

etc. (Of less general serviceability and therefore appropriate to only a portion of the pupils.)

4. Ability, disposition and habit of observation of significant biological phenomena as an enjoyable and fruitful leisure occupation.

5. Ability, disposition and habit of reading relative to biological matters as an enjoyable and fruitful indirect method of viewing biological phenomena; also a leisure occupation.

6. A proportioned vision (according to one's intellectual capacity) of the biological world as a whole—plant and animal series—as it exists today and in its genesis.

7. Ability wisely to control the several biological factors—so far as control is possible or desirable—involved in the responsibilities of parenthood.

8. Ability, disposition, and habit of viewing Man in world-genesis and relation—as a major foundation of one's sense of human brotherhood, and as one of the most inspiring visions of one's religion.

Bobbitt does not include in his objectives the aim to teach children the importance of conservation and domestication and improvement of domesticated animals and plants, except if we consider his second and third aims in a very broad sense. He does not include the vocational nor the preparatory, but does make mention of the religious aim.

By a study of our table on textbooks as given above we find that though there is comparatively little agreement among textbook authors as shown by their prefaces, yet there is the tendency toward emphasis by the more recent writers (1910 and after) on the following objectives:—Understanding of economic relations between plants and animals and man, health, adjustment to life relations, conservation, domestication and improvement of plants and animals, sociological, worthy use of leisure, and vocational. Checking this list with those aims

given in *Cardinal Principles* we find the following common to both:—Health, worthy use of leisure, worthy home membership, good citizenship, and vocational. (Very recent.) Bobbitt, Inglis and Snedden do not include the vocational. On the whole, however, we find that the aim is to make material practical, of use to the individual to make him a better citizen.

"The purpose of democracy is so to organize society that each member may develop his personality, primarily through activities designed for the well-being of his fellow members and of society as a whole."

BERTHA WITTLINGER

### PRESENT CLIMATE NOT CHANGING

IF THE word "climate" is first defined, the likelihood of any misunderstanding from the title is somewhat reduced. In Maury-Simonds' *Physical Geography* (1908), page 210, statements are found which say that climate includes "an aggregate of weather conditions" based upon observations extending over a series of years. The discussion of the statement indicates that the longer the period of observation, the more valuable become the data upon which climate is established. More recent publications give the same idea in defining and discussing climate.

As it is so often remarked in conversations that climate is changing, it is well to notice this popular idea in its conflict with the observations of those who make a scientific study of climate. The popular idea of climate changing is based upon memory and the "feelings" type of observations. Memory is inclined to recall the exceptional years or climatic conditions which were outstanding because they were unusual. In contrast, the climatologist bases his decision on the records which have been preserved from daily observation of standardized instruments.

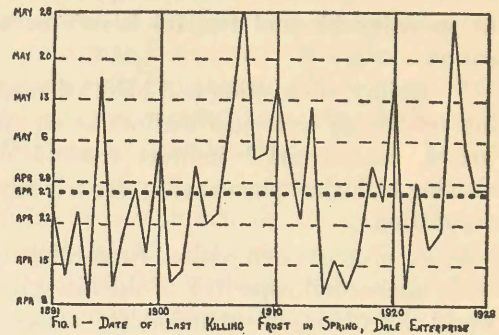
The climatologist carefully distinguishes

between sensible temperature and the temperature recorded by the thermometer. At times, one hears a remark about the air feeling so much warmer because it contains moisture. A few months later, in the winter season, a similar remark may be heard only then it is colder because there is so much moisture in the air. Those remarks have to do with the sensible temperature, and it is that kind of temperature which contributes to the popular memory. It is accepted that moisture in the air does affect how warm or how cool, a person may feel in the different seasons. As the climatic records of temperature give the results of readings from thermometers, sensible temperature is not included in this study.

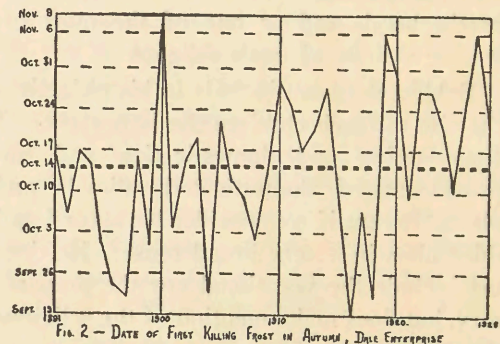
The rainfall records are secured by using a rain gauge which has been properly placed. Then it is carefully observed. This recording of the rain is in contrast with the memory of the length of time the roads were muddy, how long the fields were wet, or the days during which water stood in specified depressions. The rain gauge gives a standard measurement for all conditions and seasons, and when systematically observed, it gives records which are not influenced by any person's memory or opinion.

The Dale Enterprise weather station is four miles west of Harrisonburg, and a study of records from that station can well be used to illustrate what may be learned regarding the climatic conditions of any locality having provision for systematically recording temperature and rainfall. The temperature records of that station commence in 1891 and continue to 1928. As a test study of whether spring begins earlier or later than it did nearly forty years ago, the date of the last killing frost in the spring has been plotted as shown in Fig. 1. It is observed that the earliest date of the last killing frost in the spring was April 9th; this occurred in 1894. The latest date on which a killing frost was experienced was May 28, 1907. Figure 1 illustrates how

the frost date has fluctuated, so the average date of the last killing frost in the spring becomes April 27th. This date is indicated by the heavier dashed line in the figure.



In a similar manner, the dates of the first killing frost in autumn for the Dale Enterprise station are shown in Fig. 2. The year 1900 had the most postponed autumn frost, as in that year it was recorded November 9th, while 1916 furnished the earliest killing frost which was experienced Sep-



tember 19th. From the thirty-eight years of record, the average date of the first killing frost in the autumn becomes October 14th. The heavier dashed line in Fig. 2 indicates this date. From these two illustrations, it is evident that there may be a period of a few years during which the killing frost may be noticeably earlier or later than the average date, yet when the record of all the years is viewed, there is not a change of climate in respect to the frost dates.

Linked with the last killing frost in the

spring and the first killing frost in the fall is the length of the growing season. These are not represented by a figure in this article. The average length of growing season is found to be 171 days. The greatest number of days any year has had a frost-free period was 201; this occurred in 1914. In 1907, the growing season was limited to 134 days, which is the minimum recorded by the Dale Enterprise station.

The rainfall records for the selected station are published for 49 years. This length of record furnishes a good opportunity to study a series of years and approaches the standard mentioned in the first paragraph concerning the greater value of a longer series. These records are represented in Fig. 3. The year having the greatest recorded rainfall was 1886 when the total received measured 68.31 inches. Only five other years have a record of a precipitation

of more than 50 inches. In 1882, 56.01 inches were received and in 1901, 56.28 inches were recorded. During the forty-nine years, there have been only four in which less than 30 inches of rainfall were received. The minimum was in 1921 with 28.72 inches. The other three with low records were 1894 with 29.22 inches; 1895 with 29.50 inches; and 1925 with 29.56 inches. The average annual rainfall measures 40.55 inches. This is indicated by the heavier dashed line in Fig. 3. The representation of the rainfall records shows that the precipitation has varied above and below the average and that this has been experienced during the years for which the records are available.

Not only may one study the annual rainfall, but also the rainfall received in some month of the year. Any month might have been used. However, the choice of August

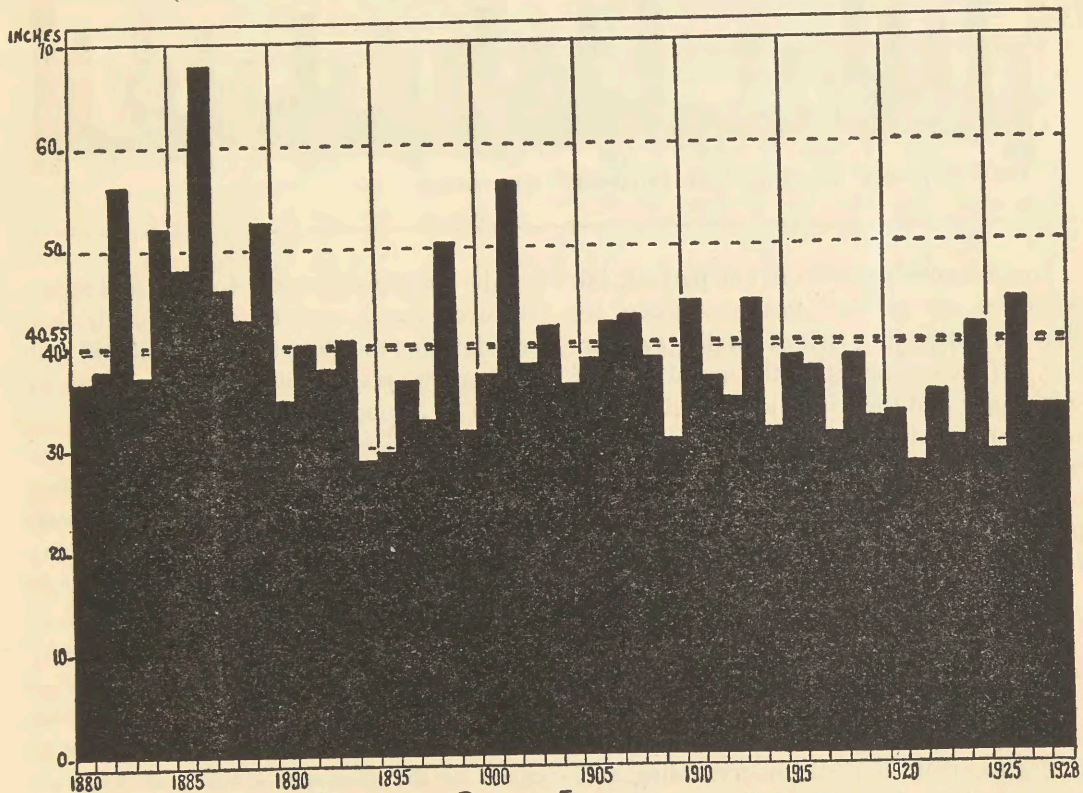


FIG. 3 - ANNUAL RAINFALL, DALE ENTERPRISE. 1880 - 1928.

was influenced by the dry conditions of that month in 1929. This record is represented in Fig. 4. The three highest rainfall records for the month are: 1882, 10.50 inches; 1898, 9.54 inches; and 1928, 8.29 inches. The three lowest records are: 1897, 0.68 inches; 1890, 1.26 inches; and 1925, 1.15 inches. The mean precipitation for August is 4.03 inches. In Fig. 4., this is indicated by the dashed line.

Following such a plan as this, a much longer study might be made but enough has been cited so that it seems very evident that the records of the Dale Enterprise station support the statement that the present climate is not changing. In the limitations of such an article as this, the records of only one weather station could be used as

illustrations. Any readers who wish to learn how well past records of other weather stations may support or refute the idea of the present climate not changing can easily make such a study. Address the Chief, Weather Bureau, Department of Agriculture, Washington, D. C. and ask for the Climatological Data for your nearest weather station, and the printed circular which includes your territory will be mailed to you free. It is to be expected that any study will give evidence of variations or fluctuations from the average or mean climatic conditions. As they are only fluctuations, they do not indicate a permanent change in climate.

RAUS M. HANSON

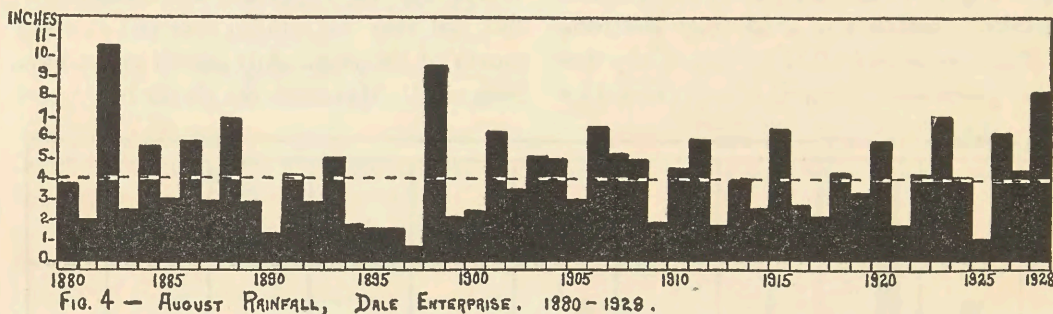


FIG. 4 — AUGUST RAINFALL, DALE ENTERPRISE. 1880-1929.

Our economic system is not perfect, but whatever our national weaknesses may be, they do not lie in a lack of vitality or courage. If we can maintain the moral fiber of our people and their individual initiative, if we can maintain equality of opportunity for our youth, if we maintain the strength of our government, we shall make even greater progress in the next century.—*Herbert Hoover*.

In the present state of the world, with evident proof that war is the greatest of all tragedies from which humanity suffers, the necessity for employing all educational forces to create mutual understanding and sympathy is obvious.—*John Dewey*.

The best preparation for the character required for democratic citizenship is that which trains the child to take a full and real share in the responsibilities of the groups to which he belongs.—*Henry Neumann*.

He who helps a child helps humanity with a distinctness, with an immediateness, which no other help given to human creatures in any other stage of their human life can possibly give again.—*Phillips Brooks*.

Thirteen percent of the high school principals in the United States are members of the Department of Secondary School Principals of the National Education Association.