EDUCATION IN WOOD SCIENCE AND TECHNOLOGY: A STATUS REPORT

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ABSTRACT

This report summarizes the current status of wood science and technology programs in North American universities as determined by questionnaires sent to the various institutions. The 25 undergraduate programs in North America were characterized in terms of their growth and academic offerings. Enrollment in undergraduate programs has increased in size during the decade of the '70's while enrollment in graduate programs has leveled off. A typical program has 42 undergraduate and 9 graduate students enrolled. Since 1964 the number of B.S. programs has increased 32%, while the number of M.S. programs has increased by 19%. During the same time period, the number of Ph.D. programs has grown by 69%. The typical program today is very close in academic offerings to the ideal program proposed by Ellis. Employment of B.S. graduates is characterized in terms of employing industry, job type, and region. The demand for B.S. graduates is currently 2:1 with future demand expected to be 3:1. Average starting salary data by regions are presented. Respondents favored accreditation of academic programs but believed licensing of wood technologists inappropriate.

Keywords: Education, wood science and technology, academic programs, employment, salaries, licensing, accreditation.

INTRODUCTION

The purpose of this paper is to provide background for the assessment of current educational programs in wood science and technology (WST) in North America. Particular emphasis is given to undergraduate education. The data in this paper were collected from the literature (Dana and Johnson 1963; Ellis 1964, 1970; Garratt 1971; Marckworth 1964–1972; Theoe 1973–1976; Resch 1977; Vasey and Theoe 1977a,b) and from a questionnaire sent to the universities offering training in wood science and technology. Respondents were asked to reply to questions regarding (1) their academic programs, (2) the employment of their B.S. graduates, and (3) the role of the professional society in higher education. An opportunity to make additional comments was provided.

The data presented herein should be viewed as representing trends rather than as exact figures. Reasonable adjustments to the data were made to account for omitted questions by the respondents. The author would like to take this opportunity to thank those responding to the questionnaire for their time and effort.

BACKGROUND

Any discussion of education in WST presupposes an understanding of the meaning of wood science and technology. Ellis (1964) in his treatise on education in WST defined wood science as:

> that body of knowledge applicable to wood as a material, including its origin, properties, and characteristics.

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He further stated that:

> wood technology follows as the application of knowledge in the conversion and processing of wood for use.

According to Marra (1972), the professional wood technologist is the product of a four-year undergraduate program who uses knowledge predominately in industrial orientations. The wood scientist, on the other hand, is the product of advanced training who discovers knowledge through research.

Within our profession, I perceive little philosophical controversy over the definition or role of the wood scientist. Ellis (1964) summarized succinctly by saying:

> [His] function is to extend the knowledge of wood as a material, *and* He must be a competent scientist in his own right, with a highly-specialized knowledge in one or more of the component areas of wood science. The development of such a capability requires advanced study beyond the baccalaureate.

A controversy arises when trying to define what constitutes a professionally trained wood technologist. Using the criterion in the foregoing description, one might rightfully classify graduates of industrial arts programs and other specialized programs dealing with a wood raw material base as wood technologists. For example, one of the laboratories in the Industrial and Occupational Education Department at Mississippi State has on the door "Wood Technology Laboratory." Therefore, some constraints on the definition of a wood technologist seem appropriate. Returning to Ellis (1964), he stated that a wood technologist

> applies wood science and related knowledge in making wood more useful to man" and that he "requires not only an expert knowledge of wood science, but, additionally, a sound understanding of industrial manufacturing equipment and methods. In short, he must combine engineering, industrial, and scientific know-how with a particular knowledge of the characteristics, properties and behavior of wood.

Professional education in WST has been traditionally related to forestry education. The first curriculum designated as "Wood Technology" was established in 1929 (Ellis 1964) although several curricula under different names predated 1929. Detailed accounts of the historical development of WST programs can be found in the literature (Ellis 1964; Preston 1948; West 1951; Garratt 1971).

At the time of Ellis' (1964) report, 19 North American universities offered an undergraduate degree or option in WST while six institutions offered only a graduate program. What changes have occurred since 1963? What is the situation with current programs in terms of curricula, enrollment, and graduates? What does the future hold and what will the role of the professional society be in that future? The following sections will attempt to answer these questions.

CURRENT PROFESSIONAL EDUCATION PROGRAMS

Program growth and changes

Program growth since 1963 is summarized in Table 1. Today, 25 North American universities offer undergraduate training in WST, eight of which offered no programs in WST in 1963. Two universities that offered only graduate programs

TABLE 1. *Growth of Wood Science and Technology programs since 1963.*

	1963	1978	Dropped	New	Net change	
					No.	%
B.S.	19	25	4	10	+6	+32
M.S.	22	26	6	10	+4	+19
Ph.D.	13	22	4	13	+9	+69

in 1963 now offer undergraduate training. In the same time period four schools dropped undergraduate programs. This represents a 32% increase in the number of B.S. programs. Laval University in Quebec City is considering initiating an undergraduate program.

Graduate programs in WST have grown considerably since 1963. Of the 25 schools offering undergraduate programs, only two offer no advanced work. Three additional schools offer only graduate work. Twenty-six schools now offer work at the master's level, compared with 22 programs in 1963. This total represents a gain of ten new programs, while six schools dropped their programs, yielding a net increase of 19%. The increase in Ph.D. programs has been dramatic, with 22 schools now offering the terminal degree, yielding a net increase of 69% since 1963. Thirteen of these programs are new, while four universities have dropped Ph.D. programs since 1963. A new Ph.D. program at Mississippi State was scheduled to begin in the fall semester, 1978.

Aside from the dropping and adding of programs, respondents were asked to describe the major changes in program emphasis that had occurred since 1963. Of those responding, 61% indicated a move to the more pragmatic aspects of WST—*i.e.*, an increase in emphasis on business and industry, production management, etc. The reasons given for this change were industrial needs and jobs. Eleven percent indicated a strengthening of the physical science and engineering aspects of their program. An additional 11% noted increased emphasis on their pulp and paper options, while 11% indicated a de-emphasis of WST in favor of the more traditional forestry/forest science programs. Six percent indicated no change in program emphasis.

Respondents gave a variety of answers when asked what changes they expected over the next five years. Almost all respondents indicated evolutionary changes in their programs and course offerings in order to keep up with changing knowledge, technology, and employer requirements. Most schools foresee an increased demand for applied programs, especially with a business emphasis. Such things as an increase in emphasis and number of concentration areas or options, the beefing up of professional and technical aspects of WST, increasing the emphasis on automation, increasing the emphasis on wood as an engineering material, and emphasizing the interdisciplinary approach to studying wood were ideas often expressed.

Most respondents were optimistic about the future. In three instances, however, respondents were less optimistic. One indicated an increase in emphasis on forestry at the expense of WST. Another indicated the move to a common core of courses for forestry and wood science during the first two years concurrently with the elimination, combination, or alternate-year teaching of courses with low

enrollment. A third indicated the dropping or combining of courses along with the de-emphasis of the graduate program due to too small a faculty.

Another measure of program growth is that of faculty growth. Faculty size ranges from a minimum of one to a maximum of 20. Current faculty for undergraduate WST programs number 248, or an average of six faculty per program. This represents an increase of 78% in the number of WST faculty since 1963. However, the percent full-time equivalents (FTE) for teaching was 63% in 1963, yielding 52 staff positions devoted to teaching. Currently, we have an FTE of 41% for teaching, which yields 60 staff positions, or a net increase of 15% in faculty teaching positions, with the balance going to research, service, and administration.

Considering the increase in academic programs, it would seem that there is a disproportionate balance between funds and personnel devoted to teaching and those devoted to research and other activities. From the 1963 figures, it would seem that the gap is widening, a fact which will be even more obvious when enrollments are considered later. In fact, three faculties have lost positions while two have experienced no growth.

When asked if their teaching budgets were adequate, 79% responded negatively. Therefore, it may be fair to say that undergraduate WST programs are carried by the research budgets of most institutions. The net result is either to decrease the department's research or, in the more likely case, to carry the teaching program as an overload.

On the positive side, 75% of the respondents indicated that their facilities, in terms of lecture and laboratory space and equipment, were adequate for their needs. Recent expansions at Oregon State, Minnesota, VPI, Auburn, and Mississippi State are examples of the modern, up-to-date physical plants available to students pursuing careers in WST.

Additionally, respondents were asked to list those areas in which they felt a need for a good "teaching" textbook. Responses varied, but the general consensus was that no good texts existed for any area with the exception of wood anatomy and structure.

The enrollment picture

Except for the past few years, enrollment data for WST programs are lacking. Reasonable estimates of students, based on degrees granted by year, can be derived. From 1952–1969 the emerging picture is one of static enrollment in undergraduate programs with an average of between 400–450 students each year. Over this time span, the average number of B.S. graduates was 104 per year. The number of M.S. and Ph.D. graduates increased slightly from 30 M.S. and 9 Ph.D. graduates per year in the 1950's to 42 and 13 M.S. and Ph.D. graduates per year, respectively, during the 1960's (Fig. 1).

The decade of the 1970's has seen a large increase in enrollment in B.S. programs, while the number of students graduating from graduate programs has remained fairly constant (Fig. 2). Between 1972–1977, undergraduate enrollment increased 63%, while B.S. graduates increased 87%. The average number of students graduating over the past six years was 204, 43, and 20 for the B.S., M.S., and Ph.D. degrees, respectively. Figures for degrees granted and enrollment do not include students in pulp and paper at institutions where a separate curriculum exists for this program.

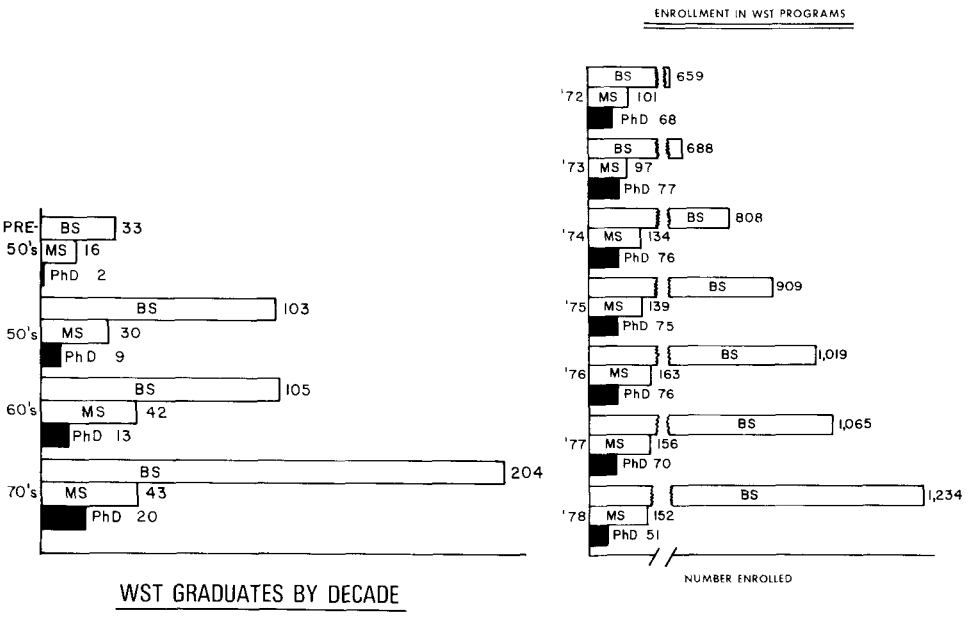


FIG. 1. Number of WST graduates by decade.

FIG. 2. Enrollment in WST programs by degree from 1972–1978. (1978 figures are predicted.)

The increasing undergraduate enrollment presents an exciting picture, although the reasons for the increase are not known. Part of the increase can be attributed to the increase in academic programs. With the increased emphasis on the environment, the resultant increase in enrollment in forestry schools has no doubt generated additional students for WST programs. Also, forest industries may now better realize the value of the professional wood technologist to their company's operations, thus creating a larger demand. Certainly, more sophisticated recruitment programs have added to enrollment. Currently, 20.5% of our students come from junior colleges, and recruitment of these students will likely increase as college costs soar.

The static enrollment in graduate programs presents a dimmer picture. Predictions for 1978 enrollment indicate a downturn in the number of graduate students for the 1978–1979 academic year. The reason is clear—the excellent employment opportunities for B.S. graduates entice students to turn aside from graduate work. In light of the predicted increase in the myriad of uses for wood in the future, one must ask the question "How is the profession to meet the forecasted demand for increased knowledge of wood as an engineered material while producing only 20 Ph.D. graduates per year?" An alternate viewpoint was expressed by Folger (1973) at the 1972 SWST Annual Meeting. He maintained that the employment picture for graduate degree holders would remain good if there was no increase in annual output. However, this was before the oil embargo and the resultant emphasis on wood.

In summary, the average number of B.S. graduates during this decade has increased 94% over the previous decade, concurrent with a large increase in enrollment. An additional increase of 20% is anticipated for next year. When asked to characterize their program's growth, 29.2% of the respondents indicated

TABLE 2. *Number of current undergraduate programs by size and region (average number refers to students enrolled).*

Region	Size				Ave. No.
	>60	30–60	<30	Total	
NE	3			3	80
MA	2	1		3	69
SO		1	5	6	24
MW	1	2	3	6	40
W		3	2	5	35
CAN			2	2	22
Total	6	7	12	25	
Ave. No.	78	53	16		42

a steady increase in student numbers. A like number indicated static enrollment. An additional 33.3% indicated that their enrollment was generally increasing, and the remainder indicated a general decrease. Overall, programs were characterized as generally increasing in enrollment.

A 54% increase in the average number of Ph.D. graduates was experienced between the 1960's and 1970's, but the static enrollment in these programs offers little encouragement for future increases. This is surprising considering the proliferation of Ph.D. programs. The average number of graduates at the master's level has remained constant over the same time period.

Characterization of academic programs

One can envision numerous schemes to categorize academic offerings. For purposes of this paper, I have chosen three categories: size, region, and academic offerings.

Size and region

Programs with more than 60 students were considered large, 30–60 students average, and those with fewer than 30 students small. The following regional categories were used: New England, Mid-Atlantic, South, Mid-West, West, Canadian. Table 2 shows the regional distribution of schools by size. Characterizing the programs by size, we see that the large schools are located in the Northeast and Mid-Atlantic regions. Programs in the West and Mid-West tend to be average in size, while Southern and Canadian programs tend to be small. Programs in the South are relatively new, however, and an excellent growth potential exists for these programs.

Academic requirements

A scheme similar to that described by Ellis (1964) was used to group academic programs based on their course content. The following criteria were used:

Group I —Undergraduate curricula conforming to the minimum educational requirements as specified by the SWST Bylaws;

Group IIA—Curricula not conforming to the minimum educational requirements for reasons of inadequate basic sciences;

Group IIB—Curricula not conforming to the minimum educational requirements for reasons of inadequate background courses in WST;

Group III —Graduate programs offering no undergraduate training;

Group IV —Specialized programs (graduate and undergraduate), such as wood chemistry, pulp and paper, etc. generally conforming to minimum requirements;

Group V —Programs related to special phases of wood technology, such as furniture construction; and

Group VI —Undergraduate programs lacking courses in both the basic sciences and wood science and/or a faculty of less than two.

In order to classify programs according to the above criteria, some interpretation of the Bylaws was necessary; therefore, the educational requirements were taken to mean the following:

A. Basic science courses
   (1) Mathematics—differential and integral calculus;
   (2) Chemistry—one course in organic chemistry;
   (3) Physics—one course in general physics;
   (4) Biology—two courses in biological science.

B. Wood Science and Technology courses
   (1) Wood Science—courses in anatomy and structure of wood, physical and mechanical properties of wood, and wood chemistry or chemical processing of wood;
   (2) Concentration areas—programs were classed as qualifying if they had the combination of any two of the following:
      (a) 12 semester hours of WST courses above the minimum educational requirements;
      (b) 12 semester hours of basic science courses above the minimum educational requirements;
      (c) 12 semester hours in an area of specialization or concentration;
      (d) 18 hours of elective courses other than in social science/humanities.

Questionnaires were collected from Groups I, IIA, IIB, and VI programs only. Current enrollment figures for Group III schools were obtained by telephone. Figure 3 shows the geographical distribution of schools by group and size. A summary is presented in Table 3.

Group IIA programs were so classified because they lacked organic chemistry or integral calculus. One school lacked the former, one the latter, and one both. For Group IIB programs, one lacked a wood mechanics course, three lacked wood chemistry, and one required only the basic anatomy course. In general, then, Group II programs lack only one course in order to meet the minimum educational requirements.

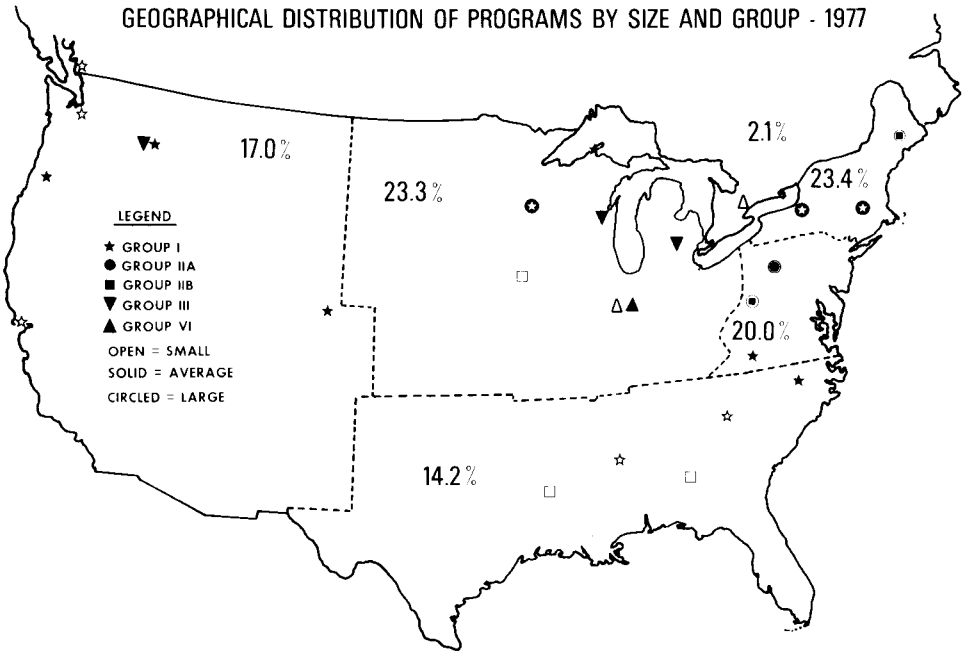


FIG. 3. Geographical distribution of undergraduate programs by group and size for 1977 academic year (percentages refer to the % of students by region).

Of the three programs in Group VI, one lacked integral calculus, wood chemistry, and wood mechanics. Another lacked organic and wood chemistry, while the third lacked a physics course and a course in wood mechanics. Considering the elective hours in these programs (average of 19 semester hours), they could easily be elevated to Group I status.

Table 4 indicates the typical undergraduate program of study in wood science and technology. Three of the schools surveyed require some form of summer work experience or practicum, while four require the traditional summer camp. The percentage of semester hours by subject matter area is very close to that proposed by Ellis (1964) as shown in Table 5.

TABLE 3. *Classification of undergraduate programs by group and region.*

	Group				
Region	I	IIA	IIB	III	VI
NE	2		1		
MA	1	1	1		
SO	3	1	2		
MW	2	1	1	2	2
W	5			1	
CAN	1				1
Total	14	3	5	3	3

TABLE 4. *Breakdown of the undergraduate programs by subject matter areas.*

Subject matter areas	Semester credit hours			% of total hours
	Median	Range	Mean	
I. General Education				18.2
English, Speech	9.0	3–12	8.2	
Economics	4.5	1–12	5.2	
Social Sci./Humanities	11.5	0–20	10.5	
II. Basic Sciences				34.3
Biol. Sci.	7.9	4–20	9.0	
Chemistry	8.5	5–21	11.6	
Math	8.5	3–15	9.0	
Comp. Sci.	2.5	0–7	1.9	
Statistics	3.0	0–8	3.0	
Physics	7.0	0–10	6.4	
Engineering	2.5	0–25	4.2	
III. Wood Science & Technology	22.5	13–43	23.8	18.1
IV. Concentration				24.9
Forestry	4.5	0–43	10.5	
Restricted Electives	18.0	5–37	20.5	
Other	1.8	0–6	1.8	
V. Free Electives	0.4	0–26	5.6	4.3
Total	131.5	120–140	131.5	

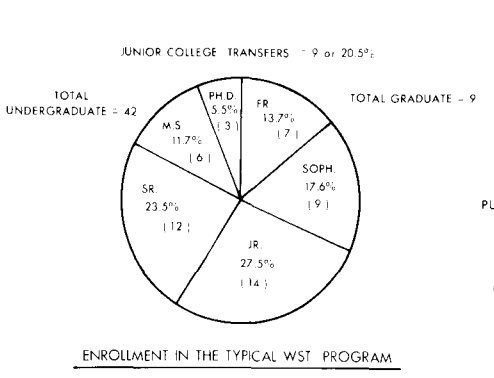
Total undergraduate enrollment for a typical program averages about 42 students. Graduate programs average six M.S. students and three Ph.D. students. The breakdown of students by class is given in Fig. 4. Junior college transfers account for the increase in junior class size while attrition would account for the drop in senior class enrollment.

Within the various academic programs, numerous concentration or option areas are available. These areas, along with the number of students enrolled in them, are shown in Fig. 5. The move to the more pragmatic courses of study discussed earlier is evident here, with 50% of the students choosing the more practical utilization and business options.

An additional feature of 50% of the undergraduate programs is the availability of a cooperative education program. In this approach to education, a student alternates between work and academic semesters, thereby not only earning funds

TABLE 5. *Comparison of current programs with recommendations of Ellis (1964).*

Subject matter area	% of total hours	
	1978	Ellis
I. General Education	18.2	18.0
II. Basic Sciences	34.3	39.0
III. Wood Science & Technology	18.1	18.0
IV. Concentration	24.9	21.0
V. Free Electives	4.3	3.0



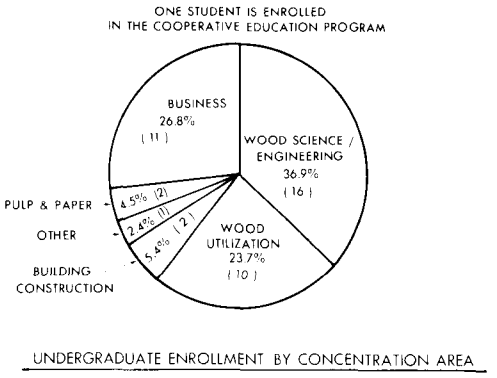


FIG. 4. Enrollment breakdown for typical undergraduate program (average number of students in parentheses).

FIG. 5. Major fields of study for current undergraduate students (average number of students in parentheses).

to help finance his education, but also gaining valuable work experience. Excellent results have been obtained by those having this program, with graduates commanding higher salaries than the normal graduate. Currently, a typical program has one co-op student, but the number is likely to increase as more universities develop this program.

EMPLOYMENT

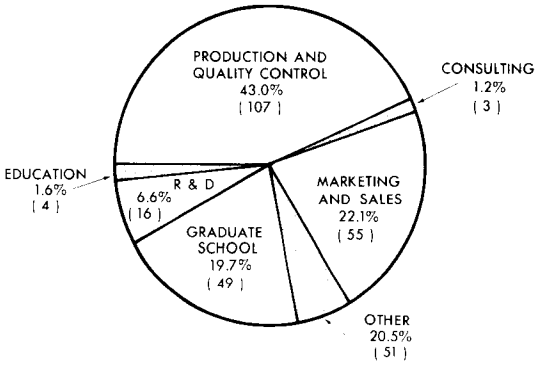
Employment of B.S. graduates has been excellent, with respondents indicating a current demand-supply ratio of 2.3:1. Future demand is expected to increase to 2.8:1; thus, the limited employment opportunity currently facing other graduates from forestry schools does not face WST graduates.

Respondents were asked to indicate the type of job secured by their graduates. As shown in Fig. 6, jobs in production and quality assurance were most prevalent (43.0%), with jobs in marketing and sales second (22.1%). Considering the projected emphasis on business and applied courses of study discussed earlier, this trend should continue.

Future increases in research and development jobs may be expected as industrial concerns increase their research facilities and staffs. Recent expansions by International Paper and Weyerhaeuser are examples.

Those opting for graduate studies accounted for 19.7 percent of the total graduates, or 49 students. Assuming that most start at the master's level and that the master's is a two-year degree, then about 50% of M.S. students come from programs other than North American WST curricula. Foreign students and students from other disciplines entering North American master's programs would account for the difference.

With respect to the employing industry, 21.9% of 1977 graduates found positions with the lumber industry, followed by 19.3% with the board industries, and 11.5% in secondary manufacturing (Fig. 7). The large percentage of those employed in the lumber industry is perhaps surprising in light of the trend toward greater usage of plywood and composition board, products requiring more sophisticated manufacturing processes. The relatively large number of lumber op-



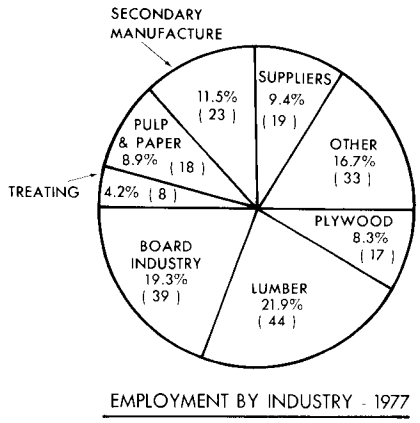


FIG. 6. Breakdown of employment by type of job (number of graduates in parentheses).

FIG. 7. Breakdown of employment by type of industry (number of graduates in parentheses).

erations would account for this high total. It seems likely that the composition board industry will employ an increasingly larger percentage of WST graduates in the future, since a greater potential for producing engineered products exists for reconstituted products than for solid wood products. In terms of total employees, it is probably valid to assume that there is a higher percentage of professionally trained people in the composition board and plywood industries as compared to the lumber industry. A modest increase in future jobs in the lumber industry may be anticipated, as is seen when the 1976 figures are compared with the present data. Lumber concerns hired 10.5% more wood technologists in '77 than in '76, while board industries hired 60.9% more during the same period.

Increases may be expected in industries requiring the blending of several materials to produce a product because of the technical knowledge required. Because of environmental concerns, reasonable prospects exist for students having backgrounds in pollution control and wood technology, especially in industries like wood treating. If Goldstein's (1975) predictions are reasonable, then we can expect chemical wood technology to become increasingly important. Experience in Canada (Marchand 1978) and elsewhere with methanol production and in Mississippi (Fang, et al. 1978) with bark-resin systems are only two examples.

Private industry employed 79.4% of all graduates entering the job market in 1977 (Fig. 8). This comes as no surprise and is likely to increase as the wood industry expands.

Figure 9 shows 1977 employment by regions. In general, graduates tended to locate in the same region as their school. The leading region is the West (29.7%) followed by the Mid-West and South. While 1976 figures differ slightly, the trends are the same. If predictions are correct, then the greatest opportunity for growth may exist in the South.

Graduates from Canadian, Western, and Southern schools earn starting salaries in excess of the North American average of $12,560 (Fig. 10). Reported salaries ranged from $9,800 to $16,700 for B.S. graduates in 1977. While not reported, industrial fringe benefits usually range from 25–35% of base salary. This translates into an average starting salary, including fringe benefits, of $16,328. The base

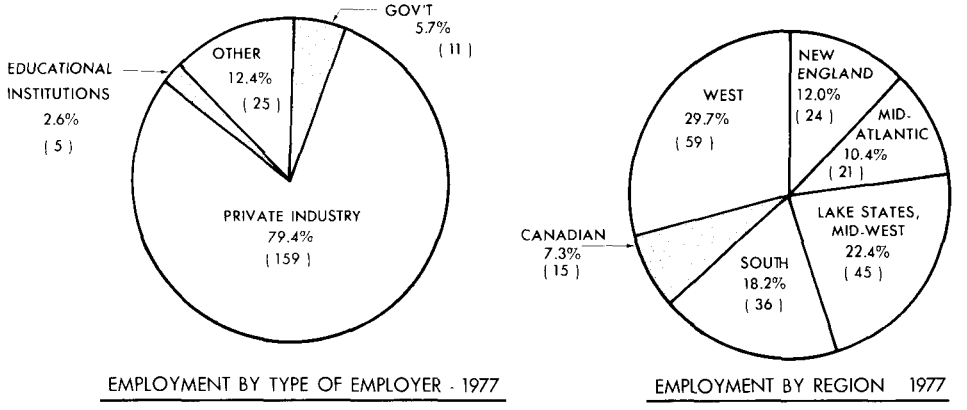


FIG. 8. Employment of 1977 B.S. graduates (number in parentheses) by type of employer.

FIG. 9. Location of 1977 graduates (number in parentheses) by region.

figure would be extremely competitive with other scientific fields with the exception of engineering, which has an average base starting salary of around $17,000.

ROLE OF THE PROFESSIONAL SOCIETY

So far we have looked at rather straightforward, nonphilosophical aspects of the educational process. Deciding what the role of SWST should be in this process poses a different problem. Some may reasonably ask why the Society should further involve itself with educational programs, considering the other problems it faces, its current involvement in education, and the reasonable success educational programs are currently enjoying. The answer lies in Article II of the Constitution, which states that one purpose of this society is "to foster educational programs directed toward professional advancement." Current programs, such as sponsored symposia and the Visiting Scientist Program, certainly help achieve this objective; but the time seems right for the Society to expand its role in education. The age of wood is at hand and presents many challenges to the profession, a point well made by Bethel (1977) in his recent editorial "Whither Renewable Materials?" What then should be the form of this expanded role?

A logical first step would be the creation of a data bank containing current information as reported herein. This idea is by no means new and represents "a long-needed service" (SWST Education Committee 1970) for the Society membership. Respondents were unanimous in their support of this idea, either on an annual or biannual basis. Other professions keep tab on enrollments, graduates, jobs, and salaries. Annual survey reports in the *Journal of Forestry* are only one example. The need certainly exists. For example, the most recent occupational brief (Anon. 1973) lists the annual salary for wood technologists as $7,500–$10,000.

Respondents were asked if they favored Society involvement in the licensing of wood technologists (Table 6). Only 29.2% answered in the affirmative. Many professions have a licensing procedure; forestry and engineering are two such examples. However, licensing, being a function of the various states, would appear to be a costly, time-consuming effort with little real support within the profession at this time. Hence, it is not suggested as a fruitful endeavor.

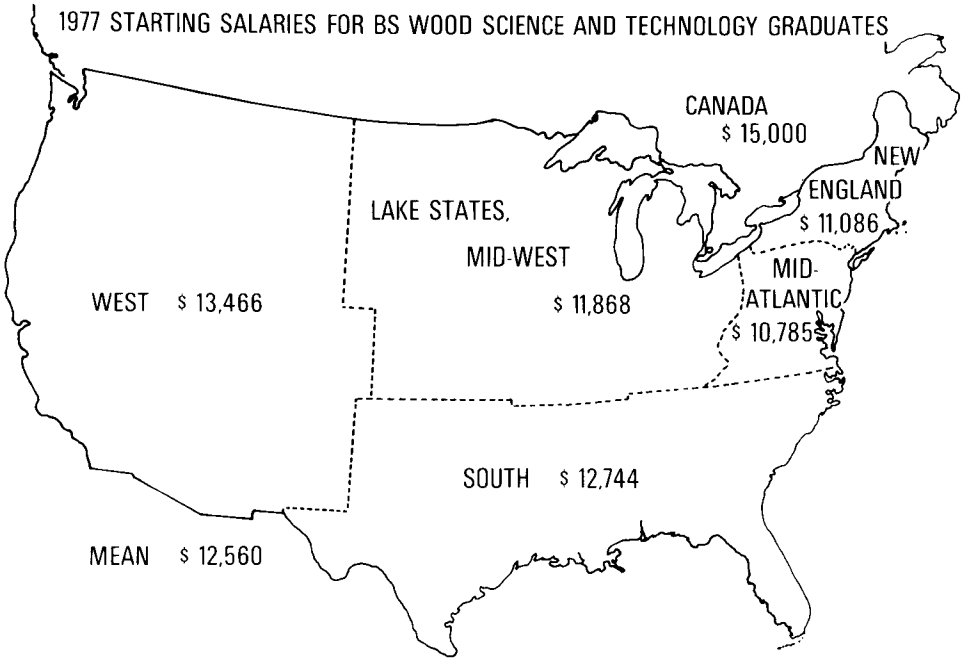


FIG. 10. Starting salaries for 1977 B.S. graduates by region.

The most obvious path for the Society to take in expanding our educational role is to be involved in accrediting professional curricula. The editorial and professional pages of *Wood and Fiber* and its predecessor, the *SWST Log*, are filled with sentiment for such a course of action.

When asked if they favored accreditation, 58.3% of the respondents agreed that the Society should be involved in such an endeavor. An analysis of the responses by program grouping is indeed curious (Table 6). Only 61.5% of Group I respondents, those who would meet the educational requirements for accreditation, were in favor. Two-thirds of Group VI respondents were in favor. In the case of the former, no additional courses would be required and, aside from preparing the appropriate accreditation report, little expenditure of funds and time would be necessary. As to the latter, additional courses, funds, and/or staff would be needed in order to meet the minimum educational requirements. Only one-third of Group IIA respondents replied affirmatively. On the average, all that

TABLE 6. *View of respondents by group on the future role of the society.*

Group	For accreditation	For licensing
I	61.5%	23.1%
IIA	33.3%	33.3%
IIB	60.0%	40.0%
VI	66.7%	33.3%
Overall	58.3%	29.2%

is required for Group IIA schools to meet the standards is a change of three credit hours of electives to a required course in the basic sciences. Sixty percent of the Group IIB respondents favored the proposition.

Some of the respondents who were against the proposition indicated that they thought FPRS should be involved. One must remember that FPRS is *not* a professional society and therefore has no role to play in such an action. The differences between the two societies have been editorialized by Haygreen (1969). This in no way demeans our sister organization, but is simply stated to point out the differences in the educational objectives of the two societies.

Several benefits accrue from initiating an accreditation procedure, not only for the Society, and hence the profession, but also for the institutions involved. From the institutional viewpoint, perhaps the most important benefit is that of leverage. Accreditation translates into a "pry-bar" with which a department can acquire additional funds, facilities, equipment, and staff to upgrade its programs. It also means an outside point of view that can help a department toward excellence. Also, the prestige garnered from accreditation should not be overlooked.

An often-expressed idea is that the profession has a low visibility. In discussing relatively low student enrollments, Marra (1978) attributed the problem in part to "the lack of a distinct professional image." Accreditation would help us increase that visibility. Concurrently, we should see an increase in Society membership due to the emphasis placed on the "practicing" wood technologist. This arises because the emphasis of accreditation is on undergraduate education. A logical consequence is the establishment of student chapters of the Society. The inclusion of the "practicing" wood technologist in Society membership is essential if the profession is to grow in stature. This need has been editorialized in the pages of our journal (Meyer 1973). One only needs to look at our membership to see that the active membership of the Society is, in reality, composed of graduate degree holders.

Ellis' (1964) words remain true for the profession today. He said:

> A profession also must have an organization to speak for it, enforce its standards, develop and disseminate knowledge, and generally play a leading role in controlling entry into the profession. Such organizations may also prescribe minimum entrance qualifications in regard to education and competence, frequently through approved professional schools. . .

SUMMARY

We have seen a sharp increase in the number of degree programs since 1963. Enrollment figures in undergraduate programs have risen sharply during this decade, while graduate enrollment has remained static. The number of graduates in the various degree programs follows the same trend. Program changes have tended toward the more applied areas of study, especially business.

Employment of B.S. graduates has been excellent, with starting salaries averaging in excess of $12,500. Private industry employs most graduates, with most finding jobs in production and quality control or marketing and sales. The West, Mid-West, and South seem to offer the greatest potential for growth.

While licensing of wood technologists was considered inappropriate for Society involvement, accreditation of academic programs and the creation of a data base

on enrollments, graduates, etc. were seen as positive steps which should be taken to improve the profession's stature.

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