Special Article

The Specialty of Anesthesiology

Its Growth in the United States Since 1940

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"It is not enough that good anesthesia can be given and that it is given to a fortunate few. What is of real importance is that all anesthesia shall be the best that modern knowledge affords. And this desirable end can be reached only when the public recognizes the need and the importance of good anesthesia; and recognizes most of all that the administration of an anesthetic is a major therapeutic operation." *

IN 1950 when I first came to work in the United States, there prevailed among anesthesiologists a spirit of confident optimism. They believed that they were doing important work and that the medical profession and the country recognized it. Their goal was that in due course anesthesia administered by properly trained physicians would be available to all Americans. Although they understood that this could not be achieved overnight the tacit expectation was that it would come about fairly quickly, perhaps in a decade or two. Implicit in this goal was the gradual disappearance of the nurse-anesthetist and, already, many things had happened which suggested that hers was an obsolescent branch of nursing. By 1950 almost all American medical schools had appointed, or were actively seeking, doctors to establish departments of anesthesia; most of the country's major hospitals and clinics were doing likewise. Many of the programs training nurse-anesthetists seemed to be terminating and in 1951 the American Medical Association formally declared anesthesiology to be part of the practice of medicine.

Now, in 1963, the continued existence of the nurse-anesthetist (coupled, one suspects, with a dearth of entrants into some physician-anesthesia training programs) has caused a few leaders in the field to take a less confident view of anesthesiology as an exclusively medical specialty. They argue that the country's population is growing so quickly that to attempt to provide all Americans with a physician-anesthesia service is a hopeless task and should be abandoned. As a result of the stimulus of such discussions this study was made. It is hoped that the uncovering of some facts will stimulate thought and debate and facilitate rational planning.

Data

Information about the practice of anesthesia in University Hospitals in the United States was derived from a questionnaire sent to the heads of anesthesia departments of all major teaching hospitals.

Other facts were obtained from the records of the American Board of Anesthesiology, Inc., the American Society of Anesthesiologists, Inc., The American Association of Nurse Anesthetists, the United States Bureau of the Census, The World Health Organization, and from the records and publications of the American Medical Association.

Board Certified Specialists in Anesthesiology. The American Board of Anesthesiology was founded in 1938. Figure 1 shows the number of physicians certified as specialists from 1938 to 1962. It can be seen that the pattern is one of vigorous growth, the total number certified having grown from 105 in 1940 to 2,885 in 1962 (during this time 103 Diplomates have died so the true total in 1962 was 2,782). In 14 out of these 22 years the number of new diplomates each year has exceeded the number for the year before.

Practitioners of Anesthesiology. In 1962 data collected by the American Medical Association showed that 7,536 American physicians

* From an address by Howard W. Haggard, Director of the Laboratory of Applied Physiology, Yale University, given to the American Society of Anesthetists at New York on October 12, 1939.

Accepted for publication November 1, 1963.

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identified themselves as specialists in anesthesiology. Of these 4,611 (61.2 per cent) were full-time specialists, 861 (11.4 per cent) were part-time specialists, 874 (11.6 per cent) were residents in training, 739 (9.8 per cent) were in full-time teaching, administration or research, and 451 (6.0 per cent) were in government service. During the same year the American Society of Anesthesiologists listed 6,677 of its members as being in the above categories. Thus the actively practising membership of the American Society of Anesthesiologists constitutes 88.6 per cent of all functioning anesthesiologists in the United States.

For this reason I have chosen the total membership of the American Society of Anesthesiologists as the principal index of the extent to which physician-anesthesia service has been available to the American public.

Actually the total figures include a proportion of non-functioning members (honorary, scientific, retired and foreign). These constitute less than 10 per cent and, for purposes of year-by-year comparison, need not be taken into account.

The growth of the Society is shown in figure 2. Between 1940 and 1962 there was a seven-fold (638 per cent) increase in the total number of members.

Residency Training Programs in Anesthesiology. The increased awareness of hospitals and their supervising organizations of the importance of modern anesthesia as a physician endeavor is reflected in the growth of training programs over the years.

The number of institutions having programs accredited jointly by the American Medical Association and by the American Board of Anesthesiology has increased seven-fold between 1940 and 1962. In the same period the number of positions offered has increased fifteen times.

In table 1 the residency data are set out in detail. It is of interest to note that while the ranking of anesthesiology by its ability to fill its training positions has fluctuated between ninth and twenty-second, it has over the last 13 years maintained an average of 80 per cent of places filled compared with an average of 81 per cent for all specialties.

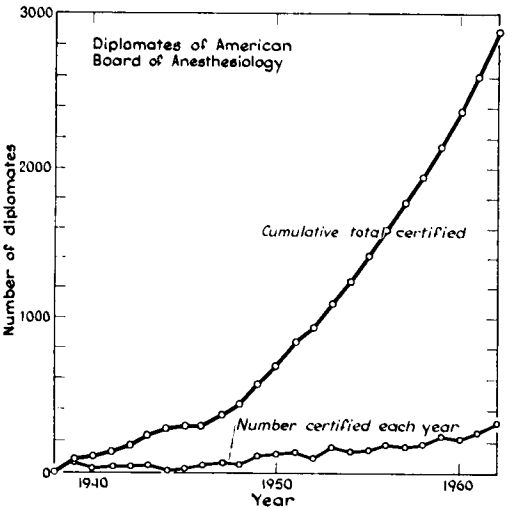

FIGURE 1

Growth of the Population and of the Medical Profession. The United States is still an expanding country and any numerical expressions of change are meaningless unless related to contemporary changes in population. Similarly, changes in numbers of physicians engaged in anesthesiology must be compared with changes in the total number of physicians.

Table 2 shows that while the population has increased 41 per cent between 1940 and 1962, the medical profession has more than kept

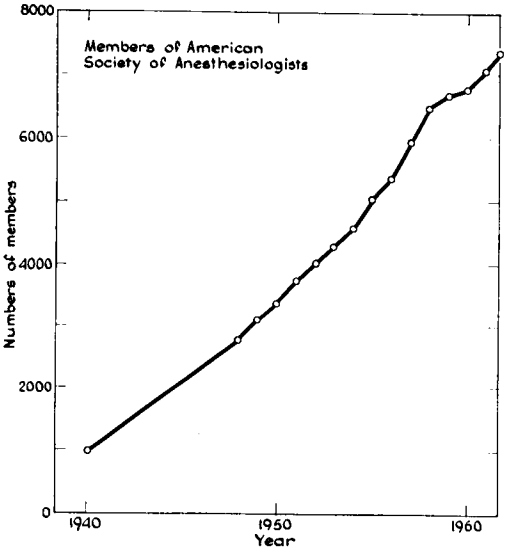

FIGURE 2

TABLE 1. Anesthesiology Residencies

Year	Programs	Positions Offered	Positions Filled (%)	Ranking of Anesthesiology among Specialties by Percentage Positions Filled	Positions Filled all Specialties (%)
1940	37	108			
1946	69	226			
1950	213	731			
1955	188	1,029	83	11th of 30	80
1960	237	1,413	87	15th of 30	87
1962	261	1,579	75	21st of 30	84
13 year average			80		81

pace; its growth has amounted to 50 per cent in the same period. The growth of physician-anesthesia services (as indicated by total membership of the American Society of Anesthesiologists) has been greater still, namely, 637 per cent.

In 1940 the proportion of physicians who were anesthesiologists was 1 in 180 (0.6 per cent). By 1950 this had changed to 1 in 60 (1.7 per cent), and by 1962 1 in every 37 physicians (2.7 per cent) was an anesthesiologist.

The Nurse-Anesthetist. The magnitude of the role played by nurses in American anesthesia has often been pointed out. In 1955 Compton *et al.* [1] estimated that nurses administered 53 per cent of all anesthetics in this country. Beecher and Todd [2] found that in a group of ten university hospitals nurse-anesthetists were responsible for about 24 per cent of the cases in 1948, although by 1952 this had fallen to 21 per cent.

The American Association of Nurse Anesthetists was founded in 1931. It lays down standards for training, and examines and certifies the competence of nurse-anesthetists. The annual membership of the Association from 1940 to 1962 is shown in table 3. According to the Association, the proportion of inactive members is consistently around 13 per cent.

It is clear that if anesthesia as a branch of nursing is in a decline, it is a very slow and relative one. The increase in numbers (417 per cent) of nurse-anesthetists during these years greatly exceeds the population growth rate (41 per cent) but falls short of that of the physician anesthetist (638 per cent).

Also expressed in table 3 is the ratio between the number of anesthesiologists to that of nurse-anesthetists. Between 1940 and 1950 this changed from 1 to 2.10 to 1 to 1.50, but since 1950 it has shown only a small change, being 1 to 1.47 in 1962.

Anesthesia in the University Hospitals. The teaching hospital generates many of the advances in the practice and patterns of medicine. The university hospital has certainly done its share both to improve anesthetic techniques and to add to our understanding of

TABLE 2. Growth of the United States Population, the Medical Profession and the American Society of Anesthesiologists

Year	Population (Millions)	Total Physicians	Physician-Population Ratio	Amer. Soc. Anesthesiologists	Anesthesiologist Population Ratio
1930	123	160,348	1–767	—	—
1940	132	179,718	1–734	1,000	1–132,000
1950	151	205,081	1–736	3,393	1– 44,500
1956	170	222,715	1–766	5,374	1– 31,700
1960	180	253,400	1–710	6,795	1– 26,500
1961	183	260,942	1–701	7,071	1– 25,900
1962	186	269,325	1–690	7,375	1– 25,200

the anesthesia process. What is happening to the organization, composition and structure of the anesthesia services in the country's most advanced hospitals?

In the Fall of 1962 a questionnaire was sent to the head of the department of anesthesia at the major teaching hospitals of every American medical school. Whereas two schools share one large hospital, some other schools indicate more than one hospital as a major teaching facility. Of 86 questionnaires sent, 81 (94 per cent) were returned. All except five of these 86 hospitals had approved programs for the training of residents in anesthesiology.

In 80 of the 81 hospitals replying, an anesthesiologist was in charge of the anesthesia service; one hospital had no anesthesiologist and the questionnaire was completed by a nurse-anesthetist.

The questionnaire asked whether or not nurse-anesthetists were trained or employed at the hospitals. Information was also sought regarding the proportion of the clinical anesthesia load carred by nurse-anesthetists in each institution. Finally, the head of each department was asked to give his opinion about the necessity and desirability of the independent administration of anesthesia by nurses.

Training and Employment of Nurse-Anesthetists. Information about the training and employment of nurses is shown in table 4. The proportion of university hospitals employing nurse-anesthetists has slowly declined from 75 per cent in 1940 to 62 per cent in 1962. The training of nurse-anesthetists in such institutions also has declined, 32 per cent having been engaged in the practice in 1940 compared with 25 per cent in 1962.

The hospitals divide themselves into three categories by their use of nurse-anesthetists. These are those who train and employ nurses, those who employ them but do not train them and, thirdly, those who do neither and whose anesthesia service is provided wholly by physicians. Detailed analysis of the replies shows that some institutions have resisted the trend away from nurse-anesthesia. Others followed the trend only to retrace their steps later. Still others even moved away from physician-anesthesia. Between 1950 and 1962 seven university hospitals discontinued the training of nurse-anesthetists but in the same period five other university hospitals started new nurse-anesthetist training schools.

TABLE 3. Members of the American Association of Nurse Anesthetists

Year	Members	Anesthesiologist/Nurse-Anesthetist Ratio
1940	2,100	1–2.10
1950	5,101	1–1.50
1955	7,683	1–1.52
1960	10,200	1–1.50
1962	10,849	1–1.47

New Medical Schools. Data were received from eleven schools which were established during the period under consideration. Most of these opened later than 1950. Of these, six employ nurse-anesthetists and five do not. None has a training program for nurse-anesthetists. Each school is following the staffing policy set at its inception, that is, those schools which now have all-physician anesthesia services began as such, and those which now have nurse-anesthetists employed them from the outset.

Proportion of Clinical Load Carried by Nurse-Anesthetists. Of 81 hospitals replying to the questionnaire, all except one gave actual figures or estimates for this function. To facilitate examination of the national scene the percentages have been averaged both for the years examined and for the three categories of university hospital. These values are summarized in table 5.

In 1962 the proportion of the clinical anesthesia work done by nurse-anesthetists in the 80 university hospitals giving data was 22 per cent, showing a decline compared with the 63 per cent of 1940.

The ten university hospitals of Beecher and

TABLE 4. Training and Employment of Nurse-Anesthetists in University Hospitals

Year	Hospitals Training Nurse-Anesthetists	Hospitals Employing Nurse-Anesthetists	Hospitals Without Nurse-Anesthetists	Total Hospitals
1940	23 (32%)	53 (75%)	18 (25%)	71
1950	25 (25%)	48 (68%)	23 (32%)	71
1955	23 (31%)	46 (61%)	29 (39%)	75
1962	20 (25%)	50 (62%)	31 (38%)	81

TABLE 5. Average Percentage Distribution of Clinical Load Among Anesthetists in University Hospitals

Year	Trained Anesthesiologists	Residents	Nurse Anesthetists
1940	15	13	63
1950	18	31	48
1955	21	39	33
1962	26	49	22

Todd's study [2] reported in the *present* survey that on the average, nurse-anesthetists were responsible in 1962 for 17 per cent of anesthesias. This compares with 24 per cent found in 1948 and 21 per cent in 1952.

The Need for and the Desirability of the Nurse-Anesthetist. The opinion of the head of each university hospital department was sought regarding the training and employment of nurses for the independent administration of anesthesia.

Replies to this query were given on 77 out of the 81 questionnaires returned. Their distribution is indicated below:

"Necessary and desirable," 25%.

"Undesirable but will be necessary for many decades," 52%.

"Undesirable and could be made unnecessary in a decade or so," 23%.

Of these answering, "Necessary and desirable," one third appended comments deploring the *independent* operation of nurse-anesthetists.

Discussion

Figures 3 and 4 summarize graphically the most important data collected during this study. Almost all the factors examined show evidence of the strength and continued development of the physician-specialist in anesthesia. His numbers have multiplied out of all proportion to population growth (table 2). He is attracting an increasing share of medical graduates into the specialty and his place on the faculties of our medical schools is well recognized and assured.

Considering that the population has only increased 41 per cent between 1940 and 1962, a growth of 638 per cent of a professional service available to that population would ordinarily indicate a sensational advance. That this is only one side of the story, and that the *incidence* of surgical operations must also have increased enormously, is evident after observing the continued rise in numbers of nurse-anesthetists (table 4).

In 1940, for every 21 nurse-anesthetists there were 10 anesthesiologists; in 1962 nurse-anesthetists still outnumbered anesthesiologists by 15 to 10 and this ratio had changed little since 1950. Thus, while the growth of anesthesiology as a specialty of medicine since 1940 has been extraordinary, it has not been enough to provide physician-anesthesia for all Americans who undergo surgery.

The specialty, the medical profession and, ultimately, the public must decide whether they consider physician-anesthesia for all Americans to be necessary and/or desirable. If it *is* so judged it must then be decided if it is possible to achieve it within a reasonable period of time.

Is physician-anesthesia for everyone desirable?

I contend that it is. I do this despite the fact that, having had eleven years' experience of supervising nurse-anesthetists, I have a high regard for many of them. Among their ranks are many devoted and conscientious people who are serving the American public to the

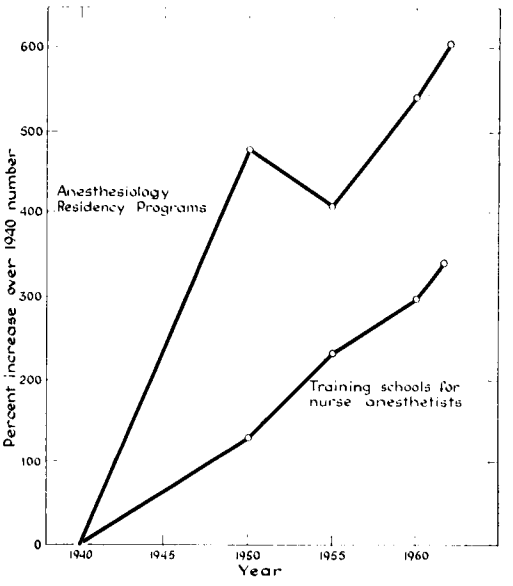

FIGURE 3

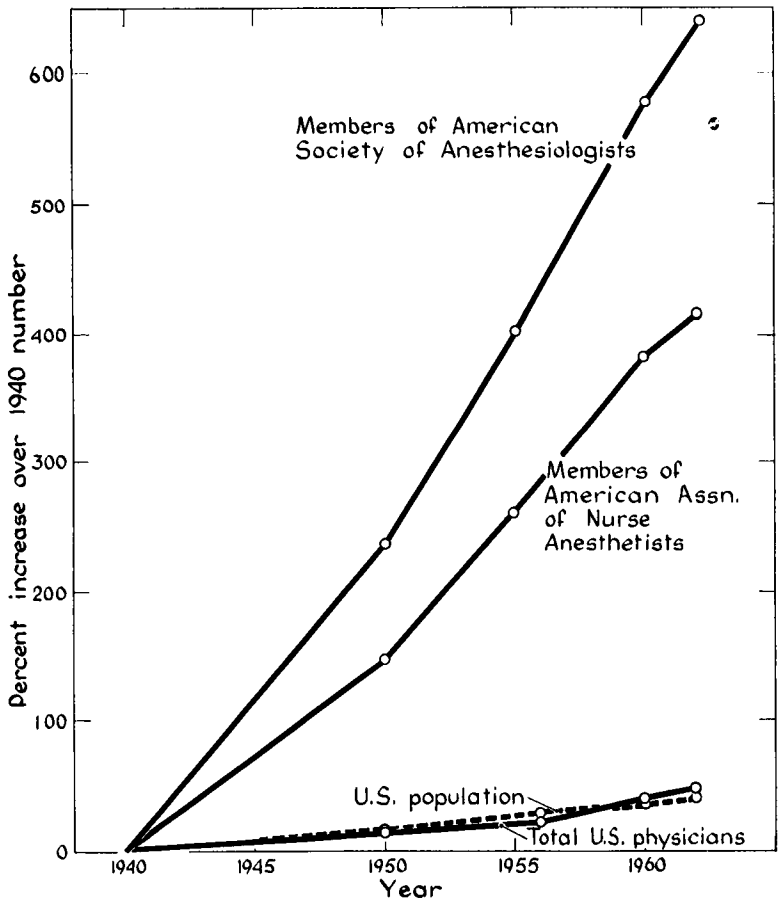

FIGURE 4

very best of their ability. A few are unusually gifted and perform work which would be hard to fault. Nevertheless, after long and close contact with both nurse-anesthetists and anesthesiology residents, as well as direct observation of privately practising anesthesiologists, I am convinced that the average conscientious anesthesiologist does far better and safer work than the average conscientious nurse-anesthetist. Considering the difference in education and training this is hardly surprising and it is no reflection on the nurse-anesthetist.

The arrangements under which nurse-anesthetists work vary enormously. Some work under the close supervision of an anesthesiologist who reviews each patient's condition, selects the drugs and directs the conduct of the anesthesia for three or four patients simultaneously.

Others have looser supervision with one anesthesiologist for about 10 nurses. With such spread the physician cannot possibly see and assess all the patients and his main function is to rescue the nurse-anesthetists (and their patients) from technical and pathophysiological trouble.

At the furthest extreme is the nurse-anesthetist who works completely alone with no possibility of help and advice from an anesthesiologist. Nominally, in this case, the surgeon has the final responsibility for the anesthesia but in practice he rarely has enough specialized knowledge to participate in its choice or its management. Most of these individuals are employed by hospitals, a few are retained by surgeons. In some parts of the country, however, they act as independent contractors, working in several hospitals and submitting bills for their services, exactly as if they were medical practitioners.

A common argument is that while the anesthesiologist may be desirable or necessary for the complicated cases and poor-risk patients, the nurse-anesthetist is adequate for the simple operations such as those done for hernia and for hemorrhoids. I hold that this is false logic. We are all aware that anesthetic deaths tend to happen when they are least expected, and often during fairly minor operations. Sad though it is to have an anesthetic death during pneumonectomy or major cardiac surgery, it is a far greater tragedy to lose a woman having a simple obstetric manipulation or the father of a young family while he is undergoing hemorrhoidectomy. Sociologically, one can almost make a case for the proposition that the patients having the most trivial and least essential operations should be anesthetized by the most skilled anesthetists.

Data collected during this survey shows that almost three-quarters of the heads of anesthesia departments of American university hospitals believe the independent administration of anesthesia by nurses to be undesirable. Of those who already have achieved all-physician anesthesia in their own institutions, 90 per cent think that independent nurse-anesthesia is undesirable.

Is physician-anesthesia for everyone possible?

I maintain that universal physician-anesthesia service *is* possible in the United States and that the specialty and the profession should redouble efforts to achieve it. A. M. Betcher, the President of the American Society of Anesthesiologists, in a recent statesman-like editorial entitled "Let's Set Our Sights," [3] aptly pointed out the need for us to re-examine and define our aims.

Attributes which are widely admired in Americans are cheerfulness and faith in themselves coupled with a certain dynamism and an ability to "get things done." At the same time the Old World sees that these praise-worthy qualities are sometimes spoiled by the characteristic national fault of impatience. Americans want to change things overnight!

We in anesthesiology must be careful not to let impatience turn our hope into despair. Since World War II broad and solid foundations have been laid for our specialty. The American Board of Anesthesiology and the American Society of Anesthesiologists are sturdy and dynamic bodies which we can look upon with pride. Our Society's journal has become one of the most highly regarded publications in the clinical sciences. The Association of University Anesthetists, established in recent years, has also become a strong and influential organization.

Almost every American medical school now has a formal department or section of anesthesia directed by an anesthesiologist. What is more, these are men of whom we can be proud; they will bear comparison with any other specialty group in the profession. Many of them play very active parts in the affairs of their own universities and their counsels are heard in all the national organizations which are concerned with medical practice, education and research.

It has been objected that physician-anesthesia is too expensive. In the world's wealthiest country this comment is surely worthless. Other less affluent nations, notably those of the British Commonwealth, consider physician-anesthesia sufficiently important to afford it. Moreover, the fees actually charged by, or for, nurse anesthetists are usually the same as those charged for the services of an anesthesiologist. Many hospitals regard anesthesia as a revenue-producing service whose profits can be used to balance losses suffered in other departments.

The allegation is sometimes made that the population of the United States is growing so fast that we cannot expect to maintain the doctor-population ratio to which we have been accustomed.[4, 5] What hope, it is asked, have we in anesthesiology of attracting an even bigger proportion of new medical graduates into our field? Let us examine the facts. Table 2 shows that the physician-population ratio, far from deteriorating, has actually been improving. In 1930 it was 1 to 767 whereas in 1962 it was 1 to 690. It must be remembered that Great Britain and Canada have less favorable physician-population ratios (1 in 909 [6] and 1 in 920 [7] respectively) but despite this they consider anesthesia sufficiently important to warrant an all-physician service.

Meerman [8] has pointed out several reasons for more optimism about the future doctor-

population ratio. First, demographic predictions are often wrong. Second, the growing national tendency to deny no individual a medical education because of financial handicap will produce more physicians. Also, usage or productivity of physicians will probably improve. At present surgeons, internists, obstetricians and other skilled physicians customarily perform many tedious and simple tasks (which are not nearly as potentially dangerous as the administration of anesthesia), which could well be done by nurses or technicians. The insertion and removal of skin sutures, the giving of injections and the personal conduct of single, long but uncomplicated labors are but a few examples. One has only to visit the doctor's locker rooms in our large hospitals to see what a tremendous number of man-hours are wasted under our existing system by surgeons and obstetricians awaiting their turns to operate.

Automation will also have an effect. Because of the growing application of computers, many of the young men who would formerly have entered managerial positions will instead be drawn to careers of individual service such as medicine, especially if the financial hardships of training are lessened.

The Past Problems and Present Opportunity of the University Anesthesia Departments. Over the last 15 years most of the political, economic and organizational problems connected with the founding of the specialty have been solved. The leadership for this phase was properly provided by a medico-political body, the American Society of Anesthesiologists. I believe that we are now entering the second period of our development, that of intellectual flowering and of further accelerated growth. This phase will be promoted by the men who direct our university anesthesia departments. Will they rise to the challenge? I believe that they will, for among them are a high proportion of strong and able people, respected alike within and outside the specialty.

In most American medical schools the anesthesia unit has been a "Cinderella" department, almost always denied direct financial support from the school and therefore forced to support its teaching and research activities out of income from patients. As a result most departments have been woefully understaffed with trained physicians and teachers and have only been able to carry their daily clinical load by employing unduly large numbers of anesthesiology residents. Those departments who failed to recruit enough residents continued to use, or reverted to, the use of nurse-anesthetists.

Despite these difficulties some departments have thrived, largely because of the personal dynamism of their chairman and their ability to raise research money from outside sources. Others have limped along, going through recurrent crises of staff shortage at both the resident and faculty levels. Several departments continued to present such discouraging conditions that they have been in a state of chronic instability. A few have failed to hold a chairman for more than a short time and have actually "used up" a new chief every two years or so!

This period is likely behind us because, these days, even the most recalcitrant administration seems to be realizing the importance of its anesthesia department, not only as a daily operating room service, but also as a therapeutic, educational and research unit making its influence felt throughout the hospital and the medical school. If this is so, then the time is indeed ripe for the university departments to make a lusty effort to achieve all-physician anesthesia in their own units.

Scattered among the ranks of privately practising anesthesiologists are hundreds of men who would like nothing better than a university hospital career, with time for contemplation, teaching and investigation, if only they could have reasonably well-paid secure positions. Many of them began academic careers only to abandon them when they discovered that unless they became heads of other departments, their prospects of achieving senior status were poor. There are exceptions, but commonly there is only one full professor (the director) and below him several instructors with perhaps one assistant professor. All these are usually people in the first few post-residency years; only rarely is there provision for permanent appointment of additional mature individuals at the associate professor and professor level.

Table 4 shows that the advance of physician-

anesthesia in university hospitals has been disappointingly slow. What greater deterrent could there be to the attraction of medical students and interns into our field than for them to see that this work is entrusted to nurses in 62 per cent of our teaching hospitals?

The words of Haggard spoken 24 years ago and published on the first page of the first issue of ANESTHESIOLOGY [9] should be read by every modern anesthesiologist. Those who are discouraged ought to take comfort from his report of the struggles of surgeons for recognition in past centuries! His words are as applicable now as they were then. After remarking that the public must be made to recognize that administration of an anesthetic is a major therapeutic operation, he goes on to say:

> "It is only with such recognition that the anesthetist will receive that public regard and public support which are essential to the fullest development of his calling. And to obtain this necessary public recognition, the anesthetist must not only give good anesthesia, he must also shape public opinion.
>
> ". . . medical regard and public regard go hand in hand. Public opinion is the doctor's opinion. He is a member of the public. Public demand and regard shape the education in our medical schools.
>
> "Today the public, by and large, believes that the important decision in anesthesia is what anesthetic they will be given, or possibly what method will be used. When, by propaganda, you have changed this view to one in which the important decision is what man shall give the anesthetic, then the problem of the place of the anesthetist in American medicine will be solved."

While those university departments with strong staffs of anesthesiologists attract a high percentage of their own medical students into the specialty,[10] others, shockingly understaffed, struggle to keep up with the everlasting burden of their heavy operating schedules. It is not surprising that the chairmen of the struggling departments tend to take a gloomy view. But surely they are not the prophets to whom we should turn for inspiration!

The factors that make for a successful all-physician university department are not easy to identify. Except that the three Pacific Coast states have all-physician departments, geographical location seems to play no constant role. In other regions of the country all-physician departments exist side by side with departments training or employing nurse-anesthetists.

The Southern states, traditionally less prosperous than the North, nevertheless boast several all-physician departments. Taken as a whole, however, 29 per cent of their university departments are all-physician compared with 43 per cent for the remainder of the country.

It is probable that personal attributes, both of the department heads and of the school administrators, have hitherto been the key to success or failure in establishing an all-physician staff. Today, however, the climate in the nation and in the medical profession is more favorable than ever towards physician-anesthesia and the specialty should now look to its university members to do their part.

The Nurse-Anesthetist. Undesirable though it may be, the independent administration of anesthesia by nurses will probably have to continue for many more years. I believe that we must not turn our backs on this fact and that we have a duty to the public to take the responsibility for the training, examination and regulation of the work which these individuals do. We should do this as long as it is necessary, even though our eventual goal may be the abolition of independent nurse-anesthesia. The active nurse-anesthetist has nothing to fear because the changes will come about so gradually that no individual will suffer economic embarrassment. Furthermore, with the advent of the more complex procedures and the movement of the anesthesiologist into the care of long-term severe respiratory disturbances there will be increasing need for technical assistance of the type which the erstwhile nurse-anesthetist can ideally provide.

I believe that while we should discontinue as quickly as possible the training and employment of nurse-anesthetists in the university hospitals, we must ensure that an appropriate number of well-organized new nurse-anesthesia training programs are started in some of our best non-university hospitals.

Although we should do everything that is reasonable to discourage the completely independent operation of nurse-anesthetists we must recognize that in many places it will continue to be necessary for some time. As

long as they are needed, these isolated workers require all the help and advice they can get so that they may take better care of their patients. I propose that the specialty consider establishing a geographically spread panel of anesthesiologists who would be willing to give personal or telephone consultations to nurse-anesthetists who have to work in isolation whenever advice or information is needed.

I urge the American Society of Anesthesiologists, the American Board of Anesthesiology, the Association of University Anesthetists to meet with the American Association of Nurse Anesthetists and examine the matter from a broad viewpoint. There is every reason for these bodies to cooperate to work out a plan which will best suit the needs of the nation.

The General Practitioner Anesthetist. We shall do the public a disservice if we abolish the trained nurse-anesthetist only to replace her by the untrained family doctor who only administers anesthetics occasionally. However, there is a great future for the part-time specialist in this field—that is, a general practitioner who has had a year of anesthetic training and who devotes about one half of his time to the practice of anesthesiology. We must increase our efforts to recruit from this pool. If need be we must arrange residency programs for such people so that the required time could be spread over a long period. For example, by doing a few half-days as a resident each week a practitioner would in two years be able to complete the equivalent of one year of full-time residency training and at the same time continue to tend his practice.

Summary

The numerical growth and development of the specialty of anesthesiology since 1940 has been examined and found to exceed greatly the growth of the population of the United States.

The number of nurse anesthetists has also shown a marked increase, but when expressed as a percentage of the 1940 figures the growth is somewhat less than that achieved by the number of anesthesiologists.

The proportion of American university hospitals having exclusively physician-anesthesia has shown only a slight increase during the period under study. The present value is 38 per cent compared with 25 per cent in 1940. A plea is made for a vigorous effort to improve this state of affairs. It is suggested that the continued presence of nurse-anesthetists in 62 per cent of major teaching hospitals is a significant deterrent to the recruiting of medical students and interns into careers into anesthesiology.

The nurse-anesthetist, although she should eventually be abolished as an independent worker will continue to be necessary for many years. The organizations representing the specialty of anesthesiology should recognize this and should seek to arrange for the recruitment and regulation of nurse-anesthetists as long as they continue to be needed.

Efforts to recruit general practitioners into anesthesiology as part-time specialists should be redoubled.

The author wishes to thank the heads of the university departments who supplied information about their hospitals. He is also indebted to the executive staffs of the American Association of Nurse Anesthetists, the American Society of Anesthesiologists, Inc., the American Board of Anesthesiology, Inc. and the American Medical Association for making pertinent data from their files readily available.

References

1. Compton, J. L., Bader, M. N., Haas, M. V., and Lange, A. M.: Survey of anesthesia service: 1955, J. Amer. Ass. Nurse Anesthetists **23**: 223, 1955.
2. Beecher, H. K., and Todd, D. P.: A study of the deaths associated with anesthesia and surgery, Ann. Surg. **140**: 2, 1954.
3. Betcher, A. M.: Editorial: Let's set our sights, ANESTHESIOLOGY **23**: 710, 1962.
4. Crisis in Medical Education. Johns Hopkins Magazine **12**: 5, 1960.
5. What U. S. has to do to get enough doctors, U. S. News & World Report **50**: 67, 1961.
6. Fry, J.: Correspondence, Brit. Med. J. **2**: 1705, 1961.
7. Official Records of the World Health Organization, No. 94. First Report on the World Health Situation.
8. Meerman, J. P.: Some comments on the predicted future shortage of physicians, J.A.M.A. **177**: 793, 1961.
9. Haggard, H. W.: The place of the anesthetist in American medicine, ANESTHESIOLOGY **1**: 1, 1940.
10. Smith, R. H., and Cullen, S. C.: One method of teaching anesthesia to medical students, ANESTHESIOLOGY **24**: 68, 1963.