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Presidential Address

A time for assessment

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I am highly honored to be chosen as President of this prestigious Association. The honor is great, and my appreciation is no less. Indeed, I have been fortunate to have the support and excellent assistance of my fellow officers, the Council, the executive office, and the members of this Association.

I have chosen as the subject of my address a major issue confronting our specialty today, namely, the present imbalance in training between general thoracic and cardiac surgery which is found in many of our programs. This imbalance has led to inadequate education of residents and, if it continues, can only result in incompetence in general thoracic surgery and a vacuum in the practice of our specialty.

The American Association for Thoracic Surgery has had a brilliant past in the development of the specialty, which encompasses the stages of (1) establishment, (2) expansion, and (3) maturity. What has gone before is pertinent to an assessment of the trends of the present.

Stage of establishment

The period of *establishment*, from the founding of The American Association for Thoracic Surgery in

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1917 to the time of the Second World War, included the inception of THE JOURNAL OF THORACIC SURGERY in 1931, advances in pulmonary and esophageal surgery together with early contributions to closed cardiovascular surgery, and the first formal discussions of training in thoracic surgery in 1936, led by Evarts Graham¹ and John A. Alexander.² Both men emphasized the importance of a broad background in general surgery before entering a training program in the specialty.

Evarts A. Graham (Fig. 1), whose membership dated to 1920, was President of The American Association for Thoracic Surgery in 1928 at its eleventh annual meeting in Washington, D. C., and was the first Editor of THE JOURNAL OF THORACIC SURGERY from its beginning in 1931 until his death in 1957. His fundamental contributions to scientific, educational, and organizational matters were many and his interest and influence in the specialty were broad, spanning both the periods of establishment and expansion. Many of his students became prominent in American surgery and Presidents of this Association. To us as younger members, Evarts Graham personified The American Association for Thoracic Surgery in his confident, erudite manner. I understand he would have assured us that this impression was correct.

John A. Alexander (Fig. 2), another pioneer giant, established the first thoracic surgical residency in 1928 in Ann Arbor, Michigan, and was President of The American Association for Thoracic Surgery in 1935.



Fig. 1. Evarts A. Graham.

He trained many thoracic surgeons, encouraged them to limit their practices to the specialty early in its development, and followed their careers with interest. Many of his residents became prominent members and Presidents of the Association. John Alexander was a strong supporter of the specialty and was an early advocate of certification in thoracic surgery. Like Evarts Graham, he commanded respect.

Stage of expansion

The stage of *expansion* began during the Second World War with recognition of the specialty by the armed forces, advances in general thoracic surgery, and contributions to closed cardiac surgery. This expansion, with recognition, led to the formation of the Board of Thoracic Surgery in 1948, as an affiliate of the American Board of Surgery.

In 1953, John H. Gibbon, Jr., (Fig. 3) performed the first successful open-heart operation, the closure of an atrial septal defect, using an extracorporeal circuit to bypass the heart and lungs. He³ had developed this apparatus after 19 years of investigative experimental research. This contribution was followed by rapid de-



Fig. 2. John A. Alexander.

velopment of open-heart surgery all over the world, and Gibbon⁴ in his Presidential Address in 1961 could state with confidence that the surgical conquest of the heart had been achieved.

Major developments in cardiac and vascular surgery followed rapidly. Included were successful general clinical use of cardiopulmonary bypass for surgical correction of congenital defects of the heart and acquired valvular disease, excision of thoracic and abdominal aneurysms, development of synthetic vascular grafts, endarterectomy, and various bypass procedures for occlusive arterial disease. The introduction of valvular prostheses in 1961 launched a new area. A few years later, the advent of coronary bypass surgery and remarkable advances in reconstructive procedures for complex forms of congenital heart disease accelerated the growth of cardiac surgery.

With the expansion of the specialty, the Board of Thoracic Surgery in 1956 found it necessary to reaffirm its position that thoracic surgery included cardiac surgery. In 1959, THE JOURNAL OF THORACIC SURGERY became THE JOURNAL OF THORAC AND CARDIOVASCULAR SURGERY. In 1962, the Board decided

against changing its name to include cardiovascular surgery, but the following year it filed a statement with the Advisory Board for Medical Specialties establishing its priority of interest.⁵ On becoming a primary board in 1971, the Board changed its name to become the American Board of Thoracic Surgery, the term "thoracic" being used in a generic sense. However, the Board found it necessary to change the certificate to state that the candidate was qualified in both thoracic and cardiac surgery to emphasize its functions and in recognition of specialization in practice in a particular aspect of the specialty.⁶

Stage of maturity

Although many opportunities for advancement of knowledge remain, we are now in the stage of *maturity* in the history of this Association and in the development of the specialty in all its aspects. Early during this period, the increase in volume of cardiac surgery has led to a serious imbalance in our educational programs, with subordination of general thoracic surgery to a secondary position in many thoracic surgical training centers.

It was natural that the excitement and challenge of newer developments in cardiac surgery would attract outstanding, innovative young men whose primary interest was in the advancement of knowledge in this area. Many of these men moved into leadership in academic centers and became role models for younger trainees in the specialty. Referral patterns following specific interests, a change occurred in training programs where the case material, major interests, and activities of the staff were in cardiac surgery. This change led to loss of volume, knowledge, and expertise in general thoracic surgery. Terms such as "cardiothoracic" and "noncardiac," which have come into general usage, are symptomatic of the scale of priority in thoracic surgery.

The scientific programs of this Association during the past 21 years reflect the changed interests and activities of its members. Of 967 papers presented, 64% dealt with cardiovascular subjects, 18% pulmonary, and only 7% esophageal. The same proportions held true for the past 10 years, except that the cardiac papers increased to comprise 72% of the programs.

Analysis of data gathered by the Curriculum Committee of the Thoracic Surgery Director's Association revealed the following distribution of operations performed by residents in the year 1975 in 95 training programs. In 33 programs fewer than 50 general thoracic surgical operations were done by senior and junior residents, and in 12 programs the number done was fewer than 25. From the standpoint of balance, there

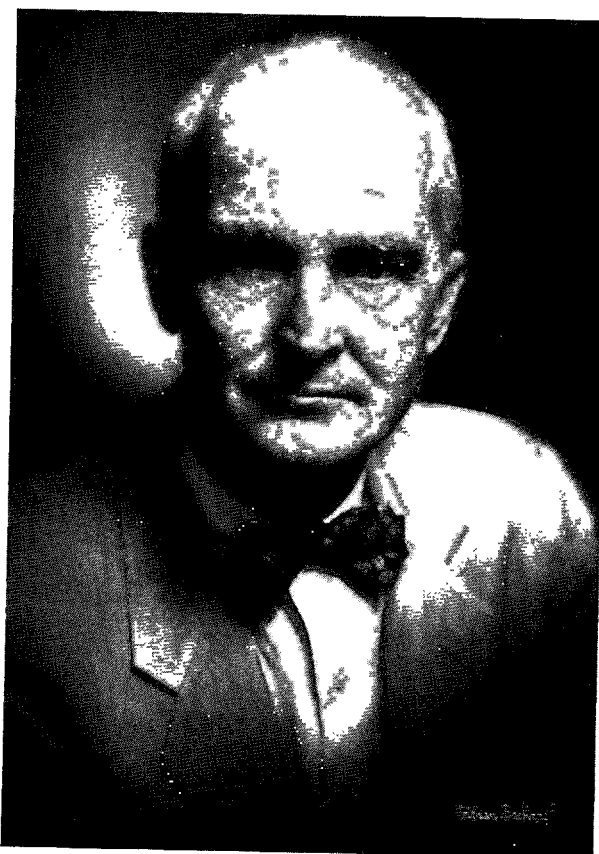


Fig. 3. John H. Gibbon, Jr.

were only 27 of 95 programs in which more than 50 general thoracic operations and 50 cardiac operations were done by residents. Only 17 programs had fewer than 50 resident cases in each category. This imbalance is not surprising, in that more than 50% of the faculty in 62% of the programs confined their activities to cardiac surgery, whereas less than 50% of the faculty in 76% of the programs confined their activities to general thoracic surgery.⁷

A statistical comparison of the operative experience of five groups of candidates examined by the American Board of Thoracic Surgery in the past 10 years shows an increase in the mean number of total major operations from 114 in 1971-1972 to 256 in 1980, an increase of more than 100% (Table I). In 1971-1972 the mean number of general thoracic cases constituted 50% and cardiac cases 48% of the total. In subsequent years the mean number of cardiac operations increased from 55 in 1971-1972 to 166 in 1980 to account for 65% of the total number of major operations. Although the number of general thoracic operations increased from 57 to 72, the proportion relative to the mean total of major operations declined to 28% for candidates examined in

Table I. Mean operative experience of five candidate groups, American Board of Thoracic Surgery (ABTS)

	1971-1972	1976-1977	1978	1979	1980
Total major operations	114	188	212	250	256
General thoracic operations	57 (50%)	66	68	69	72 (28%)
Cardiac operations	55 (48%)	107	127	156	166 (65%)

Table II. Mean operative experience in cardiac surgery of ABTS candidates

	1971-1972	1976-1977	1978	1979	1980
Congenital	26	30	33	38	39
Open	13	16	17	20	20
Acquired	22	32	36	41	42
Coronary bypass	7	45	59	77	85
Totals	55	107	128	156	166

1980. A breakdown of the mean number of cardiac operations for these years reveals an increase in the congenital cases from 26 to 39, in the acquired category from 22 to 42, but in myocardial revascularization from seven in 1971-1972 to 85 in 1980 (Table II). Coronary artery bypass operations thus accounted for about 50% of the cardiac and 33% of total major operative experience of candidates examined in 1980.

The mean number of general thoracic operations performed by candidates examined in the five time periods changed very little, with minimal or inadequate experience in pulmonary resections (23 to 27 cases) and mediastinal (two to three cases), diaphragmatic (three to four cases), and esophageal surgery (six to nine cases) (Table III). Data for vascular surgery are not available.

Experience in endoscopy has decreased from a mean number of 84 bronchoscopies in 1971-1972 to 54 in 1979 and from 19 esophagoscopies to 11 in the latter year.

The minimal volume of general thoracic surgery in many medical centers can be explained partially in two ways: (1) by referral patterns, following specific interests and activities in cardiovascular surgery, and (2) by strong competition for general thoracic patients in outlying community hospitals without residents by more or less well-trained surgeons practicing general thoracic surgery.

Compounding the problems of adequate training in thoracic surgery is encroachment by specialists in trauma, pulmonary medicine, gastroenterology, oncology, cardiology, and even radiology. With the demands of service to a heavy cardiac operative schedule, the thoracic surgical trainee frequently has little or no time

Table III. Mean operative experience in general thoracic surgery of ABTS candidates

	1971-1972	1976-1977	1978	1979	1980
Lung, pleura, chest wall	45	52	55	55	56
Pulmonary resection	23	25	25	26	27
Esophagus	6	7	7	9	9
Diaphragm	4	4	4	3	
Mediastinum	2	3	3	3	
Totals	57	66	69	70	72

for involvement in special diagnostic procedures and evaluation of patients referred for operation. He thus loses the opportunity to develop clinical judgment through experience in thoughtful preoperative consultation and becomes involved in surgery by prescription. Owing to the priority of service given cardiac operations, experience in trauma, pulmonary, esophageal, and diaphragmatic cases is neglected, and frequently operations are done without careful consideration or operative plan.

A recent survey by the Thoracic Surgery Director's Association revealed that at least two thirds of recent trainees entered private practice, 68% combining thoracic and vascular surgery, 23% thoracic and general surgery, 10% exclusively noncardiac surgery, and only 8% limiting their practices to cardiac surgery.⁷ Operative experience with peripheral vascular disease was provided in only one third of the approved training programs in thoracic surgery. The manpower study of 1976 showed that Board-certified thoracic surgeons devote an average of 58% of their professional activities to cardiothoracic work, 20% to peripheral vascular operations, and 22% to other activities.⁸ Clearly, the present imbalance between general thoracic and cardiac surgery found in many training programs cannot provide a sound background for practice of the specialty in all its aspects including general thoracic, cardiac, and vascular surgery.

Data from four studies related to supply and demand for thoracic surgery for the years 1970, 1976, and 1977 reveal a progressive increase in the total number of major thoracic operations in this country from 184,000

Table IV. Estimates of major thoracic operations in four surveys

	National Thoracic Surgery Manpower Study, 1970	Society of Thoracic Surgeons Manpower Survey, 1976	Hospital Record Study	
			1976	1977
Total major operations	184,000	196,000	240,000	262,000
General thoracic operations	120,000 (65%)	87,000	144,000	146,000 (55%)
Cardiac operations	64,000	109,000	96,000	116,000

to 262,000 (Table IV). Two thirds of the increase was due to the rapid increase in cardiac operations (from 64,000 in 1970 to 116,000 in 1977) and one third was due to the increase in general thoracic operations. Brewer and his committee,⁹ in the National Thoracic Surgery Manpower Study of 1970, reported that non-certified full-time and part-time thoracic surgeons performed 25% to 40% of the thoracic operations in the United States, with a national average of 30%. Less than half of the noncertified full-time surgeons doing thoracic operations were certified by the American Board of Surgery.¹⁰ The Society of Thoracic Surgeons Manpower Survey for 1976, by a committee chaired by Paul Adkins,⁸ revealed that surgeons certified by the American Board of Thoracic Surgery performed 196,000 major thoracic and cardiac operations, of which 87,000 were major thoracotomies and 109,000 cardiac operations. On the basis of the Hospital Record Study for 1976 as well as 1977,¹¹ it appears that 40% of the 144,000 general thoracic operations were performed by non-Board-certified thoracic surgeons, whereas virtually all of the cardiac operations were performed by Board-certified surgeons.

Although the absolute number of cardiac cases in the Hospital Record Study of 1977 represented an 80% increase over the Brewer study of 1970, the number of general thoracic operations nevertheless remained at 55% of total major operations, exclusive of vascular surgery. By comparison with the 1976 manpower survey, Feldstein and Viets¹² estimated that Board-certified thoracic surgeons performed 53% of all thoracic operations, both major and minor, in nonfederal hospitals, 77% of total major operations, but only 60% of major thoracotomies.

Discussion

It is time for assessment of the problem of imbalance found in many training programs. The resulting inadequate or minimal education of thoracic residents cannot provide a broad background of competence for the practice of the specialty in all its aspects. A vacuum thus has been created, and non-Board-certified surgeons have moved to fill the void.

Competition for general thoracic patients by non-

Board-certified surgeons, performing 40% of the general thoracic operations in outlying community hospitals, can be met by well-trained, expert, Board-certified thoracic surgeons and/or by offering a certificate of competence in thoracic surgery in conjunction with the American Board of Surgery. Our Canadian colleagues have recognized the problem of competence of general surgeons doing thoracic surgery, and the the Cardiovascular and Thoracic Surgery Committee of the Royal College now offers a Certificate of Special Competence in Thoracic Surgery based on adequate exposure to thoracic and cardiovascular surgery during general surgical training plus 12 months of senior resident training in general thoracic surgery.

Unless these problems are solved, the specialty of thoracic surgery will become fragmented and a vacuum will be created which will affect cardiac surgery as well. General thoracic surgery is as important a requirement for cardiac surgery as is the requirement of general surgery for specialized training in thoracic surgery. Although it appears that virtually all of cardiac surgery is performed by Board-certified thoracic surgeons, there is evidence that this is not entirely true. Some coronary bypass operations are being done by non-Board-certified thoracic surgeons as well as those not certified by the American Board of Surgery.¹³

The American Association for Thoracic Surgery has had a prominent role in the development of the specialty. Its members have been the leaders in training of thoracic surgeons, the founding and sponsorship of its official organ, THE JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY, and the American Board of Thoracic Surgery. The purposes of the Association are clearly stated in its By-Laws, the first of which is: "To associate persons interested in, and carry on activities related to, *the science and practice of thoracic surgery* [italics added], the cure of thoracic disease and the related sciences." If the inspiration of a glorious past is weakened, is it not that in the stage of maturity we have lost the sense of continuity and balance?

To address these problems, I have recommended to the Council of the Association that a Liaison Committee for Thoracic Surgery be established with representation by the Thoracic Surgery Director's Association,

the American Board of Thoracic Surgery, the Residency Review Committee, the Society of Thoracic Surgeons, and The American Association for Thoracic Surgery.

Instructions to the committee would include preservation of unity of the specialty through achievement of appropriate balance in each division of training, in the interest of competence in the delivery of quality health care. The committee would be responsible to the Council for (1) active on-going discussion of solutions to the problem, (2) reaching a consensus for policies, and (3) recommending possible courses of action. All organizations represented have been actively concerned with competency in the specialty and have delineated the requirements.^{7, 14}

Suggestions for consideration by the liaison committee are as follows:

1. Thoracic surgery directors should be encouraged to achieve educational balance to ensure competence in all divisions of thoracic surgical content.

2. The American Board of Thoracic Surgery should maintain realistic minimal requirements, including the number of cases and types of procedures done in the full range of the specialty.

3. Specific actions should be taken to strengthen general thoracic surgical training: (a) selection and identification of faculty members with specific interests in general thoracic surgery; (b) structuring of training programs into the subdivisions of thoracic surgical education with separate facilities and identifiable periods of training in all divisions; (c) if necessary to achieve these objectives, the use of related or unrelated institutions other than the parent program, with emphasis on education over service.

4. Consideration should be given to a procedure for offering a Certificate of Special Competence in Thoracic Surgery by the American Board of Thoracic Surgery in conjunction with the American Board of Surgery based on adequate exposure to thoracic and cardiovascular surgery during general surgical training plus 12 months of senior resident training in general thoracic surgery.

The problems of quality of training and competence in the practice of the specialty appear to be solvable. I would remind you that Parkinson's¹⁵ first law, which governs the relationship between work and time, is merely one aspect of a more general law which states, "Action expands to fill the void created by human failure." Failure to correct the imbalance in training of thoracic surgeons has resulted in a vacuum which could lead to disintegration of the specialty.

In the maturity of its illustrious history, is it not appropriate that The American Association for Thoracic Surgery assess the current problems and coordinate efforts for their solution?

Sincere appreciation is expressed to Hermes C. Grillo for analysis of data and suggestions, to Clarence C. Weldon for information gathered by the Curriculum Committee of the Thoracic Surgery Director's Association, to Herbert Sloan for data from the American Board of Thoracic Surgery, and to Anthony R. C. Dobell, Chairman of the Specialty Committee in Cardiovascular and Thoracic Surgery of the Royal College of Physicians and Surgeons of Canada.

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