

so varied, that he would have been an admirable man for the emergency, and even as a permanent head would have shown many admirable qualities. Nevertheless he is doubtless right in saying that four men can be named, two already in the government service, and two not so employed, who are qualified for the post by their acquaintance with the precise investigations which are prosecuted by the survey. One of these he hopes will be appointed.

From all that reaches us, we are persuaded that neither the President nor his advisers are hostile to the proper prosecution of the government work in science. If abuses have crept into any department, these abuses will doubtless be eradicated. As the corrections proceed, undue zeal may sometimes be shown by the subordinate reformers; individuals may neglect the considerations of courtesy and the deference due to those whose lives have been devoted without reproach to the service of the country; but the correspondence of Secretary Manning and Professor Agassiz is to us an assurance that science will not be retarded, and that scientific men will not be slighted by any act of President Cleveland.

BULGARIA AND BULGARIANS.

Forty-three years have come and gone since M. Cyprien Robert wrote that: "On the confines of Europe, there vegetates, enslaved and forlorn, a nation hardly known at the present day, but deserving all our sympathy. This nation is that of the Bulgarians, which has preserved, in the hardest state of slavery, its ancient manners, its lively faith, its noble character, and, after having had a glorious past, seems destined, by its geographical position, to play an important part in the future." Few political prophets have been happier in their prophecies. Since 1842 the Bulgarians, having acquired a national church and some educational facilities, have thrown off the cloak of listless barbarism which then enveloped them, have risen against the Turks, their masters, have been secured by the strong arm of Russia, with the consent of Europe, in a position of conditional independence, and now, at last, united and aroused, seem destined to free themselves entirely from the Turkish yoke, and, in time, perhaps, to become the European successor of "that multitudinous crime which we call the Ottoman government."

One must not ascribe everything to mere geographical position. National peculiarities have had

much to do with this progress, but a glance at the accompanying map will serve to show not merely the commercial importance of the country inhabited by the Bulgarians, but also that, in a purely strategic point of view, the Bulgarians hold the key to Constantinople. They may be said to inhabit an immense square, bounded on the north by the Danube from Widin to Silistria, and thence, in a direct line, to the Black Sea near Varna; on the east by the Black Sea itself; on the south by the peninsula upon which Constantinople stands, and the *Ægean*; and on the west by Albania and Servia. The northeastern portion of this region, however, has been colonized by the Tartars, who flying from Russian rule, soon after the close of the Crimean war, settled on the grassy plain lying to the north of the Roman wall, and between the Danube and the Black Sea. This plain, known as the Dobrudsha, soon proved too small for them, and they spread thence to the south and west for a considerable distance. Neither in strictness can the Bulgarians be said to live on the coast either of the Black or *Ægean* seas, as in all the towns on the sea coast the Greek holds the most important position. The Balkans divide this Bulgarian square into two unequal parallelograms, the northern of which constitutes the Bulgaria of the Berlin congress, while the southern forms the larger part of the Eastern Rumelia of the same instrument. Thus it will be seen that the Bulgarian holds the line of the Danube, the outermost defence of Constantinople; that the Balkans, with their difficult passes, are entirely within his control; that Shumla, which has so often and so prominently figured in the Russian advances, is now a Bulgarian fortress, and that Adrianople, the railroad centre of the Constantinople peninsula, lies on his borders. Besides this, Salonika, the military port of the *Ægean*, and Varna, that of the Black Sea, are almost at the mercy of an army having possession of the roads and the sympathies of the people of this region, even though the majority of the inhabitants of the towns themselves are inimical to the Bulgarians.

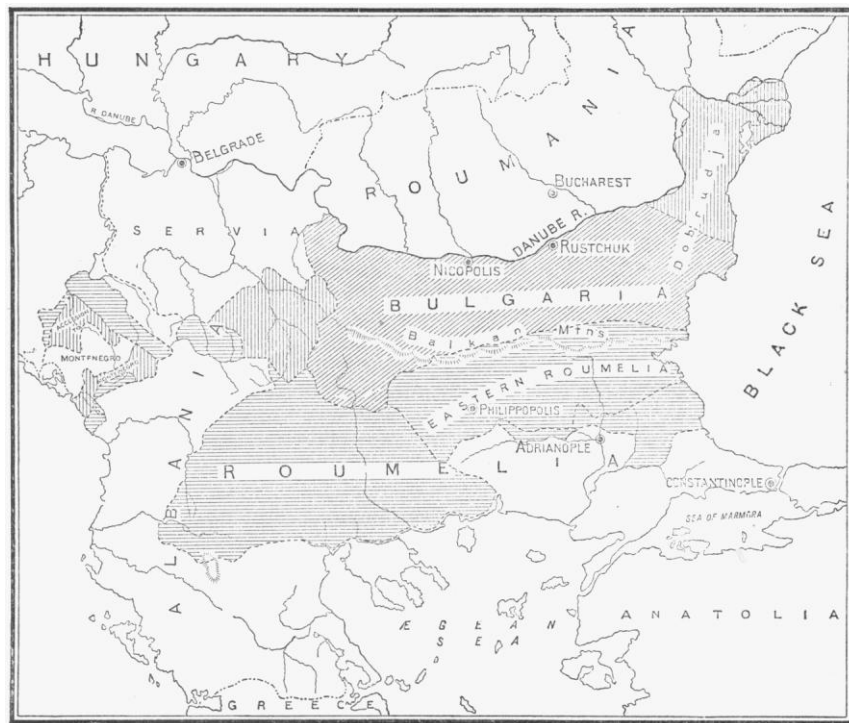
The Bulgarians of to-day resemble the other Slavic races of Europe more closely than they do the Turks or the Greeks. Yet, unlike the Servians and Montenegrins, they are not of pure Slavic descent, but are a Slavonianized race. Men learned in the languages profess to find in the Bulgarian dialect certain words and phrases which point to a Finnish origin; but there is an element, too, derived from Turkish and Persian languages; while some scholars, relying more on ethnological similarities than on philological analogies, declare the Bulgarian to be of Mongol extraction. Whatever theory is the true one, the Bulgarian differs

from the surrounding Slavic races in origin, and he has a more or less close affinity with the Russian, who has been described as a Slavonianized Finn with a dash of Mongol blood. This distinction of race is of the greatest importance as it explains, in a measure, how it was that the Bulgarian remained passive, while his Servian and Montenegrin neighbors maintained or secured their independence. Other things, however, also contributed to this result as, for instance, the banish-

by Englishmen, and whenever an Englishman writes on any phase of the eastern question his political predilections cloud his judgment. Thus an English tory has pictured the Bulgarian as 'a lazy drunkard and a fanatical fetishist,' while declaring, almost in the same breath, that the Turk is 'honest, sober, industrious,' and, furthermore, asserting that the 'purest family love exists in the harem as much as in any household of Europe.' The liberal, on the contrary, regards


'Turkish home life' as something to be avoided, and asserts that drunkenness is rampant among the Mussulmans, and that any Turk would murder a Christian for a few piastres. The Bulgarian, on the other hand, in the eyes of the English liberal, if not possessing all the virtues, is 'very industrious, penurious, and, although rather apathetic as a workman and employé, is to be preferred to all others.' The truth undoubtedly lies between the two extremes.


It was the fortune of the present writer to pass a few days in Bulgaria some six years ago, to see



A SKETCH MAP TO ILLUSTRATE CHANGES IN TURKISH TERRITORY BY THE TREATIES OF SAN STEFANO AND BERLIN.

Bulgaria, shown thus :  17,800 Geogr. sq. m.

Territory taken from Turkey by treaty of San Stefano, and restored to her by Congress of Berlin, shown by horizontal lines :  30,700 " " "

Accessions to Roumania, Servia, and Montenegro are shown by vertical lines : 

ment of the old Bulgarian nobility, the nearness of Bulgaria to Constantinople, and the lack of homogeneity in the population of that country. For, although the Bulgarians put together outnumbered all other nationalities, the Turks and the Greeks (here, at least, working in harmony with their masters) formed an important element.

It is exceedingly difficult to come to any decision as to the exact place which should be given to the Bulgarian in the social scale. There is no lack of books on the Slavic provinces of Turkey, but, unfortunately, those of recent date have been written

a good deal of its inhabitants, and to have many long and interesting conversations with some western Europeans who were then employed on the Varna railway. The conclusions which have forced themselves upon him are at variance with those reached by the English tory.

In times past, and even at present, the Bulgarians might be called a superstitious race, but so might others nearer home; and it should always be remembered that until recently the Bulgarian had few educational advantages, except those afforded by our own American missionaries, who not only

taught many of them to read and write, but placed the Bible and some good school books within their reach. Then, too, the Bulgarian church dates only from 1870. Before that time the hated—and who generally deserved to be hated—Greek priest was his only religious adviser, and such being the case he preferred to go without religious ministrations. The Bulgarian drinks no more than do those about him of other races. He is fully as honest as they, which, to tell the truth, is not saying much for his honesty, and, when any incentive is offered, is as industrious—excepting, perhaps, the Crim Tartars, who seem to be an extraordinarily industrious race. But the Bulgarian is eminently superior to the Turk or Greek in his capacity for improvement, which is certainly very marked. Then, too, though surrounded by Slavic races, whose immorality is notorious, the Bulgarian woman—though protected by none of the safeguards which the Turks throw around their women—is above reproach; and on this account mainly Bulgarian home life is something almost unique in the east. The village Turk is an entirely different being from the Moslem of Stamboul, in that he is honest and industrious, but at the same time he is susceptible of little or no improvement. The future of the Balkan peninsula seems to lie in the hands of the Bulgarians, and it is undoubtedly the knowledge of this that makes the Greeks so restive at the threatened union of all the Bulgarians.

There is no room here to go into the causes of the late Russo-Turkish war. By February, 1878, the Russians had passed the Balkans and had drawn their lines tightly around Constantinople. On March 3, the negotiators of the two powers put their hands to a treaty of peace at the little hamlet of San Stefano, ten miles from Stamboul. There are many points worthy of notice in this treaty, but what concerns us at the present moment is the disposition that was made of the Bulgarians. By this treaty of San Stefano, that part of the Balkan peninsula lying between the Danube, the Black and Ægean Seas, Albania and Servia was formed into a great tributary state to be ruled by a Christian prince chosen by the Bulgarians themselves, in whose hands should be the administration and military police of the state, and provision was made for representative institutions similar to those of Roumania. The Turkish garrisons were to evacuate the country, which was to be confided for two years to the fostering care of a Russian commissioner and 50,000 Russian soldiers.

Of course England, then ruled by the Beaconsfield government, could not calmly stand by and see Russia acquire such a predominant position at the gates of Constantinople. Explanations were demanded, money voted, the reserves called out,

and war seemed almost begun when it was agreed to refer the matter to a European congress. The congress assembled at Berlin on June 13, 1878. A month later the Berlin treaty was signed. The map in the text will show the territorial modifications of the San Stefano treaty which were thus brought about. Servia and Montenegro, with considerable accessions of territory, were declared independent. Bessarabia, torn from Russia after the Crimean war and then given to Roumania, was restored to Russia, which now once again extends to the Pruth and the Danube. Roumania, which was declared independent, was recompensed with the Dobrudsha, Bosnia and Herzegovina were turned over to Austria, and the Porte was recommended—afterwards compelled—to give large portions of Epirus and Thessaly to Greece. The great Bulgarian state which Russia had endeavored to erect at the outposts of the Turkish capital was divided into two states. That north of the Balkans to retain the name of Bulgaria, and to have an elected Christian prince, and to be tributary only to Turkey. That lying south of the mountains to be governed somewhat like an English colony, and to be called, not South Bulgaria, for that might arouse national aspirations, but Eastern Rumelia. The internal police of this partially independent or conditionally autonomous province was to be in the hands of a native militia, and the Turkish army could not be sent into the province unless to suppress an insurrection or the like, and then only on notification being given to the 'powers.' The Ottoman government was to garrison the Balkan fortresses, which right, however, it promised not to exercise.

On the whole, the Berlin arrangement has not worked well in practice. Naval demonstrations and armed occupations have been necessary to compel its observance. On the 18th of last September the Bulgarians of Philippopolis—the capital of Eastern Rumelia—rose in rebellion and proclaimed a union of Eastern Rumelia with Bulgaria. Bulgaria accepted the union, and if Prince Alexander can maintain himself, the Berlin treaty will have been pierced in its most vital part. In closing this brief account of one phase of the eastern question, I am reminded of what Mr. Gladstone wrote of the "heartless manner in which the statesmen of a by-gone generation have argued for the maintenance of the Ottoman government with a view to the general convenience of Europe, while they have seemingly omitted from the case all consideration of the question, how far the Porte fulfilled or defeated the main purpose for which every government exists—namely, the welfare of those beneath its rule." The present crisis is merely the **attempt of one** of the subject

ances of Turkey, perhaps with the connivance of Russia, to seek its own welfare regardless of the general convenience of Europe.

EDWARD CHANNING.

THE LATEST SLIDES IN THE WHITE MOUNTAINS.

THE great slide of July 10, upon the north slope of Cherry mountain, has been described in *Science*, July 31. Since then others have been revealed at various localities, but particularly at Waterville. Upon August 13, the rainfall was excessive in that township. The fields and hillsides about Elliot's hotel were completely flooded and Mad River rose twenty or thirty feet. It transpired shortly afterwards that the famous slide upon the south side of Tripyramid had been renewed and enlarged, and that upon the north side of the same elevation its double had made its appearance. This last one is not visible from any of the White Mountain localities much visited, unless it be from the distant summit of Mount Washington. I had the pleasure of visiting both these slides September 10, in company with several gentlemen and ladies from the hotel. We walked up the northern slide first, ascended the north peak of Tripyramid, followed the ridge to the south peak and then descended the old slide to its base in 'Beckytown.'

Four slides converge into one at the upper end of the northern stream. Two of them are too precipitous to be travelled over with safety. Each of these tributaries may be about a half mile in length, while the united stream below is about a mile long. Its course lay entirely through the primitive forest, and it did not reach so far as Norway brook by a half mile. An immense pile of tree-stumps and roots marks its lower extremity. The ledges exposed are mostly of gabbro. From north Tripyramid one can see that the slides upon the westside of Mount Lowell—the old Brickhouse Mountain—have also been in motion the present season.

The old slide of Tripyramid started October 4, 1869, in that wonderful rainstorm which cost the state of New Hampshire between one and two millions of dollars for repairs. It has been fully described in the 'Geology of New Hampshire.' The first steep slope amounts to three-fourths of a mile, then the current bends at a right angle and flowed to Beckytown, a further distance of more than two miles, where the trees were deposited which marked the end. The new slide takes up nearly three times as much space at the beginning, but the flood was less abundant below the bend. During the sixteen years since the first catastrophe

bushes had grown over the base ground. Those were not quite all removed by the last floods, showing it to be less extensive.

The freshet which moved the boulder from the Flume in Lincoln (Franconia) three years since seems to have been more powerful than any of this season's slides.

C. H. HITCHCOCK.

AN HONOR TO AMERICAN OPTICIANS.

THROUGH the courtesy of Messrs. Alvan Clark & Sons, we are able to publish the following extract from a letter written to them by Dr. Otto Struve :

"I am asked by the government to inform you that, in acknowledgement of the excellent performances of the great object-glass, furnished for Pulkowa by your firm, his majesty, the Emperor, has been graciously pleased to confer upon you the golden honorary medal of the Empire. The value of this gift is enhanced by the circumstance that this medal is given very rarely and only for quite extraordinary merits. You and Repsold are the first who will receive it from the present Emperor, Alexander III.

"This circumstance produces some delay in the transmission, as the Emperor desires that the medal shall bear his portrait, and not that of his predecessors. Therefore the stamp must be newly engraved. When that be done, you will receive the medal through the Russian minister at Washington.

"When this letter reaches you I shall be on a journey through Germany and Switzerland. First I shall assist at the general meeting of the Astronomical association, at Geneva, and then must go for a cure to the well-known watering place, Carlsbad. Though my health is tolerably good at this moment, I feel still very tired, and from the illness of last winter there is left some affection that demands serious treatment.

"You will be pleased to hear that, with the 30-inch refractor in good nights all the most difficult double-stars, discovered by Burnham with the Washington refractor, can be easily measured. During the last weeks, Hermann has collected already some hundreds of measures on similar objects that were out of the reach of the old 15-inch refractor. . . . OTTO STRUVE."

Pulkowa, July 23.

WEST AFRICAN ISLANDS.

MAJOR ELLIS, known as the author of 'West African sketches' and other works, accumulated the notes from which this volume was prepared,