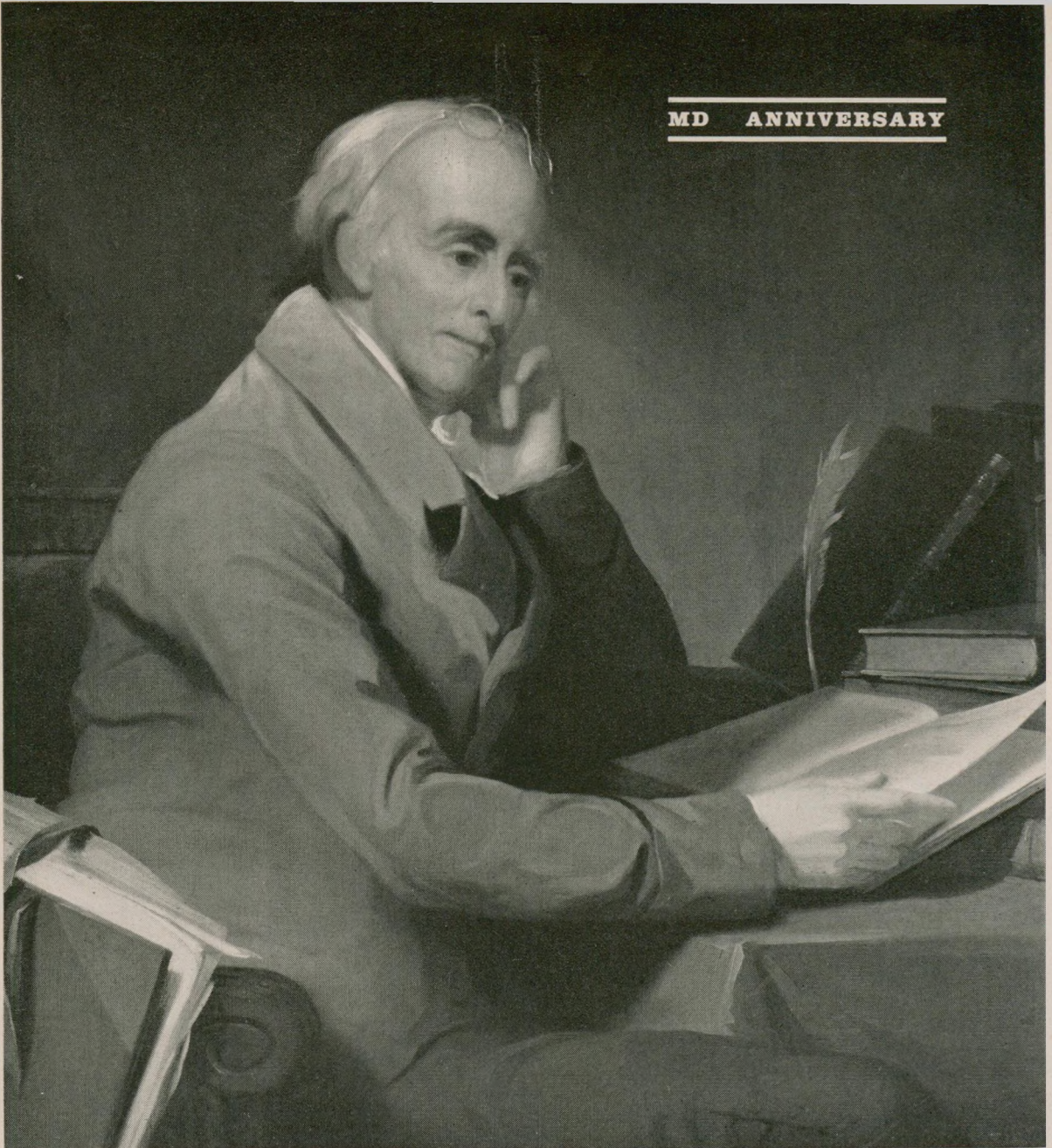




REVOLUTIONARY PHYSICIAN

■ On the first document of the infant United States, modestly wedged between Robt. Morris and Benj. Franklin, is the name of a physician who has been a controversial figure from his own day until the 150th anniversary of his death this year.

Benjamin Rush was the most widely known American physician of his time at home and abroad, yet his colleagues and even his patients turned against him, his detractors accused him of depopulating the

country. Only in recent years have medical historians unraveled the paradox of a man who was combative, courageous, sometimes mistaken, but always dedicated to man's betterment, the last great figure of prescientific medicine and a perfect model of the 18th century physician.

First Steps. On Christmas Eve, 1745, in the Quaker village of Byberry 12 miles from Philadelphia, Susanna Rush gave birth to her sec-

ond son and the fourth of seven children; Benjamin's was the fifth generation of the family of dissenters whom John Rush, once a captain of horse in Cromwell's army, led from Oxfordshire, England, in 1683. The Rush men were farmers and artisans; Benjamin's father John, a gunsmith, sold the 500-acre homestead and moved his family to Philadelphia when Benjamin was three; he died at the age of 39 when the boy was not yet six. Benjamin's mother,

a spirited and resourceful woman of some education, opened a grocery and provisions store; her business thrived with the growing city, enabled her to provide for her children's education.

Benjamin grew up in the colonies' largest city and the future nation's first capital; its 15,000 population of mainly Quakers and Pennsylvania Dutch (German) settlers boasted street cleaning and fire departments, a circulating library, a philosophic society, all inspired by leading citizen Benjamin Franklin. Philadelphia also led the colonies in medicine, with the first medical school, medical society and hospital.* Benjamin took his early schooling in his uncle the Rev. John Finley's academy, his bachelor's degree at the College of New Jersey (later Princeton University). According to custom, he became a medical apprentice; his preceptor, Dr. John Redman, was Philadelphia's leading physician, a Leyden graduate and member of the hospital staff, with the largest private practice in the city.

He worked long hours, studied late, wrote daily notes in his commonplace book. Formed in these years was the diligence that patterned his entire life: he spent no idle hours, found recreation in a change of occupation.

During his five and one-half years with Dr. Redman he missed only 11 days from his duties, spent only three evenings out. He attended Dr. William Shippen's anatomy lectures, the first in the colonies, in 1762, Dr. John Morgan's lectures in materia medica at the newly opened medical school in 1765. Both these Philadelphia men had studied at Edinburgh and with the Hunters in England. On his preceptor's advice young Rush embarked with a fellow

student in August, 1766, to follow in their footsteps.*

From his two years in the medical capital of the 18th century world, the young man of 21 extracted full value in a heavy lecture schedule†; finding his background inadequate he also took tutoring in classics, mathematics, philosophy and French, brushed up his Latin, taught himself Italian and Spanish. He joined the medical society, made friends among his contemporaries; one of these, an ardent republican whose ancestor had also served with Cromwell, gave the American his first doubts about monarchy; another was Dr. John Brown, then a young tutor, later the originator of the Brunonian system which influenced Rush's own medical theory. Rush dined at his professors' houses and accepted invitations to country houses in the neighborhood, met such celebrities as philosopher David Hume.

For his doctoral thesis on digestion Rush used himself as guinea pig: he took meals of beef, veal, chicken, beer, assorted vegetables, leavened and unleavened bread; an alkaline salt before the meal neutralized any acid present in the stomach, three hours after dinner he took an emetic, analyzed his results to discover whether fermentation was part of the digestive process. The thesis, in classic Latin with the title *De coctione ciborum in ventriculo*, was well received; Rush passed his examinations without incident, won his degree of doctor of medicine in June, 1768.

He stayed for an additional summer course in medical practice, then made his way to London for four crowded months of lectures, hos-

*Voyage was stormy and perilous, seasick Rush found relief in laudanum.

†His world renowned teachers: Alexander Monro secundus, anatomy; William Cullen, institutes of medicine (physiology); Joseph Black, chemistry; John Gregory, practice of medicine; John Hope, botany and materia medica.

pital visits and medical conversations with such distinguished English physicians as William Hunter, John Fothergill, John Coakley Lettson. He went sightseeing with Franklin, saw David Garrick perform; under the wing of the Philadelphia born court painter Benjamin West he dined with Dr. Samuel Johnson, Dr. Oliver Goldsmith and the Johnson coterie; at a dinner party in King's Bench gaol his host was the stormy liberal John Wilkes, then a political prisoner, later an advocate for the American colonies in the House of Commons.

With Franklin's letters and kindly proffered financial aid he proceeded to Paris: he glimpsed royalty at Versailles and heard anti-royalist talk in republican salons, visited hospitals, talked with physicians, but decided that French medicine was too little developed to add to his knowledge. After two more months in London he embarked for home, employed the long sea voyage to learn German and pursue his new interest in political science with readings in Blackstone's *Commentaries*.

Practitioner. Dr. Rush rented a house with his brother Jacob, a novice lawyer, and a sister as housekeeper. He was now 24 years old, handsome, vigorous, spurred by noble principles and possessed of the finest medical training of his time. Following the example of his revered Dr. Cullen, he sought his patients among the poor, walked long distances, climbed ladders to upper stories in slum warrens, filled his own prescriptions, charged few patients for either his services or his medicines.

In a profession that still largely followed the Boerhaave doctrine of the humors, the young newcomer plunged headlong into open advocacy of Cullen's theory locating disease in the solid parts of the body. Years later when the Cullen system had won acceptance, Rush had already abandoned it for his own theory of the irritability of the blood vessels; in this he was influenced by the Brunonian theory of sthenic and asthenic states of the nerves, but he arrived at his system independently of his former Edinburgh friend.

He boldly espoused liberal causes: one of the first abolitionists, he published an antislavery pamphlet in 1772, befriended the Negro community in Philadelphia and helped them found a church, sent ardent republican articles to the newspapers.

He later said that not one established physician referred a patient to him in these years although

*Pennsylvania Hospital, 1750; College of Philadelphia, 1765; Dr. John Morgan's (et al) Philadelphia Medical Society, 1766.

Dr. Rush's signature on the Declaration of Independence between those of his fellow Pennsylvania signatories Robert Morris and Benjamin Franklin.

*"at all political connection between them and the State of Gr
lude Peace, contract Alliances, establish Commerce, and to de
with a firm reliance on the protection of divine Providence, u*

John Hancock
Robert Morris
Benjamin Rush
Benjamin Franklin
John Morton
Samuel Chase
Wm. Paca
Thos. Stone
Charles Carroll

many had patients to spare; he might have starved in his poverty stricken practice, except for his appointment to the professorship of chemistry at the medical college a month after his return. He had prepared himself for this with study and letters of recommendation from his teachers; the post brought him public notice and a small sustaining income.

His practice grew thanks to his genuine concern and dedication to his patients, his unshakable confidence in his methods, and some innovations. His introduction of the Sutton method of inoculation for smallpox, which he learned in London, attracted paying patients; welcomed also was his Sydenhamian emphasis on simple diet and abundant fluids rather than unsavory and complicated medications. He reduced the *materia medica* from a vast number of traditional drugs to some 15 or 20, attacked professional obscurantism by discarding Latin terms and publishing dissertations on health and hygiene for the lay public. He recommended exercise and fresh air, a diet well balanced with vegetables, temperance in eating and drinking, fermented instead of spirituous liquors.

Rush worked from dawn to midnight, studied or wrote until the small hours, yet found time to go regularly to church, offer hospitality to friends and strangers, enjoy female society at afternoon parties in town and the country. Good families now engaged his medical services, opened their homes to the earnest, handsome young physician with the gentlemanly manners and high morals.

He was 29, with a practice approaching £900 a year, when he suffered his first romantic grief:

the attractive redheaded daughter of a sea captain, whom he had courted for more than a year, died three weeks before the wedding day of a lingering but unidentified illness.

The following year, revisiting the well-to-do Stockton family whom he had known as a Princeton undergraduate, he found that the baby he had once dandled was now a lovely girl of 16; they were married in January, 1776. Julia was loving, intelligent and wise; she won her husband's lifelong devotion, tempered his hotheadedness through a long and happy marriage. She bore him 13 children, nine of whom reached adulthood: John became a naval surgeon, James and William followed their father into civilian medicine; Richard chose the law and became attorney general of Pennsylvania and then of the United States, Secretary of State and later Treasury, minister to England and France. Julia outlived her husband by 35 years, died at 90 in 1848.

Revolutionary. While Rush courted Julia he was already active in the growing revolutionary movement in the colonies: in 1774 he rode out as one of the Philadelphia committee to welcome the delegates to the first Continental Congress. He housed John and Samuel Adams during their stay, inoculated Patrick Henry against smallpox, entertained Washington at dinner.

In the critical year of 1775, when most Americans still sought conciliation, he urged promotion of home industries to strengthen the economy and sustain the embargo on English goods. He conferred often with the leaders of the second Continental Congress, attended the dinner in honor of Washington's ap-

pointment as commander-in-chief. When Pennsylvania built a fleet of gunboats to defend the Delaware he became fleet surgeon; like most people who worked for the new cause he had difficulty in collecting his salary.

A zealous pamphleteer, Rush gathered material for a pamphlet that would be a ringing call to independence. When he realized that this pamphlet would be openly treasonable, might ruin his practice and destroy his ability to support Julia, he proposed the project to his new friend Thomas Paine, who had recently arrived from England in search of a teaching post and had no dependents to consider. Paine welcomed the plan, read the chapters to Rush as they were completed; Rush found a Whig printer willing to take the risk. Early in 1776 appeared the fiery pamphlet, with Rush's title "Common Sense," which planted the idea of independence in men's minds from Boston to Virginia.

While Jefferson was drafting the Declaration of Independence for the Congress, Rush led Pennsylvania's revolutionary state convention in adopting a resolution for independence; the state body's resolution was actually adopted ten days before the federal declaration on the historic July 4th. Rush's election to the Congress followed; with the other Pennsylvania delegates he signed the Declaration of Independence a few weeks later.

When the war began Rush returned to medicine, treated the wounded on the Princeton battlefield. His insistence on smallpox inoculation, supported by Washington, probably prevented widespread epidemics among the troops. In 1777 at the end of his term in Congress he accepted a commission as



Cherrywood medicine chest, above, used by Dr. Rush. Portrait of Mrs. Rush painted by Nathan Goodman.





Replica of a silver urn presented to Dr. Rush in June, 1790, by his "grateful" graduating students.

military surgeon but resigned after nine months in protest against Dr. Shippen's management of the army hospitals. With characteristic ferocity he wrote Washington, John Adams, newspapers and leading citizens, demanding Shippen's court martial; he even turned against Washington who was unresponsive, being occupied with his army's survival at Valley Forge (the breach with Washington was later healed).

Excluded from the war by his own act, barred from Philadelphia where the British were in command, he wandered disconsolately among the camps through the bitter winter months; finally in June he was able to bring his wife and firstborn son John home from their country

refuge. Shortly after, exhausted by his ordeal, he was seized with a "malignant bilious fever," hovered for days on the brink of death. When the medical college reopened in November he was sufficiently restored to begin his chemistry lectures; when the new state University of Pennsylvania absorbed the college, Rush at first declined to serve on the same faculty with Shippen, finally accepted an appointment and resumed his teaching career.

Teacher. Some 3000 students passed through his classes in chemistry, the theory and practice of medicine and clinical medicine; they spread from Massachusetts to Georgia and westward with the frontier, wrote to their preceptor for advice from all parts of the country. For decades he conducted a medical service by mail for these disciples, also for medical men who had never seen the inside of a lecture hall, and private persons with medical problems; he answered thousands of inquiries conscientiously, most of them without fee and at his own expense for postage. He also had private students, limited the number of his apprentices to six.

As a lecturer he held his students rapt by his fine voice, deep earnestness, simple explanations enlivened with wit and anecdote. Embattled against the pedantry that had enveloped medicine for centuries, he appalled his colleagues by insisting that the art of medicine was so simple it could be taught in two years.

He reached beyond medicine to a vision of free public schools, wrote in true 18th century spirit: "Without learning, men are incapable of knowing their rights, and where learning is confined to a few peo-

ple, liberty can be neither equal nor universal."

Prophetically he called for replacement of the classics with science, technology and manual training, advocated athletics and recreational activities within the curriculum, urged the phonetic method of teaching English and foreign languages; he opposed corporal punishment and training in the use of firearms; he supported education for women and women's suffrage.

His plan for a federal university, a graduate training school for the civil service, was ignored, but his almost singlehanded efforts to establish an institution of higher learning in Pennsylvania resulted in Dickinson College. Three decades after his death, Rush Medical College was built in Chicago as a tribute to his greatness as an educator.

Fever Feud. Flowing steadily through these diverse activities was Rush's work as a clinician: collected in the five volumes of *Medical Inquiries and Observations* that he published between 1789 and 1812 were his classic and often pioneer descriptions of cholera infantum, dengue, hydrophobia, tetanus, tuberculosis, smallpox, dropsy, gout, cancer, epidemics of cynanche trachealis, influenza, scarlet fever, his original observation of the relationship between focal infection, especially of the teeth, and arthritis, his medical and anthropologic study of the American Indian.

Dramatically at the peak of his career came the one egregious error that nearly destroyed his practice, overwhelmed him with years of calumny in his own day and marred his otherwise heroic stature in medical history: the yellow fever controversy that arose in Philadelphia's disastrous epidemics of 1793

Philadelphia, Decr 75. 1805

I HAVE seen *John Dean* and
examined *his* case, and find *he* is afflicted with *mania*
and that *he* is a proper Patient for the PENNSYLVANIA HOSPITAL.
To the SITTING MANAGERS, viz. *Benj: Rush*

Certificate signed by Dr. Rush, above, attests to the mental illness of a patient for his committal to Pennsylvania Hospital. Tranquilizing chair, right, was designed by Rush as a more comfortable restrainer than the straitjacket but was abandoned when it was found to cause bruises and fractures on the restrained.



and 1797 provided the settings.

A hot dry summer, the prevalence of mosquitoes, the arrival of refugees from strife-torn Santo Domingo followed by a wave of influenza, all were noted by Rush in his eloquent account of the 1793 epidemic. As the cases mounted, Rush returned to his notes of 1762 when as an apprentice he had helped to cope with a milder onslaught. He tried traditional fever treatment and then West Indian methods with his first patients but could not save them; finally he turned to his own theory of disease as irritability of the blood vessels, applied the logical therapy for the time: low diet, strenuous purging (10 grains each of calomel and jalap) and bleeding to the point of faintness. By chance the first patients on this therapy survived; this he took as unshakable confirmation of both the therapy and its theory.

He further insisted that the epidemic affliction was no separate disease entity, since all fevers were alike an irritability of the blood vessels, that the disease was neither imported nor contagious but endemic in the city and arising from miasmas of decayed vegetable matter; the specific cause in this instance was a heap of spoiled coffee putrefying on one of the wharves.

The anguished Rush drove himself in caring for the stricken, mostly without fee; his apprentices and the city apothecaries were kept busy pounding his purgative powders. Patients who recovered blessed his genius, when he was felled by the fever he took his own treatment and lived.

With the second epidemic the controversy was intensified, the profession bitterly attacked him as wrongheaded and stubborn, the city authorities resented his claim that the disease was endemic. One William Cobbett, an English radi-

cal practicing journalism in Philadelphia, accused him of increasing the city's death rate. Rush sued and won \$5000 in damages and \$3000 in costs, which he promptly gave to charity; the bankrupt Cobbett continued his attacks for a while from New York, finally fled home to England.

The decline of his practice left Rush in grave financial straits; his appointment to Columbia University in New York was blocked by Alexander Hamilton^{*}; Rush in despair asked President Adams for the post of Treasurer of the Mint, previously declined, which paid \$1200 a year.

In 1800 his fortunes mending and the wounds of the fever feud healing, Rush began his autobiographic *Travels Through Life*. Intended for his children, this unaffected personal history, with his hundreds of collected letters, paints a lively picture of the times in which he played a leading role. His well trained physician's eye and memory served him in sharp character sketches of his fellow signers of the Declaration, famous medical men, British and French notables he had met.

Psychiatric Pioneer. The last volume of Rush's series of *Medical Inquiries*, devoted to diseases of the mind, has been called his most significant contribution to medicine. He drew upon 30 years of experience with mental patients at the Pennsylvania Hospital; adding a personal motivation was the tragedy of his eldest son John, a young man of volatile temper who at 33 fell into a depression after killing a fellow officer and friend in a duel and was confined as mentally deranged, with one brief remission, from 1810 until his death.

Long before the onset of John's

^{*}Leading Federalist wanted no burning Republican physician on the faculty.

illness, Dr. Rush's sympathy for the insane had led him to plead for humane treatment; they were the proper concern of medicine and they could be healed. To promote recovery he recommended segregation of noisy and excited patients, separation of the sexes, adequate diet, clean rooms, good beds and care for their physical comfort, quiet and rest.

Exercise, recreation and occupation were to be supervised by instructors; hydrotherapy, bloodletting, also a "gyrator" of his invention were to be used to increase or decrease the quantity of blood in the cerebral vessels. He condemned mechanical restraint except in emergencies; the famous "tranquilizer" chair of his design was in his opinion more comfortable for the patient than the traditional straitjacket.^{*}

Published in 1812, the book went through many editions, and for 70 years remained the only American work in the field; today it is considered the first American textbook on psychiatry.

In the winter of 1812-13 a cough which had been bothering him became increasingly severe; on a day in April Dr. Rush, now in his 68th year, returned from his house calls suffering from a chill. Fever, difficulty in breathing and intense pains in his side developed; his physician diagnosed typhus but he suspected a recurrence of the pulmonary tuberculosis he had suffered from his youth. He had himself bled twice and showed some improvement, but on the fifth day, quiet and composed, he commended the poor to his son's attention, and quietly died.

Summing Up. By Benjamin Rush of himself: "He aimed well."



^{*}Chair was found to cause bruises and fractures and was abandoned.

Left, a moral and physical thermometer shows the effects of intemperance from Dr. Rush's *An Inquiry into the Effects of Ardent Spirits*. Right, Dr. Rush's portrait on State of Pennsylvania Medical Society's award medal.

