly 20 years he played an important role in the political life of his native Portugal. In both politics and medicine he espoused controversial ideas but softened his opposition by tact and charm. Even so his career included a duel, political imprisonment, and an attempted assassination that nearly cost him his life.

Lobotomy Pioneer



THE MAN. Moniz was born on November 29, 1874 in Avanca, Portugal, one of four sons of Fernando de Pina Rezende Abreu and Maria do Rosario de Almeida e Sousa. Egas Moniz was an honorific baptismal name that he later adopted as his nom de plume; it commemorated an ancestor who was one of Portugal's national heroes.

His parents were aristocrats and he grew up in a home rich in ancient traditions. He also absorbed the lore of the coastal village, and in later years he often returned there as a quiet refuge where he could think and write.

The family had a strong Roman Catholic heritage; his mother had been educated in a convent and he received his own early education from his uncle, a priest. He went on to the seminary at São Fiel (St. Faiths) but a religious life did not appeal to his restless spirit; at 17 he put aside his robe and entered the University of Coimbra, which had been founded in the 13th century.

The university was a scene of political ferment and he became an ardent debater and pamphleteer. He began by defending the monarchist traditions of his family, moved gradually to a centerist position, then joined the movement for democratic reforms. Throughout his political life he always tried to combine progressive viewpoints with a respect for the values of the past.

In his studies he was torn between mathematics and medicine; he also considered an engineering

career before choosing neurology. One decisive influence was that of August Rocha, head of the university clinic of internal medicine; Rocha recognized Moniz as a brilliant student and assigned him to many of the clinic's most difficult and unusual cases.

Moniz received his medical degree at 25, with a thesis on the structural changes in diphtheria. Postgraduate work in neurology and psychiatry was done in Bordeaux and Paris where he studied under Joseph Babinski, Jules Déjerine, clinical chief at the great Salpêtrière hospital, Pierre Marie, professor in the Paris Faculty of Medicine; all three had been pupils of the celebrated Jean Martin Charcot. At 28 he was appointed a lecturer in neurology at Coimbra University. That same year he married Elvira de Macedo Dias.

Nine years later in 1911 he transferred to the newly formed University of Lisbon where he was the first holder of the chair of neurology and also co-founded the neurologic clinic at nearby Santa Marta hospital. In 1929 he was named rector of the Lisbon medical faculty.

Work as a teacher, clinician and scientific investigator was combined with a prominent career in politics. He was elected a deputy to the Portuguese parliament in 1903 and served for 14 years; the period spanned a turbulent era of regicide and revolution as Portugal moved from monarchy to republic. Moniz was imprisoned for his opposition to dictatorship, and he helped to write an introduction to the republican constitution adopted in 1910.

He left parliament to become ambassador to

Frontispiece photograph of Egas Moniz was taken in 1949, the year he won the Nobel Prize for his work in developing prefrontal lobotomy. The famed University of Coimbra, below, was where he studied and in his elaborate doctoral robe, opposite top, took his medical degree. Casa do Marinheiro, opposite bottom, was his family home.





Spain in 1917. A year later he was named foreign minister and headed his country's delegation to the Paris Peace Conference of World War I.

His ideas helped found Portugal's Centerist party and he was a spokesman for moderate policies, urging accommodation and compromise at home and abroad; as a result he was often bitterly assailed by both the left and right wings. In 1919 he retired from public life after a political quarrel forced him to fight a duel.

As a writer Moniz contributed numerous books and more than 300 articles and reviews, the greatest part of the collection devoted to his medical work; his papers appeared frequently in foreign journals. His doctoral thesis "Sexual Life" was published in book form and went through 19 editions, remaining a standard textbook on the subject for more than 30 years.

In 1927 he produced his first report on cerebral angiography, describing the technique in diagnosing cerebral tumors. Over the next ten years flowed numerous discoveries in neurology, climaxed in 1936 with his first paper on the use of leucotomy, or prefrontal lobotomy.

His political interests produced a history of the Portuguese parliament, and in *A Year of Politics* he described the forces that undermined the republic and brought its collapse. He also wrote

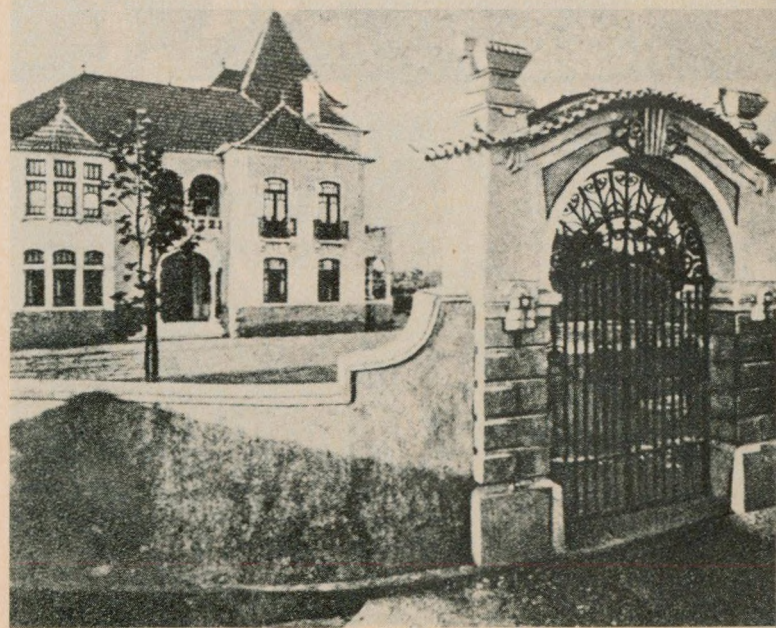
several biographic studies including the lives of physician-Pope John XXI and Portuguese physician-novelist Júlio Diniz. Other works ranged over a wide spectrum, from hypnotism to the history of playing cards.

Moniz was elected for several terms as president of the Lisbon Academy of Sciences; he was an honorary or corresponding member of more than a dozen other scientific and medical societies in Europe, Brazil and the United States. His affiliations included the Royal Society of Medicine, the Paris Academy of Medicine and the American Neurological Association.

He was awarded honorary degrees by the universities of Bordeaux and Lyons and was decorated by the governments of Portugal, Spain, Italy, France. Among the decorations were the Spanish Grand Cross of the Order of Isabella and Commander of the French Legion of Honor. When he received the Nobel Prize at 75 he remarked dryly: "At my age I am no longer vain."

In private life he was an amateur musician and composer, a connoisseur of painting and sculpture, an affable host who delighted in his knowledge of vintage wines. His manner was vivacious and his stocky figure seemed to have limitless energy; in his fifties he continued the pace undiminished despite accumulated ills. He suffered recurrent attacks of gout and his hands became gnarled and crippled as the result of exposure during his laboratory experiments with x-rays.

At 65 he was gravely wounded when a schizophrenic shot him eight times with a pistol. One of the bullets smashed his right hand, four penetrat-



Moniz helped to write the Portuguese constitution. During the revolution, which ended the monarchy, the offices of the principal Lisbon newspaper were turned into a Red Cross hospital.

Below, Moniz poses with the staff at Santa Marta hospital, where he founded a neurologic clinic and, bottom, he is received by the President of Portugal at the inaugural session of the Congress of Psychosurgery in 1948 of which he was president.



ed the thorax and one lodged so precariously in a vertebra that surgeons were unable to remove it. The shooting occurred in his consulting room and Moniz reacted with cool courage; he summoned his wife, bade her farewell in case of his death, then tended his own wounds as he was driven to the hospital. He recovered after a long convalescence but never regained his full vigor. When he received the Nobel Prize he was too frail to attend the Stockholm ceremonies. He nonetheless continued to work, maintaining a clinical practice in Lisbon and taking a keen interest in the numerous students who came to him.

The end came in Lisbon on December 13, 1955, at 81, while he was in the midst of a favorite activity. He was writing about a noted Portuguese painter whom he had known and admired when he was suddenly overwhelmed by a massive hematemesis. An old associate and close medical collaborator was summoned and Moniz smiled at him saying: "Are you coming to see a friend die?" Moments later he was dead.

SCIENTIST. Moniz credited a major influence on his scientific work to Ramón y Cajal, the celebrated Spanish pioneer in neurologic anatomy; he was also influenced by the conditioned reflex theories of Russia's Ivan Pavlov. Moniz became a controversial figure in the psychiatric world because he essentially rejected the psychoanalytic approach to mental illness and sought neurologic solutions for psychic problems.

In the early 1920s he focused his attention on cerebral tumors and advocated a more frequent use of neurosurgery; he believed that the presence

of brain tumors was often undetected. Diagnosis at the time depended largely on clinical observation and he set himself the task of improving the existent x-ray procedures.

It was earlier established that contrast in an x-ray could be sharpened by injecting gases into the ventricles, and oily substances into extravascular spaces. A safer and more accurate method was needed and Moniz found it through injecting a radio-opaque solution of sodium iodide into the carotid artery; he reported that the substance was relatively nontoxic and that it reduced the risk of embolism by passing quickly through the capillaries into the extracapillary spaces. The initial trials were done on rabbits, dogs and human cadaver heads, working in the crude conditions of a small laboratory. The university anatomy institute was some distance from the x-ray facilities and Moniz assigned himself to the "dead march" duty of transporting the severed heads.

The first report on the new technique was presented to the Neurological Society of Paris. The initial reaction was somewhat skeptical, particularly on the question of safety; in the years that followed acceptance became widespread although dangers were acknowledged. Moniz remained in the forefront of experimentation, devising improved procedures and helping to extend the technique to the pulmonary circulation.

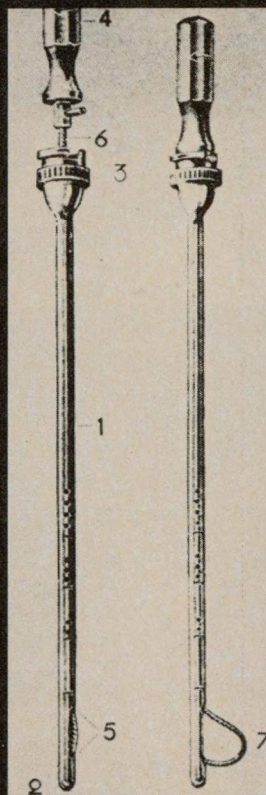
An impetus for his next discovery occurred in 1936 while attending the Second International Neurological Congress in London. J. F. Fulton and C. F. Jacobsen described the surgical removal of orbitofrontal cortex areas in two chimpanzees; thereafter the animals became docile and no longer reacted to frustration with rage. Moniz was tremendously excited by the implications and rose from the floor to suggest that a refined procedure might be applied to human beings.

Moniz had long held the conviction that "only by organic orientation can psychiatry make real progress." He accepted the theory that anxiety and aggressive reactions were concentrated in special cell groups in the cortex, and he argued that the morbid ideas could become fixed in the synaptic complex as a kind of automatic response. Since these presumed cell groups were unknown, there was no means of direct intervention but Moniz chose the prefrontal operation as a short cut to sever neuronal connections. He wrote: "Through complete alteration of the existing fiber arrangements, and organization of other synaptic fiber groups, I believed that I could transform the synaptic reactions and thereby cure the patient."

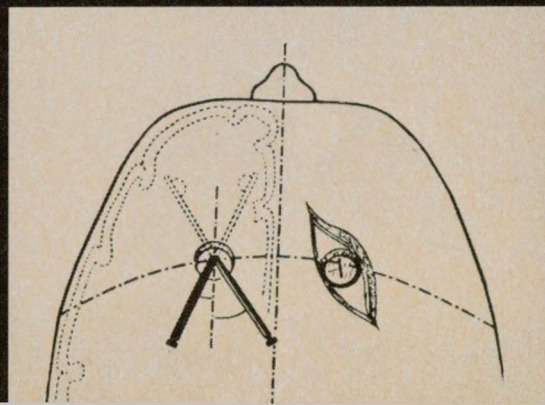
A little known fact is that a similar radical op-



Moniz began his pioneer work in cerebral angiography in the early 1920s in an effort to make safer and more accurate the then existing x-ray procedures. He finally discovered that injections of radio-opaque sodium iodide into the carotid artery sharpened the contrasts in an x-ray, as in his angiograph of the cortex seen here.



Aided by neurosurgeon Almeida Lima, Moniz developed the leucotome, left, a cannula through which a small steel wire is looped into the white matter of the frontal lobe, a curve rotated, cutting out a portion of the brain. Diagram of the skull, below, shows the introduction of the leucotome.



In 1902, an important year in Moniz' life, he was appointed a lecturer in neurology at Coimbra University and married Elvira de Macedo Dias.



eration had been tried in 1890 by the Swiss physician G. Burchardt; he claimed some success but abandoned the method because of a public outcry. Moniz became the true founder of the technique because he brought to it an established reputation and he persisted in the face of much strong opposition.

Assisting Moniz in the work was a Lisbon colleague, the neurosurgeon Almeida Lima. They began cautiously by injecting alcohol into the white matter of the prefrontal lobes, then advanced to the surgical removal while continuing to use alcohol injections for repeat operations.

Moniz and Lima designed an operating instrument they called the leucotome. It consisted of a hollow needle 11 cm. long and 2 mm. in diameter enclosing a steel wire that is looped into the cortical white matter, rotated, retracted with a 1 cm. core; the effect was to minimize damage.

Moniz and Lima performed the first alcohol injection on November 12, 1935, and followed with the first leucotome operation on December 27. Then came a series of 20 operations, typical procedure being the removal of four to six cores located at various subcortical levels in each frontal lobe. Moniz reported that a third of the patients showed a striking improvement, a third evidenced some improvement and the rest remained unchanged. He claimed no grave repercussions in intelligence or memory but noted such complications as sphincter disturbances, transient apathy, loss of initiative and disorientation. He found that the best results were obtained in cases of agitated depression and the poorest with chronic schizophrenia.

Moniz announced his technique in the following year, predicting that it would "provoke a live-

ly discussion." It actually aroused a storm of controversy, not only in the medical profession but in the press, among the clergy and the general public. Debate waged hotly as to the clinical results achieved, the degree of risk and ethical considerations.

Moniz was wrong in another prediction: he thought it would take at least 50 years for the techniques to win general acceptance but it reached its apex in about a decade. The United States was probably the most receptive country; by one estimate at least 50,000 operations were performed during the decade 1945-55 alone.

By 1955 there were at least six major variations of the original operation, although all used the basic principles that Moniz introduced. Diverse approaches included transorbital lobotomy through the eye socket, the "open" operation with removal of a skull section for direct observation, and the cortical undercut, which aimed at areas where the gray matter joined the principal white fibers. Today these procedures are rare, having been largely replaced by psychopharmacology. Annual lobotomies in the United States are estimated as low as 100 or as high as 1000.

PERSPECTIVE. Moniz and other proponents declared optimistically that lobotomy usually produced only a minor loss in intellect and personality and believed that it was more than offset by the general improvement in a patient. Critics charged that there was a severe loss of intelligence, initiative, creativity and sensitivity, and some saw the operation as an attempt to robotize patients for the institution's convenience.

A thorny issue is that of patient's consent. Last year a Michigan court outlawed the operation for all institutionalized mental inmates in the state, holding that they were by definition incapable of giving an informed consent. A congressional committee also made strong inquiries into use of the operation on involuntary subjects. The National Institute of Mental Health responded with a policy statement suggesting that lobotomy be banned for children, prisoners and mental institution inmates; the report described psychosurgery as still highly experimental but stopped short of advocating a total ban.

Where Dr. Egas Moniz sought the cause of emotional malfunction in a synaptic disturbance, his theories are still current and being vigorously pursued by psychopharmacologic researchers today. But whether or not lobotomy stands the test of time, Egas Moniz' influence on psychiatric thought and philosophic conceptions will long be acknowledged.

