

Astrology once permeated all religion, all science, and even politics; and the baneful influence of unfounded, unreasonable, or portentous predictions is not a modern affliction. Montaigne, the French philosopher and essayist of the sixteenth century, remarks that "a large sum of money was lost on 'Change at Rome by this prognostication of our ruin,'" referring to the prediction by Italian astrologers of the downfall of the French nation. Dean Swift, the powerful satirist, wrote "Predictions for the year 1708, by Isaac Bickerstaff, Esq.," to emphasize the absurdities and weaken the influence of long-range forecasters.

The infinite desirability of foreknowing the seasons for the benefit of husbandmen is at once the opportunity of charlatans and the justification of national weather services. It avails little to decry the methods of impostors or to brand them as fakirs; the court of final resort must always be a comparison of results, and such comparison every one can now make for himself. Weather maps showing the actual conditions on every day are now published by practically every civilized nation and are accessible to all; and all that is needed to cure the most implicit belief in almanac predictions is an honest comparison of these predictions for a single season with the actual occurrences as shown by these maps. Conspicuous instances of failure, such as those of the artificial rain makers, who, a decade ago, were given the fullest opportunity to test and exploit their theories, or the colorless results of the extensive campaign of bombardment as a protection against hail, conducted for several years in southern Europe, do not convince the credulous. They do serve, however, to illustrate the "confusion of tongues" among the prophets of these latter days, who bombard the skies to precipitate storms, and bombard the clouds to dissipate them. Government meteorologists are not alone in the denunciation of the fallacies, absurdities, and pernicious effects of so-called long-range forecasts. Professor Young, probably the foremost American astronomer, speaking of lunar influences, points out that the frequency of the moon's changes is so great that it is always easy to find instances by which to verify a belief that changes of the moon control conditions on the earth. A change of the moon necessarily occurs about once a week. All changes of the weather must therefore occur within three and three-fourths days of a change of the moon, and one-half of all changes ought to occur within forty-six hours of a change in the moon, even if there were no causal connection whatever. Now it requires only a very slight predisposition in favor of a belief in the effectiveness of the moon's changes to make one forget a few of the changes that occur too far from the proper time. Coincidence enough can easily be found to justify preexistent belief.

Those who are in a position to know are well aware that every possible effort is being made to extend our knowledge of the laws that control weather conditions, and meanwhile to give to those who are vitally concerned the most trustworthy information obtainable.

The problem of seasonal forecasts is receiving at the hands of the ablest and most painstaking students of both continents a comprehensive consideration that is certain to be fruitful and far-reaching in its ultimate results. So important and so pressing is this work and so promising is the field, that the Chief of the Weather Bureau is building and equipping a large observatory, wherein the best talent available will soon be employed to study the intricate and profound problems of the atmosphere, whose solution promises improvement over present methods and results in forecasting, and may lead in time to seasonal predictions on a truly scientific basis.

EFFECT OF RAINFALL ON THE PALM OIL TREE.

[Extract from British Colonial Reports—Annual, No. 427. Lagos. Report for 1903. Communicated by W. R. Buttenshaw, Imperial Department of Agriculture for the West Indies.]

The very remarkable shrinkage in the exports of 1903 as

compared with those of 1902, as regards cocoa, palm kernels, and palm oil, is the result of highly unfavorable meteorological conditions, which well deserve special consideration. It is purely a question of rainfall.

As regards palm produce, the following pertinent paragraph may be quoted from the report of a commission to the governor of Lagos, in 1898:

The yield of fruit from the palm oil tree (*Elaeis guineensis*) varies according to rainfall. With a sufficiency of moisture the tree flowers every five or six weeks, and bears eight or nine mature bunches of fruit in the year, but if the rain supply is scanty the tree flowers only every ninth or tenth week, and the annual yield is reduced to about five bunches. In normal times the *Elaeis* bears eight heads (so-called nuts) in the year, but it follows a similar habit to the cocoanut, the heads being formed spirally and the axils of the leaves at regular intervals, which are long or short, according as the season is favorable. The mischief arising from insufficient rainfall does not finish with the number of heads, for the oil is extracted from the fibre of the thin outside layers of the fruit, which are either red, ripe, succulent and rich with oil, or starved, yellow, and destitute wholly or partially of oil, according to the amount of moisture afforded to the tree during the time the fruit has been maturing.

The following table has been prepared to show the yearly rainfall, in inches; the yearly export of palm oil, in gallons; and the export of palm kernels, in tons:

Year.	Rainfall.	Palm oil.	Palm kernels.
	Inches.	Gallons.	Ton.
1887.	70.80	2,446,705	42,525
1888.	49.87	3,349,011	32,715
1889.	61.61	3,200,824	38,829
1890.	90.88	4,204,835	42,342
1891.	64.26	2,458,260	32,180
1892.	69.68	4,073,055	51,456
1893.	82.55	3,393,533	53,534
1894.	70.10	3,826,592	46,501
1895.	80.62	3,154,333	47,649
1896.	74.23	1,858,968	41,299
1897.	51.10	1,830,939	42,776
1898.	80.20	3,292,861	49,501
1899.	83.46	2,977,926	48,514
1900.	72.82	3,304,055	57,176
1901.	112.59	5,240,137	75,416
1902.	47.82	3,174,060	63,568
1903.	70.08		

The correlation between rainfall and the quantity of palm produce exported from the colony is shown in an unmistakable manner by the above figures. They are given here in detail, because the falling off in the exports of 1903 was not understood by British merchants.

It will be noticed that the effect of an unusually great or abnormally small rainfall is sometimes felt most in the exports of the following year. This arises from the fact that the rainfall is divided into the former and the latter rains. Thus, in 1901 there was the unprecedented fall of latter rain of 31 inches in September and October, the effects of which are seen in the record export of 1902.

An examination of the above figures will show that the export of palm oil is even more sensitive to rainfall than the export of palm kernels.

The greatest rainfall, that of 1901, preceded the almost phenomenally large export of vegetable produce in 1902. The short rainfall of 1902 enabled an intelligent observer to predict with certainty a great falling off in produce in 1903.

SEASONAL RAINFALL RÉGIMES IN THE UNITED STATES.

Prof. V. Raulin, of Montfaucon, France, advocates the classification and publication of precipitation statistics by meteorological seasons in place of, or in addition to, the calendar months and year. In a recent letter he incloses a map, fig. 1, showing the division of the United States into "régimes" based on the seasonal precipitation, as determined from the data of Weather Bureau Bulletin D. Professor Raulin states:

* * * the climatic chart is very interesting and shows clearly that precipitation is abundant in the neighborhood of the Atlantic Ocean, and decreases in the interior as far as to the neighborhood of the Pacific