

LINGUISTIC AND POLITICAL
BOUNDARIES IN EUROPE.

NATIONALITY is to serve as an important factor in determining the boundaries of the New Europe. On broad lines the safest guide to the nationality of any populace is the language commonly spoken, usually the mother-tongue. Hence the importance of a map like that¹ lately published by Messrs. Stanford. Consider for a moment the political boundaries, both international and national, of Austria-Hungary. Practically nowhere do they coincide with a linguistic boundary. The only people wholly within that empire are the Magyars, who inhabit a compact block of territory bounded on the south by the Drave and the Maros, on the north by the foothills of the Carpathians, on the west by a line slightly west of south from Pressburg to the Drave, and on the east by a line north-east from Arad. South-east of the Magyars lie the Rumanians, who extend beyond the Carpathian political boundary; they include islands of Magyar and German settlers, former frontier guards. Along the south and to the south-west the great group of the Yugo-Slavs (Serbs, Croats, and Slovenes) extends beyond the confines of Austria-Hungary. To the west lie the Austrian Germans, who fill the Danube valley westwards beyond the frontier. North-west are the Slovaks, who link with the Moravians and Czechs as one great branch of the northern Slavs. These peoples do not reach the Austro-German frontier, since they meet the Germans within the borders of Bohemia, or the Austro-Russian frontier, since they meet the Poles. To the north-east the Magyars adjoin the Ruthenes, or Little Russians, whose limit is far to the east beyond the Don.

Suppose an independent Magyar kingdom be established, what are the chances of stability? First, a homogeneous race; secondly, a zone railway system which concentrates on the capital, Budapest; and, thirdly, a unity of soil, climate, and products mainly agricultural—all these tend to preservation. On the other hand, there would be no Magyar outlet to the sea, the two great waterways, Danube and Theiss, would not join in Magyar territory, and no boat could journey by Pressburg to Szabadka through Magyar territorial waters for the complete voyage. The great trunk railway from Vienna to Constantinople would only serve the south-western corner. Finally, would the Magyar kingdom march with Russia on the north-east and with Germany on the west?

Contrast this kingdom with Poland, cut across by pre-war international boundaries. The Poles form the most numerous non-German people in the German Empire; they extend into Austrian Silesia, and practically fill Galicia west of the San. Unlike the Magyars, the Poles reach the sea, along a few miles of coast west of Danzig. They march, however, with Germans on the west, with Russians on the east, and with a Slav people

¹ "A Sketch-map of the Linguistic Areas of Europe." Scale, 50·8 miles = 1 in. (London: Edward Stanford, Ltd.) Price, in 4 sheets, 72 in. by 61 in., 2l. 2s.; mounted on rollers, 2l. 15s.; folded in cloth case, 3l. 10s.

—Czecho-Slovaks—on the south-west. The linguistic boundaries of Magyars and of Poles rarely lie along rivers or mountain ranges; will the new era bring into play new factors which will determine the stability and utility of political boundaries?

Messrs. Stanford have done a public service in publishing this map, which should be examined and re-examined by all who are interested in the determination of the conditions which will make for a lasting peace.

APPLIED ENTOMOLOGY IN CANADA.¹

DR. GORDON HEWITT'S recent report is an encouraging record of useful work. It forms a noteworthy testimony of his capability as an administrator and, at the same time, reflects great credit upon the Canadian Department of Agriculture in its wise provision for the needs of combating insect pests. In any such organisation as the Canadian Entomological Branch success to a large extent is dependent upon the individual capabilities and enthusiasm of field officers and assistants. Dr. Hewitt is indeed fortunate in having an excellent staff, comprising men well qualified to deal with the various problems first hand, wherever they may be reported. During the year under review four new entomological field laboratories have been erected in several parts of Canada; this in itself is a praiseworthy achievement. An addition to the permanent staff has also been made in the appointment of Dr. A. E. Cameron. Dr. Cameron is a former research scholar of our own Board of Agriculture, and conducted investigations in the Department of Agricultural Entomology at Manchester University.

In a country like Canada, the administration of the Destructive Insect and Pest Act naturally involves a good deal of routine work. More than 2½ millions of imported trees and plants were examined in 1914-15. This work had special reference to gipsy and brown-tail moths and other foreign insect pests. Dr. Hewitt tells us, however, that owing to the war this number is only about one-half of that imported during the corresponding period the previous year. It appears that the intensity of the infestation of these two moths in Nova Scotia and New Brunswick has decreased, though the area over which they have spread has become extended. An excellent feature is the co-operation which has taken place with the U.S. Government in suppressing these pests, and in introducing into Canada certain of their more important insect enemies. The army cutworm (*Chorizagrotis auxiliaris*) occurred as an extensive outbreak in a corn-producing area of about 3000 square miles in S. Alberta. Prompt measures were, however, undertaken and widespread damage prevented. The lesser migratory locust (*Melanoplus atlantis*) was very abundant in Eastern Canada, but the timely publication of an entomological circular on the subject disseminated neces-

¹ Report of the Dominion Entomologist for the Year ending March 31 1916. By Dr. C. Gordon Hewitt. Pp. 73+7 figs. (Ottawa, 1917.)

sary information, and serious losses were prevented where the measures advocated were carried out. The outstanding feature concerning fruit crops was an outbreak of the pear thrips in British Columbia, and investigations of its life-history and means of control are now being conducted. The warble-fly is also a problem of great importance, especially as the two common species of *Hypoderma* are extending their range in Canada, through the introduction of cattle from infested areas. A definite method of control, by legislation or otherwise, is an urgent need not only in Canada, but also in the British Isles.

Among other topics, insects affecting the household and public health claimed much attention, also the protection of birds and mammals, and the arrangement of the national collections of insects.

A. D. IMMS.

ÉDOUARD SARASIN, (1843-1917).

WHILE the best young shoots are being ruthlessly destroyed the mature grain is being harvested. Édouard Sarasin has passed away. In him Science deplores the loss of a distinguished physicist, and Geneva a great man of an historic race, whose traditions, however, do not cease with him.

The place which Sarasin held in the world of science was in no way due to official position. He was at no time a professor at the university. The admirer of his work who sought him at the University of Geneva did not find him, and was told: "Édouard Sarasin? He is Maire of Grand Saconnex." In answer to a puzzled question as to his academic position they would say: "He is President of the Société Helvétique, and editor of the Archives des Sciences physiques et naturelles."

Sarasin's experimental work, which was of the first order, was carried out at a private laboratory, often in collaboration with friends, whose names are no less illustrious than his own. He was not the head of a school, but a bright star in a galaxy. These men of science grew up under the influence of Auguste de la Rive; and Sarasin's first essay, dealing with electric discharges in rarefied media in presence of a magnet, were prompted by that great master. At the same time, under Soret, he was obtaining results which have become classical; among these we may mention the refractive indices of quartz, Iceland spar and fluor spar, still printed in the tables.

It was however in collaboration with Lucien de La Rive, the son of Auguste, that Sarasin's best known work in physics was achieved. This consisted in the experimental development of the Maxwell-Hertz theory. The discovery of "multiple resonance" is one of the results due to them. It is in virtue of this property that, for instance, a Marconigram may be picked up in transmission by any resonator. The last scientific work with which Sarasin was, only recently, engaged, consisted in delicate experiments on radio-activity carried out in conjunction with Tommasina.

At Geneva, however, the man of science cannot

remain mewed up in a laboratory. Nature tempts him with her beauty and her mystery. Sarasin was a passionate lover of nature and an ardent student of the geophysics of his native land. We can but refer to the instrument invented by him for recording the "seiches"—those strange undulations which from time to time traverse the Lake Lemman, and to his photographic studies on the penetration of light under water.

The reader who desires a fuller information as to the work of Sarasin is referred to the interesting article by C. E. Guye in the *Journal de Genève* of June 26, as well as to the forthcoming account by L. de la Rive in the Archives des Sciences.

GRACE CHISHOLM YOUNG.

NOTES.

SIR GEORGE GREENHILL reminds us, in connection with the correspondence on unusual rainbows in NATURE of August 30 and September 6, that letters upon this subject appeared in NATURE of January 23 and February 6, 1890 (vol. xli., pp. 271 and 316). In the issue of the former date Lord Kelvin sent a letter, with a diagram, showing a rainbow caused by reflection, and this was followed on February 6 by an illustrated description of eight rainbows seen at one time by Dr. Percival Frost. Lord Kelvin, in sending this letter, said:—"The theory of the rainbows produced by the sun itself directly, and by the image of the sun reflected from still water, is given in Prof. Tait's book on 'Light.' The phenomena seems to have been observed by Halley in 1698 (see NATURE, vol. x., pp. 437, 460, and 483 for interesting correspondence on the subject)." Referring to the observation described in NATURE of August 30, Mr. J. H. Grace writes from Cambridge to direct attention to a note in the Transactions of the Royal Irish Academy, bearing date November 14, 1826, and written by the Lord Bishop of Down and Connor, where there is a striking coloured diagram which illustrates the point raised by Mr. Low. The Bishop remarks: "It cannot be doubted that the extraordinary, or centre, bow was occasioned by the image of the sun reflected from the surface of the water. The description and the figure answer exactly to this explanation."

THE Tokyo Press publishes the scheme for the inauguration in that city of a scientific and industrial research laboratory. The principal scope of the institution is to assist in the application of modern methods to the development of Japanese industries. The chief sections of the laboratory will be those devoted to researches in electricity, chemistry, electrochemistry, textiles, and metallurgy. To meet the expenses Parliament has passed a law authorising the Government to make a grant to the laboratory of two million yen (approximately 200,000l.), payable in instalments over ten years at the rate of 200,000 yen per annum. The Imperial Household has also made a lump sum grant of one million yen (100,000l.). At a recent meeting the promoters of the scheme elected a committee the object of which will be the collection of funds independent of the Government grants. A sum of 2,900,000 yen (290,000l.) has already been collected, so that the laboratory will have available funds exceeding five million yen (half a million sterling). These particulars are taken from a paragraph in *L'Economista d'Italia* for August 30.

DURING the last three strenuous years, much has been done to organise chemical industries, and there is every reason to hope that in the difficult period after