At the twelfth annual convention of the Nurses' Associated Alumnae of the United States, held in Minneapolis, June 10-11, 1909, Florence Henderson, nurse anesthetist from the Mayo Clinic, presented a paper upon the request of Mrs. Campbell, superintendent of nurses at the City and County Hospital, St. Paul. Her subject was the nurse as an anesthetist, and Agatha Hodgins, from the Lakeside Hospital in Cleveland, was asked to discuss it. However, the participation of the audience struck more sparks than either Florence Henderson's or Agatha Hodgins' comments. For the discussion turned immediately to the training of nurses in anesthesia: current practices, weaknesses in the system and hopes for the future.

According to Florence C. Bishop:

The Maine General Hospital has always considered anaesthetizing as part of the training. The nurses have always given anaesthetics under supervision.

Then Mabel C. Long Freytag, of Missouri, said:

When I first undertook this work I found I could go nowhere where I could get this special course of training. . . . I visited the Mayo Clinic and received a great many valuable points from Miss McGraw [sic] and Miss Henderson.

Annie W. Goodrich:

Would it be possible to give to certain pupils instruction in giving anaesthetics?

Florence Henderson:

The difficulty in our hospital is that our patients are private patients.

Sophia F. Palmer:

It would seem to me to be a good plan for one of the large hospitals to open a department where nurses could receive this special training.
Annie Damer, the president:

The nurse who was inclined toward that work might take it up as it has been done, until the happy day comes when we can cover it in our training schools. Let us wait a little while.¹

But, despite the president's expression of caution, Agatha Hodgins, for one, went home with a bee in her bonnet. For it was true, as J. M. Baldy had declared the year before, that:

At present there is no place to my knowledge where a nurse or anyone else could apply for a training in anaesthesia.²

Meanwhile, the subject of training both nurses and physicians in anesthesia had been brought up for discussion at meetings of the American Hospital Association. At the 1906 convention, Henry M. Hurd, superintendent of the Johns Hopkins Hospital, noted that the instruction of younger medical men in anesthesia was "fragmentary, unsystematic and haphazard," and he recommended that every hospital have a skilled anesthetist upon the staff to conduct the administration of anesthesia in all operating rooms and "to give regular, systematic daily instruction in the administration of anesthetics."³ He reiterated this contention in 1908 and added:

In the training school an effort should be made to give nurses who intend to go into surgical practice much more careful instruction in the use of anesthetics.⁴

At the same meeting, Joseph Howland declared:

There is not sufficient return to the anesthetist merely in the name of having a hospital appointment for that work, and we must expect to pay for the service of such a man to teach our nurses, students and internes this branch of medicine.⁵

F. A. Washburn, of the Massachusetts General Hospital, also had something to say on the subject:

I believe thoroughly that the administration of ether should be very carefully safeguarded, but I do not believe that we should have special anesthetic nurses to the exclusion of the house officers. . . . I think they

should be very carefully supervised by a man who is on duty all the
time the operation is going on; but I do not think it should be taken
out of their hands. I believe the nurses should be trained too, but if we
turned out on the community, or if we had for senior house officers men
who have not had a long and careful experience in anesthetizing I think
we would make a great mistake.  

Brown, of the Toronto General Hospital, reported that at his
hospital an anesthetist in chief was head of the anesthesia depart-
ment, and that he had an assistant.

I understand that in some quarters the custom is advocated, and in
some quarters practiced, of allowing pupil nurses to take a month at a
time in administering anesthetics. I am sure after hearing what Dr.
Hurd has said this Association as a whole would condemn that practice
in the severest terms possible. Our anesthetists, while responsible for
the administration of anesthetics in the public ward cases, do allow the
senior house surgeons to administer anesthetics under their supervision
at first. . . . We have not yet established the custom of training nurses
to give anesthetics, although I think in a large teaching hospital where
nurses go out to take charge of smaller hospitals it would be wise to
train senior nurses after they are through or nearly through with the
regular course.  

In 1911, at the association's convention, Willis G. Neally pointed
out:

There are but few medical schools in this country that give any practi-
cal training in the administering of anaesthetics, one or two lectures
comprise the ordinary course. In England by a regulation of the Gen-
eral Medical Council all medical students are taught to administer
anaesthetics.

Evidently the medical schools in this country leave, practically, all the
teaching of this important branch to the hospital, which is all the more
reason why the interne should have as good training in this, as well as
along any other line of medicine. When the interne graduates from his
hospital and goes out into practice—especially in country practice—not
a little of his income for a few years will be derived from administering
anaesthetics, consequently it is desirable that he be well-trained in
this line.  

In the discussion, a Miss Ayre raised several pertinent questions:

Shall we give pupil nurses training in administering anaesthetics? If
not, how is the graduate nurse to obtain instruction afterwards?

7Ibid.
8Neally, Willis G.: loc. cit.
To this W. O. Mann replied:

I think a pupil nurse should be instructed. . . . She has to go out into the country and has to assist a country doctor and she ought to know how to handle the ether bottle.9

In the light of these comments of hospital administrators, it would seem that any nurse or physician who might have occasion to give an anesthetic should receive training, that training to be a matter of supervised empirical instruction in the operating room. And the sole object of such instruction seemed to be to enable the person to "get by." That the administration of anesthesia might be a specialty for which formal graduate education was necessary did not enter into these discussions, patterns for the empirical training of student nurses and student physicians already having been set. Also, underlying all such discussions was an unvoiced problem: how to cover the anesthesia service.

Such graduate education in anesthesia as did exist during the first decade of the century was of one of three types:* (1) that given graduate nurses in a hospital in which they were to be employed as anesthetists; (2) that provided gratuitously to visitors—physicians and nurses—who went to a hospital to observe and sometimes gave a few anesthetics under supervision; and (3) that given by the manufacturers and the demonstrators of gas machines, who often traveled round the country to sell and teach the operation of machines to anyone who would buy.†

The first type of such empirical instruction of graduate nurses had for its express purpose the covering of the anesthesia service. From the beginning, this was and still is the purpose of the course in anesthesia for nurses at the Mayo Clinic, the instruction of visit-

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9Neally, Willis G.: loc. cit.

*Education for another group of nurse specialists gathered impetus about this time. In 1910 Teachers College of Columbia University started a program for public health nurses; in 1911, the Western Reserve University in Cleveland and, in 1912, Simmons College in Boston instituted similar courses. (Stewart, Isabel M.: The Education of Nurses, New York, Macmillan, 1943, p. 228.)

†J. A. Heidbrink and his wife taught nitrous oxide anesthesia in his office in Minneapolis to nurses, dentists and dentists' assistants after World War I, the course lasting a week. Elmer I. McKesson did a great deal of teaching in his travels for the purpose of promoting nitrous oxide anesthesia and the use of his machine. Among the nurses who were employed as demonstrators of gas machines were Louise Miller by the Ohio Chemical and Manufacturing Co. and Zita Costello by Heidbrink. (Heidbrink, J. A.: Personal communication; Close, Garth: Personal communication.)
ing nurses and physicians in the past being a courtesy service. The same was true originally at the Hospital of the University of Pennsylvania, where Anna Marie Sophie Rose trained as her assistants Anna E. Leary, Margaret J. Narr, Sallie Slifer, Judith Bellis and Julia Sieke for employment in the hospital, although nurse visitors could also learn the technics of anesthesia. * From 1912 to 1947, at the Presbyterian Hospital in New York City, graduate nurses were instructed in anesthesia for the hospital's needs, the first student of Margaret Boise being Anne Penland (1885- ), a graduate of the Presbyterian Hospital School of Nursing in 1912.12 This same motive of covering the anesthesia service, while giving students a taste of the work, lay behind the training of both interns and nurses at the Massachusetts General Hospital, as it did in many another outstanding hospital coming to grips with the problem of obtaining competent anesthetists.

The system of graduate physicians' and nurses' learning anesthesia as visitors in a hospital has been illustrated already by references to the Mayo Clinic and the Hospital of the University of Pennsylvania. This type of instruction at the Lakeside Hospital in Cleveland formed the basis for yet another system, the idea for which Agatha Hodgins undoubtedly carried back to Cleveland from the Nurses' Associated Alumnae meeting in 1909. Visiting surgeons,

10Lundy, John S.: Personal communication.
11Annual Report of the Board of Managers of the Hospital of the University of Pennsylvania, 1914, 1915; Margison, Mathilda M.: Unpublished manuscript; Rose, Marie: Personal communication.
12Penland, Anne: Personal communication.

*Among the anesthetists trained by Marie Rose for other Philadelphia hospitals were Anna D. Murphy (1894- ) for the Chestnut Hill Hospital and Maude Lyle for the Philadelphia General Hospital. In 1929 the following description was given of the course at the University of Pennsylvania Hospital: "The following outline is that followed at the University Hospital Training School for Nurses of the University of Pennsylvania:

1. The course is open only to graduate nurses of those training schools meeting requirements of the State Licensing Board.
2. Applications will be accepted only from those assured of positions upon the completion of the prescribed course.
3. The course covers a period of three months in the hospital ... and includes:
   (a) Practical demonstration in the administration of the various anesthetics—ether, chloroform, nitrous oxide, intratracheal and intrapharyngeal anesthesia. (b) Three lectures on the physiological effects of the various anesthetics. (c) One lecture on the Circulatory System. (d) One lecture on the Respiratory System. (e) Practical instruction in Auscultation of the heart sounds. (f) The preparation of patient for anesthesia and the care during the recovery period. (g) The fee for the course is $75.00." (Sieke, Julia M.: The nurse anesthetist, Am. J. Nursing 20:284, 1920.)
eager to emulate the Lakeside methods of anesthesia, customarily bought a gas machine (the Ohio Monovalve) and then sent a nurse to Cleveland to find out how it worked.\footnote{Close, Garth: Personal communication.}

As early as 1912 we made special concessions and took for training, a few nurses who already had experience in ether anesthesia, but desired instruction in gas anesthesia having a definite clinic in view. . . . The number of applicants increased so rapidly that we felt some stabilizing of work necessary and the matter of a post-graduate school in anesthesia presented itself. The European war occurring in 1914 . . . necessitated the holding in abeyance these plans.\footnote{Hodgins, Agatha: Unpublished manuscript.}

However, before World War I, true postgraduate courses in anesthesia had been established in at least four hospitals: St. Vincent's Hospital in Portland, Ore. (1909); St. John's Hospital in Springfield, Ill. (1912); the New York Post-Graduate Hospital in New York City (1912) and the Long Island College Hospital in Brooklyn (1914).

Agnes McGee (1885-\textemdash ), who organized the course of instruction in anesthesia at St. Vincent's Hospital, Portland, Ore., was graduated from St. Joseph's Hospital School of Nursing in Chicago in 1907. She then went to Heidelberg, Germany, to prepare to become a surgical supervisor and, while there, learned how to administer anesthesia. In 1909, after her return, she opened a school at St. Vincent's Hospital and in the first year trained three student anesthetists. The course lasted 6 months and included instruction in anatomy, the physiology of the respiratory tract and the pharmacology of the anesthetic drugs, as well as training in the administration of the then commonly used anesthetic agents.\footnote{Sister Agnes: Personal communication; McGee, Agnes: Personal communication.} \footnote{Agnes McGee also taught students in the third year at the University of Oregon Medical School.} (See Fig. 17.)

At St. John's Hospital in Springfield, Ill.—already mentioned as being among the first at which Sisters were trained as anesthetists—a school of nursing for Sisters had been conducted since 1892. In 1912 Mother Magdalene Wiedlocher reorganized the school; the course was lengthened from 2 to 3 years, and secular nurses were admitted. That same year, Mother Magdalene, who believed in postgraduate training in all fields of nursing and was herself an anesthetist, organized a course in anesthesia for Sisters who were grad-
uate nurses. The postgraduate courses in the school were opened to secular nurses in 1924.16

In 1912 the course in anesthesia offered to graduate nurses by the New York Post-Graduate Hospital lasted 6 months.17 The report of the hospital for the next year noted that four nurse etherizers and four ether students were in residence,18 the chief nurse anesthetist being Minnie Lister. In 1915 Emil Rundquist was the medical director, and Margaret Thompson, a graduate of the school in 1913, was the chief nurse anesthetist. Each student administered anesthesia for 400 cases, attended heart clinics and lectures by physicians and did experimental work with cadavers, which included the passing of laryngeal tubes. The textbooks for the course were Frederic W. Hewitt's *Anaesthetics and Their Administration* and Dudley Wilmot Buxton's (1855-1931) *Anaesthetics; Their Uses and Administration.*19

In 1914 Louise McMurray, a graduate of the New York Post-Graduate Hospital school, started a school of anesthesia, with one student, at the Long Island College Hospital in Brooklyn. The course lasted 6 months; a visiting physician anesthetist, Alfred Frederick Erdman, delivered the lectures; Buxton's textbook was used; and a diploma was issued upon completion of the course. In 1916 the hospital employed Ruth M. Nash (1882- ), another graduate of the New York Post-Graduate Hospital school of anesthesia, who succeeded Louise McMurray as head of the school in 1917.20 *

While these pioneer educational ventures started a shift of emphasis from service to education, the service requirements of hospitals remained paramount in the majority of the training programs that sprang up during World War I and the postwar period. All other considerations were secondary to that of turning out anesthetists who had adequate technical proficiency.

Although the United States did not enter World War I until 1917, from 1914 American nurse anesthetists served as members of American Ambulances, and, with the country's formal entry into

16Mother Magdalene: Personal communication.
17New York Post-Graduate Hospital, 29th Annual Report, 1912-1913, p. 21.
18New York Post-Graduate Hospital, 30th Annual Report, 1913-1914, p. 17.
19Smith, Ada Marie: Personal communication; Nash, Ruth M.: Personal communication.
20Hess, Frances: Personal communication; Nash, Ruth M.: Personal communication.
* Ruth M. Nash was appointed special lecturer on anesthesia for the department of physiology and pharmacology of the Long Island College of Medicine in 1927.
the conflict, they made up an important part of the personnel of the base hospital units. The effect upon progress in anesthesia was threefold: For the first time the Army and the Navy trained nurses as anesthetists for war service. The second important result was the increasing popularity of nitrous oxide-oxygen anesthesia;* use of the gas in war surgery demonstrated its superiority over ether for patients in shock and for those who had been gassed, and many surgeons returned to the United States sold on the method and looking for anesthetists adept in its administration.† The third consequence grew directly out of the second: a booming demand for trained nurse anesthetists.

In 1917, with full participation of the United States in the war, the demand for expert anesthetists led to an arrangement by which several members of the . . . [Army Nurse Corps] were sent to the Mayo clinic, St. Mary's Hospital, Rochester, Minn., to take a course in the administration of anesthesia. For six weeks during April and May, 1918, five nurse members of a mobile operating unit were detailed to the Mayo clinic for an intensive course in anesthetics. Again, early in September, 1918, 15 nurses from several cantonments were sent to Rochester to receive instruction, after which they returned to their own stations to instruct other nurses, officers, and corps men. The object of this training was to supply an adequate number of specialists in anesthesia admin-

*The most publicized American Ambulance using nurse anesthetists and nitrous oxide-oxygen anesthesia was that organized at the Lakeside Hospital in Cleveland. On December 13, 1914, George Crile, 3 other surgeons, 2 anesthetists—Agatha Hodgins and Mabel Littleton—2 operating room nurses, a neurologist, a clinical pathologist and 3 persons to do special research sailed on the Adriatic to set up an Ambulance at Neuilly, France. (See Fig. 14.) Among the persons trained by Agatha Hodgins while with the Lakeside Ambulance were Berkeley George Moynihan's (1865-1936) anesthetist, an American nurse—a Miss Cotton who carried on the work when Agatha Hodgins returned to Cleveland in 1915—, two groups of English nurses leaving for posts near the front lines and several Frenchmen. "One day a wounded Australian asked, 'Are you going to put me to sleep, Sister?' Miss Hodgins, who was training a young French doctor at that time replied, 'No, the French doctor will.' 'My, God,' said the Aussie, 'Then make it quick.' " (Crile, Grace, Ed.: George Crile, An Autobiography, Philadelphia, Lippincott, 1947, vol. 1, pp. 199, 200, 250; Hodgins, Agatha: Unpublished manuscript.)

†An attempt to use nitrous oxide had been made during the Franco-Prussian War of 1870. J. L. W. Thudichum had made an earnest appeal in the English papers in favor of the use of nitrous oxide in military surgery, and Coxeter & Son had sent 3,000 gallons of the gas to Thudichum, who was at the seat of the war, and another 2,000 gallons to Paris. However, despite these efforts, chloroform was the anesthetic used almost exclusively during that conflict. (Brit. J. Dent. Sci. 13:498, 1870; Duncum, Barbara M.: The Development of Inhalation Anaesthesia, London, Oxford, 1947, p. 303.)
istration for the benefit of the surgical service both in the United States and overseas.

On September 23, 1918, the Acting Surgeon General wrote to the commanding officers of various hospitals, directing them to build up a strong department of anesthesia, by training hospital personnel by some particular person designated in the respective letters. Nurses who subsequently took such a course were rated on their proficiency by their commanding officers, and the reports were submitted to the superintendent of the Army Nurse Corps.\textsuperscript{21}

The first group of nurses detailed to Rochester for special instruction in anesthesia consisted of Edna M. Rockafellow, Sylvia M. Hannan, Helen M. Holland, Dorothy Jacobus and Ruth C. Williams from Walter Reed General Hospital. During August this Army hospital made plans for setting up its own training program. In the second group of nurses sent to Rochester were Anna Hager and Lois B. Standing from Camp Dodge, Iowa; Helen M. Amonn and Agatha A. Whitman from Camp Sherman, Ohio; Genevieve A. Dynes from Camp Custer, Mich.; Grace Imrie, Bertha A. Bernatz and Marie Johnson from Camp Grant, Ill.; Margaret M. Maag from Chanute Field, Ill.; and Ethel Evans Jones, Mildred M. Boyle and Hazel Gene Ward.\textsuperscript{22}

A letter from Major E. S. Judd, who was in charge of the Army nurses at Rochester, to Lt. Colonel M. G. Seelig outlined the course of instruction:

Dr. F. C. Mann of our Laboratories, and whose experimental work you know about, has taken a great interest in teaching anesthesia in his Experimental Laboratory, and gives some very good demonstrations. The outline of the experimental work will show you what he is doing.

The second and shorter outline covers the practical work, which is given under the supervision of Miss Mary Hines, who has been Dr. W. J. Mayo's anesthetist for a great many years. At present she is working out the course by having two or three of the student anesthetists (army nurses) in the room with each of our regular anesthetists. The general plan is to have them simply observe the work during the first week; after that they are allowed to take the case after the anesthetic has been begun by our regular anesthetist, then finally work to the giv-


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ing of the whole anesthetic. We try to have each nurse sent here for the course give at least 50 anesthetics practically if not entirely on her own responsibility before she leaves.23 *

The Navy utilized similarly established training programs for teaching nurses the fundamental principles of anesthesia. At the Pennsylvania Hospital in Philadelphia, selected nurses from the Stanford University Navy Unit were given a 3-month course during December, 1916, and January and February, 1917, under Emma Fraser; one of these nurses, Lou E. Adams (1887- ), became chief nurse anesthetist at the Cleveland Clinic Hospital.24

Meanwhile, the base hospital units had been organized through the medium of the Red Cross upon the directive of the General Medical Board of the Council for National Defense, the moving spirit behind the plan being George Crile.25 At these base hospitals, the American nurse anesthetist trained not only other American nurses in the work but British nurses as well. In addition, physician anesthetists, such as Arthur Guedel, who was in charge of anesthesia for the Army, introduced nurses to the specialty.†

*The two-part outline of instruction included the following lectures and demonstrations in the division of experimental surgery under the direction of F. C. Mann: (1) The purpose and mechanism of the circulation of the blood, physiologic significance of the blood pressure and the pulse and the importance of this knowledge to anesthesia. (2) The purpose and mechanism of respiration, the physiologic change that takes place in the lungs and the regulation of respiration to etherization. (3) The nerve mechanism in connection with the circulation and respiration, the nerve control of the circulation and respiration and how etherization modifies this. (4) Physiology of anesthesia: effect of the anesthetic upon blood pressure and respiration and the different stages of anesthesia. (5) Physiologic compensation during anesthesia: the adaptation of the anesthesia to the surgical procedure. (6) Accidents occurring during anesthesia: over-etherization, shock and hemorrhage. (Ibid.)

†Base Hospital No. 2, the New York Presbyterian Hospital Unit, had as its only anesthetist Anne Penland, who was the first official nurse anesthetist on the British Front and whose example led to the training of British nurses in anesthesia. “A number of American nurses stationed with the British Expeditionary Force were given the opportunity to take a special course in anesthesia. At Rouen, where the Cleveland (Ohio) unit (Base Hospital No. 4) was stationed, there were especially good facilities for giving such a course.” (Medical Department of the United States Army in the World War, Washington, U. S. Government Printing Office, 1927, vol. 13, p. 320.) The anesthesia service in this unit was the charge of Mary Jane Roche (1890- ), who had as her assistants Miss

24Adams, Lou E.: Personal communication.
During the war, the use of nitrous oxide-oxygen was preferred by the Surgeon General’s Office, and Army hospitals were equipped with anesthesia gas machines. In 1918 the Government order for gas machines was divided among McKesson, Connell, von Foregger and Heidbrink; in all, the Government bought 500 machines plus a number of Ohio Monovalve models. Also, the Government pur-
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purchased and installed a nitrous oxide plant in France, which was operated under the supervision of Garth B. Close.26 *

Thus, the status of both nitrous oxide-oxygen anesthesia and nurses as anesthetists was enhanced by experiences of the war. By way of example is the recognition given to the work of Alice Hunt. In 1917 when Philemon E. Truesdale joined the Yale Unit for overseas duty, Alice Hunt received an offer to go to the Peter Bent Brigham Hospital in Boston to replace Gertrude Gerrard, whom Harvey Cushing had recruited for service abroad.† While at Peter Bent Brigham, Alice Hunt trained both nurses and interns in anesthesia and gained a reputation for her work with nitrous oxide-oxygen anesthesia and a minimum of ether by the use of adequate sedation. After the war, during which the surgeons who had been abroad had been impressed with nitrous oxide as a good anesthetic agent for use in the presence of shock, Samuel C. Harvey (1886- ), professor of surgery at Yale University, heard of the successful technique of nitrous oxide-oxygen anesthesia being used at Peter Bent Brigham and wrote Alice Hunt to send him a nurse anesthetist. She herself accepted the offer and on March 1, 1922, was appointed instructor in anesthesia with university rank at the Yale Medical School. Upon her retirement in June, 1948, this tribute was placed in the Minutes of the Board of Permanent Officers of the Yale University School of Medicine:

Alice M. Hunt, R.N., Assistant Professor of Anesthesia, and Anesthetist to the New Haven unit of the Grace-New Haven Community Hospital, reaches the age of retirement this year, and on June 30, 1948, will terminate 26 years of able and faithful service to the university and hospital.

26 Keys, Thomas: The History of Surgical Anesthesia, New York, Schuman, 1945, p. 85; Close, Garth: Personal communication.

* A nonfreezing reducing gage perfected by Mr. Prince of the Lennox Chemical Co. and accepted by the Red Cross for use in France was tested at the Lakeside Hospital, Cleveland. The first ones were sent as gifts to Base Hospital No. 9. By order of Colonel Moncrief of the United States Army and Sidney Burdnap of the American Red Cross, the different gas apparatuses submitted to the Government for use in France were first sent to the Lakeside Hospital for approval. (Hodgins, Agatha: Unpublished manuscript.)

† Gertrude Gerrard, a graduate of the Peter Bent Brigham School of Nursing in 1915, was the first nurse anesthetist at that hospital. Walter Boothby, the chief anesthetist at the time, trained her, and when he became head of the section on metabolism at the Mayo Clinic in 1916, she took his place as anesthetist for Harvey Cushing, the illustrious neurosurgeon who had come to Harvard from Johns Hopkins University. (Gerrard, Gertrude: Personal communication.)
Miss Hunt was born in England, and received her training as a nurse at the Union Hospital in Fall River, Massachusetts. Graduating in 1907 [sic], she was then licensed as a Registered Nurse in Massachusetts and New York. During the succeeding ten years she was trained in anesthesia at the Truesdale Hospital in Fall River under the distinguished surgeon, Philemon E. Truesdale.

With the advent of our participation in World War I Miss Hunt went to Peter Bent Brigham Hospital in charge of anesthesia and rendered skillful and valuable service for the ensuing five years. In 1922 because of the excellent reputation she had acquired in this field Miss Hunt was called to New Haven as instructor in anesthesia, being advanced to assistant professor in 1930.

Miss Hunt is truly a pioneer nurse anesthetist, largely self-taught by working with surgeons who had a natural prior interest in anesthesia. Without formal recognition, she developed a school of anesthesia here which attracted and trained a large number of competent nurse anesthetists. Because she was a student by nature Miss Hunt acquired a good working knowledge of the anesthesia literature, and was skillful in its practical application. Thus she was competent to teach nurses, medical students, and house officers alike.

She was among the first practitioners of the art to adopt in succession such agents as nitrous oxide-oxygen with closed-circuit rebreathing, avertin, ethylene, and cyclopropane. Under her jurisdiction the flammable and explosive gases were employed here for about twenty years without a single disastrous explosive episode.

Under all conditions of stress, strain and fatigue Miss Hunt was ever a gentlewoman, with a supreme devotion to the welfare of every patient. During the exigencies of the recent war, Miss Hunt carried on for four years in her department almost single-handed—a responsibility and labor for which the school and hospital are indebted beyond words.

In acknowledgement of this loyalty and able service over the course of many years the Board of Permanent Officers places this minute on its records on June 9, 1948.27

In contrast with the situation in the first decade of the twentieth century, when the great number of nurses giving anesthetics were either personally trained by the surgeons for whom they worked or by other nurses in the hospital for the job at hand, during the war and the postwar period surgeons began to demand previous instruction as a prerequisite for employment. Consequently, the second decade saw the groundwork laid for an increasing number of training programs, for anyone could set up a course in anesthesia. The requirements consisted merely of obtaining the consent of the

27Hunt, Alice M.: Personal communication.
hospital and the surgeons and a willingness on the part of the instructor to impart knowledge of technics to the student apprentice. Such texts as did exist and were used emphasized technic, and the student, with few exceptions, was expected to acquire a smattering of the science of anesthesia from a few lectures or through osmosis. The courses represented all shades of adequacy, depending on the native intelligence and the teaching ability, the experience and the education of the instructor.

In the years between 1915 and 1920 Agatha Hodgins at Lakeside Hospital in Cleveland; Anna Willenborg (1883- ) at St. Joseph’s Hospital in Chicago;* Florence Thompson (1889- ) at Washington Park Hospital in Chicago; Sister Mary Leocadia at St. Vincent’s Hospital, Worcester, Mass.; Rose Palmer at St. Mary’s Hospital in Milwaukee; Sister Martha Lawler at Charity Hospital in New Orleans;† Margaret Boise at the Johns Hopkins Hospital,

*In 1914 Mary Schueller asked Anna Willenborg to give her instruction in anesthesia, and a school was born. From a 3-month course with theoretical instruction limited to conferences and the discussion of cases, the program expanded to a year’s course in 1934.

†In 1917 the Charity Hospital School of Anesthesia, New Orleans, was organized under the auspices of Sister Stanislaus Malone, Superior of the Sisters of Charity. Sister Martha Lawler (see Chap. 4, p. 63) was put in charge and was assisted by Sister Warburg and Adele Fontan, who had received some instruction from Agatha Hodgins in Cleveland. The first students were Mary E. Koenig, a graduate of the Charity Hospital Training School for Nurses in 1910, and Margaret A. Price, a graduate of the Hotel Dieu Training School in 1913. The fee for the course was $100 and 12-hour duty, one meal being provided by the hospital.

After she completed her nurse’s training Mary Koenig was the only graduate nurse in the hospital, and with Sister Dolores, Sister Martha’s predecessor, trained all the student nurses.

Margaret Price’s introduction to anesthesia was circuitous. During her second year in nursing school, she was loaned to Carl Winfield Ney of Madisonville, La., to help him with operations in his office. Ney had a Dr. Vanzant administer ether for him, and one day when Vanzant keeled over on the job, Ney whistled out the window for his Negro chauffeur to come finish giving the anesthetic. He then suggested that Margaret Price take up anesthesia. Accordingly, upon completion of her training as a nurse, she approached a certain New Orleans physician anesthetist and asked him to teach her. His reply was that “no nurse could have enough intelligence to give an anesthetic.” However, E. L. King, a gynecologist who was giving up his anesthesia practice, willed his books on anesthesia to her, and Sister Martha arranged for her to learn from Sister Warburg at the Charity Hospital how to drop ether. The training lasted 3 to 4 months, and at the completion of the course she was given a certificate.

While at Charity Hospital, Margaret Price and Mary Koenig pioneered in obstetric anesthesia for Negroes; they gave ether to women in labor while the visiting surgeons were in their offices and the Sisters were praying. (Gebs, Lillian: Personal communication; Koenig, Mary: Personal communication; Price, Margaret: Personal communication.)
Baltimore;* Laura Davis (1883- ) at the University of Michigan Hospital, Ann Arbor;† Adelaide Bell at the Barnes Hospital, St. Louis,‡ and Myra Babcock at the Grace Hospital, Detroit,§ set up programs of instruction, many later developing into well-established schools. Other programs in operation during this period included those at the Presbyterian Hospital, Chicago, under Isabella Herb; St. Anthony's Hospital, Chicago, under Sister Romane; Vassar

*In 1917 at the Johns Hopkins Hospital, Margaret Boise undertook the instruction of Ruth Bacon, a graduate of the hospital's school of nursing that year. Shortly thereafter a second nurse, Bess Mount, took up the work. Provision was made for the training of two student anesthetists each year, the period of instruction being 6 months and a certificate being given at the end of the course. The first four nurses trained were required to stay 2 years and received $20 a month while studying anesthesia. (Johns Hopkins Hospital Reports of the Superintendent 29:68, 1918; The Johns Hopkins Hospital 50th Anniversary, 1889-1939, p. 24; Berger, Olive: Personal communication; Boise, Margaret: Personal communication.)

†In 1919 at the University of Michigan Hospital, Ann Arbor, Laura M. Davis, who was a graduate of the University of Michigan School of Nursing in 1908 and a student of anesthesia at the Mayo Clinic in 1910 and 1911 and later at the New York Post-Graduate Hospital, organized a year's course in anesthesia for nurses. She was both instructor in anesthesia at the medical school and chief anesthetist. Her first student was Mildred Kitchen. (Baird, Lillian: Personal communication.)

‡At the Barnes Hospital in St. Louis, the first nurse anesthetist, Gladys Ferrar, was succeeded by Adelaide Bell, who had been trained by Alice Hunt at the Peter Bent Brigham Hospital, and who, in turn, trained Lauda Stein and Beatrice Priest at Barnes. Louis Burlingham, who made arrangements for these two nurses to be instructed in anesthesia, was familiar with the qualifications of nurses as anesthetists; he had been resident physician at the Massachusetts General Hospital from 1907 to 1912 and subsequently assistant superintendent at Peter Bent Brigham Hospital. In 1917 he went to St. Louis as superintendent of Barnes. In 1921 Lauda Stein replaced Adelaide Bell and undertook the instruction of a number of students; Flagg's The Art of Anesthesia was used as a text. (Ford, Lauda Stein: Personal communication; Bradley, Frank R.: Personal communication.)

§W. L. Babcock, director of the Grace Hospital, Detroit, saw in the training of nurses in anesthesia the solution to the problem of the shortage of anesthetists during World War I, and he directed Myra Babcock, the physician chief of the anesthesia department, to start immediately a training program. In July, 1918, she selected two nurses for 3 months' practical instruction in the anesthetic agents in use at that time. In 1919, eleven nurses completed the course. (Courtney, Mabel: Personal communication.)

Note: The first school in the Southeast was organized at the Grady Memorial Hospital in Atlanta. In 1918 when Wayne Aiken, the physician anesthetist at Grady, went overseas, Alice Thompson Bethune, a nursing supervisor, began to give anesthetics. In 1922 the Atlanta Postgraduate School for Physicians and Surgeons opened at the hospital, and a school of anesthesia for nurses was organized in connection with it, Alice Bethune being the chief nurse anesthetist and instructor. Ruby Latham Ridley (1897- ), a graduate of the Grady Hospital Training School for Nurses, was the first student and was given a certificate from the Atlanta Postgraduate School when she completed the course on September 15, 1922. She was taught how to administer ether, chloroform and nitrous oxide-oxygen anesthesia and, in addition, received about 10 hours of theoretical instruction, mostly on pharmacology. (Ridley, Ruby: Personal communication.)
Brothers Hospital, Poughkeepsie, N. Y., under Mrs. L. Parker Runyon and William A. Krieger; St. Joseph's Hospital, Tacoma, Wash., under Sister Mary Gilla; Evanston Hospital, Evanston, Ill., under Mrs. L. Morhouse; St. Mary's Hospital, Minneapolis, under Emelia Larkey and Marie Gronvold.

For only one of these schools, in existence continuously since the second decade of the century, are the data sufficiently complete to show the evolutionary nature of postgraduate programs in anesthesia for nurses. This school, the Lakeside Hospital School of Anesthesia in Cleveland, was established in 1915 by Agatha Hodgins after her return from service with the Lakeside Ambulance in France. The course was open to graduate nurses who had passed the state board examination and to qualified physicians and dentists. The duration of the course of instruction for nurses was 6 months. The students lived outside the hospital at their own expense and paid a tuition fee of $50. They received a diploma when the course was completed satisfactorily. (The same fee but a shorter course was required of physicians and dentists.)

The department of anesthesia encompassed the school, both being under the charge of Agatha Hodgins as chief anesthetist. She, in turn, worked under the jurisdiction of the superintendent of the hospital and the chief surgeon. For the supervision of the students she had 1 or 2 assistants until 1922 when the number was increased to 3.

In the first year of the school's existence, 6 physicians, 2 dentists and 11 nurses completed the 6-month course and had positions awaiting them in other clinics. In 1917 the school was closed as a result of a controversy with the Ohio State Board of Medical Examiners (see Chap. 7). During 1918, after the school reopened, applications were received from 141 nurses and 31 physicians. The next year, classroom instruction was incorporated in the teaching program; Agatha Hodgins gave the lectures from notes, which were eventually mimeographed and distributed to the students for a small charge.

To provide students with greater clinical experience, a system of affiliation with other Cleveland hospitals was inaugurated in 1918 through the co-operation of Aida Allwein, chief nurse anesthetist, and William E. Lower, chief surgeon, of the Mt. Sinai Hospital. Most of the clinical experience at the Lakeside Hospital was in
nitrous oxide-oxygen analgesia, and, in 1920, to give the students a requisite number of cases, the system of affiliation was extended to include St. Vincent Charity, St. John’s and St. Alexis Hospitals.

In 1919 it was discovered that the heavy surgical schedules could not be covered by the chief anesthetist and her 2 assistants, and, as a consequence, the senior students were made available for work that would have required 6 paid assistants. (Through necessity the Lakeside Hospital fell upon another method of covering the anesthesia service: the use of transient student anesthetists instead of paid graduate anesthetists, interns or house officers.)

In May, 1919, the length of the course was reduced from 6 to 4 months, and the fee was raised to $100 to take care of more students and to eliminate those who were not interested enough to pay the higher fee for the course. In 1922, “in order to efficiently take care of the work here and in other hospitals,” the number of students was increased, and 54 nurses and 2 physicians were graduated.

While George Crile was the chief surgeon at Lakeside, the instruction of medical students in anesthesia was limited to the administration of ether in the outpatient department. Elliot Cutler, who succeeded him in 1924, requested that senior medical students receive instruction in gas anesthesia as well. In addition, the department was made responsible for the supervision of second-year medical students in the administration of ether to dogs.\(^{28}\)

During the second decade of the twentieth century, the organization of all the postgraduate programs in anesthesia was primarily for an apprenticeship type of training, despite the inclusion of some theoretical instruction in many of the courses.* The programs were built around personalities, around anesthetists who had achieved distinction or who attracted students by virtue of individual reputation or the reputation of the service they directed. The need for a place to go to learn anesthesia had been satisfied, but by no stretch of the imagination could the courses be called educational in that they fulfilled the principles of systematic instruction. The service requirements of the hospital came first. The number of students accepted, the time allotted to classroom, or theoretical, instruction

\(^{28}\)Hodgins, Agatha: Unpublished manuscript.

*The first fellowship program in anesthesia for physicians was organized at the Mayo Clinic in 1929; prior to that time surgical residents had been trained in regional anesthesia. (Lundy, John S.: Personal communication.)
and the amount of clinical training and supervision all depended on the number of cases that had to be covered. This situation existed until the third decade of the century when advances in anesthesia led hospital administrators and surgeons to demand the establishment of standards in anesthesia training, in order that they might be assured of the capabilities of the anesthetists they employed. This demand was one factor in the organization of a national association of nurse anesthetists in 1931 (see Part Three).