PROFESSIONAL ENGINEERING IN WASHINGTON

The First Fifty Years

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DEDICATION

This volume is dedicated to the thousands of people who made the extra effort to become registered Professional Engineers and/or Professional Land Surveyors in the State of Washington during the fifty years from 1935 to 1985.

INTRODUCTION

Shortly Before I retired February 28,1985, John Lansberry suggested that I write a history of the Board of Registration for Professional Engineers and Land Surveyors. Since health conditions were forcing me into retirement I refused to give serious consideration to the idea. But John was persistent. In subsequent conversations he persuaded me that such a history needed to be preserved and that I was the person to write it.

Thus began the task. During my eighteen and one half years of being Executive Secretary to the Board, I had had opportunities to read the minutes of all board activities prior to August 1,1967 (when I began working for the Board). In addition Mr. Shain (my predecessor) had "filled me in" on some of the major incidents that had happened during his five years as Executive Secretary plus his general knowledge of happenings since the law was first passed in 1935. I had very limited meetings with General Dohm but since Mrs. Ellen James had worked in the Board's office most of the time since its beginning she was able to relate many of the activities of the early years of the Board and its members. I had become familiar with the records and correspondence in the Board's official files during my tenure and had the opportunity to research those files as I started to write this book.

Since there is a paucity of accurate data in the Board's files regarding financial matters, I was forced to spend many hours at the State Library looking up all of the state's budgets from 1935 and onward. Because the Board's budget was always included in with the Department of Licensing it was not easy to determine accurate figures, especially before the early 1960's. Different legislatures and administrations listed expenses for salaries, travel, overhead, etc. in a variety of ways so that it is impossible to delineate the actual expenses of the Board for many of the years.

It was my intention originally to give credit to the people who assisted the Board in their various activities during "the first fifty years." These tasks included: helping in the preparing of literally hundreds of examinations in the engineering disci-

plines in which the Board members lacked expertise; assisting in grading the tens of thousands of applicants' examination papers; proctoring dozens of examinations at sites at the University of Washington and Seattle Pacific University in Seattle, Washington State University at Pullman, Gonzaga University at Spokane, Walla Walla College at Walla Walla, and the community college at Richland. As the number of candidates increased in the seventies and eighties various buildings at the Seattle Center were used. As I began to try to list the names of all these people it became obvious that they would number in the hundreds and that it was going to be impossible to remember all of their names. Therefore I have chosen to name none. But to each one I wish to express my personal thanks, as well as the Board's appreciation, for their contributions in assisting over twenty thousand persons in their attempts to become Professional Engineers and Land Surveyors during the "first fifty years" in the State of Washington.

PREFACE

Society has, since prehistoric times, always demanded responsible actions from persons claiming special technical knowledge and skills who performed service for their fellow man. As early as 1200 B.C. the code of Hammurabi in Section 7, item 215 through 240 dictates that any person who builds a house or structure for someone else for hire is responsible for the usability of that structure. Very severe penalties were assessed by King Hammurabi of the Sumerian-Babylonian Empire. He demanded that if the owners of the house were killed because of faulty construction, then the builder must forfeit his own life. Any damage done to the owner or the general public would have to be repaid in kind by the builder.

Since that time in practically every country and culture of the world, similar regulations have been placed by the authorities on those persons assuming professional abilities. However, the first professional registration noted in history was by King Roger of Normandy in 1140 A.D. when he was called upon to designate the physicians of his day who would be allowed to practice medicine in his country. Not having the personal technical knowledge he decreed that all physicians who would be able to practice in his kingdom must first pass the test of being approved by their peers. Thus, the first registration list of the medical profession was established.

Early after the Civil War both physicians and lawyers were specifically limited by the federal

government and various states as to their ability to practice for hire. However, it was the dentists who in 1883 established the first state boards for testing and registering dentists in the United States of America.

In the state of Washington attorneys and physicians were given some protection and limitations by the Washington Territorial Government. However, it remained for the pharmacists to set up the first state board of examiners in 1891.

The practice of engineering was first regulated as a profession in 1907 in the state of Wyoming. It occurred when the state engineer, Clarence P. Johnston, became very concerned when he noticed the terrible errors being made in maps that were being prepared by lawyers, land brokers, insurance agents, notaries, etc. who were filing water rights as required at that time by Wyoming law. He convinced the Wyoming legislature to pass a bill requiring the registration of all engineers and land surveyors. This law required that all maps, surveys and drawings for engineering projects must be signed by persons who had been previously accepted and certified by a board of engineers selected by the governor for that purpose. The state of Louisiana followed suit with similar legislation the very next year.

Before World War I, several other states had passed some kind of controlling legislation setting up engineering examination boards to certify to the state that persons passing their scrutiny would be identified as capable of performing engineering and land surveying services for the citizens of their states.

Registration came to a halt during World War I, but afterwards many states set up registration processes. Our neighboring state of Oregon began registering engineers in 1919, and the registration of architects was established in Washington the same year.

Needless to say, some engineers living in Washington, but desiring to practice in Oregon, became registered in our neighboring state and thus the first professional engineer in the state of Washington came in through the "back door" by being registered in the state of Oregon.

As is still the case, engineers and land surveyors in Washington argued about the need of registration for many years. Most of the leadership of the founders and technical societies were in favor of registration while a large segment of the rank and file practitioners of engineering and land surveying was skeptical of what it would do to them personally. Their arguments then were much like those heard today. Such as "registration doesn't make a person a better engineer" and "I don't want the government telling me how to run my business".

Although the first school to teach engineering was established in Troy, New York in 1824 as Renssalaer Polytechnic Institute and engineering was considered to be a new fast growing profession, those practicing engineering and land surveying were not sure then, as some are not thoroughly convinced even today, that engineering was to be considered a learned profession. In fact this was

finally declared by the United States Supreme Court as recently as 1978. Still a large number of the practitioners after World War I were people who had "come up through the ranks" in some kind of apprenticeship program rather than through the formal education process. The battle still goes on today with many registration boards and their registrants over whether or not a college degree in engineering should be the basic requirement for registration. At the present time only a half dozen states required this as the basic requirement for engineering registration.

Even today less than one-third of all of the people have either a degree in engineering or have been hired and given the title of some kind of an engineer have seen fit to register with the Washington State Board of Examiners.

Much of this is the direct result of the fact that the Washington law exempts most of the people who work for industry and government from being registered. Since there is no legal requirement to push these people into registration, the very low figure of one out of three actually goes through the registration process.

Only a few industries and government agencies require registration of their employees and then usually only as a matter of promotion. Since registration is not required and there is very little enhancement in it, the majority of people who might qualify for registration never even bother to apply. Only when these types of engineers reach the retirement age or are seeking what they

believe to be the "greener grass" of being in business for themselves, do they begin to inquire about becoming registered.

In answer to the often heard argument that registration does not make you a better engineer, it has been my observation over many years that though it may not improve the quality of the engineering produced, it does make the engineer much more cautious in checking and double checking his calculations and design work.

Because the law says that all engineering drawings must be dated, signed, and stamped by the engineer doing the work, it also holds this engineer responsible legally for any detrimental effects his designs might cause the public. This in turn causes the design engineer to be much more careful about the work that he performs after registration than ever crosses his mind before registration. It is absolutely true that registration does protect the public, and the public is certainly best served when engineers identify their work by placing their stamp and their signature on all of their design drawings.

Perhaps the best motivation for an engineer to become registered is simply personal pride in one's self. I remember a friend of mine many years ago who worked for a private consultant and thus did not have to be registered. When I was gently goading him as to why he didn't go ahead and get his license, his explanation was that he didn't need it. He'd been out of school for 10-12 years and felt that it would be a very definite burden to have to

go back, review and take the required written examination. I reminded him that he had always impressed me as being the kind of person who wanted to be the very best that he could be. He had a very competitive spirit in high school and college and was always in the higher percentages of his various classes. I suggested that this was just the top rung of the ladder that he needed to climb in order to prove to himself and to the rest of the world that he had done the very best possible as an engineer. I wasn't too surprised a short time later to notice his application for registration. He was approved by the board to sit for the exams and subsequently did sit for the two day written examination. It would be almost impossible to describe his reaction when he found out that he had passed the exam and the board had given him a certificate as a Professional Engineer. He was pleased with himself in that he had done well on the written examination, and the joy that comes from knowing that he had done the best that he could do. He had arrived at the top of his and everyone else's expectations--it was wonderful to see.

This may well be the answer to the question, "Why should I become registered?

CHAPTER 1

THE FIRST ACT OF 1935

Early in 1935 House Bill 238 was considered by the Washington State Legislature. The bill described itself as "an act relating to and regulating the practice of engineering and land surveying". The first bill included civil, electrical, mechanical, structural, and/or hydraulic engineering and land surveying.

There were the usual exemptions. Engineers who worked for the federal government, engineers who worked in industry, engineers who worked for other registered engineers, and of course, registered architects were all exempted from registration. An unusual exemption was "A member of the American Institute of Mining and Metallurgical Engineers". I have never been able to find out the purpose or reason why membership in this particular technical society should have been exempt from the Registration Act. Apparently they were strong enough politically to influence the legislature that they needed to be excluded from the process of registration.

The bill stated, "The Director of Licenses shall have the power to supply and approve applications, set times and places of examinations, and take care of all administrative operations".

Another interesting aspect of this first engineering bill was that all applicants had to "speak,

read, and write the English language". Even though this restriction was removed in later enactments, those who have had to examine and evaluate applications and grade examination papers since, would probably like to see that statement in force. The bill further stated that all applications "accompanied by a certified bank check, or a United States Post Office money order for the sum of fifteen dollars, had to be filed with the State Treasurer, who would bank the money and transmit the applications to the Director of Licensing". The requirement that, in order to have the money properly banked in a timely manner, it had to be sent to the State Treasurer is also interesting. But I can't imagine the State Treasurer of today having to handle all of the thousands of applications that come in each year for engineers and land surveyors.

The Act also made provisions for the annual renewal of licenses of the registrants. The annual fee was three dollars per year and again had to be remitted directly to the State Treasurer by January of each year.

What later became the board members were, in this first Act, referred to as the 5 member committee. They were appointed by the governor. Each member had to be a citizen of the United States, a resident of the State for five years previously and been engaged in the practice of engineering for at least seven years. They received ten dollars per day for each day spent in actual duties plus their actual travel expenses. They were empowered by the Act to prepare and grade all examinations that were to be given prior to registering the applicants. However, the bill indicated

that the Department of Licenses would be responsible for the processing and approving of the applications as to their form rather than the 5 member committee.

The bill also provided for a board consisting of the Director of Licensing and two persons appointed by the governor, not necessarily from among the same five members of the examination committee. This board was empowered to revoke the certificate of any registrant found guilty of fraud or deceit or any gross negligence, incompetency, or misconduct. In actual practice the five board members who did the preparation and grading of examinations also acted as the disciplinary committee. But the fact remained that persons other than these five, acting in concert with the Director of

In September of 1967, the only meeting of the three Executive Secretaries took place. Above from left to right: Clarence Shain (1962-1967), Edward Dohm (1935-1962), and Quentin Gateley (1967-1985).

Licensing, could also act as a disciplinary board.

All applicants who had the qualifications of having eight years of a combination of engineering experience and/or education, if found to be acceptable by the examining board, were to be grandfathered in to registration status without having to take any further examinations. Qualified applicants had until December 1935 to get their applications to the board to be considered under the grandfather portion of the Act.

The board was inundated by hundreds of applications. The number was large because each applicant could apply for registration in one or more of the branches stipulated in the Act. For instance, most civil engineers of that date considered themselves to be well-versed in land surveying, and the majority filed for a license in both civil engineering and land surveying. It was also not unusual for a civil engineer to have engineering expertise in either structural or hydraulic engineering. Many applied for registration for one or both of these fields.

Since the original board members felt very keenly about their responsibility to evaluate all of these applications, each of the five board members evaluated each of the applications. They were pretty hard on those applicants who had asked for multiple registrations. It was not uncommon for all except just the civil to be denied. A number of complaints and appeals followed, which in turn led to the board requesting and receiving additional experience records from each applicant.

All of these procedures were very time consuming and caused the board's work of evaluating the original applications to go well into the mid-year of 1936. The records indicate that, although several applicants rather ambitiously asked for registration in all six branches, only one man was actually granted this number of multiple registrations. His name was Luther E. Gregory and, appropriately enough, he received license number six.

After all the applications were in and the many appeals answered and adjustments made, the board had licensed 1,437 applicants under the Grandfather Act the first year.

The 1935 Engineering Registration Act also made provision for engineers who wished to reserve their eligibility for being licensed without examination under the Grandfather Act to make application to the board with the stipulation that they did not wish registration at that time, but, merely wished to qualify for sometime in the future. The only advantage for the applicant was that they would pay the fifteen dollar application fee but would not pay the ten dollar certificate fee until any time in the future that they wished to become registered. Nearly one hundred engineers followed this procedure and were partially registered as "qualified for registration as engineers". They were assigned a "Q" number and, in fact, many of them did pay their certificate fee and become registered over the years. It is amazing to me that many never exercised this privilege and

other persons waited many years before they finally decided to pay the ten dollars and get their certificate.

The Act provided for engineers to be registered by means of reciprocity, because of prior registration in some other state. The first to avail himself of this privilege was Walter Brenton, Number 1,183, who was registered as an electrical engineer by reciprocity with the state of Oregon. Shortly afterwards Edwin F. Costal receive registration Number 1,381 as a land surveyor by reciprocity also with the state of Oregon.

No records seem to be available that show the actual income and expenditures of the board the first year or year and a half of operation, but judging from the application fee and the certificate fee paid by the number of applicants and those who were finally registered, income must have been in excess of thirty-five thousand dollars. Judging also from the performance in later years, expenditures were probably under ten thousand dollars per year. The surplus seems to have been lost in the general fund of the Department of Licensing. Information gathered from the biennial reports of the state budget for 1936-1938 indicate that the board had income of about ten thousand dollars per year and expenditures of something less than six thousand dollars. During this period of time, the board had one clerical employee who spent approximately five hours a day working on engineering board business. She was making ninety-five dollars per month. As noted above, the board members themselves were granted ten dollars per day for each

day that they spent on board business.

The only one who worked with any degree of regularity was Edward Dohm, who had been chosen to act as secretary for the board. A Frances Williams is listed in the board budget as being paid one hundred twenty-five dollars a month for lettering the certificates. It is obvious that she did not work every month or even one full month at a time on just lettering certificates. This seems to have been a position within the Department of Licensing that lettered not only the engineering certificates, but other professional boards under the jurisdiction of the Department of Licensing as well.

In the proposed budget of 1937 to 1939 the board asked for a full-time clerk at one hundred dollars per month. This position was never given to the board.

There were no expenses or duties for written examinations during 1936 since all of the 1,435 registrants received their license either by the Grandfather Act or reciprocity from other states. Beginning in 1937 the board was faced with preparing and grading sets of examinations for the five branches of engineering and land surveying.

During this period twelve people passed the written examination. The first registrant to receive a license by written examination was George E. Lamb who received license Number 1,470. Only sixty-two licenses were issued during 1937, most of which were by reciprocity from other states. The number dropped to a low of thirty-five

in 1938, and then from sixty-two in 1939 to a low of forty-four in 1943. When World War II was over, the number jumped into the hundreds with 570 being registered during 1947.

With World War II over and many thousands of servicemen returning to civilian jobs and to the educational systems, it was easy to foresee that registration as an engineer was destined to increase very rapidly.

CHAPTER 2

THE ACT OF 1947

The war effort of World War II brought many scientific breakthroughs and dynamic changes in the registration procedure. Various technical societies (The American Society of Civil Engineers, the American Society of Mechanical Engineers, The American Society of Chemical Engineers, The American Institute of Electrical Engineers, and the Institute of Electrical and Electronic Engineers), supported by the newly formed Washington Society of Professional Engineers, encouraged the legislature to make major changes in the 1935 Act.

These changes were brought to the legislature in House Bill No. 42 by Senator William D. Shannon who had received registration Number 141 under the 1935 Act. This bill passed the House and the Senate on March 9, 1947. It was signed into law by the governor on March 22, 1947 with some notable vetoes.

The engineers who had pushed for the new Act recognized the need for expanding the duties and strengthening the authority of the Registration Board and voluntarily agreed to increase their fees accordingly. They convinced the legislature to take many other responsibilities given to the Director of Licensing in the 1935 Act and give them directly to the board. These engineers insisted on an aggressive enforcement program against unlicensed and incompetent persons

then offering engineering services to the public.

Among these major changes were the responsibility of control over applications and examinations, the issuance of the certificates, and all disciplinary actions. It was realized that to accomplish this the board would have to be autonomous in these fields. This would mean that the board should employ its own staff persons and control its own finances. A Professional Engineers account was set up with the State Treasurer. As was to be expected, the governor (at the request of the Department of Licensing) vetoed a great number of these provisions.

One of the notable changes in the 1947 Act was the establishment of the title "a Professional Engineer". This title was meant to cover the broad range of engineering disciplines proliferating in education and industry. The major thought behind this new title was that the engineer, like the physician, though needing to be broadly educated and trained in engineering, would practice only in areas in which he had proven competence.

Then, as today, there were many differing opinions concerning the "civil engineer doing mechanical engineering or electrical engineers doing chemical engineering". The practitioners in private practice knew there was a great deal of overlapping in the various branches of engineering just as there were great differences within even a major branch such as civil engineering. Competency needed to be determined rather than just labeling various branches of engineering as

had been done in the 1935 Act.

Other states had already crossed this bridge as the National Council of Engineering Examiners had already included a legal definition of engineering in their model laws which was used in the majority of cases for the 1947 Act.

Another legal definition that was included in the new Act was the establishment of the intermediate status of "Engineer in Training". Again debates occurred. Most of the academicians said that one of their graduates was already an engineer by virtue of the fact that he possessed a degree from their institution. However, the engineer in private practice had learned over the years that knowledge gained from practical training was necessary before a graduate engineer could actually take his place alongside the professional engineer. Thus, the engineers in private practice insisted on a title that would proclaim to the public that the graduate engineer had not received professional status but certainly was to be entitled to the term of Engineer in Training.

Many other changes were made in the 1947 Act. For instance, applicants now had to take two days (16 hours) of written examinations. They had to have eight years experience (approved by the board) before they could sit for these examinations (six years of combined education and experience were required for the land surveyor). All engineering education was to be approved by the Board. This requirement included even the curriculum at schools that granted baccalaureate degrees. The

law gave the board the authority to give credit for one additional year for any kind of graduate work in engineering education and those academicians who asked for registration were granted two additional years credit for teaching engineering subjects. (One year was allowed for land surveying subjects).

Qualifications for board members also were changed. Instead of the seven years experience required under the 1935 Act, they were required to have twelve years of increasing professional experience and the board's compensation for time spent in meetings and examinations was increased from ten dollars per day to twenty-five dollars per day.

Examination fees and application fees along with certificate fees were also set by the new Act. Twenty-five dollars was required for the professional engineer application examination and certificate. Fifteen dollars was required for land surveyors and a ten dollar application and examination fee was required for Engineers in Training. These fees were split as follows. For the professional engineer fifteen dollars was required with his application and, after passing the examination, an additional ten dollars was required for the certificate. The land surveyor was to be charged only fifteen dollars and this charge included the application, the examinations, and the certificate. For the newly defined Engineer in Training, the original ten dollar application fee included taking the first eight hour examination in the fundamentals of engineering. An additional fifteen dollars was later required for his application and examination in the

professional field. No certificate fee was required for the Engineer in Training. Those engineers who might require registration from other states by reciprocity had to pay a fifteen dollar application fee only. Renewal fees were set at five dollars per year for engineers and land surveyors. No renewal fee was required for the Engineer in Training.

All registrants under the 1935 Act who had maintained a valid license were automatically reregistered under the 1947 Act. All other branches and practices of any form of engineering were now affected under the new Act. As with the 1935 Act, all violations were considered to be misdemeanors.

There were a number of exemptions in the new Act:

1. All legally recognized professions or trades.

2. All out of state engineers who were registered in their respective states could practice in the state of Washington for a maximum of thirty days upon giving notice to the board.

3. Out of state registrants or those recently acquiring residence in the state of Washington who were registered in other states could practice as long as their application was pending for the board's approval.

4. Any employee of a practicing regis-

tered professional engineer.

5. Any engineering employee of a corporation provided that the corporation had at least one professional engineer as the responsible engineer for the corporation.

6. All officers and employees of the United States government.

7. A non-registered engineer who might be engaged by the board in the preparation and grading of examinations.

8&9. Corporations and partnerships. Although they were not required to be registered and, in fact, could not legally practice engineering as a corporation or partnership would be exempt from registration.

Perhaps the most difficult problem to solve after the 1947 Act defined the "professional engineer" was how to examine the candidates. It seemed impossible to write an examination that would cover the complete spectrum of engineering. The big problem facing the board then, was how to divide engineering into subdivisions or branches. The marketplace after World War II had already divided and subdivided into literally dozens of engineering fields and titles. Many engineers had already organized into fast growing societies, each grabbing for additional members and extra "turf".

This fragmentation was clearly exemplified at two meetings held in Seattle in 1948. The first meeting was to discuss the advisability of dividing the field of mechanical engineering into separate branches such as heating and ventilation, refrigeration, tool, and others. This meeting attracted over one hundred fifty persons. Many gave testimony and presented papers. As might be expected, there was no unanimity of feelings on this subject. The second meeting was similar with a heated discussion on the advisability of subdividing electrical engineering into such branches as illumination, radio, electronics, and others.

The Act became effective June 12, 1947 and the first meeting of the reorganized Board of Registration was held in Olympia on August 8, 1947. The minutes show that somehow through the issuance of rules and regulations by the Department of Licenses, the Director of the Department had been made the ex-officio chairman of all registration boards. This perhaps came about during World War II when it became exceedingly difficult for many boards under the Department of Licensing to operate due to the lack of members and lack of quorums. In any event, Harry C. Huse, who was then the Director of Licenses, was present along with newly reappointed board members M. K. Snyder, R.G. Tyler, J.P. Hart, E.B. Crane, and Edward C. Dohm. Snyder, Hart, Crane, and Dohm were all members of the original board set up in 1935. Tyler had replaced Rockwell. For reasons explained by "for the purpose of carrying out the provisions of the Act and the business of the board, Mr. Hart was selected as

chairman". It seems obvious from these recorded minutes that the board at this time had no inclination to be dominated by the Department of Licensing.

Among the other memorable actions taken at this first board meeting was the identification of the number of branches of engineering that were selected by the board in which examinations would be given and registration accepted. These official branches of engineering under the 1947 Act were the following: aeronautical, agricultural architectural, ceramic, chemical, civil, electrical, heating and ventilating, hydraulic, industrial, logging, mechanical, metallurgical, mining, naval architect and marine, petroleum, refrigeration, sanitary, and structural.

Original "grandfather" registration was also granted in such fields as illumination, radio, tool, and evaluation. There were never any exams given in these fields and, although some people registered in these fields continue to hold valid registration today, no further applications are accepted by the board in these sub-fields.

CHAPTER THREE

THE QUESTION OF REGISTERING ENGINEERING CORPORATIONS

The question of offering personal professional services by a corporation had been hotly debated for some time by many of the professions. It was agreed by most physicians, attorneys, and accountants that corporations could not be held adequately accountable for their personal services to their clients. Even the architects agreed for the most part, but engineers disagreed violently! The Austin Company and Weyerhauser as examples, sided with the notion that corporations could be held accountable. Most of the smaller privately owned consultant firms opposed this view. Technical societies debated the issue fervently in their meetings. The Washington Society of Professional Engineers was split drastically. However, organization lobbies and money were on the side of the big corporations.

Senate Bill 127 was sponsored by Senator William B. Shannon, P.E. This was the same engineer who had sponsored the 1947 Act. The bill was shepherded through the House of Representatives by Representative Daniel Evans, P.E.

When the bill was introduced into the legislature early in 1959, the preliminary debates and arguments gained in intensity because of the lobbying of various legislators. This activity was so active and fervent that John Abel, a member of the

board from 1960 to 1970, told the story of two chartered busses of Seattle area engineers who went down to Olympia to lobby the bill. One bus was for it, the other bus was against it.

Amid the din created by strong feelings regarding corporate practice of engineering, several other items that were included in this bill slipped through almost unnoticed. Engineers still insisted that the Board of Registration have full responsibility for carrying out the conditions of the Act and, in order to do this, they changed the fee structure. They voluntarily raised the annual renewal fee to seven dollars fifty cents, but specified that only five dollars of this amount would go into the General Fund and the remaining two dollars and fifty cents was to be placed in a special Engineers Account. With the land surveyors the renewal was the same but three dollars went into the General Fund and four dollars fifty cents was stipulated to go into the Engineers Account. All application, examination, and certificate fees were to go into the General Account.

The Professional Engineers account was specifically dedicated to the use of the board in its organization and duties. That is, all could be used to support their employees, the promulgation of bylaws, office equipment, disciplinary procedures, and (for the first time) a mandated annual roster that the board was to publish for free distribution to the public and all registrants. It was obvious that the engineering profession and the legislature were mandating greater responsibilities and greater control for the Board of Registration

instead of the Department of Licensing. The legislature was, in essence, protesting the governor's veto of these same provisions of the Act of 1947 and insisting that these provisions now be reinstated.

A minor change was also made in the paragraph regarding reciprocity. The board was directed to grant reciprocity only to registrants of other state boards who, in turn, would grant reciprocity to Washington registrants.

But the big items were the certification of corporations and partnerships. Because of the intense feelings and lobbying, there were many compromises and restrictions placed on this certification. The major bone of contention was the restriction that some professional engineer must be responsible for all the engineering decisions made by the corporation. Therefore, safeguards were demanded in the corporations' Articles of Incorporation and in their Constitution and Bylaws giving this kind of authority to the professional engineer in their employ that was to be personally responsible for all engineering actions. Another restriction that was inserted was rather steep application and renewal fees. These were set at five hundred dollars for the application fee for corporations and two hundred fifty dollars for the application fees for partnerships. The annual renewal fee for corporations was one hundred dollars and fifty dollars for partnerships. All of these fees were specifically placed in the Professional Engineers account and were to be used by the board in carrying out its duties and responsibilities to the public.

Another one of the big compromises in order to get the bill passed was the automatic cessation of the registrations of corporations and partnerships on December 31, 1961. It was obviously to be on a trial basis. The bill passed the Senate unanimously and the House by a twenty-three vote majority. However, when it came time for the governor's signature, he appended an unusual personal statement to his pocket veto.

Governor Albert Rosselini stated that, since he was an attorney, he felt very strongly about a corporation being held legally responsible for services delivered to its clients but, because the Bill automatically carried a Sunset date of less than two years, he was willing to let the bill go into law and wait on the results of the Act.

Somewhere in the flurry of charges and countercharges mingled with compromises, the land surveyors of the state decided to drop out of the corporate practice section of the Act. They agreed, however, to try the partnership registration and so for a number of years the board's policy was that they could not allow corporate practice by land surveyors, but they could allow partnership practice. This was later changed by an attorney general's opinion to mean that land surveyors could incorporate their practice, but the board was not to register them.

However, the situation was far from settled. Immediately on June 22, a referendum was filed with the Secretary of State to block the implementation of the section about the corporate practice of

engineering. Referendum Number 31 was sponsored by a group calling themselves the Professional Engineers Legislative Council and cosponsored by Joseph P. Ward. They had sixty days in which to gain enough signatures to block the bill as passed.

By August 21, the last day for filing signatures, 46,816 signatures were submitted to the office of the Secretary of State. By law, 45,160 signatures were needed. However, 2,782 signatures were rejected, which made the total fall 1,124 signatures short for the referendum. There was a flurry of arguments, questions, and statements made regarding the invalid signatures.

An article from the Seattle Post-Intelligencer, dated April 8, 1959, stated that Horace J. Whittaker of Tacoma, a consulting engineer, headed the committee which was called the Professional Engineers Legislative Council. In a statement from Mr. Whittaker, he said the referendum was sponsored by the Puget Sound Engineering Council. Another letter dated June 10, 1959, from C. C. Arnold, P.E. listed himself as chairman of the Seattle Professional Engineers Legislative Committee. Both Mr. Whittaker and Mr. Arnold requested a list of the rejected signatures from the Supervisor of Elections, Kenneth Gilbert. Their insistence that some of the signatures were in truth valid pressured the Secretary of State, Victor A. Myers, into sending letters to the clerks in 77 cities and 18 counties to determine whether the signers listed were actually registered voters in their precincts. According to a newsletter

by Robert C. Cummings, this was the first time that this type of action had ever been taken by a Secretary of State for the State of Washington. Mr. Gilbert, the election supervisor, estimated that $15,000 had been spent in rechecking the rejected signatures.

The Board of Registration had been placed on hold by the action of the referendum. Minutes of the board meeting of October 17, 1959 showed that the board had received applications by corporations and for the very first time had approved such applications. The corporations formally accepted and registered at this meeting were the Austin Company, Bechtel Corporation, Ebasco Services, Inc., Ford Bacon & Davis, Inc., Henry J. Kaiser Company, Stone and Webster Engineering Corporation, and United Engineers and Constructors, Inc.

With the registration of several large engineering corporations successfully completed, the debate began to die down and so by the time of the regular session of the legislature in 1961 another Bill was introduced to continue this practice. Senate Bill 81 passed the Senate March 7th after having passed the House the day before, and on March 16 was signed into law by the governor without any further comments. Minor changes were made in the fee system when the application fee for practicing of engineering by a partnership was reduced from the original $250 to $100 dollars and the annual renewal fee was reduced from the original $50 to $25.

A much more important change was made in RCW.18.43.105 adding to the law a list of actions identifying misconduct or malpractice. These eleven paragraphs, stating explicitly the code of conduct for engineers and land surveyors, is the only code of conduct that is written into state law for any of the States. For many years this was the only code of ethics that the board adopted and used for disciplinary purposes.

CHAPTER FOUR

"WHO CONTROLS THE MONEY?"

The conflict over "who controls the money" actually started in the late 1930's. Those oldtimers who used to go into the board's office for applications or examinations grades will remember that General Dohm was never allowed enough equipment or manpower to do the job that the engineers felt needed to be done. They remember seeing General Dohm sitting on a three-legged drafting stool, which he had brought from home, banging on an old typewriter that he had managed to scrounge from surplus equipment, and it was easy to see that not enough clerical help was being supplied to him at that time.

Budgets that were allowed by the Department of Licensing ranged from a low of nineteen percent of the board's income to a high of nearly sixty percent of the total revenues during those first years. The 1947 Act did set up a special Professional Engineers account, however, at the Department of Licensing's request the governor vetoed that section of the 1947 Act. When the board went back to the legislature in 1959 again, the legislature passed the same requirements for a Professional Engineers account and this time it passed. However, the Department still controlled all expenditures. Correspondence between the then Director of Licenses, Harry Huse, and Edward Dohm indicated that funds for the board had been allocated in the budget by the legislature through

the Department of Licensing and would be disbursed through regular departmental channels.

In the beginning, the board's office was assisted by Mrs. Ellen James, who as a clerk-typist received $90 per month and assisted the board for approximately one-third of her time. In the proposed budget for the 1937-39 biennium the board asked for a clerk full time at $100 per month. It was many years later before Mrs. James began to work for the board on a full time basis.

After the passage of the 1947 Act the board proposed in its 1949-51 biennium budget that it be allowed a full time secretary at $400 per month and a clerk-typist at $175 per month. Only the clerk-typist was allowed at that time.

The conflict had not disappeared in 1959. The minutes of a board meeting held August 14, 1959 shows that the Director of Licensing had arbitrarily reduced the board's budget from $25,000 to $17,000. Also, the board requested additional space be provided, and one clerk assigned on a full time basis. Additionally, a key had been requested for the secretary so that he might have entrance to the board's quarters at all times. The board also requested at this time that the Attorney General assign one of his assistants to work with the board part time so that the board would not have to depend on Assistant Attorney Generals who had been assigned to the Department of Licensing. The board also requested that the department pay past dues to the National Council of Engineering Examiners. It seems that Washington was the

only state that had failed to pay its dues to the National Council of Engineering Examiners regularly.

The financial statement was also discussed at this meeting. A summary shows that revenues for the 1957-59 biennium were $66,298.25. since no costs were supplied or were available from the department, expenses were estimated at $15,357.96 and this did not include administrative costs that had been assigned by the department to the board. So there is no available data to tell us what the actual expenses of the board were for this period of time.

The direct control that the department maintained over board activities is shown in a letter dated December 15, 1959, from the then Director of Licensing, Louise S. Taylor, and addressed to General Dohm. It stated that the board's compensation would be limited to eight days per member for the six month period through June 30, 1961.

Minutes from the board meeting held September 6, 1962, stated "A discussion of the necessity of changing the law to reapportion twenty percent of the fees to the General Fund to be available for appropriation by the Department of Licensing for the overall support to the board and as payment for the provision of office space, accounting, and such general expenses as the department now stands. Eighty percent was to be available to be appropriated to the Professional Engineers Account and earmarked to be used only

for the operation of the board."

It became evident to Clarence Shain after he replaced Edward Dohm as Executive Secretary in May, 1962, that the law be changed in order for the board to have the money it needed to operate effectively. His research indicated the cost of administrative services needed from the Department of Licensing was somewhere between eighteen and nineteen percent. He rounded the figure up to twenty percent and helped draft a bill that would guarantee eighty percent of all revenues accruing to the board could be set aside in the Professional Engineers Account and dedicated to the board's use only.

Mr. Shain was an experienced politician having served as Thurston County Engineer, the Director of the State Department of Highways, and Commissioner of Public Works for the City of Olympia. So with the help of Gerald Cavanagh, an engineer for the Weyerhauser Company and legislative representative for the Washington Society of Professional Engineers, Senate Bill 241 was drafted and dropped into the legislative hopper.

Since no "self-respecting bureaucrat" likes to be restrained in any way in spending the public's money, this bill had a difficult time wending its way through the legislative process. Finally, after being carried over from the regular session, it was passed in the extraordinary session and signed by Governor Evans on April 6, 1965.

But, except for the bookkeeping, nothing

really changed! The board (through its Executive Secretary) continued to submit a budget each biennium. This budget would be merged into the budgets of other boards making up the Professional Licensing Division, and this budget in turn merged into the much larger budget of the Department of Licensing. By this time the board's budget was reduced to one line of revenue showing the anticipated income from the Professional Engineers Account. The expenditures were just lost in the general allocation to the Department of Licensing.

When I replaced Clarence Shain as Executive Secretary in August, 1965, I discovered that the department was making substantial changes in the board's budget without informing the board about these changes. The most noticeable was in the amount automatically being taken for administrative costs. Knowing that Mr. Shain had anticipated that the administrative costs would be taken from the twenty percent allocated to the General Fund, an Assistant Attorney General's opinion was requested. It stated that the twenty percent going into the General Fund by the 1965 Act was not to be used for the department's administrative costs as Mr. Shain had planned. This twenty percent was just the "bait" for the legislature to pass the bill. So the Department of Licensing just skimmed this amount "off the top" as General Fund revenue. The department then appropriated an arbitrary amount for their cost of "services" supplied to the board's operation. This arbitrary cost at this time was approximately another twenty percent. So the total amount subtracted from engineers revenues was now forty per-

cent and the board had only sixty percent of its total revenues on which to operate.

The changes in 1961 to the Engineers Act mandated that an annual report be prepared by the board indicating incomes and expenses as well as the roster of all registered engineers and land surveyors. It became necessary to ask the administration for exact expenditures charged against the board's account. The board began to question the "how comes" and "whys" of the department's actions. But no reasonable or satisfactory answers were forthcoming. I well remember a meeting between the board and the then Director of Licensing, Douglas Toms. After being pressed by some relevant questions, answers to which Mr. Toms obviously did not know, he used the phrase "the funds in the Division of Licensing are co-mingled". It later developed that in general the dedicated accounts were kept separate but disbursements were usually made in the aggregate. For instance, items like space rentals, equipment, postage, legal expenses, personnel expenses, accounting expenses, and so on, were prorated by some means such as a number of employees, number of registrants, etc. No actual costs for the individual boards were available.

Similar problems arose over the board's staffing. The number of full time employees (FTEs) were budgeted much like funds. A certain number of FTEs was allocated by the legislature to the Department of Licensing and its various divisions. The administrator of the Professional Licensing Division controlled a bloc of personnel.

Several times this administrator would add to, subtract from, or otherwise change the personnel of the board's staff.

I remember a confrontation between then administrator Max Brokaw, and board member Cecil Arnold. Mr. Arnold had questioned Mr. Brokaw because one of the clerk-typists who the board had asked for in its budget and had been approved by the legislature, had not been given to the board for taking care of office correspondence. Mr. Brokaw explained that the FTEs that had been appropriated by the legislature to the Department of Licensing had been assigned by Mr. Brokaw to another board. Mr. Arnold exploded by saying, "You're nothing but a common crook. First you take our money for these positions and then you steal the employee and give her to some other board." Needless to say, Mr. Brokaw was not happy with this viewpoint although nothing was ever done to change his original action.

On another occasion with another administrator, Mr. K.C. Diehl, board member Hal Birkeland was trying to understand why the department had been so arbitrary in the assignment of personnel and in the arbitrary reduction of some expenditures for which the board has asked. Mr. Birkeland made the statement to Mr. Diehl that "you are nothing more than servants to the board". Again Mr. Diehl did not appreciate Mr. Birkeland's comments, but Birkeland was right. The Department of Licensing had set up the professional licenses division as a service unit to the various thirty-some-odd boards that had been

assigned to it.

In 1969 I began to press the department for accurate figures on the board's expenditures, especially in regard to informational services which at that time was costing the board about $1,000 per month. It became obvious that the accounting division really had no exact figures that could be assessed against the board's Professional Engineers Account. The expenses for the last computer services supplied by the department to all divisions were broken down only by the various activities of the Department of Licensing such as drivers licenses, vehicle licensing, and other general categories. The Professional Licenses Division was granted a percentage of the grand total of that amount but no accounting was possible for the various boards - some thirty of them - that were included in the Professional Licenses Division even though some of these boards had dedicated accounts like that for the Professional Engineers. It was not possible for those boards to know the exact amount that had been charged to those dedicated accounts. The engineers board caused such a ruckus about this that the department did implement a new accounting system by which the various boards were now assessed computer costs based on the number or registrants that each board had.

Other administrative costs such as accounting and personnel were allocated on the basis of the number of employees that each board had. It became very obvious when sufficient breakdowns were made that the revenues brought in by the

Nursing Board was actually being used to subsidize the Physicians Board. You can imagine the furor that arose among those nurses when this information became available to them.

Most of the conflicts arose when the department denied the board's request for additional employees or office space or when board members desired to attend the meetings of the National Council of Engineering Examiners. However, to illustrate some of the little things that brought on major battles, I remember an incident in 1977 when the department decreed that only one standard letterhead would be used by all divisions, boards, and commissions within the Department of Licensing. The board had used their own individual and very distinctive looking letterhead for several years, so when I put in a request to have a reprint of the board's letterhead, it was denied. Rather than fuss with the department over such a small item, the then Chairman of the board, Jim McGee, had the board's letterhead reprinted in Seattle at his own expense. When the department found out that we were still using our own letterhead paper, memos were written to me to cease and desist using these new letterheads. I obtained confirmation from the board that they did desire their own letterhead and to continue the use of the paper that Mr. McGee had supplied. A few days later when the then administrator for the Professional Licenses Division, Joan Baird, found out that I was still using the board's letterhead, I received a memo from her that I was to bring all of the existing and/or remaining letterheads to her office for destruction. When I

relayed this information to Chairman McGee, he talked with the other board members by phone and a confrontation began over this item. To indicate just how this small item got all out of proportion, the then Assistant Director for the Department of Licensing, Mr. Ken Marks, asked for an official Attorney General's opinion as to whether the board could, in fact, use its own letterhead or not. Of course, the opinion came back from the Attorney General that according to the RCW 18.43.035, the board certainly had that authority. The case was dropped by the department, and the board continues to have its own distinctive-styled letterhead.

CHAPTER FIVE

THE ATTEMPT TO REWRITE THE REGISTRATION ACT

In the fall of 1974, Chet Compton, the president of the Washington Society of Professional Engineers, saw the need for some changes in the Registration Act. He appointed an ad hoc committee with Walt Gordon as chairman to investigate the specific needs for change and initiate steps with the legislature to make such changes. I was appointed to this committee along with Mike Yuhl, Steve Olson, Joe Walker, Alfred Byrne, Ted Wright, Ernie Dodge, and Ken McGowan.

The first meeting was held in Olympia at the board's office beginning at 5:00 p.m. Chairman Gordon assigned different sections dealing with all the aspects of the law, to each of the committee members. I was asked to supply registration laws from most of the states for study at the next meeting. A hint as to the intensity of the chairman came about 7:00 p.m. when he sent out for sandwiches and beverages and just continued the meeting. Various committee members began excusing themselves about 11:00 p.m. Many of the subsequent meetings lasted past midnight!

A month later at the second meeting a thorough study was made of other states' registration laws and adaptations for Washington were suggested. Reports from some states' registration boards as to the problems and successes they had encountered with their laws was studied and discussed. Mr. Gordon then assigned the task of writing the proposed changes to various committee members.

We reported these proposed changes back at the next monthly meeting and the debating began! I am always surprised at the diversity and tenacity of professional engineers as they express their solutions to any given problem. This was never more evident than with this small committee! Some of the most heatedly debated subjects were the definition of engineering, the basic minimum education requirement, the types and length of examinations, the requirements of board members and their compensation, the experience requirement for registrants--especially for professors of engineering in the various engineering schools, the requirements for an engineer-in-training, the need for strong enforcement of the Act, the elimination of engineering exemptions, the setting of fees, and so on. In fact, just about every item was subject to some modification except the section about registering corporations. The memory of the bitter fights of 1959 was still in the minds of the committee members. They didn't want to open Pandora's Box again!

Finally the group compromised and hammered out a rough draft of proposed changes. It became evident that there were so many changes in so many parts of the law that it would be better to just rewrite the law rather than "patch" it. Or so we thought!

Anyhow, a complete rewrite was accom-

plished, and about two or three months later the committee presented it to the State Board of Trustees of the Washington Society of Professional Engineers. It became obvious that many of the same diversities of opinion were present in this larger group, but with the attitude that "we had to start somewhere", it was grudgingly accepted.

Facing similar problems with the engineering technical societies of the state, it was decided to mail each of them a copy of the rough draft and to offer to attend their meetings to explain the background of the plan. This would entail asking the societies' input and support for it. Since the committee members were the best qualified to answer all of the anticipated questions, they were asked to continue on to this next task.

During the next year, meetings were attended and questions were answered. Some very headed discussions occurred and it became obvious that many industrial users of engineers, i.e. Boeing, PacCar, Puget Sound Power and Light, would be affected especially by changes in the exemption clauses. We began meeting with these groups and many other compromises developed.

Finally, in 1976 a bill was drafted and sponsored by State Representative Lorraine Wojahn, and "dropped in the legislative hopper".

At the very first legislative committee hearing we got a preliminary indication as to future problems when representatives from the American Society of Civil Engineers and Land Surveyors

Association of Washington appeared against the bill. Further objections arose over the proposed elimination of the "industrial exemptions". The legislative committee members were quick to catch the obvious lack of unity among the engineering professions, but compromises were suggested and amendments to the bill were made and it finally got out of committee. The damage had been done, however, and the bill did not get to the floor of the House before the session closed.

We used the time before the next session of the legislature for "damage control". We reached agreement with most of the engineering societies and tried to persuade them to have representatives at future hearings to endorse the new bill. We had learned a little about the legislative procedures in our first try; so now we proceeded to get a fellow P.E. to assist us, Senator Sam Guest, of Spokane, agreed to sponsor the bill in the Senate.

Starting this time in the Senate proved to be better than starting in the House as we had in the previous attempt. With Senator Guest's help, the bill went right through committee and after some typical "politicking" it passed the Senate. But because of the delays incurred there, the bill never got beyond the House committee before the regular session was over. A special session was called by the governor and all bills were automatically "resurrected". This time we managed to get the Senate bill through the House Committee, but not before the full House before this special session adjourned.

The next year identical bills were introduced in both the Senate and the House. The political thinking behind this was that we would have two chances instead of one of getting the Act through the legislative procedure. However, by this time other opposition had arisen. One of the major ones was the Department of Licensing. The departmental personnel realized that many of the changes were going to strengthen the board in their activities and at the same time decrease the responsibilities of the department. The other voice of opposition that proved to contribute gravely to dividing legislative feelings was a group of engineers who had never become registered and feared that they could never pass the examinations, and who kept insisting that they be "grandfathered in" to the new Registration Act. The committee had foreseen this possibility and had tried desperately to rewrite the Act in such a way that there would be no "grandfathering" at this time. But some of the voices coming from industry were so strong and had political roots so deep that at every committee hearing the disruptions were so great that the legislators insisted on further postponements and delays. The House bill finally made it through and went to the Senate committee where this time the senators were beginning to be leery of such a large bill necessitated by the complete rewrite. At this time we began to get suggestions that the bill was too long, too complicated, and that we might stand a greater success if we chopped the amendments into small pieces and then tried to pass them separately.

Anyway, the objections by the Department of

Licensing were so strong that there seemed to be no way of compromising with them. The continued insistence that certain people be "grandfathered in" or given their license without written examinations also had its effect and the legislative session again ended without any real progress toward getting the Registration Act changed.

Concurrent with these years of frustration with the legislature, something else was happening in the Seattle area that has since proven to be one of the great developments for engineers since the original Act of 1935. It started in a peculiar way with members of the American Institute of Architects. They saw what was happening with the engineering profession and registration. They decided that it was time for the architects to correct some of the problem areas in their law which had originally been passed in 1919.

They suggested to some of their friends and co-workers in the engineering profession that it was time for the design professions to merge their talents and political power. So delegates from several of the design professions decided to form a committee that would meet regularly to pursue these endeavors. The people who originally were involved in this cooperative movement were Jerry Williams of the American Institute of Architects, Art Anderson of the Consulting Engineers Council of Washington, Al Kelly representing the Structural Engineers Association of Washington, Ernie Dodge as a delegate from the Washington Society of Professional Engineers, Bill Lee representing the American Society of Civil Engineers,

Mike Yuhl representing the Washington Council of Civil Engineers and Land Surveyors, Ben Knotkin representing the American Society for Mechanical Engineers, and Ken McGowan representing the Institute of Electrical and Electronic Engineers. This committee began meeting for early morning breakfasts during the legislative sessions so that tabs could be kept on legislative activities and then reported back to their various societies. The title of this committee was simply "The Architects, Engineers Legislative Council (AELC)". During the legislative sessions they met weekly for these breakfast meetings and were quick to develop a policy that would allow the AELC to speak with a unified voice for the design professions. This meant that any one of the participating society groups could withhold the composite affirmation of the Council by that society objecting to any portion of bills that had to do with the design professions.

In the early days there was no one who was able to spend time in Olympia to actually lobby for or against the various bills as they were presented to the legislature. It was quickly realized that some professional representation or lobbyist was required. Subsequently, Mike Ryherd was retained on a part-time basis by funds that were contributed to the AELC by the various participating design professional groups.

In the very beginning the AELC budget of less than $20,000 did not buy very much time from the professional lobbyist. So the amounts increased yearly and now it is approaching $50,000 a year for part-time service. After three or four

years of serving the AELC, Mike Ryherd resigned because he had further interest in other clients that he felt might be in conflict of the interest of the design professions. So another young attorney, Bill Robinson, was hired. Robinson represented the design professions for two or three years and a junior member of this law firm, Cliff Webster, was retained and is still acting as the official lobbyist for the AELC.

The AELC each year grows in effectiveness at the legislature process and now enjoys a very prestigious position with many of the state legislators. In fact, statements have been made by legislation individuals that the design profession now has one of the most effective lobbyist programs in the State of Washington.

But perhaps the greatest progress has been made in the unification of the engineering profession. Split asunder by the corporate practice portion of the Act in 1959, the engineering professions went their separate ways until the organization of the AELC. This committee has proven that engineers can work together for the common good of the large numbers of personal interests that each of the professional and technical societies have. I hope that this cooperative spirit may continue to grow in the years to come.

CHAPTER SIX

THE BOARD MEMBERS

When the first board assembled in July, 1935, they were faced with the staggering task of "getting organized". With no office or staff and very few guidelines they plunged into the paperwork world of the registration process. They had to have letterhead stationery and envelopes for correspondence, applications forms had to be designed and printed, certificates had to be prepared, and hundreds of letters and phone calls had to be answered. Since they expected hundreds of applicants to be registered under the "grandfather's clause" it meant that the board had to evaluate their education and experience records to determine if they qualified under the laws requiring eight years of engineering experience. But first "they had to get organized!"

This meant that they had to grant a license to themselves. Since the law required that all certificates be serially numbered, who was going to get certificate number one? The age-old custom of "drawing straws" was invoked and Morris K. (Mike) Snyder became the first engineer to be registered by the State of Washington. Years later (1953) his son, Morris K. Snyder, Jr. was to be registered as number 4664. After Mike Snyder died in 1961, his son asked for and received permission from the board to retain his father's original certificate as a "keepsake".

Mike's original application states that he was born December 29, 1874 in Cambria, Michigan. He was educated in the public schools of Cambria and Hillsdale College in Hillsdale, Michigan. He received his lifetime teaching certificate at Michigan State Normal College and later his BSCE from the State College of Washington. He began teaching as an instructor at that school in 1907 and advanced to the Head of the Civil Engineering Department in 1930. He was buried in Pullman, Washington on December 5, 1961.

Certificate Number 2 went to Edward C. Dohm. According to his original application he was born October 2, 1883 in Seattle. His formal education ended after three years in Civil Engineering at the University of Washington. He worked for one and a half years for the engineering firm of Reitze & Story in Seattle. This was from June, 1906 to February, 1908. He spent nearly two years with the state highway department working on the first highway over the Cascade Mountains, "now known as Snoqualmie Pass". The fall and winter of 1908-1909 he worked for the renowned R.H. Thompson, Seattle City Engineer. Then Dohm moved to Olympia to become City Engineer, but after a few weeks he was appointed to the position of Chief Engineer for the State Department of Public Lands. A position he held until 1933, interrupted by his service in World War I as a Captain in the Army Engineers. Dohm served the City of Olympia as a consultant in various engineering and planning capacities until his death in 1968. He had joined the National Guard in 1904 and progressed to the rank of Brigadier General shortly

after service in World War II. General Dohm had served as a member of the Board of Registration until 1960 when he became Secretary to the board until his retirement in June, 1962. He had long been active in the American Society of Civil Engineers and was a charter member of the Olympia Chapter of the Washington Society of Professional Engineers.

John P. Hart drew Certificate Number 3. He was born June 8, 1892 in Vancouver, Washington and attended public schools through high school in Seattle. He graduated with a BSCE from the University of Pennsylvania in 1913. He began work with the Grand Trunk Pacific Railroad in Prince Rupert, British Columbia after graduation in June of 1913 as a bridge engineer. Then, in October, 1914 he moved to Seattle to work for the J.A. McEachern Company until 1921. This job was interrupted by two years of service with the 18th Engineers, U.S. Army in France during which time he advanced in rank from Private to First Lieutenant. In 1921 he formed the Hart Construction Company in Tacoma and continued in the fields of engineering and construction until his death in March, 1974. He was quite active in the American Society of Civil Engineers.

Certificate Number 4 went to E.B. Crane. He was born in Dexter, Iowa on March 15, 1882 and graduated from the University of Iowa in 1904 with a BSCE. Six years later he attained the graduate degree of Civil Engineer. His lifelong association with railroad engineering began with summer work in 1903 with the Western Ohio Interurban

Railroad. His first job after graduation from college in June of 1904 was with the Illinois Steel Company in Chicago, but in November, 1905 he began work as an assistant engineer with the Chicago-Minneapolis-St. Paul and Pacific Railroad. He progressed with this company to principal engineer until his death.

The last member of the original board was another midwesterner. Certificate Number 5 was issued to Robin L. Rockwell. He was born in Peabody, Kansas on December 16, 1886. He graduated from the Electrical Engineer Institute of New York in 1913 and later studied in London. He took several post-graduate courses from the University of Wisconsin. Later, from 1923 to 1928, he taught night courses in applied electricity at the Washington Technical Institute. His original application shows work experience of one year with the Ontario Light and Water Company, two years with the Idaho-Oregon Power Company, and from 1913 to 1917 he was Head of the Electrical Engineering Department for Old Broadway High School in Seattle. Rockwell formed a partnership with Henry R. Stevens to offer engineering consulting services in Seattle in 1917. One year later he went into the same business for himself and continued until his death on February 11, 1948. He was a member of the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, and the Society of American Military Engineers for many years. He also held more than ten patents in both the United States and Canada.

From 1935 to 1947 the five members of the

original board were merely reappointed by the Governor when their five year term expired. Beginning in 1947 we have the first replacement of the original board member. This was R.G. Tyler, who replaced Robert L. Rockwell.

R.G. Tyler, Certificate Number 2825, was born on October 16, 1885 in Georgetown, Texas. He received his degree in Civil Engineering in 1908 from the University of Texas and his BS in Civil Engineering in both Austin and Paris, Texas from 1910 to 1918. During World War I he rose to the rank of Captain in the Quartermaster Corps. After the war he served as Dean of Engineering at Oklahoma A&M until 1923. He then became professor at M.I.T. teaching sanitary engineering and continued there until 1929, at which time he became Dean of Engineering at the University of Washington.

James G. McGivern received Certificate Number 2029 in Mechanical Engineering. He was born July 11, 1905 in Boston, Massachusetts. He received his baccalaureate degree in Mechanical Engineering from Northeastern University in 1928; his Masters of Engineering at Harvard University in 1932 and his PhD at Washington State College in 1939. It was in September, 1939 that he went to Gonzaga University and organized the College of Engineering of which he became the first dean. He did research at Harvard University and published many of his results in different forms both in the United States and abroad. His service of twenty-five years on the board (1949-1974) ties with Mike Snyder for the second longest term of any person

on the Board of Registration. General Dohm was first with twenty-six years of service.

Henry K. Benson, Certificate Number 2555, served on the board from 1949 to 1953. He was born January 3, 1877 in Lebanon, Pennsylvania. He received his Bachelor's and Master's degree from Franklin and Marshall College in 1899 and 1902 respectively. In 1906 he received his Doctorate in Science from the same institution. Then in 1907 he received a PhD from Columbia University. He served as Head of the Chemistry Department at the University of Washington and later was also Head of the Chemical Engineering Department. He had the distinction of developing a curriculum for accreditation in Chemical Engineering in 1926.

Earl K. Baughn, Certificate Number 2357, served on the board from 1949 to 1957. He was born January 12, 1893 in Tobias, Nebraska. He received his BSCE from Washington State College in 1916. He served as engineer for Washington Water Power Company in Spokane most of his engineering career.

Drury Augustus Pifer, Certificate Number 2618, served on the board one term from 1951 to 1956. He was born March 18, 1905 at Charleston, South Carolina. He received his baccalaureate degree in Coal Mining Engineering in 1930 and in 1931 his Master's degree also in Mining Engineering. He worked in various positions in the mining industry in South Africa from 1932 to 1947. He became professor and Head of the College of

Mining, Metallurgical, and Ceramic Engineering at the University of Washington in 1947 and served there until his death.

Cotton M. Howard, Certificate Number 443, served on the board from 1953 to 1958. His certification was in civil, structural, and hydraulic engineering and also as a land surveyor. Mr. Howard was born May 10, 1888 in St. John, Washington. He received his BSCE from Washington State College in 1913. He worked for a number of years for the Department of Highways and also irrigation projects over the state. He was finally engineering manager of Washington Concrete Products Association in Seattle. He died November 30, 1969.

F. Robert Bergseth, Certificate Number 4978, served on the board for 19 years. His certification was in electrical engineering. He was born in Seattle on October 5, 1915 and received his BSEE at the University of Washington in 1937, and his Master's in Electrical Engineering from M.I.T. in 1938. He worked for the Allis Chalmers Company until 1939 when he enlisted in the U.S. Navy as an Ensign. At the conclusion of World War II he was a Lieutenant Commander. He stayed in the U.S. Naval Reserve and finally retired as a Captain. He began teaching at the University of Washington as an assistant professor in 1947 and rose to the rank of associate professor and at one time was the acting chairman of the Electrical Engineering Department at the University of Washington.

Kenneth P. Norrie, Certificate Number 2300, registered in civil and structural engineering as well as land surveying, and served on the board 20 years from 1958 to 1978. He was born in Olympia, Washington on March 4, 1913. He graduated from Olympia High School where he was a star athlete in several sports. In 1937 he received his baccalaureate degree in Civil Engineering from Washington State University and in 1939 his Master's in Civil Engineering from the University of Wisconsin. During World War II he served four years with Navy Construction Battalions in the South Pacific Theater. He later taught at the University of Washington and at Gonzaga University. He worked for several engineering firms in the Spokane area before starting his own engineering consulting firm in 1949. He was active in the Structural Engineers Association of Washington of which he was president, the American Society of Civil Engineers of which he was president of the Spokane section. He was also active in the Washington Society of Professional Engineers. He died in Spokane on May 12, 1983.

John S. Abel, Certificate Number 1843 in civil and structural engineering, served for 10 years on the board from 1961 to 1970. His registration in Washington was obtained by reciprocity from his original registration in the state of Pennsylvania. Mr. Abel's fathers was an engineer and while his father was stationed at Paramaribo Surinam, South America, he was born there on December 13, 1895. He received his BSCE from the University of Manitoba, Canada in 1921. He served as a bomber pilot with the Royal Air Force

in World War I. He did structural design for Dwight P. Robinson & Co., Inc. who later merged with United Engineers and Constructors, Inc. in Philadelphia. He did large design projects for United Engineers and Constructors, specifically the International Airport at Rio De Janeiro and the subway system for Buenos Aires, Argentina. Also, he was project manager of a large subway system in Brazil and designed and supervised construction of numerous large structures in the United State. In 1944 he was hired by the Weyerhauser Company as their Chief Engineer and remained in that capacity until he retired in 1960. Mr. Abel died in California in 1972.

Harrison W. Kramer, Certificate Number 1821 in Civil engineering, served one five-year term on the board from 1961 to 1966. Mr. Kramer was born in Seattle, April 21, 1914. He received his BSCE from the University of Washington in 1939. In World War II he served as a Second Lieutenant in the 6th Coast Artillery. He later worked for the H.D. Fallar Company of Seattle and then joined with James W. Carey, as partner in 1944. This firm later became Kramer, Chinn, and Mayo, Inc. Mr. Kramer retired from this firm and died in 1982.

Cecil C. Arnold, Certificate Number 2333 in civil and structural engineering, served on the board for ten years from 1966 to 1976. He was born November 21, 1899 in Walla Walla, Washington. He received his BSCE from Washington State College in 1925. His first job was on the Central Ferry bridge in Eastern

Washington. He then did structural design for several Seattle firms and the State Department of Highways before starting his own consulting firm in Seattle. He died in Seattle in 1980.

Halvard W. Birkeland, Certificate Number 1758 in civil and structural engineering as well as land surveying, was born August 31, 1907 in Oslo, Norway. He came to the United States and entered the University of Washington where he received his BSCE in 1932. He also received his Master's Degree there in 1933. He worked for a number of years for the U.S. Bureau of Reclamation designing dams from their Denver, Colorado headquarters. He saw service in the U.S. Navy during World War II and after the war worked in Panama and Pakistan. He returned to the City of Tacoma and was Chief Design Engineer for the Mossy Rock and Mayfield dams. After this he formed a partnership with Arthur and Tom Anderson in Tacoma. This firm in turn became ABAM Engineers, Inc. Mr. Birkeland retired from his corporation and is now living in Bellevue, Washington.

James M. McGee, Certificate Number 13468 in mechanical engineering, served on the board from 1974 to 1979. He was born in Centralia, Washington on July 18, 1926. He received his BSME from the University of Washington in 1957, and his Master's Degree in Mechanical Engineering from the same institution in 1963. He worked for the Boeing Company since his baccalaureate degree and became the first member of the board who was an employee of the Boeing Company. He was a member of the Seattle

Professional Engineers Association, the Washington Society of Professional Engineers, and the American Society of Mechanical Engineers. Mr. McGee had the unfortunate experience of being the first member of the board to die while in office. He died of a heart attack in September, 1979.

Harvey R. Dodd, Certificate Number 6141 in Civil and structural engineering, served on the board for ten years from 1976 to 1986. He was born in Fort Supply, Oklahoma on March 3, 1922. He saw military service in World War II and received his baccalaureate degree in Civil Engineering from the University of Washington in 1951. He worked for the Lincoln Bouillon Associates, the John Graham Company, Stevenson and Rubens, and the Seattle Building Department before starting his own consulting business of Harvey R. Dodd and Associates, Inc. He is now retired from that business.

Wilho E. Williams, Certificate Number 4425 in civil and structural engineering, served on the board from 1978 to 1983 and then had the unusual distinction of being reappointed to the board again in 1986. He was born in Spokane, Washington on March 7, 1922. He received his BSCE from Washington State University in 1943, and his Master's in Civil Engineering from the University of Illinois in 1947. In World War II he progressed from Ensign to Lieutenant Junior Grade, became a full Lieutenant during the Korean Conflict, stayed in the Naval Reserve, and finally retired as a Captain. He has worked for several Spokane design firms in the Spokane area. He is an active

member of the Washington Society of Professional Engineers serving as president of that organization. He was also very active in the Structural Engineers Association of Washington and the American Society of Civil Engineers.

Robert G. Clark, Certificate Number 5320, served on the board for ten years from 1977 to 1987. He was licensed in both electrical and nuclear engineering. He was born in Omaha, Nebraska on October 21, 1917. He received his BSCE from the South Dakota School of Mines in 1948, and his Master's Degree in Nuclear Engineering from Oregon State University in 1964. He worked for Battelle Northwest most of his professional life and was nationally known for his expertise in radiation detection and radiation measurement. He was active in the Washington Society of Professional Engineers and the American Society of Nuclear Engineers.

Alfred F. Byrne, Certificate Number 6646 in mechanical engineering, was appointed to the board by Governor Dixie Lee Ray in 1979 to replace James McGee. Mr. Byrne was born in Greensville, Idaho on December 9, 1921. He received his BSME from the University of Idaho in 1950. He has recently retired from the Boeing Company for which he worked his full professional life. He is active in the American Society of Mechanical Engineers and has been president of the Seattle Chapter of the Washington Society of Professional Engineers.

John R. Wallace, Certificate Number 1997 in

Civil Engineering and Land Surveying, served on the board from 1980 until 1985. He was born in Seattle August 3, 1915. He received his BSCE from the University of Washington in 1941. He then did Graduate Studies in Civil Engineering and also taught lower division courses in engineering and land surveying from 1941 through 1944. Other employment included work at the White Sands Proving Grounds and with R.W. Beck and Associates before starting his own private practice.

Roy A. Avent, Certificate Number 10936 in Civil Engineering, served on the board from 1983 until 1993. He was born in Murfreesboro, Tennessee January 31,1935. He received a BSCE from Tennessee State University in 1957. He worked for the Bureau of Public Roads, the Michigan State Highway Department and the Boeing Company before forming the partnership Jordan/Avent and Associates. He had served as President of the Association of Black Engineers of Washington and was a member of the Washington Society of Professional Engineers.

CHAPTER SEVEN

THE REGISTRANTS

In the half century of personal association with engineers, I have come to the conclusion that engineers really are different. They certainly have the differences in personalities and characteristics that one would find in any societal group, but there are certain characteristics and qualities that make them also different. It shows up usually quite early in life, even in junior high school; they are the ones that like Math. In senior high schools they are the ones that enjoy laboratory assignments and don't seem to mind doing homework. In college they readily subject their social life to their studies and report writings. They seem to be imbued with an analytical mind. They approach problems which they love to solve with a logical reasoning attitude. They are inventive and innovative and approach life with the philosophy that "there must be a better way to do this" attitude.

After reading thousands of applications and tens of thousands of transcripts during my time as Executive Secretary to the board, I've observed many peculiarities of those candidates who wish to be professional engineers. For instance, many times the candidates who had the poorest engineering related backgrounds would submit the best and most completely filled out applications. They would be neatly typed or hand lettered with a great deal of obvious care in the preparation. Contrarily, some of the candidates who obviously had the bet-

ter engineering education and background would be very careless and sloppy in their completion or lack of completion in their applications to the board. Sometimes the candidate who was obviously trying to impress the board with his somewhat meager abilities would take paragraphs to tell in detail some actual project that he had designed, while others would merely just say "designed engineering projects". It was interesting also to note how some applicants would try to take full credit for large engineering designs that obviously were accomplished by large teams of other engineers.

Close examination of transcripts also told some interesting stories about the candidates. One of the most remarkable indicated a young fellow whose father was a medical doctor and whose mother was a registered nurse. He was duly enrolled in medical school and made miserable grades. So badly that he finally flunked out of the school and was drafted into the Army. During his Army experience he was attached to an engineering and artillery group. After serving his two years in the Army, he returned and had obviously found himself, for he now enrolled in an engineering school and graduated about three years later with straight A's on his transcript.

Another interesting story that could easily be traced by transcripts was a young lady who enrolled in a southern engineering school. Her freshman year showed straight A's. Her sophomore year was a disaster. She finally, after being on probation twice, dropped out of school and next showed up at an engineering school in the north-

west. It was pretty obvious that she had followed a boyfriend because within the year they were married. She then continued with her engineering and the next two years was again a straight A student.

Another young fellow started out with a Bachelor of Arts degree in music. Shortly after graduation he obviously married the daughter of the president of a well-known organ manufacturer. Shortly thereafter he went back to school, enrolled in electronics and finally graduated with a degree in Electrical Engineering.

These are but a few of the unique stories that I have gleaned from the school records of various applicants. The typical engineer, however, seems to know well in advance exactly the direction he wishes to go. He has the necessary math, physics, and chemistry courses from high school, enrolls directly into a college of engineering. There are the exceptions of some who are forced by economics to either work while attending school or taking off semesters or sometimes full years to make enough money to finish their engineering education. These usually graduate without problems, with average grades, and continue into their professional engineering life without great interruptions.

Since most of the examinations given by the board were open book, it always amazed the board members and the proctors at the amount of books and other study materials that the candidates would bring into the examination rooms. It was almost pathetic to see the candidates arrive quite

early before the exam room doors were opened with their great loads of books in all kinds of containers. The favorites were, of course, cardboard boxes. Many times they had two, three, or four boxloads of books. The heaviest containers seem to have been large suitcases and usually the candidate had two. In some cases these had grown into large trunks which meant that they had to have help to get the trunk to the tables. Because parking was not always available nearby, they became very innovative in transporting their books from their cars. I was always amazed at the number of little red wagons that many candidates pulled into the examination room piled high with books and cartons. Some even arrived with contractor wheelbarrows loaded down with their books and supplies.

One innovative candidate arrived with a very unique bookcase that he had prepared. It was about four feet high and three feet wide, containing built-in shelves in two pieces hinged together and on rollers. He was able to pull it into the exam room and set it up on top of his table unfolded so that he looked like he was sitting in front of a complete library shelf. Jack Abel, one of the board members at that time, remarked that if he had spent as much time studying for the examination as he did in designing and building the bookcase, he would have passed it with flying colors. It really got ridiculous when one candidate set up his own little study lamp and then assembled a large drafting machine on his table. He really didn't need either the extra light or the drafting machine and didn't use either one, but apparently he felt comfortable with his own equipment on his table.

Where some of the applicants over-prepared there were a great number who were not properly prepared for the examination. Most of the time this consisted of people who had just failed to study, or had not attended refresher courses. But there was one candidate that really illustrates what I mean by not preparing adequately in advance. He lived in Eastern Washington and apparently, rather than spend the time and the expense to drive to Seattle the afternoon or evening before the examination site so that he could get a good night's rest and be at the exam on time, rather he got up at three or four o'clock in the morning and drove to Seattle. Somewhere on the trip he had car trouble and didn't get to the exam until about nine o'clock. He was already an hour late and frustrated and tired, but he immediately was placed at his table and started working the problems. About ten o'clock we heard the sound of a body hitting the floor. I rushed over to his position and found that he had passed out. My first concern was that perhaps he had suffered a heart attack or some other medicinal failure. He came to rather readily and then the full story came out. He had not had breakfast before he left home, hoping to get to Seattle in time to grab a bite before the exam. The lack of food, the frustration of car troubles, the excitement of the exam had just been too much for him and he merely fainted and fell out of his chair. After being revived and getting a candy bar from the vending machine, he was able to go back and finish the examination. Truly a classic example of poor preparation.

It was my observation over the many years that the candidates who did the best on the exami-

nations were usually those who had attended some kind of a refresher course. For the E.I.T.'s this was usually given at the school by the professors or members of professional societies. Those who studied for the branch examination usually did so in small groups and these refresher courses were sometimes sponsored by the various technical societies. Nevertheless, some kind of semi-formal preparation seems to have been necessary for a majority of the candidates.

Like any other large group there were always the persons trying to sit for the examination who were physically handicapped from accidents or some other temporary type of disability. There were literally dozens that I can remember arriving in wheelchairs because of skiing, hiking, or hunting accidents. Some had writing problems because of broken arms and fingers and some who had other physical ailments brought about by illness. Probably the most difficult were the students who were blind. The board always tried to make arrangements that would accommodate people with this type of handicap who had the perseverance to try to become registered. Usually this meant placing them in a separate room with a "reader" who would be a college professor or someone who had helped the blind person with their college work. This usually would be a wife or another member of the family. I recall a telephone conversation with a blind person who had already passed his E.I.T. and he was asking about the possibility of sitting for the branch examination. I explained to him the board's policy and reminded him of the circumstances that allowed him to acquire his

E.I.T. certification. I suggested that perhaps his wife would be able to do the reading for him. He laughed and said no, that she was busy taking her E.I.T. examination at the local university.

The deaf persons were more easily accommodated, usually bringing a member of the family who would listen to the oral instructions given at the time of the examination by one of the proctors and then would relay that information by the means of sign language to the deaf person taking the examination. Another unusual incident that I recall was a candidate who had already passed the professional portion of his examination and later on wished to be registered as a structural engineer. The board had always maintained that since this was a specialty registration that the registrant sit consecutively for the two day examination This candidate had some physical problems with his heart and respiratory organs and his doctor forbade him from doing such a strenuous task. He proposed to the board that he be allowed to sit for the examination one day and then a week later take the second day of the examination. The board gave special permission and this was done and he passed his structural examination under these conditions. One might wonder how he was able to perform as a structural engineer, but he was able to work out of his home and do plan design review work for various small municipalities. So even with the physical handicap he was able to maintain his engineering abilities and provide a secure income for his family.

Another type of handicap, though not physi-

cal, were the persons who were "Sabbath observers". A few of this classification made special petition to the board to allow them to sit for their examination, which would normally have occurred on a Saturday, at some other date. Usually this would have been either the following Sunday, or in some cases, they would appear at the board's office in Olympia on the following Monday. This was done in an effort to maintain the security of the examinations and at the same time allow persons who because of strong religious convictions would not have been able to be registered as professional engineers.

Another one of the oddities that showed up occasionally was the husband and wife team. Because they normally had studied together and had used the same reference books, they usually wanted to sit at the same table. This required close monitoring and usually a proctor was stationed nearby to make sure that each person worked his own examination. There never seemed to have been any problem with one trying to help the other or any other type of cheating occurring. The thing that always impressed me when the results came in, quite frequently one would pass and the other would fail. There were several incidents of which I know that the wife passed the examination before the husband. I always wondered how they handled the problem emotionally at home.

After going for a number of years with only a sprinkling of two or three woman candidates in the examination room along with literally hundreds of

men, in the mid-seventies it was noticeable that the number of women sitting especially for the E.I.T. examination was increasing dramatically. Instead of the less than one percent of past years, the numbers began to increase to where in the early 80's from ten to twenty percent of the candidates were young women. As these E.I.T. registrants progressed into the professions, we began to see more and more women sitting for the branch examinations. It is not uncommon for ten percent of the candidates of the present day to be females.

Another of the transitions that occurred much more rapidly was the change from the slide rule to the hand calculator. In the mid-seventies the proctors first began to note that a few of the candidates at one of the examinations had these new-fangled devices with them. Just one year later Professor Albert Hoag from the University of Washington who was acting as one of the proctors came up to me and said, "I only saw about a dozen slide rules on the tables and most of them were just brought along for the atmosphere." The candidates, even then, were using the hand-held calculators and had brought their slide rules with them as backups. Now, of course, one never sees a slide rule at the examination.

Examinations were sometimes labeled by the board because of the number of persons from some organization that desired registration because of "company policy". In the mid to late 60's for instance, the Department of Highways made requirements known that anyone wishing to be promoted beyond a certain grade must be regis-

tered as a professional civil engineer. This brought a drastic increase in the number of people from the Department of Highways who wished to become registered as soon as possible. Several of the examinations in the late 60's were dominated by these kinds of people and the number of civil branch examinations, even though always in the majority, increased drastically.

Similarly in the 70's when the Boeing Company had its dramatic layoffs and closures, that the numbers of these engineers who had never had the need to be registered, now felt that it would enhance their resumes and chances of getting jobs at some other employer even if it did not help them to maintain their employment at Boeing. Since most of these employees were mechanical engineers, the number of mechanical examinations given at this time increased to where it even surpassed the number of civil applicants. The board laughingly refer to that particular examination as the "Boeing examination". Incidentally, it was noted that the applicants for this particular examination were of exceptionally high quality. A larger percent of those sitting for this examination passed than any other examination of memory.

The board always encouraged the exam takers to be as comfortable as possible at the examination. It was always a trying time for a person to maintain their peak performance over the long eight hour period of time required to sit for these written examinations which consisted mostly of problem solving. The board tried to provide adequate space by having the applicants sit two to a

typical eight-foot table. They tried to maintain an atmosphere of quiet and good lighting and good temperature control so that the candidates would feel comfortable. The applicants learned early that part of this being comfortable included stocking themselves with snack foods that they could eat or drink during their problem solving time. No doubt this was a carry-over from their periods of study or perhaps working conditions. Normally you would expect the thermoses full of coffee along with other assortments of drinks such as canned pop, special fruit juices, oranges, and apples. It also included peanuts and candy bars, cookies, potato chips, etc. Cleaning up the exam site after an eight-hour examination looked more like cleaning up the cafeteria after a lunch hour at school.

One of the disagreeable things about examinees attending specific times and places was the variety of excuses that we had to listen to. Most of them would have preferred the examination to be held in their home towns and at times that were of their own choosing. It became very difficult to explain to some of these types of applicants that the examinations had to be set at specific times and dates for very good reasons and that their excuses could not be accepted. These excuses ranged all the way from not being able to get away from work or their wife was expecting a new baby at that time, to the company was sending them out of town on a very important project at that period. One of my favorite illustrations is the applicant from a Scandinavian country who was trying to get registered so that his company could perform engineering services in the United States. Timing was

critical for both him and his company in getting himself registered. When I explained to him that he would have to be at Seattle on a specific date, he became very uncomfortable and asked if it would be possible for him to appear at another time. When I explained to him that the board very seldom made that kind of accommodation and told him that even though his engagement seemed important to him, the board would not accept any excuses and expected him to be there at that time and at that place if he wished to be registered in this country. He said it was a very important engagement and that he did not think he could break it. We terminated the telephone conversation with the perception on my part that he would not be at that exam. So I was quite surprised when he showed up at the examination on that date. I asked him how he was able to make the date when he had told me on the phone that he would be unable to break it. His very short answer was, "I just told the King that I couldn't make the engagement with him." Obviously I was dumbfounded and pressed for more details, but about all I got out of him was that he had had a very important diplomatic appointment with the King of his country. He felt that registration was so important to him and his company, that he broke the date with the King. I often used this story when a candidate was offering some flimsy excuse as to why he couldn't be at the exam site at a certain time with telling results.

Another one of my favorite stories always came to mind when I was explaining to some individual that if they wished to perform engineering

services as a private consultant that they would have to become registered. A great number of them would say that they had been out of school too long. Or, I'm too old to start taking tests again. I reminded them of the person who showed up to take the land surveyor's examination, which is a very difficult two consecutive days exam. It was obvious that he was retired and certainly in the later years of life, but he showed up at the exam site with the usual suitcases of books and then very enthusiastically sat down and started the examination. His wife who had accompanied him this day asked if she could sit near the front of the examination room with the proctors, not having any place else to go. As I was getting her a chair in which to sit, she confided in me that she did not understand why her husband was subjecting himself to this very demanding task. After all, she said, he's retired from a full life of work, he's 71 years old, and I don't know why in the world he wants to become a land surveyor. But he was there and very enthusiastically took his examination during the very strenuous two day period of time. I'm only too happy to report the end of the story that he not only passed the examinations, but passed with exceptionally high grades.

Another candidate who passed his examinations with extremely high grades was perhaps the envy of all who observed him. He appeared just a few minutes early for the examination and while the other candidates where unpacking their books and getting settled down for the grueling exercises before them, he nonchalantly walked into the examination room and took his seat. The only

piece of equipment that he had in his hands was a slide rule. The proctors watched with a great deal of envy and admiration as he sat there doing the full day of examination, working out his problems on his slide rule and placing his answers on the answer sheet. He even finished the examination early and before four o'clock, walked out, still carrying just the slide rule in his hand. Truly a remarkable experience.

The most remarkable story that comes to memory in my nearly eighteen years of proctoring examinations for the board concerns an individual who set a record which I am sure will never be broken. He had started his examination procedures in mid-life and had what the board considered to be a marginal educational and experience record. He worked as an engineer for a municipality and apparently was striving for registration in order to better his promotional possibilities. He had started the examination process before I became the executive secretary to the board, but for the first several years of my employment, he never missed an examination, but he never passed an examination. He continued steadfastly appearing every six months to sit for the eight hour fundamental examination and the eight hour civil examination. He continued for thirty-eight consecutive examination periods. It early became apparent to the board that because of his low scores that he was never ever going to pass the exams, but because of some kind of stubborn persistence, he insisted on going through the ordeal every six months. The law made provision for anyone failing the examination to be able to sit for the following examination with

only the payment of a fee every other time. He was a rather quiet and dignified person who always sat near the back, by himself, and worked very diligently for the entire eight-hour day. We actually got to be good friends over the years. He always expressed his feeling to me that he expected to pass the very next examination.

It would not be right to close this chapter on registrants without giving some dry statistics in which everybody may or nobody might have an interest.

The first on the honor roll of statistics is William D. Shannon, the man who, as a member of the House of Representatives for the State of Washington, shepherded the first Registration Act of 1935 through the legislature and also sponsored the 1947 Act. Mr. Shannon was registered under the Grandfather Act as Number 114 in civil and hydraulic engineering.

Luther E. Gregory was issued license Number 6 in 1936 and holds the honor of being the person registered in the most number of branches. He was registered in civil, electrical, mechanical, structural, and hydraulic engineering and also in the field of land surveying.

The first professional engineer licensed in the State of Washington by reciprocity was Walter Brenton. He was issued license Number 1183 as an electrical engineer by reciprocity with the State of Oregon. The first person to be licensed by reciprocity as a professional land surveyor was also

from the State of Oregon, he was Edwin F. Postal, Number 1381.

The first licensee under the 1935 Act to be licensed by examination was George E. Lamb of Hoquiam. He was one of twelve who took and passed the very first written examination given in Olympia in 1936. He was issued license Number 1470.

The first person to be licensed under the Grandfather Act of 1947 was Phyl S. Bessor. He was issued license Number 2489 in mining engineering.

The first person to be licensed as an engineer-in-training and holds Certificate Number 1, was Howard M. Angell, Jr. He took a two day examination May 29-30, 1948, and then four years later received his professional engineer's license No. 4856 in mechanical engineering.

The person to hold the dubious honor of being the first person to have his license revoked by the board was Kenneth B. Aldrich. Mr. Aldrich was registered by reciprocity with Arizona in electrical engineering and was issued license Number 4000. Unfortunately, in 1956 the board found that he had received his license fraudulently in Arizona and thus on December 11, 1956 the board revoked his authority to practice in the State of Washington.

CHAPTER EIGHT

THE EXAMINATIONS

The board's first big problem in 1936, after having evaluated nearly fifteen hundred persons for registration under the Grandfather Act, was to next grapple with giving written examinations to all applicants. The board members first conferred with the Oregon board, which had been in operation since 1919, as to how their exams were prepared and graded. After this meeting the board began to assemble problems and to write the first exams. This did not prove to be too difficult because they were only examining in six fields: civil, electrical, mechanical, structural, hydraulic engineering, and the field of land surveying. Most of these subjects were well represented with the first five member board. Thus, it was easy for them to assemble their own examination problems. This problem of having to prepare examinations continued to grow and be the number one problem facing the board for at least its first thirty years. For instance, only twelve persons took the first examination in 1936. By June of 1960 this number had grown to 603.

With the advent of the titles of professional engineer and engineer-in-training in the 1947 Act, this chore changed dramatically. First, the numbers taking the exam rose from the "dozens" to the "hundreds". Second, the five board members did not have the expertise in many of the diverse branches and subdivisions of engineering in which

applicants were asking for registration. The board went to the educational institutions for help in getting volunteer services from numbers of engineering professors who, because of their familiarity with testing the students, had much less trouble preparing and grading examinations than did the usual board members. But even this extra work force didn't really supply expertise in some fields which were more "working titles" than they were educational divisions of engineering. For instance, applicants sought registration under the 1947 Act in such areas as radio engineering, manufacturing engineering, heating and ventilating engineering, tool engineering, value engineering, refrigeration engineering, etc. After grandfathering in a great number of persons into these categories (which Ed Dohm humorously later referred to as "cats and dogs disciplines"), the board finally adopted a policy of granting registrations only in such branches of engineering in which degrees were given at one of the state's schools of engineering.

Before 1948 all examinations were given in Olympia. The first examination under the 1947 Act was given June 22-24, 1948. Shortly thereafter there was a great deal of enthusiasm created in Spokane and a large refresher course was organized and given at the School of Engineering at Gonzaga University. Then, on September 6, 7, 8 of 1948, the first exam was given in the Spokane area on the Gonzaga campus. The students took the E.I.T. and a fairly large group of engineers in eastern Washington assembled to take the branch exams. Later on the E.I.T. examination was given to students at Washington State University at

Pullman and also at the University of Washington in Seattle. In the mid-1960's the demand was for additional sites and the board introduced the examinations at the graduate center at Richland and also the fundamental examination was given to students at Walla Walla College.

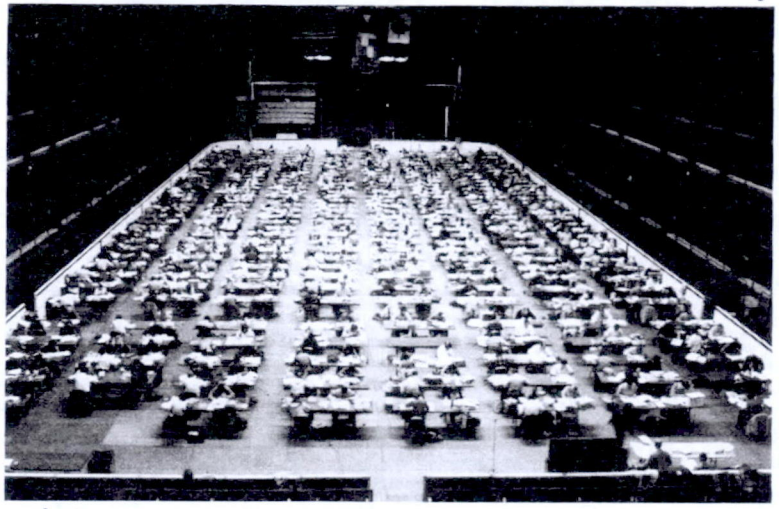
Because of the larger numbers of people taking the examinations and most of them living in the Seattle area, the board now began to use facilities on the University of Washington campus for their twice yearly examinations. In the late 1960's, because of large numbers of applicants and also because of the change in the times of the year that the board chose to give the examinations to be in uniformity with surrounding states, the Seattle exam site was changed from the University of Washington to the Seattle Center buildings. Except for two of the exams given at the Seattle Masonic Temple and one time at Seattle Pacific University, all major exams have been given in the Seattle Center buildings.

One can begin to appreciate the need for large spaces when you realize that only two candidates were assigned to the 2 1/2' by 8' tables and with nearly 1,000 people showing up for the examination it requires a great deal of space.

The board continued to give the examinations annually in Spokane, Walla Walla, and Richland. The E.I.T. exams only were given twice a year for graduating students at Washington State University in Pullman.

For the first twenty-five years the board used a rather complicated system of grading the

applicants and the examinations. They allowed up to forty percent for the applicants' experience records; they allowed up to thirty percent for the fundamental grade, and up to thirty percent for the branch examination grade. These were totaled together and became the grade necessary for registration. The board fixed the minimum at seventy



points.

In September of 1962 the board made some major changes in this grading system. They now allowed eight years experience as what they termed qualifying only and then they allowed one-half point per year for experience above that statutory eight years, up to a maximum of ten points, which would have been a total of twenty-eight years experience by the applicants. They also changed the passing grades of the written examination so that they must average seventy percent. They set a minimum of sixty percent in either the fundamentals or branch examinations. Then the total percentage needed for certification was set at

the weighted grade of seventy.

In 1969 the board decided that this system was also clumsy and eliminated the points system entirely and required a minimum passing grade of seventy on each of the two written examinations which were not to be averaged. This system is in use down to the present time.

For the first fifty years the board used the educationally approved and time honored system of curving the examination scores, usually based on a standard deviation curve. Just recently the board has adopted a different plan in which scores are pre-set. The exam questions are closely reviewed at the time of preparation and taking into consideration the difficulty of each individual problem, a specific point system is assigned to it. Applicants then, as they work the problems, are graded on how well they have done on that problem in respect to its assigned value. Thus, the examination cutoff score passing grade is determined before the applicant takes the examination. This supposedly makes for a fairer grading system and is more defensible in case the applicant appeals his failing score. It is apparent to me that the examinations have become more difficult in their content and also perhaps in the grading of these exams over the years. However, I have noticed in my experience, that whether the applicants think that the exam is either easy or hard depends on whether they have passed or failed the examination.

The examination procedure in the 1930's and 1940's were usually two 8 hour written exami-

nations. That is the one examination in the fundamentals of engineering and the other exam being in the specific branch that the applicant has been educated in and working in. These exams were open book, that is, the board allowed the applicants to use text books, handbooks, practice examinations and solutions that they had worked on prior to the examination, and most other materials that the board felt were suitable in testing the applicant's ability. It was not so much a matter of testing their memory work as is done quite frequently in college, but rather their ability to seek out engineering solutions regardless of where that basic material might be found.

These early examinations also included an oral interview and an additional very brief one or two hour examination on ethics, and sometimes on the law itself. Applicants also were asked to submit a short engineering project report of which they had been responsible in their work experience. In the mid-1960's these reports were eliminated because the board just did not have the time to review them due to the extraordinarily large number of applicants.

As mentioned above, the early branch examinations were prepared by the board members themselves and then later were supplemented by professors at the various engineering colleges in the state. In the 1960's the board decided that so many of the examinations being prepared by academicians were too bookish and many times more theoretical than practical. The board then sought the aid of practicing professionals in their specific

fields. This was especially true of examinations in agricultural, aeronautical, naval architecture and marine engineering, chemical, industrial, metallurgical, ceramic, sanitary, and structural engineering. At first these professional practitioners prepared and graded the examinations mostly as a labor of love with sometimes a modest stipend being paid for their time and efforts. The board owes a great debt to a large number of professional engineers who have given such assistance in times past.

Beginning with the advent of the title "engineer-in-training", the board, following the lead of many of the surrounding states, tried various means of examining the graduating seniors at the colleges of engineering. For instance, in the early 1950's for a few years the graduating seniors were allowed to sit for the eight hour fundamental examination and their intended branch examination. The applicants, after having passed this so-called "two day E.I.T." examination were permitted to reapply to the board after four years of practical progressive experience and by the submission of a written report and a personal interview with the board they were then granted professional registration. This system did not work too well. There were several students who had gained passing marks on their two day E.I.T. examinations who, for various reasons, never did reapply to the board for professional registration. Whether it was because of personal problems, changing jobs, or jobs that did not require registration is unknown, but it always seemed strange to me that after having put that much time and effort into the registra-

tion process that they would never follow through. There were many others who, though they were eligible in four years, took as long as twenty or twenty-five years before they would reapply for full professional registration.

During this same period the board tried several different fundamental examination procedures for the graduating students. At one time they gave multiple choice questions. These were given usually in a four hour period of time and were closed book rather than the more generally accepted open book system. Dr. McGivern, Dean at Gonzaga University School of Engineering, supplied a great number of these tests and he was ably assisted by a fellow board member, Robert Bergseth, who was a professor at the University of Washington.

When the National Council of Engineering Examiners finally came out with a uniform fundamental of engineering examination in 1966, the Washington board began to use this nationally accepted examination. In the early 1970's this examination became multiple choice and electronically graded. There are now in the neighborhood of forty thousand candidates nationally per year taking this examination, of which more than one thousand are from the State of Washington.

In 1962 the board decided that the structural examination, which had been an eight hour-one day examination, now required much more depth in testing and went to a two day examination. It has always been either prepared and graded by a member of the board or by a committee of structur-

al engineers from the Structural Engineers Association of Washington and overseen by a member of the board.

In December of 1962 the board went to a two day examination in land surveying. One day being given for problems and the second day being added specifically for an examination of the applicant's knowledge of the rules, laws, and principles of land surveying. Again this examination was prepared by members of the board until the early 1970's when assistance was sought from the Land Surveyors Association of Washington who formed a committee to prepare and grade the examination under the oversight of one or more of the members of the board.

The board has always encouraged its applicants to properly prepare for these examinations as mentioned earlier. One of the better ways of this preparation is participation in some kind of structured refresher course taught either by academicians or members of the profession. The Washington Society of Professional Engineers has organized several of these refresher courses over the years at various locations to assist the new engineer in better preparing himself for his life's work as a professional. Again, a great deal of thanks is due to these persons who have given so much encouragement and instruction to the newcomer to the engineering profession.

The number of people who have assisted the board for proctoring these examinations are far too numerous to mention by name. They are composed

of college professors who saw and filled the need in helping the board to attend and proctor the various exams that have been given, especially since 1948. When you realize that ten to fifteen such proctors have been needed in Seattle, five or six in Spokane, five or six in Pullman, three or four in Richland, and two or three in Walla Walla, you can begin to realize the number of dedicated people who, for a very small stipend and sometimes no payment at all, have helped countless thousands of people in being able to sit for these examinations which in turn lead to professional registration and has enriched their lives in their chosen profession. It is totally impossible for their names to be listed herein, but a great debt is owed these people for their continuing support of the board's activities in examining people for registration.

CHAPTER NINE

THE NATIONAL COUNCIL OF ENGINEERING EXAMINERS AND RECIPROCITY

Thirteen years after the state of Wyoming passed the first registration act for professional engineers in 1907, eleven other states (Louisiana, Illinois, Florida, Oregon, Nevada, Michigan, Iowa, Idaho, Colorado, Virginia, and New York) had done likewise. Since each of these boards had similar problems, it was only natural that somebody propose a meeting for discussing these problems. Thus, seven of the twelve state boards (Colorado, Florida, Illinois, Iowa, Louisiana, and Michigan) met at the Hotel Sherman in Chicago, Illinois on November 8-10, 1920. It started as a very informal meeting but like many similar meetings, it ended with the election of a chairman and a secretary and the date for another meeting the next year. They even adopted a name and thus was born the "Council of State Board of Engineering Examiners". In 1925 the word "National" was added to the organizational name. This name was to remain until it was shortened to "National Council of Engineering Examiners" (NCEE) in 1967.

NCEE struggled with many problems over the years. The preparation and grading of exams was a major chore for all the state boards at first. Most of them had one or more deans of engineering

as a member, some states required it by law. This question of examinations took a lot of time at the first meetings. It still does today, although this chore has now been computerized and printed in a very professional-like manner. Since engineers are a very mobile group, the need for registration in more than one state often became a must. At first many of these engineers had to go through different testing procedures as they sought registration in each additional state. Though this problem is not completely solved yet, great strides have been made and will be discussed further later.

Another source of many of the discussions was how to evaluate the educational background of the applicants. Some kind of uniformity was obviously needed.

In 1932 NCEE, with the assistance of many of the technical societies and schools of engineering, was instrumental in organizing the Engineers Council for Professional Development (ECPD). This organization has become internationally recognized as the accrediting body for engineering curriculum throughout the United States.

The ECPD established standards for engineering and technology curricula and then made visits every six years (more often if problems existed) to every school that wanted accreditation. Many state boards now require its applicants to be graduates of such an accredited institution (all six of the engineering schools in Washington are now accredited, that is, the University of Washington, Washington State University, Seattle University,

Gonzaga University, Walla Walla College, and St. Martin's College).

In 1978 ECPD changed its name to the more descriptive "Accreditation Board for Engineering and Technology" (ABET).

In the mid-1970's ABET began to invite and encourage state boards of registration to send observers to the ABET visits to institutions in their jurisdiction. Washington has taken advantage of this and found it to be a very rewarding experience.

These visits take two to four days depending on the number of disciplines accredited, and are very thorough. They include such things as: facilities, textbooks, libraries, laboratories, interviews with students and their transcripts, discussions with the deans and their faculties, and presidents of the institutions and their administrators.

The Washington Board has been a contributing member to ECPD/ABET since its beginning in 1935.

After establishing uniformity in education, NCEE tackled the next big problem of uniformity in examinations. Some state boards were giving oral exams (or none at all in some cases) but most recognized that written exams were easier to defend. Some were giving four hour examinations, a few were giving six hours, but most were giving eight hour examinations. Before very long it was generally recognized that it was necessary to give an eight hour examination in the fundamentals of

engineering (often called the engineer-in-training exam) and an eight hour exam in the principles and practice of engineering (usually referred to as the branch exam).

Although NCEE saw the need and began working on it much earlier, it was May, 1965 before a uniform fundamentals of engineering examination was actually compiled, printed, and offered to the various state boards.

Washington began using it in May 1968. Now all fifty state boards, four territorial boards, and the District of Columbia use it. It is offered on the same period in mid-April and late-October each year. It started as the working of ten problems out of some twenty problems in subjects such as statics, dynamics, mathematics, chemistry, physics, electrical circuits, engineering economics, etc. It is now a multiple choice, machine-graded test of 140 questions for the first four hours and seven ten-part problems chosen from approximately the same subjects (also multiple choice, machine-graded) for the second four hours.

This fundamentals of engineering examination proved so popular for the state boards that NCEE almost immediately produced branch examinations in civil, chemical, electrical, and mechanical engineering in December 1966. Washington started using these exams in May 1968. At first these subjective type examinations were prepared and upgraded by contract with professors at various engineering schools, but now are mostly provided by the founder societies of the specific disci-

plines. As these technical societies became involved, other disciplined societies began providing exams in such branches as aerospace/aeronautical, agricultural, ceramic, industrial, manufacturing, nuclear, petroleum, and fire protection engineering.

As NCEE solved the problems of uniformity and education evaluation and examination, it also solved the reciprocity or comity problem. Earlier the charges and countercharges between the state boards were: "Your applicants are not as well educated as ours." "Our exams are harder (or longer) than yours." Such statements are no longer valid. A professional engineer registered in one state having a baccalaureate degree from an ECPD/ABET accredited institution and having passed an eight hour examination in the fundamentals of engineering and the eight hour examinations in the principals and practice (branch) may be registered by any engineering examining board by simply completing an application form.

NCEE provides a record certification program by which a registrant of any state board may supply the usual basic requirements of NCEE and for a fee NCEE will provide this information (this includes transcripts, references, experiences, affidavits from other P.E.'s, etc.) to any other (or all other) state boards which in turn will accept these documents from NCEE in lieu of the applicants having to supply them. Though this is not the same as federal registration, it does alleviate the time and tedious process of the registrant's supplying duplicate documents in most cases. Many pro-

fessional engineers use NCEE's record of certification program for multiple state registrations and a few have gotten registered in all fifty states this way.

NCEE has a staff of some twenty persons at P.O. Box 5000, Seneca, South Carolina 29678. It is governed by a president elected annually at council meetings and four vice presidents who are elected by their four geographic zones (over which they preside for two years).

The full council meets annually as invited by the four rotating zones, usually in August. The zones meet twice annually, once at the council meeting and one other time as invited by the boards making up that zone. This meeting is usually in early spring.

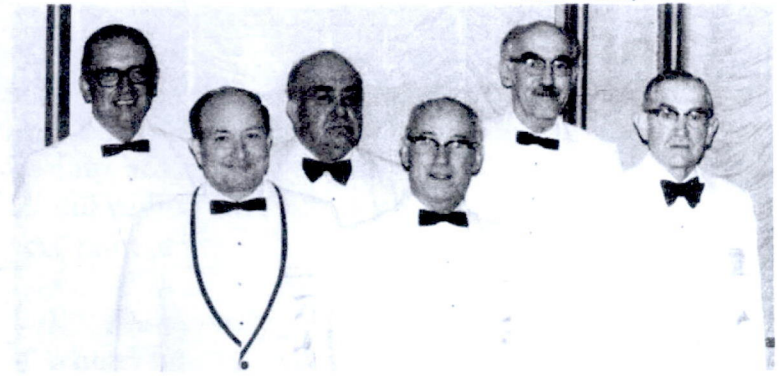
The Washington Board has hosted the western zone meeting of NCEE twice; in Spokane in 1971 and in Seattle in 1982. In addition, Washington hosted the 1972 annual meeting of NCEE in Seattle. The board was amply assisted by members of the Washington Society of Professional Engineers, the Land Surveyors Association of Washington, the Consulting Engineers Council of Washington, and the Seattle Section of the American Society of Civil Engineers.

Although the Washington State Board has been a member of NCEE since 1935, it was never very active in national council meetings and committees until the 1960 annual meeting held in Portland, Oregon. Four members of the

Washington board attended and for the first time a NCEE committee was headed by a member of the Washington State Board. General Dohm was elected chairman of the committee on land surveying and Bob Bergseth was appointed to the NCEE finance committee. Beginning in the 1960's Washington became increasingly active in NCEE. Washington board has had a member on the very important uniform examinations committee continuously since 1972 and on the State Board Secretary's Committee, almost continuously since 1960. Dohm was chairman of that committee in 1961 and Gateley was chairman of the same committee in 1971 and 1972.

The host Board for the annual meeting of the National Council of Engineering Examiners in Seattle, Washington.

Photo Courtesy Mike Yuhl, P.E.



From left to right: F. Robert Bergseth, Quentin H. Gateley, Kenneth Norrie, Dr. James McGivern, Halvard Birkeland, Cecil C. Arnold

Over this entire fifty year period of time, three of the Washington board members have received "the distinguished service medal" from NCEE. M.K. Snyder received it in 1955, General

Edward C. Dohm in 1958, and Dr. James G. McGivern in 1971.

CHAPTER TEN

WHAT ABOUT LAND SURVEYORS?

Ever since the practice of land surveying was included in the original Act of 1935, the land surveyors in the state of Washington have had to struggle for recognition as a separate profession. The original Act seemed to include land surveyors as merely a branch of engineering. It required all board members to be professional engineers and in the entire first fifty years of the board's activities, only five professional engineers have been registered as land surveyors and most of them, though registered to do so, had actually performed very little as a land surveyor. General Edward C. Dohm, who was the first professional engineer and land surveyor on the original board, believed that land surveying was merely a branch of civil engineering and believed this all of his life. The American Society of Civil Engineers has always insisted that all surveying (including geodetic and cartographic) are "part of the civil engineering profession".

The nearby states of Oregon and Idaho, both of whom had registration acts several years prior to Washington, allowed their registered civil engineers to do land surveying until very recently. The big western state of California still allows their registered civil engineers to do land surveying. About half of the registration boards in all other states combine land surveying with engineering registration. Most of them have felt in past years

that land surveying was merely a subsidiary of the engineering profession.

The first land surveyors examination offered by the State of Washington consisted basically of questions generated in the fields of engineering and construction surveying. In fact, it was not until Clarence Shain became the second executive secretary to the board in 1962 and became responsible for the preparation and grading of the land surveyor examinations, that any emphasis was ever placed on laws and rules governing land surveying. In fact, it was in December of 1962 before the board began giving two day examinations in order to qualify land surveyors for registration. At that time it became the policy of the board for the first day of the examination, to qualify land surveyors for registration, to be based on the principles of the laws and rules of surveying with the second day of the examination based on surveying problems.

In the changes in the Registration Act as passed by the 1959 legislature, the new Section 105 "Misconduct or Malpractice in Engineering Defined" only engineering was mentioned in the eleven paragraphs defining misconduct and malpractice, until the very last phrase where land surveying is seemingly just "added on".

This may have been because of the terrific fight that was being carried on in 1959 amongst the engineers regarding the practice of engineering by a corporation. In any event land surveyors wary of being involved in the big debate specifically

asked to be dropped from the language of practicing by a corporation. Since the engineers were the more vocal in pressing for revisions in the 1947 Act and Section 105 was specifically a new section the engineers in pressing for this enforcement of the procedure in the Act, did not mention the land surveyors in this new section except as a part of the last paragraph which was admittedly "the catch-all paragraph".

As mentioned earlier from 1936 to 1962 the land surveyors examinations were prepared and graded by General Dohm and consisted basically of the fundamentals of measurement and instrument care and correction.

In 1962 Clarence Shain was hired by the board as Executive Secretary and because of his interest in land surveying, the board delegated to him the responsibility of preparing and grading the land surveyors examination. For the first time this became a two day exam and Shain emphasized the rules and procedures of subdividing land in addition to the typical land surveying problems. Mr. Shain particularly felt that the judgment inherent in subdividing land could be illustrated by knowing all of the peculiarities of subdividing Section Six in the townships. Thus applicants quickly discovered that if you could learn to properly subdivide Section Six, you could probably pass Mr. Shain's examinations. Hal Birkeland replaced Jack Abel in 1970. Birkeland was registered as a professional land surveyor but had practiced very little.

When Mr. Shain retired and I replaced him

as Executive Secretary in August of 1967, he was asked by the board to continue preparing and grading the land surveyors examination and this he did. After Mr. Birkeland was appointed to the board, Mr. Shain continued for one more year in this endeavor and then asked to be replaced. Mr. Birkeland then sought assistance from Daniel O'Shea (who had retired as chief surveyor for the Weyerhauser Company shortly before this time). Mr. O'Shea, under the supervision of Mr. Birkeland, prepared and graded a number of land surveyors examinations.

Finally, he too, retired from the task and Mr. Birkeland and I went looking for assistance primarily from the Land Surveyors Association of Washington (LSAW). We found a very capable and willing individual in Albert Hebrank. With Mr. Hebrank acting as chairman, a committee was put together by LSAW and so for several years the land surveying examinations were prepared and graded under Mr. Birkeland's supervision.

Mr. Birkeland was replaced on the board by Mr. John Wallace. Mr. Wallace had been a practicing land surveyor as well as a professional engineer for a great number of years, was in his retiring age and did not wish to spend the amount of time that was necessary for the proper preparation and grading of examinations. He solicited help again from the members of the Land Surveyors Association of Washington and David Berg, Chief Surveyor for Whitaker Engineers in Tacoma, agreed to act as the chairman-coordinator of LSAW members who then supplied and graded the LSAW examinations.

This continued until my retirement in February of 1935. Shortly thereafter the LSAW helped push through the legislature a change in the law which made it mandatory that two additional members be appointed to the 5 member board and that at least two of the seven members should be practicing land surveyors. Mr. Jerry Olson and Mr. Bob Cray were appointed to the board and they continued the process of using LSAW members to directly prepare and grade the land surveyors examinations.

Long before this, however, the rumblings were beginning to be heard from the land surveyors who kept saying that civil engineers were not properly trained to do land surveying, and especially with new changes in the laws after World War II, civil engineers were not given the educational background to properly carry out the task of land survey. Land surveyors complained that civil engineers who were trying to do land surveys were doing a very poor job and at this point, the board asked for an opinion from the Washington State Attorney General regarding what separation could and should be made between land surveying and engineering. In 1946 a landmark opinion was delivered by the State Attorney General which stated that land surveying was a separate profession from engineering and that anyone in the State of Washington who practiced any type of land surveying and land subdivision must be registered as a professional land surveyor.

This legal decision was the impetus that the land surveyors needed and so in the early 1950's

land surveyors in the Seattle area banded together and formed the Land Surveyors Association of Washington. The have become very active in professional and political fields. Their presence in the business, legal, and political world has now become recognized as a truly different profession, separate and apart from engineering.

CHAPTER ELEVEN

EPILOGUE

It is now more than five years since my retirement as the Executive Secretary of the board of Registration for Professional Engineers and Land Surveyors. I feel it is necessary to relate some important happenings after the first fifty years of engineering registration in the State of Washington.

First, my assistant for the last five years of my tenure as Registrar, Mr. Alan Rathbun was appointed as Registrar and Executive Secretary to the board and immediately changes arranged by the Department of Licensing were forthcoming. But first, let me relate the changes in the board members themselves.

In 1986 the legislature was persuaded by the Land Surveyors Association of Washington to change the makeup of the Board of Registration that had been in place since 1935. The requirement of five professional engineers to be appointed by the governor to carry on the affairs of the registration of engineers and land surveyors, the RCW 18.43.030 added two practicing land surveyors to the board as the board was increased from five to seven members. Since Jerry Olson of Olson Engineers of Vancouver, Washington had been appointed in mid-1985 was a practicing land surveyor as well as a professional engineer, the gover-

nor was then persuaded to add Robert Cray and Wesley Taft to the present board. Robert Cray is a practicing professional land surveyor and had been the president of the Land Surveyors Association of Washington. He is a principal in a land surveying firm on Whidbey Island. Wesley Taft is a professional engineer specializing in structural engineering and is president of Whitaker Engineers, Inc. of Tacoma.

In 1987 Wilho Williams, who had served a previous five year term on the board, was reappointed replacing John Wallace who had served five years. Thus Mr. Williams became unique in becoming the first board member to serve two terms not consecutively on the board.

But the greatest change was a product of AGO, 1986, Number 14. This Attorney General's opinion was asked for by Director Teresa Aragon of the Department of Licensing. The department's plan of reorganization, which reduced the board's authority in applications, renewals, examinations, removed some of the board's clerical personnel. The Director also attempted to change the Registrar's duties for the board which resulted in Mr. Rathbun's resignation. By this time the Director was in such bitter conflict with the board over the authority to move and change personnel and reduce the board's authority that she asked for an Attorney General's opinion in order to substantiate her position. To her chagrin the Attorney General stated in his formal opinion addressed to her on December 17, 1986 that indeed the board did have control over its personnel, and further

that the Department of Licensing had been in error in trying to restrict the board's use of its own employees. (See Appendix)

Since that time negotiations have continued with representatives of the Governor's office and various legislators trying to settle the dispute of whether the board should continue to be a part of the Department of Licensing with much more leeway for independent functions, or the board be given independent, small agency status under the direction of Fiscal Management.

Later developments have brought about the replacement of Ms. Aragon by Mary Falk as Director of the Department of Licensing, the return of Mr. Rathbun as Registrar and the signing of a contract of agreement between the board and the department. The contract gives the board control over its own finances and personnel.

THE END

THE FOLLOWING IS A LIST OF THE BEGINNING AND ENDING CERTIFICATE NUMBERS AND THE TOTAL NUMBER OF CERTIFICATES ISSUED FOR EACH YEAR SINCE 1936.

YEAR	CERTIFICATE NUMBER FROM	TO	TOTAL
1936	1	1435	1435
1937	1436	1510	62
1938	1511	1545	35
1939	1546	1607	62
1940	1608	1661	54
1941	1662	1723	62
1942	1724	1767	44
1943	1768	1811	44
1944	1812	1881	70
1945	1882	2046	165
1946	2047	2259	213
1947	2260	2829	570
1948	2830	4017	1188
1949	4018	4165	148
1950	4166	4271	106
1951	4272	4447	176
1952	4448	4624	177
1953	4625	4850	226
1954	4851	5109	259
1955	5110	5483	374
1956	5484	5807	324
1957	5808	6183	376
1958	6184	6596	412
1959	6597	7080	484
1960	7081	7534	454
1961	7535	7969	435
1962	7970	8360	391
1963	8361	8718	358
1964	8719	9112	394
1965	9113	9529	417
1966	9530	10056	527
1967	10057	10653	597
1968	10654	11219	566
1969	11220	11781	562
1970	11782	12449	668
1971	12450	13235	786
1972	13236	13964	729
1973	13965	14546	582
1974	14547	15081	535
1975	15082	15737	656
1976	15738	16285	548
1977	16286	17000	715
1978	17001	17766	766
1979	17767	18533	767
1980	18534	19370	837
1981	19371	20182	812
1982*	20183	20530	348

* as of May 1982

THE FOLLOWING IS A LIST OF THE BEGINNING AND ENDING CERTIFICATE NUMBERS AND THE TOTAL NUMBER OF E.I.T. CERTIFICATES ISSUED SINCE 1948, FOR EACH YEAR

YEAR	CERTIFICATE NUMBER FROM	TO	TOTAL
1948	1	127	127
1949	128	299	172
1950	300	462	163
1951	463	615	153
1952	616	757	142
1953	758	879	122
1954	880	970	91
1955	971	1056	86
1956	1057	1145	89
1957	1146	1296	151
1958	1297	1491	195
1959	1492	1715	224
1960	1716	1943	228
1961	1944	2156	213
1962	2157	2359	203
1963	2360	2574	215
1964	2575	2762	188
1965	2763	3029	267
1966	3030	3353	324
1967	3354	3688	335
1968	3689	4033	345
1969	4034	4423	390
1970	4424	4766	343
1971	4767	5125	359
1972	5126	5459	334
1973	5460	5792	333
1974	5793	6186	394
1975	6187	6533	347
1976	6534	6947	414
1977	6948	7452	505
1978	7453	7986	534
1979	7987	8613	626
1980	8614	9316	703
1981*	9317	10072	756
1982**	10073	10339	267

* 1981 - 376 licenses issued by reciprocity.
** as of May 1982

Ken Eikenberry

ATTORNEY GENERAL OF WASHINGTON

TEMPLE OF JUSTICE • OLYMPIA, WA 98504-0121 • PHONE 206/753-6200

OFFICES AND OFFICERS--STATE--BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS--EMPLOYEES ASSIGNED TO SUPPORT BOARD FUNCTIONS--SUPERVISION OF EMPLOYEES

(1) The Board of Registration for Professional Engineers and Land Surveyors, not the Director of the Department of Licensing, has the authority to manage, direct, supervise, and discipline those employees assigned to support the Board's function.

(2) The Director of the Department of Licensing does not have the authority to assign duties to these employees other than duties relating to the Board's functions.

- - - - - - - - -

December 17, 1986

Honorable Theresa Anna Aragon
Director, Department of Licensing
Highways-Licenses Building
Olympia, Washington 98504

Cite as:
AGO 1986 No. 14

Dear Ms. Aragon:

By a previously acknowledged letter, you requested an opinion of this office on questions which we paraphrase as follows:

> (1) Does the Board of Registration for Professional Engineers and Land Surveyors or does the Director of the Department of Licensing have the authority to manage, direct, supervise, and discipline the current Registrar, Assistant Registrar, and other persons assigned to support the Board's functions?
>
> (2) May the Director of the Department assign duties to these employees other than duties relating to the Board's functions?

For the reasons set forth in our analysis below, we respond to your first question by concluding that the Registrar and other persons assigned to assist the Board of Registration for Professional Engineers and Land Surveyors (Board) in carrying out its duties under chapter 18.43 RCW are under the control of, and

are employees of, the Board. We answer your second question in the negative.

ANALYSIS

In an October 14, 1981 opinion, which you attached to your request, this office concluded that the Board is an independent agency. We stated there that even though the Board receives its funding for administering chapter 18.43 RCW through appropriations made to the Department of Licensing (Department) the Legislature did not place the Board under the control or supervision of the Department. The appropriations received by the Department to support the Board's functions are drawn from the Professional Engineers' Account of the State General Fund. Pursuant to RCW 18.43.150, that account is to be used "to carry out the purposes and provisions . . . and all other duties required for operation and enforcement" of chapter 18.43 RCW. Most of the duties required for operation and enforcement of that chapter are assigned to the Board. The Director of the Department has no authority under that chapter, except for such administrative functions as setting fees and furnishing registration application forms.

Because the appropriations are drawn from a dedicated fund, the Department has no discretion to spend the appropriations on anything other than support for the Board's functions and its own limited administrative functions under chapter 18.43 RCW. The purpose of an appropriations bill is simply to implement general laws; it cannot suspend provisions of a substantive statute. Flanders v. Morris, 88 Wn.2d 183, 190, 558 P.2d 769 (1977). That the legislature chose to implement chapter 18.43 RCW by funding the Board's functions through appropriations to the Department does not, in itself, grant the Department any authority to determine how the Board's responsibilities should be carried out or grant the Department control over staff assigned to assist the Board in carrying out its functions.

The legislature specifically granted the Board authority to employ persons necessary to assist it in carrying out its responsibilities: "The board may employ such persons as are necessary to carry out its duties under this chapter." RCW 18.43.035. A review of how the legislature has authorized the staffing for other boards established under Title 18 RCW highlights the significance of its specific grant of authority to the Board under RCW 18.43.035 to employ staff. The legislature has not often

granted business or professional boards general authority to hire their own staff. Generally, the legislature has granted such boards authority to hire only certain kinds of staff, or it has granted them no authority at all and instead has granted employment authority to the Department.[1]

With respect to a number of these other boards, the legislature has charged the Director of the Department of Licensing with employing staff to support the boards' functions. For example, RCW 18.92.033 states: "The director shall provide the [state veterinary] board with adequate administrative and investigative staff to carry out its duties." The same is true with respect to the Board of Occupational Therapy: "The director shall provide such administrative and investigative staff as are necessary for the board to carry out its duties under this chapter." RCW 18.59.150.

Another method the legislature has chosen is to give the Director of the Department direct authority to hire such staff as are "necessary for enforcement of" or "to implement" a chapter, rather than grant the Board that authority. See RCW 18.83.025 (Examining Board of Psychology); RCW 18.16.040 (Cosmetology, Barbering, and Manicuring Advisory Board).

In other instances, the legislature has granted the Director of the Department authority to employ certain staff "subject to approval" of, or "after consultation" with, the appropriate board. The Executive Secretary for the Medical Disciplinary Board is appointed by the Director of the Department from a list of three names supplied by the Board. RCW 18.72.155. The Executive Secretaries for the Board of Registration for Architects, the Board of Examiners for Nursing Home Administrators, the Board of Practical Nursing, and the State Board of Nursing are employed by the Director of the Department with the individual board's approval or advice. RCW 18.08.340(2); RCW 18.52.060; RCW 18.78.100; and RCW 18.88.090. Clerical or other staff for these boards, however, are employed by the Director without consultation or approval. RCW 18.72.155; RCW 18.08.340(2); RCW 18.52.060; RCW 18.78.110; RCW 18.88.090.

1 In a number of chapters under Title 18 RCW, the legislature has not specifically stated whether the individual board or the Director of the Department has authority to employ staff.

Some boards are granted limited authority to employ their own staff. The legislature has granted the Board of Dental Examiners authority to employ staff "on a temporary basis to assist in conducting examinations for licensure." RCW 18.32.035. The Chiropractic Disciplinary Board and the Dental Disciplinary Board are authorized by statute to hire "necessary stenographic or clerical help" only. RCW 18.26.110(4); RCW 18.32.640(3).

Only the Board of Accountancy and the Board of Pharmacy are granted broad authority to hire whatever staff is needed similar to that which chapter 18.43 RCW grants to the Board of Registration for Professional Engineers and Land Surveyors. See RCW 18.04.045; RCW 18.64.005(5). One other board, the Optometry Board, is granted authority nearly as broad: "The board may employ stenographic and clerical help, and such other assistance as may be necessary to enforce the provisions of this chapter." RCW 18.54.070(4).

It is apparent from your letter that the Department thought it was following the procedure of hiring staff with the approval or advice of the Board, which procedure the legislature has prescribed for certain other Title 18 RCW boards. This procedure, however, is not set forth in chapter 18.43 RCW. The legislature instead has granted the Board of Registration for Professional Engineers and Land Surveyors authority to hire its own staff.

Minutes of Board meetings, supplied by the Board, show that the Board interviewed job applicants and otherwise acted as though it were hiring its staff. It also promulgated regulations outlining the duties and qualifications of the Registrar and Assistant Registrar. See WAC 196-04-030, -040. You noted in your opinion request that the Department of Personnel has classified the Board's staff as Department of Licensing employees. We do not find this to be significant, however, because the classifications appear to have been made on the basis of representations by the Department of Licensing rather than on the basis of a decision of the Department of Personnel.

In summary, the Board is an independent agency; appropriations for its support are drawn from a dedicated fund; and the legislature specifically granted the Board authority to employ staff although it generally has not granted such authority to other business or professional boards. These factors lead us to conclude that the Board, and not the Director of the Department of

Licensing, employs the staff assigned to assist it in carrying out its statutory responsibilities. As employer, the Board has authority to manage, direct, supervise and discipline the staff. Accordingly, the Director of the Department could not assign other duties to such staff. Persons employed to carry out the Department's administrative duties under chapter 18.43 RCW, however, would be employees of the Department and would not be subject to any control by the Board.

We trust that the foregoing will be of assistance to you.

Very truly yours,

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