PRESIDENTIAL ADDRESS

RESEARCH AND PROSEARCH

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THE death of our elected president, Dr. Richard Sweet, has affected all of us with a profound sense of loss of one who had attracted both warm admiration and deep respect during his life and his notable career in surgery. Yet, as we salute him gravely in his passing, we nevertheless have cause for rejoicing also, in that we were for so long the beneficiaries of his talents, his friendship, his counsel, and his guidance. These are enduring testaments to the man which transcend the immediate moments of grief.

So it comes about that I, who was elected your Vice-President, must appear in his stead. I should like to express my gratitude to you for the distinction you conferred upon me by electing me your Vice-President at the meeting of the Association last year. Many in this audience deserve this honor more, but there are none, I am sure, who value this expression of confidence more. I am deeply grateful to you all.

When I reviewed past Presidential addresses of this Association, I noticed that most of our Presidents have chosen a subject of philosophic or historic nature or have presented some aspect of thoracic surgery in which they have had some particular interest or experience. My remarks on this occasion will be in rather sharp contrast to this tradition.

With your permission, I propose, first, to present some reflections on the word "research"; next, to coin a new word; then to illustrate my definition of research by a limited factual example; and, finally, to point out a disturbing change in the position research occupies in our medical community today.

When we scrutinize the word "research" through the eyes of a lexicographer, it is obvious that the prefix "re" suggests backward or again. The implication of the word is, therefore, to search into the past or to take another look. It is apparent that we do not use this word in its derivative sense, for these days we tend to think of research as a looking forward into the unknown, a seeking for something that has never been discovered. If we desire to retain this implication of forwardness, we have at hand a very suitable and adequate prefix. It

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is "pro," the movement of "forth" or "out" from a position in the rear. Research, then, validly becomes "pro-search." If this seems awkward, we can substitute for the search component the Latin root "spectare" (to look), and then we are back on familiar ground with a word, "pro-spect," or, as we pronounce it, "prospect."

Having been raised in the Colorado mountains and actually having spent a year of my life drilling, blasting, and mucking in a hard-rock mine, I am at home with this word "prospect" and all its implications. In its construction it correctly implies that which the term "research" fails to do—the search for hidden treasure, be it gold or knowledge.

Let me make it clear at the outset that I am not a medical prospector. I am not about to reveal the discovery of a Surgical Bonanza or a Lost Dutchman's gold mine to members of this Society. But, as many a prospector would do, I have searched backward and taken a second look into the great Thoracic Mine.

In a remote tunnel I found color in the neglected ore, and my samples have assayed satisfactorily. I have not worked this pocket exhaustively. I certainly did not discover it. But I did find, gentlemen, a very disturbing fact. Other people, primarily neurologic surgeons, are already at work in this field, and they may call us "claim jumpers."

THE THORACIC OUTLET COMPRESSION SYNDROMES

May I describe to you, then, this remote pocket, called the "thoracic outlet," with its compression syndromes and the surgical treatment which such syndromes require.

I hope you will allow me to call this investigation "research," in the ancient meaning of the word, and to use it as evidence in the re-staking of our legitimate claims to these problems.

This relatively new term, "thoracic outlet compression syndrome," first used by Rob and Standeven[1] in 1958, describes all the long-recognized syndromes which result from compression of the neurovascular structures supplying the upper extremity. These conditions previously had been known variously as the scalenus anticus, costoclavicular, cervical rib, hyperabduction, and shoulder-arm syndromes. The preference for the term, "thoracic outlet compression syndromes," on this occasion is obvious. However, the term in fact is a better and more descriptive phrase than some of the older ones. Although patients with these syndromes have not been the concern of thoracic surgeons in the past, surgical conditions involving this anatomic area are legitimately the province of thoracic surgeons. Actually, thoracic surgeons, because of their familiarity with the anatomic aspects involved and their experience with vascular lesions, should be particularly qualified to deal with the syndromes in question.

I must admit, however, that I had not appreciated that surgical diseases in this particular area might be a problem for thoracic surgeons until one of my neurologist friends told me that he was not satisfied with the results being accomplished by sectioning of the scalenus anticus muscle and removal of cervical

ribs. He asked if there might not be some other surgical procedure which would more adequately decompress neurovascular structures in this area. I suggested resection of the entire first rib. We carried out the procedure in a few cases and it was successful. But, as usually happens when one believes he has come upon something new and original, search of the literature showed me that this operation had been suggested and performed by Murphy,[2] Telford and Stopford,[3] and by Brintnall and associates.[4] However, it has not received the attention it deserves.

After review of the anatomic aspects of the region traversed by the subclavian and axillary vessels and the brachial plexus, it is not surprising that symptoms of compression occur in this general area; it is only surprising that they do not occur more frequently. These neurovascular structures must pass through a series of naturally occurring, narrow, rigid spaces in which only a slight anatomic variation can easily produce pressure or angulation. Although no single factor can explain the variety of symptoms which may occur in these thoracic outlet syndromes, it seems obvious that, in most instances, neurovascular compression results from loss of tone of the suspensory muscles of the shoulder girdle, with sagging of the shoulder, and additional decrease of the already narrow anatomic bottlenecks in the thoracic outlet.

The presence of a congenital anomaly, such as a cervical rib or an abnormal first rib which occupies space and distorts the normal anatomic configuration of the region, predisposes to symptoms. Occupations such as painting or repairing cars, which involve the use of unusual postures requiring a marked degree of hyperabduction, or occupations which involve heavy lifting with pulling down of the shoulder girdle, may be important factors in the genesis of these syndromes in some cases.

Occasionally, excessive formation of callus or deformity of the clavicle incident to a fracture of this bone may narrow the costoclavicular space and result in manifestations of neurovascular compression. However, the fact that neurovascular compression syndromes involving the thoracic outlet occur most commonly in middle-aged persons, and particularly in women, indicates clearly that sagging of the shoulder girdle is the major factor.

The symptoms of the thoracic outlet compression syndromes vary greatly, depending upon the nerve or vessel compressed and the point at which compression occurs. They may be primarily neurologic or vascular; if they are vascular, they may be either arterial or venous in origin. Combinations of both neurologic and vascular symptoms are common. Not too long ago it was generally believed that compression of the elements of the brachial plexus in this cervicobrachial area was rather common, and that the compression could be relieved by sectioning of the scalenus anticus muscle. In our own experience, about 60 per cent of patients have not been relieved by scalenus-anticus operations, and we now believe that neurologic symptoms caused by compression of the brachial plexus in this particular area are not so common as was once believed. Many of the disturbances previously attributed to compression of nerves by the scalenus anticus really are caused by protruded intervertebral disks in the cervical area, spondylitis and carpal-tunnel syndromes. This emphasizes that an extremely careful

neurologic examination should be carried out before neurologic symptoms are attributed to compression of the brachial plexus in the thoracic outlet.

Neurologic symptoms caused by compression of the thoracic outlet are pain, usually segmental in distribution, accompanied by paresthesia, numbness, and motor weakness. The objective findings are sensory loss and muscular atrophy. When present, muscular weakness and atrophy generally involve the muscles of the hand and forearm.

Arterial insufficiency is manifested by pain which is diffuse in distribution, and by coldness, weakness, and easy fatigability of the extremity. Pulsations of the peripheral arteries are diminished or absent, a phenomenon which may be influenced by certain positions or maneuvers. When the condition is advanced, pale, blanched fingers or even ulceration and gangrene may be seen. Occasionally, a unilateral type of Raynaud's phenomenon may occur.

Venous obstruction is manifested by an aching, tired limb, swelling, cyanosis, edema of the arm, and evidence of distended collateral veins around the shoulder and upper part of the chest.

Diagnosis.—Any patient who complains of any of the signs or symptoms just described should have the benefit of investigation for the possible presence of neurovascular compression in the thoracic outlet. The history should be evaluated, particularly in respect to the onset of symptoms. It should be ascertained whether the symptoms are related to some injury or unusual physical activity or to occupation, and whether they are aggravated by any particular movements or position. Physical examination should include particular attention to posture. Cervicodorsal kyphosis or scoliosis and sagging of the shoulders are very significant signs. The supraclavicular fossa should be examined for the presence of a cervical rib or post-stenotic dilatation or aneurysm of the subclavian artery. A systolic bruit commonly will be heard in this region if the artery is compressed. A thorough neurologic examination should be conducted to determine whether sensory or motor impairment is present and to detect evidence of muscular atrophy, should such be present. The vascular status of the extremity is determined, with the use of all the various tests available, including the Adson, Allen, costoclavicular, and hyperabduction maneuvers. Angiographic studies of the patients would be interesting, and may be used frequently in the future. Thus far we have not found these studies necessary to the diagnosis of these problems.

Roentgenographic examinations are extremely important in searching for evidence of cervical rib, anomalies of the first rib, prominent transverse processes of the cervical vertebrae, bony exostosis and abnormalities of the clavicles.

Although almost one per cent of all persons have cervical ribs or anomalies of the first rib, it should be emphasized that the presence of a congenital or developmental anomaly in this area is not necessary for neurovascular compression to occur. Two of the past Presidents of this Association, Dr. Alton Ochsner and Dr. Michael De Bakey,[5] pointed out in 1935 that typical scalenus-anticus syndromes could occur in the absence of cervical ribs or other congenital anomalies.

It does not seem necessary to me to attempt to distinguish all the different syndromes that have been ascribed to compression of neurovascular structures in the thoracic outlet. Such syndromes have a common cause and, I believe, a common treatment. Location of the exact site of compression is not of too great importance, since a well-conceived and executed decompressive operation will relieve all instances of compression. It should be recognized, however, that, although the diagnosis of vascular compression in this area is relatively easy, the differential diagnosis between neurologic disorders of the upper extremity may be extremely difficult.

Treatment.—Since sagging of the shoulder girdle, common among the middle-aged, is a major etiologic factor in many cases of compression of the thoracic outlet, it is reasonable to treat less severe instances by physiotherapeutic measures designed to improve posture and to strengthen the muscles which support the shoulder girdle. Some authorities estimate that about 70 per cent of patients can be treated effectively in this manner. However, surgical decompression of the site of pressure should not be delayed when neurologic evidence of muscular weakness or atrophy has developed or when patients have vascular compression which is complicated by post-stenotic dilatation of the artery or vascular insufficiency or obstruction.

Historical Aspects.—A brief review of some historical aspects of the development of the surgical treatment of this condition may be of some interest. Perhaps the first operation for this syndrome was performed by Coote[6] in 1861. In his case, post-stenotic aneurysmal dilatation of the subclavian artery had resulted from pressure on the vessel exerted by an exostosis of the first thoracic rib. Resection of this exostostic process gave a good result. John B. Murphy[2] was the first to resect a cervical rib that had produced a subclavian aneurysm. This was in 1905.

Halsted[7] was much interested in the problems presented by cervical ribs. He reviewed a series of 716 patients who had cervical ribs and noted that approximately 35 per cent also had vascular symptoms. In 27 cases there was "an enlargement, fusiform, aneurysmal or cylindrical" of the subclavian artery just distal to the cervical rib, and disturbance of circulation was severe, 6 patients having gangrene of the fingers. The interest of Halsted[7] was provoked by this observation, and he began to study experimentally the phenomenon of post-stenotic dilatation of blood vessels. His student and our past President, Dr. Emile Holman,[8] made this same problem the subject of his Presidential address to this Association a few years ago.

In 1920, Law[9] called attention to the fact that patients actually could have the typical syndromes of cervical rib in the absence of cervical ribs. The possible role of the anterior scalenus muscle in patients who have the cervical rib syndrome was first suggested by Adson and Coffey[10] in 1927. The importance of the anterior scalenus muscle as a compressing factor was further developed by Naffziger and Grant,[11] and by Ochsner, Gage, and De Bakey[5] in 1935, and thus the scalenus-anticus syndrome became identified (Fig. 1).

Brickner in 1927[12] and Telford and his associate[3] in 1937 and again in 1948[13] pointed out that the first thoracic rib, rather than cervical ribs or the scalenus anticus muscle, could be responsible for compression of neurovascular structures in this region.

Falconer and Weddell[14] in 1943 called attention to the costoclavicular area as a site at which pinching of the neurovascular structures could occur in the absence of any abnormality involving the proximal anatomic area (Fig. 2).

In 1945 Wright[15] described the hyperabduction syndrome, and pointed out that the position of hyperabduction, maintained for considerable periods, either at work or during sleep, could cause compression of neurovascular structures, either at the site at which the vessels and nerves pass under the tendon of the pectoralis minor muscle or in the retroclavicular position between the clavicle and the first rib (Fig. 3).

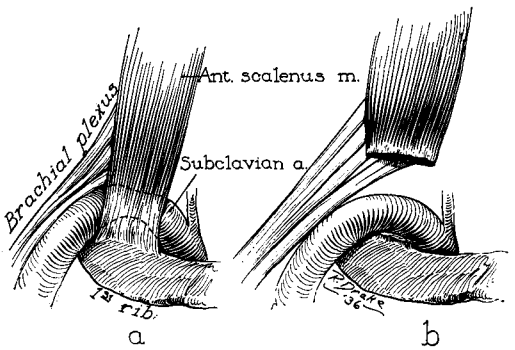

Fig. 1.—Compression of the subclavian artery by the scalenus anticus muscle. (Reproduced by permission of the copyright owners, from: Craig, W. McK.: Cervical rib and the scalenus-anticus syndrome, Ann. Surg. 105:556-563 [Apr.] 1937.)

As the various sites of angulation and compression have become recognized and identified, there has been a gradual evolution in the surgical treatment of these problems. The first efforts were directed at removal of a cervical rib. When it became apparent that similar syndromes could occur in the absence of cervical ribs, sectioning of the scalenus anticus muscle was widely favored. As it became obvious that this procedure was not always successful, other procedures, such as resection of a portion or all of the clavicle and division of the tendon of the minor pectoral muscle, were added to the surgeon's armamentarium.

Dr. Jere Lord, of New York City, who can very rightly be considered a leading authority on the surgical management of the compression syndromes in the thoracic outlet, strongly favors treating these lesions by exploring them anteriorly through an incision which will permit removal of a cervical rib when such is present, sectioning of the scalenus anticus muscle, total excision of the clavicle, and sectioning of the pectoralis minor tendon, the subclavian muscle and the costocoracoid membrane. However, using this approach he found that it was necessary to remove the entire clavicle in 30 of 51 patients if adequate decompression of the neurovascular structures was to be obtained. Although

the clavicle is one of the bones of the body which can be spared fairly readily, it is the only bony connection between the upper extremity and the trunk, so that removal of this bone must involve some degree of disability and considerable disfigurement. Since the syndromes under consideration occur in women in a high percentage of cases, the cosmetic factor is particularly significant. Falconer and Li[16] recently have advocated resection of the first thoracic rib from

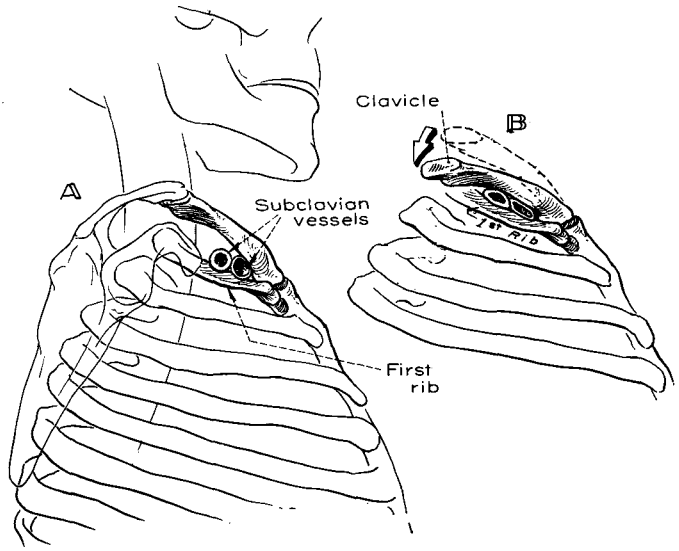

Fig. 2.—Compression of the subclavian vessels between the clavicle and first rib.

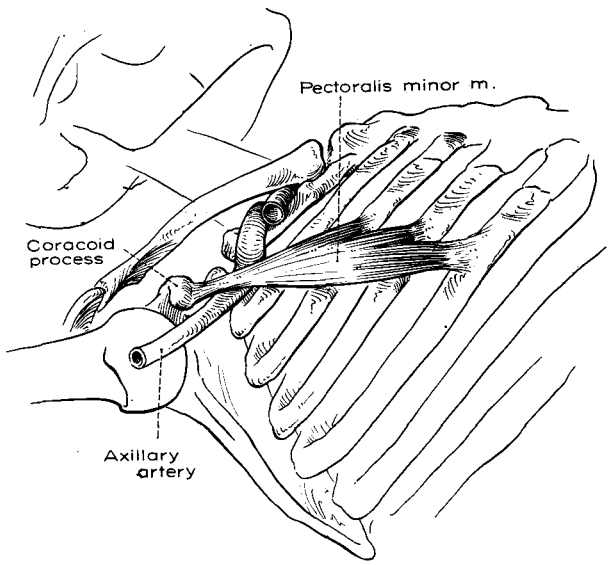

Fig. 3.—Compression of the subclavian vessels by hyperabduction.

a supraclavicular approach for the management of these disorders. That approach obviously is inadequate, and must involve infliction of considerable trauma to the nerves and vessels in the region.

The Contribution of Thoracic Surgery.—I believe that we thoracic surgeons have an opportunity to offer a much better surgical procedure for relief of syndromes of compression of the thoracic outlet than any of the foregoing, since it is possible for us to explore and to decompress the entire thoracic outlet by resection of the first rib, a technique which does not involve any disability or disfigurement.

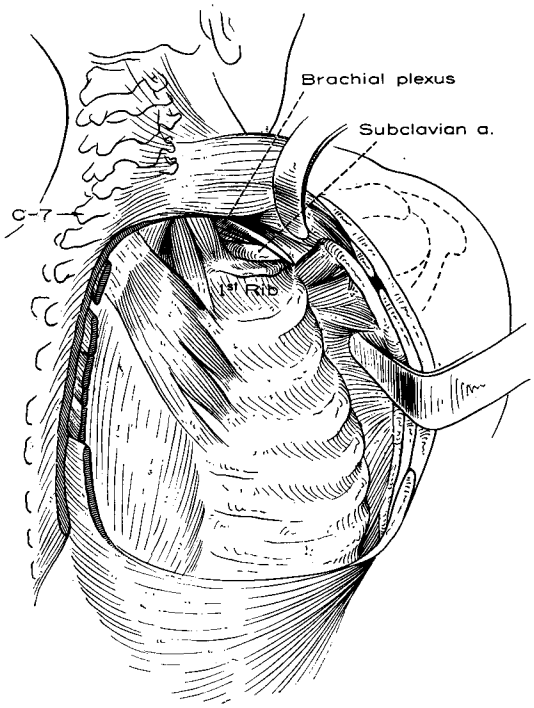

Fig. 4.—Surgical approach for resection of the first thoracic rib.

The technique will be demonstrated by a short movie strip. An incision identical with that one used for upper-stage thoracoplasties is made (Fig. 4). The entire first rib is removed. If a cervical rib is present, it can be removed easily through the same incision (Fig. 5). This very effectively decompresses the neurovascular structures in this region; the subclavian vessels and brachial plexus are well exposed. Although the ribs are resected subperiosteally to protect the adjacent structures during removal of the rib, as much periosteum as possible should be removed subsequently to prevent bony regeneration in the area. If sympathectomy affecting an upper extremity seems indicated, it can be performed readily through this same approach by resection of a short, posterior segment of the second thoracic rib. It would not be possible to perform resection of a subclavian aneurysm and grafting through this approach, but,

fortunately, these procedures rarely are necessary. Post-stenotic dilatation will regress remarkably after relief of compression of the subclavian artery. I am convinced that removal of a cervical rib and section of the scalenus anticus muscle alone do not provide adequate treatment in most cases of compression of the thoracic outlet. Resection of the first thoracic rib is essential for adequate decompression. Rosati and Lord[17] have written that removal of the first thoracic rib and cervical ribs from the posterior approach involves too much danger to the vessels and nerves in this area. Our experience as thoracic surgeons does not support this view. Many of us here have had considerable experience in removing the first rib safely in the performance of thoracoplasty for tuberculosis.

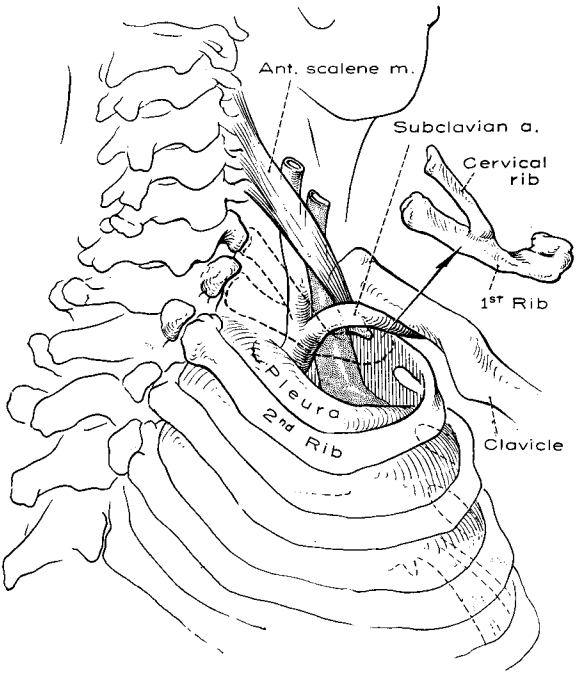

Fig. 5.—Resection of first thoracic rib and cervical rib.

My personal experience with this operation, as I indicated earlier, is rather meager. The neurosurgeons have seen most of these problems. I have operated upon 12 patients with compression of the thoracic outlet in the last 15 years. Ten were females; only 2 were males. Their ages ranged from 17 to 57 years. Six had a cervical rib or an anomaly of the first rib. Five had post-stenotic dilatation of the subclavian artery. Five had trophic changes or ulceration of the fingers caused by vascular insufficiency. Six of the 12 had some symptoms of neurovascular compression in the opposite extremity. One underwent a bilateral operation. Two others will almost certainly require an operation on the opposite side. Three had undergone some previous operation, such as sectioning of the scalenus anticus muscle or removal of a cervical rib, performed previously without benefit. There have been no postoperative complications. Most patients were out of the hospital in less than a week after operation. Eight patients have obtained an

excellent result, with complete relief of all symptoms. Two have obtained a good result, but have minor evidence of vascular insufficiency; 2 patients in whom symptoms of rather severe damage to nerves and blood vessels developed before the operation have continued to have some symptoms since surgical treatment.

I have chosen to discuss this subject here, first, because I am convinced that thoracic surgeons can make a very significant contribution to the management of these syndromes of compression of the thoracic outlet; second, because the study offers some evidence that it is still possible for surgeons to make worthwhile contributions to surgical progress without resorting to a modern research laboratory; and third, because this study is an example of what I have earlier defined as "research." In effect, I have researched an old problem rather than prospected a new one.

THE CURRENT FRENZY FOR RESEARCH

I believe that the distinction between "research" and "prosearch" or "prospect" which I propose has merit. We have been accustomed to think of "prospect" and "prospectors" in terms of searching for precious metals. However, prospecting for precious metals and prospecting for new medical knowledge really have much in common. After all, Nobel invented dynamite and from the proceeds of that compound he has endowed for us a prize in physiology and medicine. The gold and silver rushes of the past are quite comparable to the rush toward research which we are experiencing in medicine today. Unprepared, inexperienced tenderfeet armed with hope, a pickaxe, and a few sticks of dynamite went around the Horn, or across Death Valley, and to the Arctic Circle to search for mineral wealth. Today, men almost as ill prepared and with as few tools as the Forty-niners are taking part in the research rush. Men left their jobs, their families, their professions and their pulpits to participate in the gold rushes. Now students, physicians, and teachers neglect some of their other responsibilities to join in the research rush.

Gold fever and research fever seem to be almost identical in their effect upon men. The tenderfoot mineral prospector spent much time and effort digging up fool's gold without going to the trouble to have his ore assayed. I am afraid a good many medical prospectors are making the same mistake. The value of the discoveries of both mineral and medical prospectors can be determined only by careful assay. I hesitate to compare the sterile holes in the mountains made by mineral prospectors with certain medical endeavors undertaken in the name of research, but they do have similarities. Decency will not allow me to compare the registrars of mining claims with respected editors of medical journals; however, I should point out that both mineral and medical prospectors must have a place in which to register their discoveries because both are familiar with claim jumpers.

The unknown and the undiscovered haunt both the mineral and the medical prospector, whether he be professional or amateur, and there is glamor in the search.

Medical prospecting is exciting and challenging, and there are still treasures to be discovered. We should honor our true medical prospectors, and they are many, as they richly deserve. However, in my opinion, the search for new bonanzas should not interfere quite as much as it does with other matters of importance.

Prosearch in recent times has enlarged until we now tend to think of it in capital letters. It is a giant symbol which controls the main path to professional advancement, to promotion in the academic hierarchy, to prestige and to membership in restricted scientific societies. One consequence is that the superb clinical surgeon or surgical teacher may get little consideration if his bibliography is sparse. Acceptance of the bibliography as the standard of achievement perhaps in part is due to the difficulty of assessing clinical excellence or teaching ability, whereas it is easy to count, or if necessary weigh, an individual's publications. We have gone too far, I believe, in accepting as the principle standard of success the quantity of papers a person has written and the amount of prosearch he appears to have done. The result has been a tendency for young surgeons to write papers and do research projects not so much to increase knowledge as to improve their professional position. To me this has a most unfortunate influence on the true, sound education of surgeons.

But how can the ambitious and able young surgeon do otherwise than try to follow what appears to be the pattern for success he sees around him?

Barzun,[18] in his book, *The House of Intellect,* has commented, "The name of research has changed from a simple description to a term of honor, and the occupation itself has acquired an inherent sanctity, the quality of the work and its results are secondary. This is shown by the fantastic estimate placed upon research in our seats of learning. To do research is deemed nobler than to teach, the men whose names bring prestige to a university are those whose research has impressed others of equal research potential. For, I repeat, it is not necessary to discover if one 'produces,' production being defined as 'publication'."

It is quite obvious that much of what passes for prosearch is really a repetition of something someone else had done, with some minor variation of little consequence, and that, instead of being truly original, much so-called prosearch is unduly influenced by the latest fads or is work done in certain areas simply because everyone else is doing it. Prosearch once started in a given direction too often, because of the lack of imagination or courage of its instigator, tends to elaborate indefinitely on a single, narrow subject without assessment of the real value of the subject or accomplishment of the primary objective. It is also unfortunately true that since prosearch has become so widely favored and opportunities for prosearch so easy there is a real danger that good, valuable prosearch will be lost in the welter of mediocre prosearch which is flooding scientific literature.

THE TYRANNY OF RESEARCH

I wonder if those of us in surgery today can possibly cope adequately with all the burdens we are trying to assume. We have our own administrative

duties, our responsibility for teaching and patient care, and, in addition, since prestige and position demand it, we must do prosearch. For most men this is an impossible task. Tuve[19] well said, "The professor's life now-a-days is a rat race of busy work and activity, managing contracts and projects, guiding teams of assistants, bossing crews of technicians, making numerous trips, sitting on committees for government agencies, and engaging in all the other distractions necessary to keep the whole frenetic business from collapse."

This may be exaggerated, but, judging on the basis of what I see in my own institution, it is not far from the truth. Obviously, such a life does not leave much time or energy for teaching or patient care. It can be argued that the stimulation of a prosearch atmosphere more than compensates for the loss of time and attention devoted to teaching and patient care, but I am not convinced this is true.

I have wondered at times just who does still have time to assume the responsibility of teaching young surgeons surgical judgment and surgical technique and how to take care of sick people. These skills do not come automatically, without the expenditure of time or effort. They can be learned in the hard school of experience, I suppose, but it is easier and better for both young surgeon and patient if adequate guidance and supervision and training in both judgment and technical skills are provided before the young surgeon takes on too heavy a burden of surgical responsibility.

In some instances I fear the young surgeon does not have much opportunity to learn from his chief because his chief is so harassed by his administrative duties and his other activities that he cannot appear in the wards or in the operating room as often as would be desirable. A professor of surgery in a large medical center recently told me he could not get into an operating room himself more than once a month. How can he be considered a surgical teacher? Too often the junior members of the teaching faculty are not able to devote their best energies to teaching young surgeons because they know that other considerations shape their destinies more importantly than teaching efforts. Who is left to guide and supervise the young surgeon, to give him the surgical wisdom and judgment he needs, to teach the technical skills that make the operations easier and safer, and the art and humanity of taking care of sick people?

In spite of all I have said, I am not against prosearch. I fully realize that the great advances in surgery are the direct results of prosearch, and that the best means we have with which to increase surgical knowledge and skill is prosearch. I know that without prosearch there would be no progress and that clinical surgery would stagnate. The protection and advancement of research are important functions and the great opportunity of surgery. Those who have the talents for prosearch should be given every facility and opportunity and the most valuable ingredient of all, time in which to do prosearch. However, it must be realized, as Dr. Gibbon[20] pointed out in his Presidential address last year, that not everyone, actually only a few individuals, have the imagination, the knowledge, and the patience to do really good, productive prosearch. It has been my impression that it is almost impossible to keep a person who truly has within him the ability to do prosearch from doing good prosearch. On the other

hand, it is impossible for a person without natural talents for prosearch to do work which will justify his time and efforts. It can be granted without question that prosearch experience is of great value to the individual performing it, even if he does not make a major scientific contribution. However, no one ever had time to do everything, and most young surgeons could spend their time and effort to better advantage developing the judgment and skills for using prosearch knowledge provided by others, rather than in trying ineffectively to do prosearch themselves. My plea is that we restore the proper values to the relative importance of patient care, teaching, and prosearch in our medical centers. I would not reduce the place that prosearch has earned, but I would restore the status of patient care and teaching to an equal position.

In the past two decades, the medical profession and surgery in particular have participated in a series of remarkable scientific advances that have prolonged the lives and vastly improved the health of the American public. Members of this Association have contributed very importantly to much of the progress that has been made. This is a fact of which we can all be proud. However, in the midst of this great scientific progress it is a source of dismay and concern to observe that the medical profession and surgeons are becoming the target of an increasing number of complaints. Perhaps some of the complaints are not justified. Undoubtedly many are. In any event, these complaints cannot be ignored. Not all complaints can be traced to a single cause, but I believe some may have their origin in the fact that in many of our medical centers and teaching hospitals the atmosphere and interest have become so strongly oriented toward prosearch rather than teaching and patient care that there has been a deterioration in the quality of teaching and patient care and a serious disruption of beneficial patient-physician relationships. Patients want and demand all the benefits prosearch can bring them, of course, but even more importantly a sick person wants and deserves the sympathetic attention and services of a physician who will make that person's problems, and not the physician's administrative and prosearch activity, his primary concern.

I do not like to be critical of prosearch because I fully realize its value, but as Berrill[21] has said, "It is a hard way of progress but when conditions become intolerable from an excess of anything a rebellion breaks out." Rebellion, Mr. Barrett, is not unknown to both our peoples. You dealt with Charles the First. Abruptly, I might add. And we had rather protracted dealings with a certain George. I believe we have an excessive emphasis on prosearch today. I think we have lost that proper balance in the relative importance of patient care, teaching, prosearch, and administration which is essential to sound surgical progress and to the training and development of surgeons. I hope that balance can be restored without requiring a rebellion. A Magna Carta may be the solution. Our guest might be able to suggest by what means Rex Research could be persuaded to affix his seal.

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