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Course in Meteorology at UT, Second Term 2-1-1898

University of Tennessee

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C O U R S E I N M E T E O R O L O G Y

At The

U N I V E R S I T Y O F T E N N E S S E E.

(For the second term, beginning February 1, 1898.)

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LABORATORY EQUIPMENT:

Exposed thermometer (with brass support and aluminum back.)
Maximum and minimum thermometers (self-registering.)
Wet and dry thermometers.
Sling psychrometer.
Rain gauge (old style.)
Rain gauge (Marvin's improved "tipping bucket gauge", with attached electrical recorder.)
Wind vane.
Anemometer.
Barometers (two mercurial, latest pattern.)
Thermograph (Richard Frères, Paris.)
Barograph (Richard Frères, Paris.)
Sunshine recorder (mercurial.)
Triple register, electrical, for rainfall, wind direction, sunshine and wind velocity (Julien P. Friez, Baltimore.)
Standard Instrument shelter.
Meteorological library of Weather Bureau publications, scientific papers and standard works on meteorology.

Complete outfit for preparing and printing daily weather charts.
NOTE.-Telegraphic reports are received daily (about 10 a. m.) at the local Weather Bureau station, University of Tennessee, from twenty two other W.B. stations, well distributed over the entire section of country in the United States between the Rocky Mountains and the Atlantic Ocean. A daily weather chart is prepared from the data contained in these reports and local ^{weather} forecasts for the coming 36 hours are made by the observer in charge of the local station.

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BOOKS, ETC.

Davis' Elementary Meteorology.
Instructions to Voluntary Observers.
Instructions for Use of Maximum and Minimum Thermometers.

Instructions for Use of Rain Gauge.

Barometers and the Measurement of Atmospheric Pressure.

Instructions for Obtaining and Transcribing Records from Recording Instruments.

Bigelow's Storms, Storm Tracks and Weather Forecasting.

Current copies of the Monthly Weather Review.

Special Weather Charts prepared by U. S. Weather Bureau for use in connection with meteorological instruction in Colleges and Universities (one copy for use in class room only.)

COURSE OF STUDY :

2nd Term, Feb^{ry} to June 18th 1898

Time: Three hours per week, one half of which is to be spent in laboratory. *Required as Approx. Election in Eng. & Sc. Institute.*

- (1) Elementary meteorology. Students will first be required to acquire a thorough knowledge of the fundamental principles of meteorology, after which more extended study will be given to:-
- (2) Temperature. The temperature of the air, obtained by the dry thermometer (supplemented by maximum and minimum thermometers and thermograph) will be determined under a variety of conditions. The data thus obtained will enable the student to take up an independent investigation of some such problem as:-
 - a. The best method for obtaining the mean temperature of a day.
 - b. The departure of daily mean temperature from established normals (using normals computed for Knoxville station for past 28 years.)
 - c. The diurnal range of temperature under different conditions and at different heights above the ground.
 - d. Vertical temperature gradients and inversions of temperature.
 - e. Cyclonic and anticyclonic changes of temperature.
 - f. Temperature as a climatic factor.
 - g. Temperature distribution over a state (e.g., Tennessee, using data given in monthly bulletins of the State Weather Service, together with local observations by student), establishing monthly, weekly or daily isothermal lines.
- (3) Winds. The direction and velocity of the wind will be determined from the records of the triple register, at different hours, under different conditions of weather, and at different stages of the season. The data thus obtained will enable students to take up original investigations along numerous lines.
- (4) Humidity, Dew and Frost. The humidity of the air, as deter-

mined by the sling psychrometer, and the occurrence ~~of~~ or absence of dew or frost will be studied together. The usual observations will accompany this study, together with the consideration of independent problems.

- (5) Clouds and upper air currents. The form and movement of clouds will be observed under varying conditions; the height of clouds will be determined by synchronous observations from points at a known distance apart; some work in cloud photography will be done, if practicable to procure necessary apparatus.
Note.- It is hoped that the U. S. Weather Bureau will establish kite observations at this station within the near future, and students will thus be enabled to make a more accurate study of upper air currents.
- (6) Precipitation. Marvin's improved "tipping bucket rain gauge" will furnish excellent data for studying the rate of fall of rainfall during storms, excessive and deficient falls, etc. The quantity of precipitation of various kinds ~~are~~^{is} also to be studied, together with the usual solution of independent problems.
- (7) Pressure. Observations will be made of atmospheric pressure as shown by the barometer (supplemented by barograph records), from which independent deductions can be made. *Proposed for 2nd yr.*
- (8) Climatology. Students will be required to write original compositions setting forth the ideas gained as to the relation of the various meteorological elements to climate, and the extent to which each serves to determine the climate of a country or locality. These compositions will appear in connection with the study of general climatology. Note books must be used constantly and freely.
- (9) Engineering and Agriculture. In the consideration of each meteorological element, its relation to agriculture and engineering will be fully set forth, and carefully studied.
- (10) Weather Forecasting. Having gained a knowledge of the laws of storms, students will be given exercises in making local and general weather forecasts from day to day, using data received daily at the local weather office, together with copies of the daily weather maps issued at the Central Office, Washington, D. C., and at the local station. ¶ It is the intention of the instructor to take up, at once, an investigation into the relation of the electric potential of the atmosphere to weather forecasting. Apparatus will be procured as soon as practicable for taking continuous records of electric potential at different elevations, and copious local data will, in the course of time, be thus obtained. Records from all other available sources will also

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be collected. Students will be expected to aid in this investigation. The results attained will be compiled each year for the benefit of the class of the succeeding year, and the work thus continued as long as there remains a prospect for original discoveries. As soon as it is found that valuable results are being attained, these will be given out to the public, from time to time, either through the columns of some leading scientific magazine as contributions to science, or otherwise, as may then be considered most expedient.

W. M. Fulton