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FRANCIS GILMAN BLAKE

1887—1952

A Biographical Memoir by
JOHN RODMAN PAUL

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Biographical Memoir

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James S. Blake

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Francis Gilman Blake was one of those unusual individuals who combined the qualities of a wise physician and an astute scientist. He was also the possessor of a kindly and understanding heart. He moved quietly through the professional environment of full-time university medicine, a medium for which he seems to have been made: medical laboratories, hospital wards, seminar and board rooms. Many of his associates admired him from a distance but never understood his taciturnity,—a few were so deeply inspired that they developed a lasting type of hero worship.

By far the greater part of his professional life was spent at Yale. Any graduate in medicine, who received his or her degree from the Yale University School of Medicine between the years of 1922 and 1952, or any House Officer who served on the medical service of the associated hospital¹ during that period knows for what he stood, both in the school and the hospital. Besides being Professor and Chairman of the Department of Internal Medicine, the responsibilities which he carried on his shoulders during that period included: Physician-in-Chief and Chairman of the Medical Board of the Grace-New Haven Community Hospital, and for seven years, Dean of the Medical School. A more detailed list of his appointments appears at the end of this article. But, although this list speaks for itself, it does not tell the whole story or indicate his real influence in the school in guiding its destiny, or his influence upon clinical medicine or clinical investigation in this country,—which is not to be measured in terms of multiple positions or tenure of office.

As to his origin, he was a true product of old New England on both sides of his family, his forebears having arrived in this country during the seventeenth century. Among this long line of New England families were a number of teachers, ministers and physicians who now lie sleeping in little country graveyards

¹ Designated as the New Haven Hospital up to 1946 and subsequently as the Grace-New Haven Community Hospital.

scattered throughout Maine and Massachusetts. His father seems to have deviated from this pattern somewhat and had become a mining engineer, interested in the coal and iron resources of Pennsylvania. Francis was born in the small Pennsylvania town of Mansfield Valley on February 22, 1887, the second of three boys. When he was three years old his father died. Most of his boyhood was spent either in Williamstown, Mass., or Brookline, Mass., where he had ample opportunity to develop at an early age a love of the out-of-doors. Most of his boyhood summers were spent at Camp Pasquaney in New Hampshire and when he "graduated" he returned as camp councillor and later as camp doctor. Indeed, Mr. "Ned" Wilson, the director of the camp, became almost a second father to him. It was not by accident that as a boy he roamed the woods and developed an enthusiasm for nature, particularly for birds; or that he took a year off between college and medical school to spend the winter in a log cabin in the Maine woods, for he was a born naturalist and he published, at the age of 15 (with his brother), his first scientific paper, on an ornithological subject. It appeared in *The Auk* in 1902.

During the year spent in the Maine woods he was getting ready, as it were, to go to medical school. He was not very rugged while at college, where he went under the name of "Bant", and I believe he derived a good deal of satisfaction from the thought that he might demonstrate his ability, as a camper, hunter and trapper, and to snowshoe his way through the forest in the dead of winter. But perhaps the most important aspect of this year in the woods was the task of tutoring a schoolboy by means of which he made enough money to enable him to study medicine. Three of them: "Bant" Blake, the recent Dartmouth College graduate; Horace Priest, an experienced Maine guide; and the schoolboy, took up residence together in a small log cabin deep in the woods. In a journal which he kept regularly at that time he wrote at the beginning of this adventure under the date of October 8, 1909:

"Horace and I set out early this morning. We walked along the tote road about a mile and then branched off down Bald

(Tyler) Mt. Brook, where Horace has a canoe. I stood up in the bow while Horace paddled me noiselessly down the brook. It was entrancing—right in the heart of the wilderness and beautiful beyond words—the slow dark water of the brook mirroring the spruce and fir and larches with exquisite perfection. Such solitude, such silence—only the almost noiseless dip of the paddle, and the occasional call of a downy or hairy woodpecker, or a flock of siskins twittering and buzzing. . . . It is good to be alive and well in the midst of these woods whose grandeur is awe inspiring. It lifts one up into the sixth heaven than which there is only one better.”

In the years immediately preceding, while at Dartmouth College, he had taken all the courses in biology and zoology that he could. His notebooks, now in the Yale Medical Library, bear witness as to how the science of living things had taken hold of him. He was never to forget biology and Dartmouth, nor did Dartmouth forget him; for he received an honorary Sc.D. from his alma mater in 1936.

In Boston both at the Harvard Medical School which he entered in 1909, and later, at the Peter Bent Brigham Hospital as a house officer, he spent altogether seven years, finishing up as resident in medicine, his opposite number in surgery being Dr. Elliott C. Cutler. Together they had planned to become Professor of Medicine and Professor of Surgery at Harvard;—a plan which did not misfire by a very wide margin.²

As to his teachers at Harvard, of all the members of the faculty whom I have heard him mention, Dr. Theobald Smith was spoken of more often than others, and always with admiration. Dr. Blake's early *medical* publications, which appeared while he was a house officer at the Brigham Hospital certainly reflect Theobald Smith's interests in the field of infectious disease and applied microbiology.

While he was at "the Brigham" he met and married in 1916, Dorothy P. Dewey of Springfield, Mass., who was a nurse in training there. It was the happiest of marriages, and no account

²Dr. Cutler eventually served as Moseley Professor of Surgery at Harvard.

of Francis Blake's life would be adequate without mention of his devotion to his family.³

Shortly after he left the Brigham Hospital, and at the urgent request of his wife, he began keeping a diary and this journal was maintained intermittently between the years of 1916 and 1921. It gives an intimate picture of his early professional life and in preparing this biography the diary has been drawn upon freely. In the diary are descriptions of the busy days of this crucial period in the young physician's life when, after years of semi-regimented life as a medical student, interne and hospital resident he doffs his white uniform, and decides what sort of a career in medicine he will make for himself,—a decision which usually comes later in life for the physician than for those in most other professions. With Francis Blake it was clear in his own mind and in the minds of his close advisors, Dr. Henry A. Christian and Dr. Francis W. Peabody, that he was headed for academic medicine; but could he afford it, and how to do it, and where, were questions he faced.

His first move after leaving "the Brigham" in September, 1916, was to accept a Fellowship⁴ at the hospital of the Rockefeller Institute and to move with his bride of three months to the "whirling metropolis" of New York City.

He was engrossed at this time with studies on cross immunity reactions between different varieties of pneumococci under the guidance of Drs. O. T. Avery and Rufus I. Cole. Three major

³ Their family consisted of three sons all of whom have chosen academic or scientific careers which reflects the atmosphere in which they grew up.

Francis Gilman Blake, Jr. born in 1917, attended both the College and Graduate School of Harvard University from which he earned a Ph.D. degree in Physics. During World War II he worked with the "Atomic Laboratory" at Los Alamos, New Mexico. He is now employed as Director of the Physics Laboratory at the California Research Corporation at Los Angeles, California.

William Dewey Blake, born in 1918, attended Dartmouth College and Harvard Medical School. After two years in the Army, he was associated with the Department of Physiology at the Yale University School of Medicine and is now Associate Professor of Physiology at the University of Oregon, Portland, Oregon.

John Ballard Blake, born in 1922, attended Yale College and the Graduate School of Harvard University where he is currently working for his Ph.D. in History.

⁴ Moseley Traveling Fellowship given by Harvard University.

pneumococcus types (I, II & III) had been identified by the Rockefeller group, and the Institute was buzzing with activity which concerned the significance of this finding. They were serious days too, for he recorded in his diary on February 8, 1917, "War seems inevitable and is probably but a matter of a few days."

Later that year (in June) he accepted a position as Assistant Professor of Medicine at the University of Minnesota and moved to Minneapolis. War had been declared in April, 1917. His first child (F. G. B., Jr.) was born that same month. Naturally he was concerned about entering the service and registered thoughts on this subject in November, 1917: "It would almost be too easy to go, and I feel for the present at least that my responsibility is at home".

This decision was reversed in January, 1918, when he applied for and accepted a commission as 1st Lieutenant in the Medical Reserve Corps and was off by early February to Fort Sam Houston, San Antonio, Texas. The Army with singular perspicacity had immediately picked him as one with special talents who could be put to work on a special assignment. This special assignment was with the "Pneumonia Commission," at that time stationed at Fort Sam Houston, whose members consisted of: Rufus I. Cole, W. G. MacCallum, A. R. Dochez, O. T. Avery, T. M. Rivers and four others, including himself. Of the five names which are mentioned, all of them either were or were to become members of the National Academy of Sciences.

Pneumonia in the U. S. Army Camps during World War I was a cause of great concern, and relatively a problem of much greater magnitude than it was in World War II. Among the most serious forms were: post-measles and post-influenzal bronchopneumonia. In the winter of 1917-18 post-measles bronchopneumonia was extremely prevalent in the training camps. The reason usually ascribed is that the crowding together of "susceptibles" was greater in 1917-18 than in 1942-45. In other words, in 1917 great numbers of boys from *rural* areas,—brought up in that pre-automobile era of isolated grade schools, who had not had the benefit of childhood exposure to measles, were suddenly gathered together in huge cantonments.

There, as unseasoned and non-immune recruits, they quickly picked up measles and other types of respiratory infections which often lead to the serious complication of pneumonia. From the clinical investigator's point of view this was a "pre-virus era" in which there was no exact knowledge as to what caused measles or influenza, or the common cold; and so the members of the Pneumonia Commission were forced to apply to their problem what microbiological talent and knowledge they had regarding acute respiratory disease, most of which lay in the field of bacteriology. The attempt to measure the degree to which bacteria such as pneumococci, b. influenzae, streptococci and staphylococci played a primary or a secondary rôle in initiating bronchopneumonia and lobar pneumonia was their difficult, almost impossible, task at that time.

That Francis Blake acquitted himself well in his Army assignment is borne out by the fact that he was promoted to be a captain within three months of his entry into the service. Soon afterwards, he was shifted to work with another commission studying pneumonia in the Army camps, whose activities were carried out at Fort Riley, Kansas, and Camp Pike, Arkansas. Its membership consisted of: Drs. E. L. Opie, H. S. Freeman, T. M. Rivers, J. C. Small and himself. Their work, written up as a monograph, was subsequently published in book form.⁵

In the autumn of 1918 and during the subsequent winter, the world had witnessed a *plague* the like of which had not been recorded for a generation before (or since). This was the pandemic of influenza. It struck hard in the Army camps of this country; the mortality there, as elsewhere, was appalling. Nothing in the way of prevention or treatment was effective. The patient with pandemic influenza in the early days of his illness was in a highly vulnerable stage, and very prone to pick up a bacterial infection caused by the pneumococcus (usually the heterogeneous "Type IV"), or b. influenzae, or streptococci or staphylococci, and often the pneumonia was caused by a mixture of these organisms. But whether the preceding in-

⁵ Opie, E. L., Blake, F. G., Small, J. C., and Rivers, T. M.: Epidemic Respiratory Disease. St. Louis, C. V. Mosby Co., 1921.

fluenza was *initiated* by these organisms, singly or severally, was a major concern with which the Pneumonia Commission struggled. The impression which this experience left on Francis Blake was never to be forgotten by him. It may have shaped his choice of a career. The pathogenesis and therapy of pneumonia remained for him a consuming interest during all of his professional life. It is reflected in his choice of a title, made by him and Gen. (then Col.) J. S. Simmons, 22 years later at the onset of World War II, for a board which was created to deal with epidemic diseases. Francis Blake was the first president of this board which was originally called: "The Board for the Control of Influenza and other Epidemic Diseases in the Army."

So deeply had he been stirred by this experience that unlike most young medical reserve officers, he did not leave the Army at once on the termination of the war in November, 1918. Instead he went to authorities at the Army Medical School in Washington and, as is recorded somewhat facetiously in his diary, he "brazenly approached Colonel Russell and told him if he would give me all the monkeys and laboratory space and assistance I wanted I would find out all that an eagerly waiting world wanted to know about pneumonia and influenza." Maj. Russell Cecil joined him in the project on which they worked for 20 months at the Army Medical School in Washington. Their results were published in a series of 10 papers which appeared in the *Journal of Experimental Medicine*. Nearly all of the work dealt with the experimental production of bacterial pneumonia in monkeys and ways and means of preventing its production. "Whether Cecil and I discovered all there is to be known about pneumonia or not," he wrote in his diary in November, 1920, "must be left to others to decide." Among the various society meetings before which he presented aspects of this work were the National Academy of Sciences at its meeting of November 1919 in New Haven; and the American Philosophical Society's meeting in Philadelphia in April 1920.

About this time he received an offer of a position as Associate in Medicine at the Hospital of the Rockefeller Institute in New York City which he "eagerly accepted." Here he was to pursue

experiments of a new type, for by now he had abandoned attempts to explain all there was to be known about pneumonia and influenza by working on *bacteria alone*, and entered the virus field. Experiments were begun with measles virus and together with his new found colleague and assistant, Dr. Trask, they proved conclusively that measles is due to a virus; that it can be transmitted experimentally to rhesus monkeys; and that the experimental disease is infective only in its earliest (pre-exanthem) stage. This line of experimentation was to continue. It directly led to subsequent work by Dr. Trask 10 years later in experiments at Yale on poliomyelitis virus infection in rhesus monkeys.

At the hospital of the Rockefeller Institute he was associated in the study of infectious disease with as brilliant and active a group of clinical investigators as had ever been gathered under one roof in this country. Most of them were old friends and included Rufus I. Cole, Oswald T. Avery, Homer F. Swift, Alfred E. Cohn, D. D. Van Slyke, and others. In the adjacent Institute building were Dr. Simon Flexner, Dr. Karl Landsteiner and a large number of others. It was a period of flood tide in the clinical investigation of infectious disease in this country and he was not alone in taking advantage of it. Indeed he was one of the most vigorous members of this group, endowed with two characteristics which made him stand out. First he had gained through experience a keen sense of the practical, clinical aspects of his problem; and second, he was imbued with an early appreciation of the *biology* of infectious disease. For the *nature* of infectious disease, and its *natural history* appealed to him as well as its control. He was a doctor first and a microbiologist second.

With this as a background, Francis Blake in 1921, at the age of 34 became Professor of Medicine at the Yale University School of Medicine in New Haven, Conn. He was one of a group selected at that time by Dean Winternitz to transform the Yale Medical School within less than a decade from a second-rate institution to one worthy of the University. It was at a time when the clinical faculties of a number of medical schools in this country, similarly situated in cities not much

larger or smaller than New Haven, were being reorganized, somewhat experimentally, on a full-time basis—Rochester and Vanderbilt were two of these other schools. At Yale the experiment worked from the very start. It exemplified how when the right man is chosen to fill the right position everybody benefits. However, in New Haven as elsewhere it was not all plain sailing. There were labor pains and after-pains. Within a very short time he had made himself indispensable at Yale, and so when, in June 1923, hardly a year and a half after he had arrived there, he received an offer from the University of Chicago to accept the Chair of Medicine and the deanship of their newly reorganized medical school, the Yale faculty were indeed perturbed. President James Rowland Angell wrote to him from his summer place, on July 4th, 1923, as follows:

“The compliment paid you by the invitation is very flattering and I congratulate you sincerely. I need hardly say, however, that if you are seriously tempted by the invitation I shall be greatly disturbed. I do not quite see how we could let you go without gravely disintegrating the plans we have cherished and without damaging most seriously the organization. We have started to build. On the other hand we must not play upon your loyalty to us in any unfair way. Anything that we can do to make you feel that the New Haven opportunities are as attractive,—or if possible more attractive than those at Chicago, I shall wish to attempt.”

Dr. Blake's subsequent decision to remain in New Haven was received with acclaim. He remained as Professor of Medicine and Chairman of the Department of Internal Medicine at the Yale University School of Medicine for 30 years.

Success attended Francis Blake's efforts at Yale because he gathered at once into his department men of special calibre: Dr. W. S. Stadie and Dr. J. P. Peters (now both members of the National Academy) to develop the metabolic field, Dr. H. M. Marvin in cardiology, and his devoted follower Dr. J. D. Trask as his own special assistant. But success was also due to his singleness of purpose; confidence in his own capabilities; and his devotion to the concept of full-time medicine. His industry and enthusiasm carried the newly reorganized medical school forward. Few realized how hard he worked. Often he told

me that during the first ten years at Yale he rarely left his desk until midnight on at least four or five nights a week.

He had accepted the chair at Yale at a time when the concept of a strictly full-time professor of *clinical* medicine was new and regarded by some with suspicion. That a good doctor who became a professor of medicine, should renounce the privilege of carrying on a certain amount of private practice, notably consultation practice, and should accept instead a modest university professor's salary, was actually described in the early 1920's by some physicians as an "un-American" form of activity. Consequently, it is worthwhile perhaps to record here, two of Francis Blake's concepts about full-time clinical medicine which all of his local "extra-academic" colleagues and contemporaries do not seem to have appreciated. Primarily he certainly did not regard himself as a "contract physician" practicing "hospital medicine" for a stipend that could be measured in terms of money. Not that he did not need the money. He needed it desperately, for among other obligations he now had a family of three sons to raise and educate on a limited academic salary. But it was clear to him that his recompense lay in the opportunity which his position gave him, for teaching and carrying out *clinical investigation*, usually in collaboration with a junior member of his staff. Not only did it give him the opportunity to work intimately and enthusiastically with young men, but he was glad enough to raise money for *their* researches and then to leave them alone to find their own way. To have participated in this form of activity was his reward. It was also participation in the progress of medicine in this country. Obviously the ideal that he now set for himself was achieved more in his younger than in his older years. For the ever-increasing burden of administrative duties and extra-clinical responsibilities eventually swallowed up the precious time he had hoped to use for clinical investigation. But I think he counted himself lucky to have had 15 or 18 years of it.

Secondly, he had an extraordinarily clear vision as to what his functions in the medical school were. As Professor of Medicine, and later (1940-47) as Dean of the Medical School he was beset with requests for his services, or those of the

Medical School, to engage in various extra-academic consultations or community activities. His first consideration when asked to enlist his own services, or those of his department or those of the school, in such activities, was: "Is this a University function? If not, I shall not engage in it." For instance, he seldom engaged in out-of-town clinical consultations, although his services were sought over and over again. To him Dr. Abram Flexner's rugged tenets, which applied more during the 1920's perhaps than they do today, were a guide as to what a university should or should not be doing. It should not, according to Dr. Flexner, give society what it wants, but what it needs. Such needs were listed as four fold: i) the conservation of knowledge and ideas (as exemplified by the building up of university libraries or other collections); ii) the interpretation of knowledge and ideas (as exemplified by the encouragement of scholars and thinkers); iii) the search for truth (i.e., the gathering and integration of new data), and iv) the training of students.⁹

Let us consider him first in the role of a *teacher*. He certainly did not choose the easiest way here, namely instructing by *preaching*, but he followed the hard road instead, of instructing by *example*. He was convinced that if his behavior in the hospital wards, in the medical amphitheatre, or in the medical laboratory, was the best he was able to do, it might leave a more lasting and salutary impression on the student or house officer than any impressive pronouncements that he might make. This type of *apprentice teaching* reached fruition with his house staff and its hierarchial system of internes, assistant residents, and resident, each one coming a step closer each year to the Chief, and each member of the staff passing a little of his or her hero worship down the line, particularly to the third and fourth year students at the bottom. The example that he tried to set was primarily one of integrity in thought and behavior; of carefulness rather than brilliance. He seldom allowed himself to "think out loud." When the details of a given case had been presented to him he would often remain silent and with

⁹ Flexner, A., *Universities: American, English, German*. Oxford Univ. Press, New York, 1930, p. 6.

pursed lips proceed to examine the patient, then make his way over to the X-ray department to see the films, then down to the laboratory to look at the blood smears or the bacteriological findings; all this with his group of "apprentices" around him, and all this to see for himself, and weigh the evidence before his diagnostic decision was made. His action seemed to be in keeping with Wordsworth's lines that:

"Wisdom is oftentimes nearer when we stoop than when we soar."

These attributes have been clearly expressed by Dr. T. Francis, Jr. of Ann Arbor, Michigan, who gave one of three short addresses at a meeting organized to pay tribute to the memory of Francis Blake. It was held at the Yale Medical School five months after Dr. Blake's death.⁷ Tommy Francis as one of Dr. Blake's first students and house officers chose on that occasion to discuss his former chief as a *teacher*, pointing out primarily that:

"It is doubtful whether a man in any other calling can mould the thoughts and call forth so much endeavor from his students so completely and so enduringly as in that of the teacher-physician."

Dr. Francis then gave his own impression as a medical student in one of the early classes which came under the influence of the new Professor of Medicine at Yale in the 1920's.

"To us as undergraduates, Doctor Blake constantly brought the impression that we were participating in the march of medicine. At times it seemed he had cultivated what Osler called 'The Art of Detachment' to a high degree but on teaching rounds there was friendliness and encouragement, a willingness to discuss the perplexities, so that the sessions were anticipated eagerly as only too short group activities of enlightenment rather than squirming ordeals of exposed ignorance. He was authority, but did not use its voice; the why's and the how's were the theme."

⁷ This meeting was held in the Historical Library of the Yale University School of Medicine on Sunday, June 15, 1952. The two other speakers were: Dr. Stanhope Bayne-Jones of New York City and Dr. J. P. Peters of New Haven, Connecticut. See, *Yale Journal of Biology and Medicine*, 24: 569 (June, 1952).

As a *clinician* his great asset lay in the field of diagnosis. He was the ideal consultant. Careful, canny, astute and solid as a cedar post. He could sense what was wrong with a patient over and over again where others had failed. No one derived more pleasure from making a correct diagnosis, and the expression which he used to assume under these circumstances, was one of joy and triumph.

In the care of his patients he was chary with words, cautious with the use of any but specific drugs with constant warnings to his assistants about the dangers of unnecessary drug therapy which might result in "meddlesome treatment." But he was also a past master in the use of *specific* therapy having lived through and contributed materially to two eras in the treatment of infectious disease: the era of *antiserum*, and of *chemotherapy* or *antibiotic* therapy. The writer will not soon forget Francis Blake's excitement in the late 1930's during the early days of the use of sulfonamides, nor his indefatigable efforts to test their efficiency and measure the adequate dosage, to which his bibliography during that period bears witness. Nor will he forget seeing him one afternoon in June 1941, in earnest conversation with Dr. Florey (later to become Sir Howard) during the latter's visit from England to New Haven. Six months later Dr. Blake was to administer one of the first effective doses of penicillin given to a severely ill patient in this country. Nor will the writer forget being Dr. Blake's patient during an illness which kept him in bed at home for four weeks. Dr. Blake never missed a day visiting his patient during that period.

As a *clinical investigator* he was in his real element, having been drawn as any true medical biologist might into the clinical applications of microbiology and the study of infectious disease. It was a field which was to become in large measure transformed during his lifetime—and in this transformation he was to play no small part.

Mention has already been made of his special and particular interest in acute respiratory disease, notably influenza and pneumonia, but it was not confined to this, as can be seen by a glance at his bibliography. He turned his attention sequentially

to several special projects which may be reviewed in turn as:

i) Immunological reactions in infectious disease and their meaning or significance.

ii) The production of pneumonia experimentally,—and ways and means of preventing it.

iii) The virus etiology of measles, which was demonstrated in a classic series of experiments carried out on monkeys at the Rockefeller Institute in 1920-21 in collaboration with his junior colleague the late James D. Trask. The solidarity of the measles research team of Blake and Trask was such that Dr. Trask said when Dr. Blake was invited in 1921 to become Professor of Medicine at Yale, there never was a question in his own mind but that he would go too, even if he had to go as a technician. To remind Dr. Blake of these crucial and successful experiments two pictures of rhesus monkeys spotted with the rash of measles hung above his laboratory desk for at least 30 years.

iv) In the early 1920's, studies on scarlet fever were carried out by Blake and Trask in the isolation wards of the New Haven Hospital. They were the logical application to clinical medicine of Dochez's discovery that certain special strains of hemolytic streptococcus were the responsible agents in causing scarlet fever and these same strains of streptococcus produced an exotoxin, and, in the course of an infection, a demonstrable toxemia which might be treated successfully by scarlatinal anti-toxin. Dr. Dochez had turned to Dr. Blake, his friend and former colleague of the pneumonia commission. He knew of Blake's ability as a clinical investigator, and also that at the New Haven Hospital there was an infectious disease pavilion, as part of the general hospital, where scarlet fever patients were being treated within a few steps of Dr. Blake's laboratory.

The effectiveness of anti-scarlatinal serum as a therapeutic agent in scarlet fever was demonstrated by the team of Blake and Trask quite dramatically and the results were widely hailed in the lay press, more perhaps than in medical literature. The achievement did not receive the recognition it deserved perhaps because the severity of scarlet fever cases in this country seemed to decline in the 1930's and what was formerly a severe

disease with an appreciable mortality became a milder type of illness, as mild perhaps as the serum disease which often followed in some of the patients treated with anti-scarlatinal serum.

v) The possibility of the use of pneumothorax in the treatment of acute pneumonia.

vi) Chemotherapeutic agents and antibiotics with special reference to their effective doses, the duration of treatment and the dangers. At least 27 papers listed in his bibliography deal with these subjects.

In the autumn of 1943 during World War II, as President of the Army Epidemiological Board, he accompanied as director, a team of investigators which went to New Guinea, while it was still technically in the combat zone, to study scrub typhus (or tsutsugamushi disease). This was an important cause of serious illness among troops in action in the South Pacific and American scientists had very little first-hand knowledge at that time about the disease, its vectors and animal reservoirs.

This chance to visit New Guinea came at a time when he was overwhelmed with teaching and administrative responsibilities, both at home and in Washington. Actually it was a welcome break, for a letter written from New Guinea by Dr. Blake tells of his great pleasure in being able to spend several "quiet" weeks working all day in a special ward of a field hospital. He had to travel far in the South Pacific during war time to find this opportunity. He returned to New Haven with a wealth of new and important data on scrub typhus and a wonderful collection of butterflies from New Guinea, but he also had the bad luck to acquire tertian malaria from which he suffered recurrent attacks during the subsequent two years.

As an *administrator* he worked with dispatch and with no fuss. Seldom did he let administrative details keep him at his desk after 10:00 a.m. for he was due on the hospital wards at that time,—even when he was Dean of the Medical School. He had accepted the deanship of the School of Medicine under pressure in May, 1940 and at first as a temporary and emergency measure. The task of jointly administering the Department of Internal Medicine and also the whole medical school—(both full-time assignments in themselves) would seem to be an im-

possible one. The seriousness of the world situation at that time with World War II in full blast in Europe meant troublous days ahead for everybody. He knew there was to be rough sledding in the medical school which he faced with stern resolution.

His recreations were many in his younger days but had become less so in his later years. He maintained a love for the out-of-doors and natural history, and with his family spent most of the summers, prior to 1941, at their small cottage known as "Pebble Hedges" at Newfound Lake, N. H. He always enjoyed his membership in dinner clubs of which he belonged to several. He maintained an interest in stamp collecting all his life. Most of his later recreations were of a type that he could enjoy individually or with his family. He enjoyed travel to interesting and far places and during the next to last year of his life he and Mrs. Blake went round the world, a trip which was made as a result of an invitation received from the Australian Post-Graduate Medical Association to lecture in Australia.

This account would be inadequate without mention of Francis Blake's long record of service to his country. Here was one kind of extra-academic activity that he did not shun; perhaps it may have later become part of his philosophy of "teaching by example." Serving for 29 months as a Medical Officer in the Army in World War I he got to know the ways of the Army Medical Department and of Washington, where he later became very much at home. During the 1930's he was tireless in his work for the National Research Council and it was at that time that it became evident to this and other Washington agencies that here was a man of wise counsel. From 1945 the Surgeon General's Office of the Army, the National Research Council, the U. S. Public Health Service and the Office of Research and Development in the Army, turned to him more and more. But his greatest achievement in Washington was the organization and direction of the Army Epidemiological Board of which he was the first President—an office that he held for six years. The concept of this semi-military organization which utilized

but did not exploit university personnel was hatched in 1940 jointly by Gen. (then Col.) J. S. Simmons and Francis Blake.

It proved to be an effective and closely knit organization, based on the fact that it was not an advisory board *per se* but a working group equipped with contacts to carry out both basic and applied investigations in the field. It brought him in intimate touch with the great majority of medical scientists working on the subject of infectious disease throughout the entire country. The citation with which he was honored when he received for this achievement the Medal for Merit in January, 1946, is not a series of overstatements. It is singularly accurate.⁸

How one man could work so quietly and effectively over the years, how he could possess so many different capabilities—the research worker and the university administrator, the clinician, the teacher, the wise committeeman, and yet do well in all these fields, is a feature which caused those who knew him well to revere and well-nigh worship. But his labors told on him in his later years.

His death at the age of 64 came swiftly, for early in January 1952, only fourteen days after he had relinquished his duties

⁸“Francis Gilman Blake, A.B., M.A., M.D., Sc.D., eminent physician and scientific investigator, leader in curative and preventive medicine, wise and able administrator, devoted servant of the health of the Armed Forces, for exceptionally meritorious conduct in the performance of outstanding services as Consultant to the Secretary of War, and President of the Army Epidemiological Board. Through his organization and direction of the Army Epidemiological Board since its establishment by the Secretary of War in January 1941, Dr. Blake has guided investigations, policies, and measures which have safeguarded the health of troops. He has directed research and the applications of research which have resulted in decrease of infectious diseases at Army posts and stations in this country and overseas and which have led to development of new protective measures. He has administered the Army Epidemiological Board as a means for preparation in advance of the outbreak of the war and as an effective weapon to combat communicable diseases during the war. In addition to his constant advisory assistance and supervision of the activities of the ten Commissions under the Army Epidemiological Board he has contributed benefits by his own personal participation in field work, under campaign conditions, to the understanding and control of scrub typhus fever, one of the most serious hazards to the health of troops in the Southwest Pacific Area. In his capacity as trusted adviser on the health of the Army and as leader in investigation and control of influenza and other epidemic diseases in the Army, Dr. Blake has rendered courageous and exceptionally meritorious service to the nation.”

as Sterling Professor of Medicine at Yale and had moved his residence from New Haven to Washington, he suffered from a severe attack of coronary disease,—his second within a period of four months. He died on February 1 in the Walter Reed Hospital, Washington, D. C.

As mentioned earlier, a memorial meeting was held in his memory at New Haven in June 1952. At this same time an exhibit of his life and activities was presented in the Historical Library of the Yale University School of Medicine. To those who attended on that Sunday afternoon it was apparent that his quiet influence had penetrated into the hearts of many present and also had left its mark throughout the length and breadth of this country.

CURRICULUM VITAE

- 1887 Born (February 22), Mansfield Valley, Pennsylvania.
- 1908 A.B., Dartmouth College.
- 1913 M.D., Harvard Medical School.
- 1913–16 Successively: Medical Interne, Assistant Resident, and Resident, Peter Bent Brigham Hospital, Boston, Massachusetts.
- 1916–17 Moseley Traveling Fellow, Harvard University.
- 1917–19 Assistant Professor of Medicine, University of Minnesota Medical School.
- 1918–19 Served on active duty (during World War I) as 1st Lieutenant, Captain, Major, Medical Reserve Corps, U. S. Army.
- 1919–20 Associate in Medicine, Hospital of the Rockefeller Institute for Medical Research, New York.
- 1920–21 Associate Member, Rockefeller Institute for Medical Research, New York.
- 1921–52 John Slade Ely Professor of Medicine (1921–27), Yale University School of Medicine. Sterling Professor of Medicine, 1927–1952.
- 1921–51 Chairman of the Department of Internal Medicine, Yale University School of Medicine.
- 1921–51 Physician-in-Chief, New Haven Hospital (and later,

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- 1946-1951) the Grace-New Haven Community Hospital, University Service.
- 1921-51 Physician-in-Chief, New Haven Dispensary.
- 1921 M.A. (Honorary), Yale University.
- 1924-35 Member of the Board of Scientific Directors, Rockefeller Institute for Medical Research.
- 1925-36 Member, Division of Medical Sciences, National Research Council (Chairman of the Division for the term 1933-36).
- 1928-51 Chairman, Medical Board of the New Haven Hospital, and later (1946-51) the Grace-New Haven Community Hospital.
- 1931 President, American Society for Clinical Investigation.
- 1932-33 Member, Executive Council, Association of American Medical Colleges.
- 1934-52 Associate Fellow of Silliman College.
- 1935 President, American Association of Immunologists.
- 1936-46 Chairman, Medical Fellowship Board, National Research Council.
- 1936 Sc.D. (Honorary), Dartmouth College.
- 1938 Chairman of the Section on Medicine, American Medical Association.
- 1939-47 Regent, American College of Physicians.
- 1940-41 Acting Dean, Yale University School of Medicine.
- 1940-52 Member, Committee on Chemotherapeutic and other Agents, National Research Council (Committee on Chemotherapy, 1946-52).
- 1941-47 Dean, Yale University School of Medicine.
- 1941-46 Consultant to the Secretary of War and President of the Board for the Investigation and Control of Influenza and other Epidemic Diseases in the Army, War Department, Preventive Medicine Service, Office of the Surgeon General, U. S. Army; known from 1946 to 1949 as the Army Epidemiological Board.
- 1943 During World War II, on expedition to New Guinea to study scrub typhus fever.
- 1943-47 Special Consultant to the Committee on Medical Research, National Research Council.

- 1943-46 Member, Subcommittee on Coordination of Malaria Studies, National Research Council.
- 1945-50 Chairman, Advisory Council, Life Insurance Medical Research Fund.
- 1945 Received Charles V. Chapin Memorial Award from the City of Providence, Rhode Island.
- 1945 Awarded United States of America Typhus Commission Medal.
- 1946 Awarded United States of America Medal for Merit, the highest civilian honor.
- 1946-52 Member, Army Epidemiological Board, known since 1949 as the Armed Forces Epidemiological Board.
- 1946 Vice-President and Chairman, Section on Medicine, American Association for the Advancement of Science.
- 1946-48 Member, Advisory Board on Health Services, American Red Cross.
- 1947 Elected to National Academy of Sciences.
- 1947-52 Member, Committee on Medicine, National Research Council.
- 1948 Vice-President, American College of Physicians.
- 1948 Elected Fellow, American Academy of Arts and Sciences.
- 1948-51 Member, National Advisory Health Council, U. S. Public Health Service.
- 1948-51 Chairman Committee on Medical Sciences, Research and Development Board, National Military Establishment.
- 1949 Elected Member, American Philosophical Society.
- 1948-49 President, Association of American Physicians.
- 1950 Participated in giving lectures in Australia under the Australian Postgraduate Federation in Medicine.
- 1952 Technical Director of Research, Medical Research and Development Board, Office of the Surgeon General, Department of the U. S. Army.
- 1952 Died February 1 in Washington, D. C.

KEY TO ABBREVIATIONS USED IN BIBLIOGRAPHY

- Abstr. Bact.=Bacteriological Abstracts
 Am. J. Hyg.=American Journal of Hygiene
 Am. J. M.=American Journal of Medicine
 Am. J. M. Sc.=American Journal of the Medical Sciences
 Am. J. Pub. Health=American Journal of Public Health
 Ann. Int. M.=Annals of Internal Medicine
 Ann. Otol. Rhinol. Laryn.=Annals of Otolology, Rhinology and Laryngology
 Arch. Int. M.=Archives of Internal Medicine
 Arch. Pediat.=Archives of Pediatrics
 Boston M. & S. J.=Boston Medical and Surgical Journal
 Bull. New Haven Dept. Health=Bulletin New Haven Department of Health
 Bull. N. Y. Acad. M.=Bulletin of the New York Academy of Medicine
 Constructive M.=Constructive Medicine
 Fed. Proc.=Federation Proceedings
 Internat. Clin.=International Clinics
 J. Am. M. Ass.=Journal of the American Medical Association
 J. Ass. Am. M. Coll.=Journal of the Association of American Medical Colleges
 J. Bact.=Journal of Bacteriology
 J. Clin. Invest.=Journal of Clinical Investigation
 J. Conn. M. Soc.=Journal of the Connecticut Medical Society
 J. Exp. M.=Journal of Experimental Medicine
 J. Maine M. Ass.=Journal of the Maine Medical Association
 J. M. Res.=Journal of Medical Research
 N. England J. M.=New England Journal of Medicine
 N. Y. State J. M.=New York State Journal of Medicine
 Proc. Conn. M. Soc.=Proceedings of the Connecticut Medical Society
 Proc. Conn. Pub. Health Ass.=Proceedings of the Connecticut Public Health Association
 Proc. 3d Internat. Congr. Microbiol.=Proceedings of the Third International Congress for Microbiology
 Pub. Méd.=Publicações Médicas
 R. I. M. J.=Rhode Island Medical Journal
 Tr. Ass. Am. Phys.=Transactions of the Association of American Physicians
 Tr. Coll. Phys. Phila.=Transactions of the College of Physicians of Philadelphia
 Tr. Kansas City. Acad. M.=Transactions of the Kansas City Academy of Medicine
 Yale J. Biol. & M.=Yale Journal of Biology and Medicine

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