

THE UNITED STATES NAVAL OBSERVATORY.—The report of the U.S.A. Naval Observatory, Washington, for the fiscal year ending June 30, 1908, contains several important announcements, and gives the record of the work done during the year.

Rear-Admiral Walker having retired from the superintendentship on November 13, 1907, Captain W. J. Barnette was appointed to the position, and submits this report.

Having asked a board of astronomers to report on the state of the observatory and the most proper work for it to perform, he received a report in which it was laid down that astronomy of position, rather than astrophysics, should be the principal work of the observatory. In order to secure the continuity and coordination of the work, an astronomical council, consisting of the officers of the observatory, was appointed, and will in future act as an advisory council in connection with all the work, astronomical and administrative, of the observatory.

The climatic and terrestrial conditions at Tutuila, Samoa, having been found too unfavourable, the branch observatory established there in 1904 has been discontinued.

SCIENTIFIC AGRICULTURE.¹

THE bulk of this work is taken up by the reports on economic zoology and mycology; the remainder comprises reports from the veterinary, chemical, and botanical departments, and the farm report.

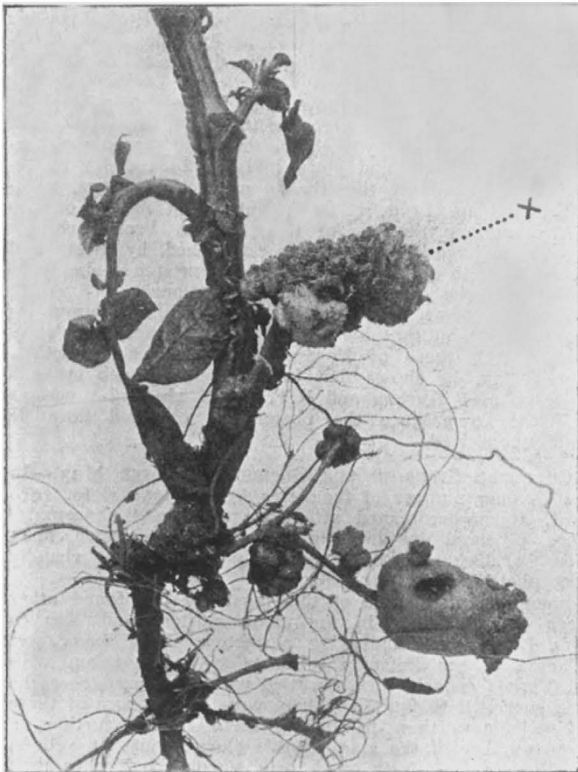


FIG. 1.—Photograph of a growing potato plant attacked by the "Black Scab." At X is a diseased shoot above ground; several young disease potatoes can be seen below.

The determination of the digestibility of feeding stuffs, giving, as it does, an insight into Continental methods, is of exceeding interest to all scientific agriculturists. Prof.

¹ The Journal of the South-Eastern Agricultural College, Wye, Kent. No. 17. Pp. 478. (London and Ashford: Headley Bros., 1908.) Price 6s.; Residents in Kent and Surrey, 3s.

F. V. Theobald's work is well known, and in his contribution to the journal the notes on the damage to hops by *Entomobrya nivalis*, Linn., and on the occurrence of *Rhagoletis cerasi* in imported cherries, are worthy of

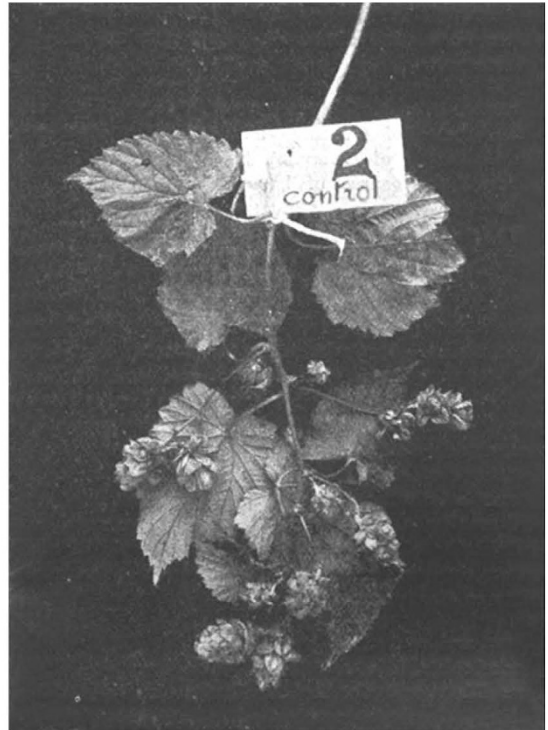


FIG. 2.—A branch of seedless Golding Hops.

special mention. Most of the illustrations in this section are excellent.

The report on economic mycology contains articles on American gooseberry mildew and on black scab, among others, illustrated by a series of twenty-six splendid plates, one of which is reproduced here. This shows very plainly the peculiar warty outgrowths to be found, not only on the tubers, but on the shoots and leaves of potatoes attacked by *Chrysophyctis endobiotica*. Hops, as is fitting in a hop-growing district, receive attention, and the article on the value of the male hop, illustrated by most lucid plates, is by no means the least important item in the journal. The plates illustrating "seeded" and "seedless" Golding hops, taken from the same bine, show one of the effects of fertilisation, viz. that "growing out" takes place along with seed production; in fact, the investigations carried out at Wye prove beyond question that only "seeded" hops will grow out properly. The "growing out" takes place immediately after fertilisation, thus obviating a long "burr" period, a period in which there is the greatest danger of attack by "mould."

The amount of resins, too, is increased by more than one-half as a result of fertilisation; in fact, the quantity and quality of hops is improved by the presence of the male hop. This was shown in a practical manner by the fact that samples of "seeded" and "seedless" hops, grown in the college hop-garden, were submitted to the hop-factors for valuation, and it was found that the "male plant had increased the value of the crop (at the price of hops then current) by the sum of 24l. 10s. per acre." Such investigations are not only of absorbing interest, but of the greatest possible utility.

One always looks for good work in the veterinary department, and the present report is no exception, but mention can only be made of the discovery of *Strongylus*

ostertagi, new to this country, and large numbers of the rare *Sclerostoma hypostomum*.

Exigencies of space forbid the mention of other contributions.



FIG. 3.—A branch of seeded hops produced on the same line and under identical conditions as those shown in Fig. 2, except that pollen was supplied to the "burr."

The letterpress and plates are alike excellent, and, as a year's record of all that is best in scientific agriculture, the *Journal of the South-Eastern Agricultural College* should find a place on many bookshelves.

C. A. E.

THE ROYAL PRUSSIAN AÉRONAUTICAL OBSERVATORY'S AÉROLOGICAL EXPEDITION TO TROPICAL EAST AFRICA.

THE Royal Prussian Aëronautical Observatory, Lindenberg, supported by the active interest of some "friends of science," sent out in June, 1908, an aërological expedition to tropical East Africa under the direction of Prof. Berson, first observer at Lindenberg, accompanied by Dr. Elias, formerly assistant, and Mr. Mund, balloon superintendent of the observatory. At the end of December last they returned safely, and in possession of a good amount of interesting data.

In consideration of the proximity of the region explored to British possessions in East Africa, and also in recognition of the help and protection given to our work by the English authorities, I asked Prof. Berson to write a special report for *NATURE*, believing that there are British readers who take interest in our work.

I am therefore glad to offer the following account of the work by Prof. Berson.

R. ASSMANN.

Director of the Royal Prussian Aëronautical Observatory, Lindenberg.

Much good work has been done lately in the exploration of the upper atmosphere in the region of the trade winds, more particularly the Atlantic trades, where men of science of Germany, the United States, and France have been making investigations, trying above all to

elucidate the very important question of the anti-trade. But in the Indian Ocean and the adjacent regions, the realm of the most powerful and persistent monsoonic system of the globe, with the exception of a few ascents from the German ship *Planet*, carried out in the southern and eastern portions of the ocean, only the Indian meteorologists, Mr. Walker and Mr. Field, had applied the new aërological methods for the study of the monsoon phenomena, the work in the south-west monsoon proving especially difficult on account of the stormy and rainy character of the weather prevailing during its sway.

Very naturally the idea occurred to try similar explorations on the east African coast and the waters washing it, the region lying at the starting point or (in the case of the Indian "winter monsoon") at the extreme limit of these peculiar wind-systems. It might be expected that there would be less difficulty to be encountered here than in India proper, especially if the work were carried out on the water, where self-registering balloons might be found easier, by means of a small steamer chartered for the purpose, and the wind, if too weak or too strong for kite ascents, increased or lessened by the motion of the vessel.

This plan once conceived, it occurred to us that some 600 miles further inland there was situated a vast sheet of water—the Victoria Nyanza—on the surface of which all the above-named advantages might be met for balloon as well as for kite work, thus affording the possibility of efficient and fruitful aërological research in the heart of a tropical continent, even in the middle of the equatorial belt, a unique spot of similar convenience to be found on the surface of the globe.

The Royal Prussian Aëronautical Observatory, the well-known creation of Prof. Assmann, took the matter in hand, and after having overcome a rather lengthy series of difficulties—above all, naturally enough, of a financial character—chiefly by the persistence of Prof. Assmann and the generosity of a few wealthy friends of scientific work we succeeded in carrying out our plan, at least in the leading features. This had in itself a double bearing. The first item consisted in an investigation of the monsoons, more particularly of the conditions of their change in the north-hemispheric autumn, and the intervening land and sea breezes, on the coast of British and German East Africa, as well as on the neighbouring sea (as a matter of fact, the work was carried far beyond the limits of the monsoons, down to the tropic of Capricorn). The other point was the "study of the tropical, or, more exactly speaking, the equatorial continent"—in contrast to the ocean of the same latitudes—from the aërological point of view, over the Lake Victoria, implying the research of the vertical distribution of temperature, the question of the "upper inversion," the study of the winds prevailing in the different strata, and, in addition, a comparative investigation of the land and sea breezes of the lake in analogy to those on the coast of the ocean.

For scientific and practical reasons, though, the experiments had to be executed in the inverse order; we began by the ascents on the large "inland sea of Central Africa," and wound up by research on the ocean.

The writer, as leader of the expedition, accompanied by Dr. Elias, and a technical assistant, left Europe in the middle of June, and managed, after some little delay at Mombasa and Nakuru, to arrive, *via* Uganda Railway and the lake, with all our cargo of windlasses, kites, balloons, chemicals, instruments, and personal equipment, on July 24 at Shirati, in German East Africa, situated on the east coast of the Nyanza, in 1° 7' S. lat.

That all the difficulties which, of course, did not fail to arise could be overcome with so little loss of time is to a large extent due to the extreme courtesy, or in many cases even most helpful assistance, with which the expedition met everywhere in British East Africa. For this the observatory is largely indebted to Dr. Shaw, the director of the Meteorological Office, to the Colonial Office, and to all the authorities, Imperial as well as local, in British East Africa and Uganda. We beg to express our feelings of sincere gratitude to all of them, most particularly to Dr. Shaw and to the officials of the Uganda Railway, the custom and port officers in all those places, and the officers of the steamers plying on Lake Victoria.

Owing to this loyal help we succeeded in securing a