

## CHAPTER TWENTY-TWO

# SCIENCE AND MATHEMATICS

The purpose of the Normal School was prescribed in the statute which established the institution. In addition to the function of instructing “in the art of teaching, and in all the various branches that pertain to a good common school education,” and in “the fundamental laws of the United States, and in what regards the rights and duties of citizens,” the School was to “instruct in the arts of husbandry and agricultural chemistry.” A subsequent section was more specific:

Lectures on chemistry, comparative anatomy, astronomy, the mechanic arts, agricultural chemistry, and on any other science . . . shall be delivered to those attending said school by the professors of the University [of Michigan], provided the regents shall give their consent thereto.<sup>1</sup>

Interest in establishing schools for instruction in the practical arts first became manifest at about the time that Michigan became a state. An interest in agricultural instruction was evident from about 1838. Memorials for the establishment of colleges of “agriculture, mechanics, road making, and architecture” from several states had been presented to Congress in the 1840’s. In 1847, a committee of the New York legislature had recommended that a school be established to teach “agriculture and the mechanic arts.”<sup>2</sup>

In 1849, the Michigan State Agricultural Society was formed. This organization had a decisive influence on provision for instruction in agriculture. Indeed, one of the organizers of the Society, John C. Holmes, is felt to deserve major credit as founder of the Michigan Agricultural College (now Michigan State University). In December of this same year the Executive Committee of the Society resolved to ask the State Legislature to establish “as soon as practicable, an

agricultural college.” It will be noted that this took place subsequent to the passage of the Act establishing the Normal School.<sup>3</sup>

In the revised Michigan Constitution of 1850 provision for such a school was made, but with the suggestion that it be a branch of the University of Michigan. Here, then, was created a confusing situation. In the Normal School Act passed the preceding March, the Normal School had been authorized to instruct in agriculture. Now it was suggested that a school for this purpose might be organized as a branch of the University of Michigan.

That such a branch was not authorized by the legislature has been blamed on the rivalry that ensued between the U-M and the Normal School for the honor. In Ann Arbor, President Tappan insisted that this area was in his province. He had good reason for taking this stand. The organic act establishing U-M was revised in 1838 and modified to include the clause, “in one at least of the branches of the University, there shall be a department of agriculture . . .”

The U-M organized a course of lectures in agriculture, and the Rev. Charles Fox, an Episcopalain clergyman with BA and MA degrees from Oxford, gave some lectures on the subject without charge in the spring of 1853. The following year he was appointed by the Regents as Professor of Agriculture. Death prevented his serving.

In the same year (1853) the Normal School brought Lewis Ransom Fisk from the Wesleyan Seminary and Albion Female College (later to be known as Albion College) as professor. Fisk had been educated at Harvard, Dartmouth, and the University of Michigan.

In December of 1854, the Agricultural Society passed a resolution “that an Agricultural College should be separate from any other institution.” In 1855, the legislature established a separate college, provided a site of nearly 700 acres, and appropriated \$30,000 for buildings.<sup>4</sup>

Thus, neither of the two existing institutions won. Yet, in some respects, the Normal prevailed. The new agricultural college was placed under the authority of Normal’s State Board of Education. And the new institution proceeded to secure Professor Fisk as its instructor in agriculture. Fisk (also spelled Fiske) was later elected by the faculty of the Agricultural College as Acting President, upon the resignation of President Williams in 1859.

It was thus, out of confusion of legislative intent and competition

for possession of the area of instruction in agriculture, that science instruction at the Normal was born. Many years were to pass, however, before science instruction became specialized. Professor Jessie Phelps, for 41 years a member of the Natural Science Department (1898–1939), has given us this description:

During the first three decades, from 1853 to 1883, the sciences taught here were not separated into distinct departments. They were all taught in one laboratory or suite of rooms on the first floor of the only college building. Physiology, Natural Philosophy (a potpourri of explanations of common phenomena such as gravitation, the formation of dew, etc.), Geology, and the physical sciences were presented by some one or two men of the faculty, while Botany was assigned to the preceptress.<sup>5</sup>

David Porter Mayhew (later to succeed Welch as Principal) replaced Fisk; botany was assigned to Ruth Hoppin, Preceptress; and, a decade later, psychology “theoretical and applied” was added.

In the 1870’s courses in Structural Botany and Zoology were introduced, and a laboratory method employing a compound microscope (“a very up-to-date method”) was in use.

By 1880, classes in zoology, physiology, hygiene, chemistry, astronomy, geology, and botany were being held. In 1882, Lucy Osband was added to the faculty as instructor in biology, assisting Professor McLouth. She was instrumental in bringing together the courses being offered in the natural sciences, and from 1883 headed a Department of Natural Sciences. In 1895, she retired and was succeeded by William Hittell Sherzer, who joined the Normal staff in 1892. Sherzer headed the department until his death in 1932.

At the same time physics and chemistry formed a department under McLouth, who had been teaching the sciences at the Normal since 1869. Two years later (1885) McLouth was persuaded to leave the Normal and take a position at the Michigan Agricultural College as Professor of Mechanics and Astronomy. His replacement, Edwin Atson Strong, became in time an outstanding member of the faculty. Strong remained with the Normal until his retirement in 1916, a period of 32 years.

*Physics and Chemistry*

The Department of Physics and Chemistry retained its identity until 1916 when the physical sciences were split into separate departments.

The separation elevated Bert W. Peet, who had been on the staff since 1899, to head of the new Chemistry Department. Peet served until his retirement in 1958, and was in turn succeeded by John A. Sellers. After Sellers' death in 1961, Marvin S. Carr served as acting head until 1962 when Clark J. Spike was named.

Turning to the Physics Department, Professor Strong's retirement in 1916 brought Frederick R. Gorton (who had been on the Normal staff since 1896) to the headship. Upon his retirement in 1941, Harry L. Smith became head. Smith retired in 1960 and was succeeded by James A. Barnes.

As for the Natural Science Department, Sherzer's death in 1932 brought Milton Hover as head. To his duties were added, in 1935, those of Dean of Administration. Hover served in both capacities until his death in 1940, when the departmental headship went to Clarence M. Loesell. Loesell died in 1958 and was replaced by Robert Belcher, whose department became designated in 1962 as the Biology Department. Belcher resigned to devote full time to teaching and research, and was succeeded by Richard Giles.

As of 1962, the offerings in science had developed from the few general lectures in agricultural chemistry in 1853 to offerings in four highly organized divisions, as follows: Biology—35 (Biology—10, Botany—11, Zoology—14); Chemistry—22; Geography—11; Physics and Astronomy—24 (23 in Physics).

Several of the names mentioned above are worthy of more attention. Lewis McLouth, of the Department of Physical Sciences, remained in this position only two years, leaving in 1885 to accept the chair of Mechanics and Astronomy at the Michigan Agricultural College. While at Normal, however, McLouth was instrumental in the construction of the astronomical observatory and of the ornate tower (a contribution of the citizens of Ypsilanti) on the Old Main Building. William McAndrew, an alumnus and one-time Superintendent of the Chicago Public Schools, reminisced as follows concerning McLouth:

Another strong and well beloved man we had was Professor Lewis McLouth. I had him in natural philosophy, chemistry, geology and Bible study. He was a living contradiction of Emerson's declaration that the scientist is like the dried plants in his herbal, without sap and humor. McLouth was one of the most lovably humorous and human teachers that ever happened . . . He had a fad for fine looking glass-ware in chemical demonstrations and an artistic arrangement of the air-pump and the electrical machine so that, as the art folks say, they would "compose" well on the table before the class. He was as keen as a knife but he never hurt.<sup>6</sup>

Considerable resentment on the part of the students was expressed against the authorities at East Lansing for taking him away from Normal.

The Natural Science Department was placed under an exceptionally interesting and effective person, Lucy Aldrich Osband. Mrs. Osband's educational experience had been varied. She had been principal of the Sylvan Villa Seminary in Virginia; teacher at the Northville, Michigan, high school; Preceptress and Professor of Modern Languages at Albion College; teacher of Greek at Olivet College.<sup>7</sup> In 1882, she was employed by Normal as instructor in biology. Her contributions to Normal were impressive, and of pioneering character. She developed good working collections in geology and zoology. She originated the herbarium. With the aid of her students she is said to have prepared one of the best osteological collections in the State. Through personal friends she secured many treasures for her department, among them a collection of fish gathered by Agassiz in South America.<sup>8</sup>

Through her classes in physiology she initiated work in physical training which developed into a Department of Physical Education. She can be credited with influencing the first head of that department, Wilbur P. Bowen, to leave his chosen field of mathematics and devote himself to physical training. She was also given credit for winning the State Legislature over to an appropriation for a gymnasium.

In her pre-Normal years, as a teacher in Methodist seminaries and at Albion College, she was credited with having inspired many young people to go as missionaries to Burma, China, Japan, India, and Korea. Her zeal at the Normal in developing the new Department of Natural Science was unbounded.

Upon her retirement in June of 1895, the school paper made this comment:

Mrs. Osband is a good example of what force of will can accomplish. Although hampered by a frail constitution, she had, nevertheless, by unfaltering resolution and careful use of her strength, accomplished a work which can be measured only by the lives of those who came under her influence.

The Osband daughter, Marna, writing about her mother at a later time, made this somewhat bitter comment: "Mrs. Osband never received any extra pay for all this special work. In fact, she never got but half of what the men professors did."—a statement all too true. Such were the times for women, and such they were to remain for decades to come.

Mrs. Osband's successor was Willaim Hittell Sherzer who was at the moment temporary occupant of the chair of geology at the University of Michigan. After coming to Normal, Sherzer completed work for the PhD, and remained until he had served with distinction over a period of 40 years. Not only was he a superior teacher but he attained a national reputation in geology and anthropology.

At the national level he was engaged to make a special study in anthropology for the National Museum, was in charge of the Smithsonian Glacial Expedition to the Canadian Rockies and Selkirks (summers 1904, 1905), and made important field studies in the Hawaiian Islands, with special attention to the explosive eruptions of Mt. Kilauea (1920–1921). At the state level he assisted in the Michigan State Geological Survey (1896–1913). He contributed the Detroit Folio of the United States Geological Atlas and was consulting geologist for the City of Detroit in establishing a suitable location for the Detroit-Windsor tunnel under the Detroit River.

As head of the Natural Science Department he was the pioneer in Michigan in promoting the study of nature in the elementary curriculum. Here he developed a collection of material for use in teacher training that was probably unexcelled anywhere. His interest has been attributed to his theory that the child must recapitulate the experience of the race.

Sherzer was also active in organizing extensive field trips for summer school students. One announcement (that for 1924), advertising a tour of "about six weeks," read:

. . . in the interest of teachers who feel the need of relaxation and who wish to see the choicest bits of scenery on the American continent, if not in the world.

There followed a list of places to be visited: Glacier National Park, Mount Rainier National Park, Seattle, Victoria, Vancouver, Alaskan and Canadian Rockies. One or two units of credit were offered, via the Extension Department. The announcement closed with a practical item:

Pairs of close friends are desired who can occupy together a Pullman section, steamer cabin and hotel room.

In those years when teaching about evolution aroused strong antagonism, particularly in the area of public school education, Sherzer taught it. He insisted that there was no conflict between religion and science; that there is only one Truth. He commented that “nature is so beautiful—God and Mother Nature must be working together.” Whenever sisters of the Catholic faith sat in his classes, however, he is said never to have asked them to recite.

In his teaching, Sherzer placed great emphasis on demonstrations. He developed a collection of minerals and rocks which in time was reported to be one of the best in the State. He acquired a valuable skull collection from a local dentist to show the evolution of vertebrate dentition. He organized the Nature Study Club, forerunner of the Natural Science Club (1898 or 1899) which still flourishes, and entertained students and colleagues extensively at his cottage, Fernwood, at Baseline Lake near Ann Arbor, where scientific topics were avidly discussed.

During his long tenure, Sherzer saw his staff increase from 2 to 8 (and 11 student assistants). New areas were developed, old areas expanded. The number of courses increased from 5 to 55, and included offerings in agriculture, heredity and evolution, nature study, as well as botany, geology, and physiology.

Two buildings stand on the campus as monuments to his interests: the old Science Building, re-named Sherzer Hall, which he helped to plan, and the Hover Laboratory Building, erected during World War II for the training of teachers in nature study for the elementary grades.

As a citizen of Ypsilanti, too, Sherzer made a lasting contribution.

It was he who brought the Boy Scouts to the community. He was president of the first Boy Scout Council, the camp at Peninsula Grove on the Huron River was named after him, and he was the proud host for a full week of the founder of the Boy Scout movement, Ernest Seton Thompson.

Sherzer's counterpart in the physical sciences, Edwin Atson Strong, also left a permanent impression on Normal. Strong came to be looked upon by his colleagues as the most learned man on the faculty.

He was brought to Ypsilanti from Grand Rapids in 1885 to head the new Department of Physical Sciences. In Grand Rapids, he had been principal and superintendent of public schools since 1861, and for 18 years was curator and promoter of the Kent Museum there.

Strong's professional contributions included publication of many pamphlets and articles on scientific and educational subjects, service on the Michigan Geological Survey, and publication of two numbers of the List of Fossils of the Lower Carboniferous of Kent County, Michigan. He was a member of the American Association for the Advancement of Science and a director of the National Educational Association (1892-1894). He was president at one time or another of the Michigan Academy of Science, Michigan Teachers Association, the Michigan Schoolmasters Club, and the Michigan Association of High School Principals.

Notwithstanding his role as scientist, he possessed a highly stimulating and attractive personality. W. N. Ferris, founder of Ferris Institute and one-time Governor of Michigan, is reported to have said that E. A. Strong was one of two men to whom he owed all the inspiration that made him what he was. The college paper, *Normal News*, paid him tribute in his late years, "not only as a teacher but as a man in whom rare intellectual attainments are combined with rarer and more precious qualities of a pure heart and a noble soul."

Sherzer once referred to him as "one of the few remaining naturalists of the old school, his mind encompassing the entire realm of scientific knowledge. But oddly, he was almost or quite as well informed in literature, art history, and matters pertaining."

The esteem in which his colleagues held him was strikingly illustrated at the time of his death by their preparation of a memorial booklet. In a prefatory note they said: "The loss of our distinguished colleague, Professor E. A. Strong—an inspiring teacher for over sixty years, a member of this faculty for thirty-five years, an eminent

scholar of the broadest culture—is an event calling for more than passing notice.”

### *Geography*

The subject of geography was taught at the Normal almost from the first and was included in the first curricula, prescribed by the State Board as “geography, including the use of outline maps and instruction in map-making.” It is probable that the example set by the European seminaries, which was influential in the existing normal schools in Massachusetts, New York and Connecticut, also influenced Michigan’s State Board. Because of the map-making emphasis, the subject at Normal was long associated with drawing.<sup>9</sup>

The first course in geography and drawing was given by a student at Normal in his senior (second) year, John Goodison (1860). Upon graduating he was immediately added to the faculty where he taught both subjects regularly for years, and acquired assistants who at times added arithmetic, Virgil, and Greek.

Goodison was born in England. His father, an artist, at one time had an assignment as decorator of the interior of the British Museum. John, age 16, assisted him. The parents came to the United States in 1851, the son following a year later and in due course becoming a student at Normal. He taught at the Normal from 1861–1869, left to join the staff of D. Appleton and Co., publishers, and returned in 1885 to remain until his death in 1892.

In teaching, Goodison was said to have devised and made nearly all of the charts and illustrative appliances that he used. He was described as thorough, persevering, and patient in dealing with his students. “Let him once feel that a student was making an effort to advance,” said his friend and colleague, Austin George, “and progress might be never so little or never so slow, he had for such student only words of cheer and encouragement.”

Goodison was succeeded by Charles T. McFarlane, whose department continued to be known as Drawing and Geography. By this time instruction in geography had been organized and broadened to include courses in contour and relief of the earth’s surface, hydrography, climate and distribution of vegetable and animal life, “anthropogeography” (man as dependent upon the physical condition of the earth’s surface; the earth’s surface as modified by the action of man),

“special geography,” and a course in the teaching of geography.

McFarlane, a native of New York and graduate of the New York State Normal School, came to the Normal at age 21. His enthusiasm for his subject was contagious, and spread also to those in attendance at the teachers institutes. On the campus at Ypsilanti, McFarlane guided a number of students into geography as a profession, among them H. H. Barrows (later to head the Geography Department at the University of Chicago) and D. H. Davis (later to become head of the Geography Department at the University of Minnesota). In 1901, he left to succeed David Eugene Smith, Principal of the Normal School at Brockport, New York, who had preceded him there from Normal.

McFarlane was succeeded by Mark Jefferson, strongly supported by W. M. Davis of Harvard. Jefferson remained until his retirement in 1939, and made a career that contributed greatly both to the teaching and the development of his field throughout the nation.

Jefferson had insisted that geography and drawing should be divorced. Upon his arrival in 1901, therefore, he became first head of the Geography Department. By the time he retired he had expanded the offerings to include all the continents of the world, and such specific areas as the British Isles, Switzerland, Africa, Egypt, and the Caribbean lands. From time to time courses expressive of a particular interest or novel inquiry would appear, such as Geography of Culture, Geography of Railways, Geography of Commerce, and Geography of Cities. Jefferson became known for his emphasis on a place for man in geography, and among the textbooks that he wrote were such titles as “Man in Europe,” “Man in the United States,” and “Exercises in Human Geography.”

In the 38 years that he spent at the Normal he trained several of the future “greats” in the field of geography, served as Chief Cartographer of President Wilson’s famous committee known as “The Inquiry,” played an active role in the work of the Paris Peace Conference of 1919, and won three of the most cherished awards that the geographers of this country have to bestow: the Helen Culver Gold Medal of the Chicago Geographic Society, for original work in geography; the Cullum Geographical Gold Medal of the American Geographical Society; and the Distinguished Service Award of the National Council of Geography Teachers.

His influence as a teacher was profound. He started three men on their careers as geographers who later became presidents of the

Association of American Geographers—Isaiah Bowman, Charles C. Colby, and A. E. Parkins. Three received the Distinguished Service to Geography Award of the National Council of Geography Teachers—D. H. Davis, R. R. Platt and George J. Miller. The Annals of the Association of American Geographers made this comment at the time of his death:

This disciple record is better than that of any other college. Indeed, few major universities with departments of geography and with large numbers of students, fine equipment, and graduate school opportunities have approached that record of starting in Geography as many men who subsequently rose high in the profession.

Many of his articles were directed towards the teaching of geography in the public schools. Many school teachers resorted to him for recommendation as to materials desirable for specific grade levels, for assistance in revising a syllabus, or for evaluation of their work.

Jefferson retired in 1939 at age 76 but not because his energies were waning. He was vigorous and brimming with ideas and plans. He retired reluctantly because he had to; a literal-minded Board had recently adopted a ruling that age 70 would henceforth be the arbitrary limit of faculty service.

His successor was James Glasgow, product of the University of Chicago, brought from Western Michigan Normal College (now Western Michigan University) at Kalamazoo. Glasgow remained as head of the department until 1956 when he resigned to take charge of the new Graduate Division of the Normal College (by then Eastern Michigan College). During the period of his administration of the Geography Department, courses in meteorology and geology and a course on Canada were added. The work done in meteorology proved to be particularly useful to a number of Normal's sons as they entered the military service of their country in World War II.

Glasgow was succeeded by Albert Brown, a product of Syracuse University. Brown left this position in 1961 to become dean of the new College of Arts and Sciences. He left this position in 1965 to accept the presidency of the College of the State University of New York at Brockport. Brown's replacement was John Lounsbury, brought from Antioch College in Ohio.

*Mathematics*

The first instructor in mathematics at the Normal was Orson Jackson. He was a member of the first faculty in 1853 and remained three years, followed in succession by John E. Clark, George S. Jewell, George E. Dudley, and E. L. Ripley. In 1867, Charles R. Bellows, a graduate in civil engineering from the University of Michigan, was employed. Bellows remained with the Normal 14 years, serving one year as Acting Principal (1870–1871), and resigning in 1891 to become the first principal of the Central Michigan Normal School at Mt. Pleasant.

The subject matter offered during this time concerned algebra (including “higher algebra”), geometry, trigonometry (plane and spherical), surveying, and bookkeeping. A review course in arithmetic was given for those needing it. As for mathematical prerequisites for admission to the Normal, a notice in an early catalog read:

It is earnestly recommended that all intending to become members of the Normal School acquire some knowledge of Elementary Algebra, before offering themselves as candidates for admission.

As with the other areas of the curriculum, mathematics was represented by one faculty member, referred to variously as professor of, holding the chair of, or head of the department of mathematics. As help was needed, assistants were brought in or particular courses farmed out to representatives of other areas. Ruth Hoppin, for example, although Preceptress and Professor of Botany, also taught arithmetic at times. Formal organization of a Department of Mathematics occurred only after an extended evolutionary period.

Bellows, although trained in civil engineering, became an outstanding enthusiast for the professional preparation of teachers. He, together with Professor McLouth in Natural Science, was an ardent promoter of the experiment, tried in 1879–1880, to make of the Normal a purely professional school. With its demise under Principal Mac Vicar (himself a mathematician of some note), Bellows continued his campaigning until he completely alienated the State Board and was asked to resign. Bellows' position in this matter was that all courses in the Normal should be professional in character, including the academic courses. Instruction should be planned in terms of teaching the subject rather than in terms of the subject

matter itself. In defense of his position at the time of his dismissal, he wrote:

I sought to give a professional cast to all my academic work. I aimed to have my students conscious all the time that they were studying to be teachers. It was my usual custom to address them as teachers. I sought to bring them day by day the freshest thought and the most recent approved views on matters under consideration.<sup>10</sup>

In a letter to Bellows from a committee sent by the State Board to evaluate his work, the chairman wrote:

I call the work you were doing purely professional work. No lessons assigned, no recitations. All the work done by the teacher with now and then a drawing out question of the class . . . We desire to have the academic work the sharpest kind of a review of what is in arithmetic. Not original methods, devices or solutions.

With the arrival of David Eugene Smith in 1891, a Department of Mathematics came into existence and the work done represented the best standards of the field. Smith, born in Cortland, New York, was a product of the Cortland State Normal School. From there he had gone to Syracuse University where he earned the doctorate in mathematics, then had returned to the Cortland Normal as a member of the faculty. At age 31, he came to Ypsilanti and remained seven years, resigning in 1898 to become principal of the State Normal at Brockport, New York. Leaving Brockport after three years, he went to Teachers College, Columbia University, as Professor of Mathematics, where, through extensive publishing, he became an international figure in his field.

For Smith, the years at Ypsilanti were formative in that he developed and expressed an abiding interest not only in mathematics as a field of human achievement but also in the problems of teaching. The bibliography of his publications includes some 600 items.<sup>11</sup> He was the author or co-author of some 70 books. More than 40 of these were textbooks for all levels of instruction—elementary, high school, and college. His highly successful series of high school textbooks in collaboration with Professor Beman of the University of Michigan was begun while he was at the Normal.

His books on the history of mathematics became standard source-books. His interest in this stemmed from his belief that the history of

mathematics revealed that which is most precious and most significant in our civilization. He began his excursion into this area while a member of Normal's faculty, publishing his "History of Modern Mathematics" in 1896. He published also several textbooks while at Ypsilanti.

At the time of his death, in 1944, it was said of him: "His interests were unusually extensive but most of all he was an untiring worker for the cause and improvement of the teaching of his favorite subject, mathematics."

His successor at the Normal was Elmer Adelbert Lyman, brought to the campus from the University of Michigan where he had been teaching mathematics and had been in charge of the U-M's first venture in organizing a summer school.

Lyman came to the Normal just as it was becoming a four-year college. His arrival also coincided with the installation of the so-called Normal School System whereby a president was appointed by the State Board to be in charge of all of the normal schools of Michigan, and each school was headed by a principal. Lyman was the principal of Michigan State Normal College during the period of this experiment. As head of the Mathematics Department he served under Presidents Jones, McKenny and Munson. From 1912 until his death in 1934 (at age 73), he was a trustee of Berea College, serving on two of the most important committees of the Board, the Executive Committee and the Investment Committee. He was also a trustee of Alma College. During this period he published nine textbooks in mathematics, some in collaboration with Albertus Darrell (at a later date to become head of the Mathematics Department of Wayne State University) and Edwin C. Goddard (later to achieve an outstanding reputation as a member of the law faculty of the University of Michigan).

Lyman's death brought a member of his department of some years standing, Theodore Lindquist, to the position of head. In 1946, Lindquist, retiring, was replaced by Robert Pate, the present incumbent.

Additions to the mathematics offerings by the close of the Lyman period were courses in Integral Calculus, Differential Calculus, and Differential Equations. Further additions—some prompted by the desire to strengthen a two-year curriculum called pre-engineering that had evolved through offerings in the Industrial Arts, Mathematics, and Physics Departments—were courses in Statics, Vector Anal-

ysis, Fluid Mechanics, Digital Computing, Matrices, Functions of a Complex Variable, and some service courses for Education and Business.

Thus, from small beginnings there developed a well-rounded, extensive, competently administered and taught liberal arts program, worthy of a prominent place in a university. Along the way, the Normal (now Eastern Michigan University) was fortunate in its ability to attract faculty members who were both stimulating and a credit to their professional fields of learning. Particularly noteworthy is the fact that without exception these people were profoundly dedicated to the improvement of instruction in the schools of the land, to the preparation of competent teachers, and to the writing of competent textbooks.

