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CARDIOVASCULAR SURGERY**

Presidential Address

The compleat thoracic surgeon

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Election to high office because of the regard of one's peers at first fills the recipient with a warm glow of appreciation and then chills him a bit as he contemplates the task of preparing a presidential address. This has been my experience on both counts. In the thirty odd years that I have been practicing thoracic surgery, this election must be my greatest satisfaction. As to the presidential address, there are continuing moments of doubt that I can, in any way, measure up to my illustrious predecessors. I have no astounding research to report and my contributions to clinical thoracic surgery have been modest. For many years, however, I have been involved in resident training and I was approximately the twenty-second surgeon in this country to opt for full-time practice in thoracic surgery. Therefore, training and practice are what I wish to discuss briefly with you today.

My title stems, of course, from Izaak Walton and much more recently, it was employed briefly by Effler. The archaic connotation of *compleat* is "perfectly equipped and

skilled." Since this is exactly what I want to describe, it seems only natural to use the old time spelling.

This great and honorable Association is now entering into the second half century of its existence. Certain dates during the first fifty years are important as background when describing the present and future of training and of practice.

1917. The varied skills of the fifty founding members were deliberately brought together. There were surgeons famed in clinical and in experimental surgery, pleural, pulmonary, esophageal, and cardiac, as well as vascular; there were nonsurgeons with special knowledge in tuberculosis, physiology, gastroenterology, anesthesia, endoscopy, and radiology. Today these talents are combined in the modern practitioner of thoracic and cardiovascular surgery, the compleat thoracic surgeon.

1928. There was established at Ann Arbor the first known formal training program in thoracic surgery. Originally, this was for one year, but within a short time the training period was increased to two years. John Alexander had a tremendous impact on the training of thoracic surgeons (Table I).

Table I

	Number of trainees	Number of trainees Board certified
John Alexander's trainees (1928-1954)	76	62*
Trained by "J. A. Boys" (Through mid 1964)	357	325
	433	387†

*Of these, 25 were taken into the Founder's Group of the Board of Thoracic Surgery. This is more than 10 per cent of the 228 in the Founder's Group.

†This represents 25 per cent of the 1,525 certified by the Board through mid 1964 (10 years following Dr. Alexander's death).

Eleven of the 39 past and present members of the Board of Thoracic Surgery were trained by him; 4 of the 9 Chairmen of the Board were his pupils.

1936. This was the first annual meeting of the Association which I attended. A symposium was held on Thoracic Surgical Training. In his Presidential Address, Dr. Eggers reviewed the questionnaire he had sent to the 169 members of the Association. There was a 94 per cent response. Nearly all believed that special training was necessary for the practice of thoracic surgery. Interestingly, 18 (20 per cent) indicated that they were limiting their practice to thoracic surgery. Dr. Graham described the early efforts leading to the soon-to-be founded American Board of Surgery. Dr. Alexander described the details of his 2 year training program. I can personally attest to the fact that what he expected his boys to accomplish, "occupying an average of nine or ten hours a day during two years," was the understatement of the meeting. All three essayists stressed the necessity for broad general surgical training along with, or prior to, special training in thoracic surgery. The question of certification in thoracic surgery was discussed and Dr. Eggers chaired a committee to consider this.

1937. This Committee reported in effect that there was no need then for specialty certification in thoracic surgery, that the Association should recognize the new Ameri-

can Board of Surgery as the parent organization, and that the Association would be willing to cooperate with the American Board of Surgery if, and when the certification of thoracic surgeons became desirable.

1946. The war years changed this sentiment considerably. It became obvious early in the conflict that soldiers with thoracic wounds fared better when treated by those with special experience. The end of the war saw many surgeons returning for further thoracic surgical training. A short time later, the report of a second Eggers Committee led to the formation of the Board of Thoracic Surgery in 1948. This Board remains an affiliate of the American Board of Surgery.

Since its inception, the Board of Thoracic Surgery has continued to strive for excellence in thoracic and, more recently, in cardiac surgical training. The concept of "basic" surgical experience leading to certification by the American Board of Surgery has been continued. In the beginning, two types of thoracic surgical training programs were recognized: (1) the straight service, in which full time was given to the care of thoracic patients, following the general surgical residency; (2) the mixed service where originally thoracic and nonthoracic patients were treated together. In the main, this latter proved unsatisfactory for the broad training of a thoracic surgeon—the technical aspects were well covered but, more often than not, the indications for surgery were frequently not well understood by the resident and the postoperative care left something to be desired. On the mixed program today, there is clearly defined rotation through a thoracic and cardiac surgery service and the work-up and study during this period is confined to thoracic and/or cardiac patients.

The present

Training. The present-day Board has a number of problems. The opinion has been expressed more than once that we may be training too many thoracic and cardiovascu-

lar surgeons. The content and quality of training programs are a main concern. The effort continues to outline an ideal training program in thoracic and cardiovascular surgery.

Ninety-five programs are presently approved, of which 88 are straight programs and 7 are mixed. Three years ago there were 14 mixed programs. The Board is discontinuing the *advance* approval of mixed programs; nevertheless a candidate may qualify for examination after favorable review of such a program on an individual basis.

Other organizations have considerable impact on present-day education and training in thoracic/cardiovascular surgery. Chief among these is the American College of Surgeons. The College strongly supports all surgical specialties and, of course, is one of the sponsoring organizations of the Board of Thoracic Surgery. The following committees of the College are the most important insofar as thoracic/cardiovascular surgery is concerned.

1. *The Advisory Council for Thoracic Surgery.* The members of this Council are appointed by the Regents, the nominations coming from this Association and from the Society of Thoracic Surgeons. The Council nominates, where appropriate, specialty personnel for the standing committees of the College (Trauma, Cancer, etc.). Through its representative on the Program Committee, all presentations at the annual Congress concerning thoracic surgery are selected, including the subject matter of the two panel discussions. The Council helps plan the postgraduate course in thoracic surgery and nominates the chairman. Last year, the Council expressed its great concern to the Board of Regents that the postgraduate course in thoracic surgery had been reduced in length from 12 to 6 hours. After due consideration, the Regents have now returned the course to its original 12 hours' length.

2. *The Residency Review Committee.* The graduate training of a surgeon was one of the major interests of the Founding Fathers of the College. The evolutionary

process through the years has led to a closer liaison with appropriate specialty societies and other interested organizations. Recently, a committee was established for thoracic surgery, made up of representatives from the Board of Thoracic Surgery, the American College of Surgeons, and the Council on Medical Education and Hospitals of the American Medical Association. It is identical with tripartite committees in other specialties and its functions include: (1) the codification of standards for residency training in thoracic surgery and their adoption by the three parent organizations; (2) the continuing inspection and evaluation of residencies already approved; (3) the consideration of, and decision on, all requests for approval of new programs.

In all cases, the actual physical review of each program has been carried out by the field staff of the Council on Medical Education and Hospitals. Whenever additional information is needed, site visits are made by surgical educators selected by the committee.

3. *The Cardiovascular Committee.* This is a new standing committee of the College and it is in charge of the cardiovascular postgraduate course. The committee chairman is a member of the Program Committee for the Clinical Congress. It has liaison members and/or consultants from the following interested organizations: National Institutes of Health, American College of Cardiology, American Society of Anesthesiologists, American College of Radiology, and the American Heart Association. Plans call for: (1) liaison with the American Association for the Advancement of Medical Instrumentation, the chief purpose being to keep up with developments in Federal legislation affecting prosthetic devices; (2) the presentation of vascular problems at sectional meetings; (3) the planning of further educational activities in the field of cardiovascular disease; and (4) the eventual development (with the help of liaison members) of a means of reviewing an individual cardiovascular surgical program if requested by the hospital to do so.

Practice. A number of views have been expressed recently as to the present and future of thoracic and cardiac surgery. Many of us believe that the specialty is on a solid present foundation and has a bright future. Some are of the opinion that cardiac/vascular surgery should become the main specialty both for training and for practice, and that general thoracic surgery should again be relegated to subspecialty status within "basic" surgery. Still others suggest that some changes might be made in the type and length of the training period.

In an effort to discover what the present patterns of practice and of training are, a questionnaire was sent to 650 surgeons who are limiting their practice to thoracic/cardiovascular surgery and who have been in practice for three or more years. There were responses from 557 (85 per cent).*

As for present and future practice, my respondents voted in some strength that thoracic/cardiac surgery should remain a major specialty (510 or 92 per cent). A significant number suggested thoracic/cardiovascular surgery and the rationale of this is borne out by the appreciable amount of major vascular surgery that is being performed by this group (vide infra). Forty (8 per cent) believe that cardiovascular surgery should become a recognized major specialty; three fourths (29) of these believe that general thoracic surgery also should remain a major specialty; one fourth (11) believe that general thoracic surgery should be absorbed into general surgery. In consonance with the latter, several expressions of opinion seemed worth recording: "Cases of general thoracic surgery are decreasing in amount and interest"; "Cardiovascular surgery is emerging from the ashes of general thoracic surgery"; "Pulmonary infections, including tuberculosis, are so well controlled by antibiotics that pulmonary surgery is no longer a major concern"; "Too many aspects of general thoracic surgery are in the gray zone"; "The future will find

young men doing cardiac and vascular surgery and, therefore, pulmonary and esophageal surgery will fall (in) with general surgery." I hope this last respondent does not mean to imply that only the aged surgeon will be performing general and thoracic surgery. Sic transit the gloria of all those starry-eyed young surgeons of 35 years ago who first entered the chest because it was a challenge.

A distinguished foreign colleague argues that thoracic surgery should be "returned" to general surgery since, in essence, all the problems peculiar to thoracic surgery have been solved; only the heart still presents a challenge. I respect this colleague but I cannot agree with his conclusions. For all practical purposes the day of the truly general surgeon is done. There is simply too much scientific and technical knowledge extant to

Table II

25/50,000	10
50/100,000	41
100/500,000	211
over 500,000	289

Table III

University—full time	89—17.4%
Institution or service full time	62—12.1%
Private practice full time	327—63.8%
Private practice part time	34—6.7%

Table IV

Percentage of practice	General thoracic	Closed heart	Open heart	Major vascular
80-100	182	1	6	1
50-79	169	3	48	27
25-49	96	64	100	93
Under 25	70	346	166	201
0 per cent	22	130	227	222
Per cent not indicated	18	13	10	13
	557	557	557	557

*Some categories will not give 557 answers (100 per cent yield), because all questions were not answered on all questionnaires.

allow most surgeons to become expert in ever-widening fields. In sum, scrutiny of these figures indicates continuing satisfaction with thoracic/cardiovascular surgery as a specialty. I am grateful to many of my responders who went to considerable trouble to write thoughtful letters although these could not be put to statistical analysis. Over the next few months I hope to reply to most of this group.

As might be expected, most but not all thoracic surgeons practice in urban communities of over 100,000 population (Table II).

Parenthetically, a long-used personal rule of thumb has some validity in smaller population areas (circa 50,000). If the community is supporting a neurosurgeon, it will almost certainly support a thoracic surgeon.

Table III shows distribution and types of practice.

These figures indicate that 195 (36.2 per cent) are probably involved in training programs. There must also be an increment of teachers from the "Private practice—full time" group, but this percentage is not available.

Table IV shows the percentage of practice in each general category of thoracic/cardiovascular surgery, as indicated on individual questionnaires.

Review of Table IV shows that the practice of nearly two thirds of those responding (351) is more than 50 per cent general thoracic surgery. A minority of the surgeons responding, practice less than 50 per cent general thoracic surgery. The opposite is true in the cardiac/vascular fields, i. e., the

majority of surgeons indicate that less than 50 per cent of their practice fall in these categories. There is even an appreciable number of surgeons whose cardiac/vascular load comprises less than 25 per cent of their practice. Presumably the number of cases is sufficient to make this a meaningful percentage.

Finally, it was surprising to me that 322 (58 per cent) are performing major vascular surgery. Apparently most of the experience with vascular problems was obtained during general surgical training. Only a few thoracic training centers have a significant interest in major vascular surgery. One wonders, however, if these figures might not suggest that more particular interest and experience in vascular procedures be brought somehow into the thoracic/cardiac training sphere.

Five hundred forty-nine surgeons answered the question regarding their own training and their recommendations for future residency. The breakdown is given in Table V.

In the past few years there have been more residencies available on straight services. This, of course, explains the larger number of surgeons reporting "straight service" training. It is probable that one's own residency experience has a bearing on his recommendations for future training. That this is not borne out to the same degree in the straight and mixed categories is illustrated in Table V. Of those who trained on a straight service and indicated a choice, 301 (96 per cent) recommended that present and future residency training be on

Table V

<i>Own training</i>	<i>Recommended training</i>				
	<i>Straight</i>	<i>Mixed</i>	<i>Combination</i>	<i>No choice</i>	
Straight	360	301	13	0	46
Mixed	150	52	81	1	16
Combination	39	25	7	2	5
Totals	549	378	101	3	67
No answer	8				
	557				

a straight service. Of those whose training was on a mixed service and whose preference was indicated, 81 (60 per cent) recommended mixed training.

The "combination" training indicates a small group whose general surgical residency was mixed, but who, nevertheless, completed training by serving additional years on a straight thoracic surgical service.

Prospect

As to the future, the complete deviner I cannot be, but I think the Association may well continue to concern itself with the training and practice of thoracic/cardiovascular surgery throughout succeeding decades. Obviously, both training and practice today differ from those of 30 years ago; there is no reason to think either will be the same some years in the future.

It is probable, nay almost certain, that the Federal Government's interest in medical affairs will alter the methods of training and perhaps of practice in the years to come. Also, both the Millis and the Coggeshall reports suggest areas of considerable change from our present way of life—new ways in postgraduate education, modification in the system for specialty certification, the elimination of the internship year, and others. Thoracic/cardiovascular centers will be no less affected by Medicare and Medicaid than will general surgical programs.

The Board of Thoracic Surgery has an interesting and perhaps difficult time ahead. This Association has a vital stake in the Board and in its decision and can well make suggestions to its representative members. If the affiliation between the Board of Thoracic Surgery and the American Board of Surgery is to remain strong, there must continue to be dialogue, there must be imagination in initiating new types of programs, and there must be some give and take. Otherwise the affiliation may well founder. Many believe this indeed would be sad; others, frankly, believe it to be inevitable.

Representative groups of surgeons on both sides of the United States—Canadian

boundary have developed essentially different programs to achieve the same purpose, a well-trained thoracic/cardiovascular surgeon. This probably means that the ideal program has not yet been conceived. I have, at the request of the Council and following Fred Kergin's lead of a year ago, appointed a standing committee to study how a closer correlation of these diverse programs can be accomplished.

In considering "straight" programs, there was general agreement that a minimum 6 year period of residency would develop sufficient expertise to satisfy eligibility requirements for both Boards. However, answers to the questions concerning *allocation* of the 6 years showed differences of opinion. Three hundred and twenty (63 per cent) believed the 4 year general surgery/2 year thoracic/cardiovascular training was satisfactory. One hundred eighty-seven, a surprising 37 per cent, favored other combinations, by far the most common choice being 3 years in general and 3 in thoracic/cardiovascular training. Of the full time university people, 41 per cent believed the three/three allocation preferable to the four/two division. Approximately 22 individuals favored such ratios as 3/2, 4/3, 3/2/1 (laboratory), 4/2/1 (laboratory), 4-5 mixed general and thoracic/2 cardiovascular, 5-6 mixed/1 cardiovascular.

Strieder suggests in essence that the total residency period might even be shortened and, by inference, concentrated and strengthened if those in charge of training programs would be willing to devote more personal time to the training of the young surgeon.

The consensus of those who discussed the three/three ratio emphasized that the trainee did not need four years of general surgery, but could well devote an extra year to cardiovascular surgery. These ideas are, of course, contrary to the present thinking of the American Board of Surgery which requires "senior (fourth) year experience and responsibility" in general surgery as a prerequisite to eligibility for Board certification. I am well aware that the American

Board of Surgery is phasing out its 3 year training programs in general surgery because of its dissatisfaction with the end product in general surgery. I will not quarrel with this philosophy. This cannot be compared, however, with a *further* 3 to 4 years in specialty training and *its* opportunity for "senior year responsibility" in thoracic/cardiovascular surgery rather than in general surgery. Here again is a prime example of the need for dialogue between the representatives of our two Boards.

A training program should have some flexibility, perhaps reflecting some desires by the trainee. It is inconceivable, however, that a cardiovascular surgeon should not have had experience in general thoracic and pulmonary problems. While a longer period of training may be desirable in many instances, the broadly trained thoracic/cardiovascular surgeon can, following a 2-year straight residency, practice general thoracic surgery and pull his weight on a team for open-heart surgery which is already organized. It is certain, however, that he cannot expect to *establish* an open-heart program without at least a year's extra training on a busy open-heart service.

The length of time allotted for work in the laboratory should be flexible. A certain minimal amount is good for all—but special provision should be made for increased time to permit those with real desire and ability to make such contributions as they can.

As the complexity and perhaps the length of training increases, it may become more common to involve several hospitals in a residency program, all oriented around a parent service. A single chief with broad powers of supervision is probably advisable.

It is perfectly conceivable that university training centers may combine with nonuniversity teaching groups in other hospitals to achieve a well-rounded program. The necessity for this may occur when there are no faculty men of sufficient stature in general thoracic surgery to attract either patients or residents. Inherent dangers must be recognized when several hospitals are used—partition of services and multiple exposure with-

out graded responsibility. In addition, too short a stay in any one institution leads to discontinuity and is not conducive to any type of clinical review or basic laboratory research.

Finally, what is the *compleat* thoracic surgeon of today and of the future? I think he is and will be a surgeon of many facets and many skills and each may not have these in equal abundance. His training both in basic and in thoracocardiovascular surgery has been broad and varied. He is at once a product of his training, his practice environment (university, institution, or private), his wishes, and his opportunities. He may do general thoracic surgery only, a combination of thoracic and cardiovascular, or cardiovascular surgery exclusively. He is characterized by being able to think "thoracic" and think "cardiac." Operatively, he is at home in the chest as well as for those occasional forays into the neck, or into the abdomen, which at times are necessary to care for problems that are primarily thoracic-based. He has neither the time nor the inclination to dabble in general surgical fields. Hopefully, neither will he perform the odd cardiovascular procedure unless the circumstances are right. He is "perfectly equipped and skilled" in those auxiliary techniques which are so necessary for the full practice of his specialty: endoscopy, tracheobronchial catheter suction, bronchography, certain types of topical and regional anesthesia, pulmonary function tests, blood gas analyses, radiology. He has a thorough understanding of pulmonary physiology. His concern in gastric and intestinal physiopathology will aid him in interpreting esophageal disease. If his interest is primarily cardiovascular, his knowledge of cardiac catheterization and angiocardiology must be complete from performance to interpretation. Cardiopulmonary relationships must be second nature. He can, more often than not, tread the thin line of success in his decision to undertake pulmonary surgery if the heart is not all that it should be, or in order to perform surgery on the heart when the lungs are far from normal.

He may or may not be interested in "prosearch." He may or may not contribute widely to the literature. But he remains a student throughout his professional life. He may not aspire to national prominence, but on the local scene he frequently enriches the teaching program and is usually active in county and state tuberculosis, heart, and cancer associations.

I believe such a surgeon will continue to be important in residency training at the university level. I believe such a surgeon will always be a welcome addition to the local professional community. However, the future practice of medicine is modified by the computer, the bomb, the pill, forced group practice or other forms of Federal intervention. I doubt very much that the compleat thoracic surgeon will ever vanish from the earth.

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