

THE TEACHING OF ASTRONOMY AT THE UNIVERSITY OF TENNESSEE

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"Beginning with the fall of 1901, the study of meteorology which has hitherto been confined to one year, will be made a two years' course. The object of this extension is two-fold: First, to meet the requirements of the general student; second to provide advanced work for the special student.

"With the first named object in view, a popular, attractive, and yet thoroughly instructive, course has been arranged. The science, viewed in its primary aspect, partakes of the elements of the allied sciences of physics, mathematics, botany, chemistry, and astronomy. Instruction is offered at this institution in all of these branches except astronomy, so that hitherto students have entered upon the study of meteorology with an adequate knowledge of all allied branches except astronomy, perhaps the most ennobling—certainly not the least important from a meteorological standpoint—science of them all. To supply this deficiency, the first two terms will be devoted to the study of descriptive astronomy; while the last term will be consumed in making a survey of the domain of meteorology. Thus, at the end of the first year, the student will find himself in possession of knowledge which may either be used simply to augment the stock of general information which every broadly educated person must possess, or he may turn it to further account in prosecuting the study to its more technical end in the second year. The stereopticon will be freely used and the best illustrations obtainable will elucidate every point. Being an elective study in all branches of the academic department, the first year's work will count as a junior science. It is recommended to all students, and to none more than those pursuing the regular literary course.

"An outline of the work for both terms of astronomy follows. 1. Astronomy: The language of astronomy, the philosophy of the celestial sphere and the stars in their courses. Illustrated lectures and parallel reading. 2. Astronomy: The earth and other planets, the moon, the sun, eclipses of sun and moon, the control of meteorological conditions by the sun. Comets, meteors, the cosmogony and the nebular hypotheses. Some noted observatories and something about their equipments.¹"

Thus was astronomy introduced at the University of Tennessee. The instructor of this course was the United States Weather Observer, Mr. Weston M. Fulton. Mr. Fulton also conducted the course in meteorology as one would suspect. The Weather Station at that time was on what is now the main campus and Mr. Fulton's office was in Old College. While Mr. Fulton was "weather man" he invented an instrument with which he could read the height of

¹The University of Tennessee catalogue, 1901.

the water level in the Tennessee River, one of his daily tasks, without having to leave his office. Previously the weather observer had to go down to the river bank and check the water level at first hand. The ingenuity of Mr. Fulton, at the turn of the century, aided weather men all over the country, probably preventing numerous bad colds from exposure on cold river banks. As many of you are aware Mr. Weston M. Fulton later invented the Fulton Siphon Bellows.

The second era in Astronomy at Tennessee was ushered in with the appointment of a new University president in 1904. Dr. Brown Ayres. Dr. Ayres came to Tennessee from Tulane University where he had held various positions, among them, Professor of Physics and Astronomy and Dean of the Academic Colleges. As a memento of his great interest in Astronomy while at Tulane, we have preserved in our department now a clipping from a New Orleans newspaper dated May 28, 1900, recounting the preparations for observing the solar eclipse on that date. The work described was due to the combined efforts of Dr. Ayres of Tulane and a number of gentlemen (unnamed) from the University of Mississippi. Quoting from the printed account "The progress of the eclipse will be noted with Scientific accuracy by a most ingenious contrivance, which may best be compared to the recording cylinder of a phonograph, except that the cylinder is covered with paper instead of wax. It is revolved by electricity and upon it a finely pointed ink-pencil makes continuous lines in red ink, but as this ink-pencil is electrically connected with the observatory clock, small notches or jogs are made directly from the clock, marking each second or some short period of time well understood by Professor Ayres." The news clipping further describes the procedures planned for photographing the various stages of the eclipse. I can assure you that the gentlemen engaged in this project enjoyed excellent weather for their work because we also have in our department quite a number of the original plates that were made that day.

The university catalogue for 1905 offers two courses in astronomy; one, elective for students of junior or senior standing, called Descriptive Astronomy in which Young's Manual of Astronomy is given as the text. The second course was a graduate course in Celestial Mechanics and Practical Astronomy. This catalogue gives Dr. Ayres as the professor teaching those courses. A year or so later he is listed as president of the University and professor of physics and astronomy. None of the old records, so far as I know, give any clue as to the number of students taking the courses in astronomy nor, in fact, whether or not the courses were actually taught each year.

Dr. Ayres brought with him, when he came, a refracting telescope which he gave to the University. It had a very good lens about five inches in diameter. (This was, I believe, the instrument we used when I studied astronomy in 1927-28). The tube on its tripod could be carried around and the lenses of course would be removed

after each period of use for safe keeping. Dr. Ayres continued to be named professor of physics and astronomy until 1911, but about this time he found his administrative duties so heavy he was forced to give up teaching. His courses were taken over by Dr. James T. Porter.

Dr. Porter came to Tennessee in 1908, from Randolph-Macon College, as assistant professor of physics and astronomy. He had been a student at Johns Hopkins University as had President Ayres. Dr. Porter, I believe first actually taught the astronomy course in 1912. One of the students in this class was Miss Margaret Davidson, who became a little later Mrs. James T. Porter.

The catalogue description of the two courses continues from 1905 until 1914 when both were made undergraduate courses, but, I do not know how often the courses were actually taught. In 1926 the description was changed dropping the more advanced course, so that only "Descriptive Astronomy" was offered, three quarters completing it.

During my senior year at Tennessee 1927-1928 I persuaded Dr. Porter, then dean of liberal arts, and Professor Hamilton in mathematics (I was majoring in mathematics) to allow me to take the astronomy course. There were three of us in the class: a Mr. Smith who was an instructor in the College of Engineering and Billy Harkness of football fame—a few years earlier. Billy was doing some graduate work at that time. It was in the spring quarter of that year that the telescope came to a sorry end. Dr. Porter had taken us out at night numbers of times during the year for observations. The telescope tube and tripod were left on the roof of Ayres Hall. One evening in May, Smith called and asked me if I would like to go up on Ayres roof that night and use the telescope. Dr. Porter could not go but he was willing for us to do so. Many times since in recalling this, I've been thankful that I had another date for that evening so I refused. But Smith took the lenses and borrowed Dr. Porter's master key for Ayres Hall and went alone. Probably he had a very nice evening although I never knew, for what happened later so overshadowed everything else. Coming down stairs from the roof he dropped the objective lens and broke it! And in all the excitement and dismay the next morning the master key to Ayres Hall was mislaid. The key was eventually found but the lens was beyond repair.

The summer of 1929 marked the completion of the new Physics and Geology building. The roof of this building had been made with a new telescope in mind. About 1931 this new instrument arrived and was permanently mounted. It is a Bausch and Lomb four-inch refractor with a clock drive. Dr. Porter died in August 1931, so he never had the pleasure of teaching the course with the use of the new telescope.

Astronomy was next taught in the fall of 1934 by Dr. K. L. Hertel, professor of physics and chairman of the department. The class started with five students, the winter quarter continued with two

students, but there is no record of any students in the spring quarter of that academic year. The next class was recorded as given in 1938-39 by Dr. Roy Sullivan. This one started with five students and closed with three. The two following years, 1940-1 and 1941-2, astronomy was taught by Dr. Katherine Way. Beginning with 1940 the course was called Introductory Astronomy and one hour of credit was added for laboratory work. At long last the Astronomy achieved the rank of a laboratory science at the University of Tennessee.

No further classes were taught in astronomy until the fall of 1948, when I began teaching the course, almost by accident. The department made plans to offer the course again expecting a member of the mathematics department, Dr. Lois Kieffer, a Ph.D. in astrophysics, to teach the course for a year, and allowing me to observe and help her. In the spring of 1948, Miss Kieffer married, resigned, and moved to California. So I began to teach the course.

In the fall of 1948 we started with thirteen students, the following year we began with fourteen students, and this fall (1950) we have sixteen. Of course, I must add that during each year there were the usual casualties so that the course would end with several less than the number starting. However, I do feel encouraged by the fact that each fall has marked an increase in the number electing astronomy. We have planned the course to serve as a physical science to satisfy the requirements for such a science in Liberal Arts. It has no required pre-requisites and may be elected by any student in the University. The greatest problem I face each year is the fact that there are such a variety of students. For example, the fall of 1950 there were in the course two beginning freshmen, one graduate student in chemistry, one senior majoring in mathematics, one junior in engineering physics, and the rest with varying amounts of previous work in physics and mathematics. Frequently those with backgrounds in the sciences get involved in technical questions in celestial mechanics, astro-physics, relativity, and what not, perhaps just things they have an idea about, but even those ideas are beyond the scope of our two freshmen. However, I do feel that all of the students enjoy the course to some extent and I believe that most of them learn something from it.

To conclude there is something I must call to your attention, with reluctance, although perhaps you have noted it already. During the half century that astronomy has been a part of the curriculum of the University of Tennessee there seems to have been a trend of some sort in those teaching the course. If I just name those people you will see why I am presenting this trend with reluctance. It seems definitely down grade. First there was Mr. Weston Fulton, inventor of the Sylphon Bellows who became a millionaire. Second, Dr. Brown Ayres, president of the University of Tennessee; third, Dr. James T. Porter, Dean of the College of Liberal Arts; fourth, Dr.

K. L. Hertel, Head of the Department of Physics. Fifth and sixth on my list are Roy Sullivan and Katherine Way. Could they have noticed this downward trend and have been frightened by it, since both of them have given up teaching and are making names for themselves in research laboratories?

NEWS OF TENNESSEE SCIENCE

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