established fact. But that English misconception and maltreatment are the sole or even the most important cause of the miserable condition of Ireland today, that there has been a "long perversion of Irish history" in the interest of politics, or that it has always been supposed to be the business of the historian of Ireland "to seek out every element of political instability, every trace of private disorder, every act of personal violence, every foreign slander, and out of these alone, neglecting all indications of industry or virtue, to depict a national life" (p. xi), may well be doubted. The Irish race has always possessed certain sterling qualities—warm-heartedness and personal devotion are among the most prominent—but, on the other hand, it has been singularly lacking in capacity for self-government, stability, and union. Though it has had many heroes, their work has always been of a character rather local than national, and the glories of Irish history have suffered in consequence. In so far as Mrs. Green's book is a plea for a fuller and more impartial study of the field with which it deals, it is heartily to be welcomed; but we fear that future writers who follow to their logical conclusion the lines of argument which she has laid down, will find, ere long, that they serve to obscure rather than to illuminate the truth.

From Peking to Mandalay: A Journey from North China to Burma through Tibetan Ssuch'uan and Yunnan. By R. F. Johnston. Pp. xii+460; with maps and illustrations. New York: E. P. Dutton & Co. $5 net.

This is the story of a wanderer in search of things strange and beautiful. His chief aim was to learn something about that wild border-land on the far west of China. Its interest lies both in the loveliness and grandeur of its river and mountain scenery, and in the number and diversity of the races by which it is peopled, of whose origin and history, social, physical, and linguistic peculiarities little is known. Having travelled extensively in China and learned the language, Mr. Johnston was well qualified for his task. Leaving Peking in January, 1906, he went by rail to Hankow, and thence up the Yangtse by steamer and through the famous rapids and gorges by "red-boat." This is the name of the government life-boats now stationed near each of the most dangerous rapids and manned by skilful and daring river-men, who annually save many lives from the wrecked junks. At Wan-hsien he left the river and went overland to Ch'eng-tu, the capital city of the province of Ssuch'uan. On his way thither he found posted in the towns and villages proclamations calling the attention of the people to a railway which the government proposed to construct from the capital to the Yangtse. The announcement pointed out the great benefits to the trade and prosperity of the province, and invited subscriptions for shares. To those who can remember that only thirty years ago the prejudice of the Chinese against railways was so great that the government bought the little road running out of Shanghai, sold the plant, and tore up the rails, this is a remarkable indication of progress. In Ch'eng-tu there is a provincial college with about three hundred students, who are being educated in Western as well as Chinese branches of learning:

> There is an Englishman who lectures on chemistry and physics, there are several Japanese lecturers and a staff of Chinese teachers who have a knowledge of European languages.

From this city he went by the mountain region which constitutes the western frontier of the empire through Yunnan to Burma—the whole journey taking a little over five months.

The larger part of the book is devoted to this little-travelled region, and as the author's object is to give information rather than to furnish entertainment, the work is not easy reading. There are minute details of the route followed, numerous references to the different tribes encountered, and their racial affinities and origin, a summary of the results of his and other travellers' ethnological investigations, a discussion of Chinese Buddhism, with special reference to a visit to the shrines on the sacred mountain Omei, and many suggestions as to feasible trade-routes between Burma and China. An indication of the undeveloped mineral wealth of that western region is to be found in the fact that in one place coal was so abundant that the poorest peasants freely used it for heating and cooking. The concluding chapter upon the present conditions in China is suggestive and valuable. In Mr. Johnston's opinion, the stage of civilization which the Chinese have reached is much higher than is generally believed. As a proof of their law-abiding character, he tells us, from his own experience as district officer and magistrate of the leased territory Weihaiwei, that in this district, 200 square miles in extent, with about 200 villages and nearly 100,000 inhabitants, there are only eight policemen; yet during a recent period of six months there were only reported three cases of robbery. "During more than two years in Weihaiwei I have tried Englishmen and Japanese for being drunk and disorderly, but never a single Chinese." The neighboring districts under Chinese rule, he adds, are just as well behaved, if not, indeed, better. The book contains an excellent index and an appendix containing notes, vocabularies of six tribal languages, and the itinerary. The illustrations are reproductions of photographs, many of the wonderful mountain scenery, a fairyland of beauty.

Primary Elections. By C. E. Merriam. Chicago: University of Chicago Press. $1.35.

The preëminence which ancient Greece has long been accorded as a bazaar of political curiosities can no longer be conceded, in view of such an exhibition as Professor Merriam makes in his "Primary Elections." The aspiration of Edward Everett's school-boy orator that Columbia's soil may—

> Exceed what Greece or Rome has done
> Or any land beneath the sun.

has been satisfied in this particular. It is amazing what an intricate plexus of legal regulation has grown up about what was originally, and still is in other countries, a very simple matter. And the process of change continues, producing additional complexity, in conformity with the general principle that one organic change tends ever to initiate another. Professor Merriam remarks that no sooner was the movement for compulsory regulation of party action generally successful than a demand arose for abolishing the convention system, and for establishing the direct primary. Now that the direct primary is so widely introduced that it is the predominant form of party action, "there is discernible a powerful movement in favor of nomination by petition as a substitute both for the convention system and for the direct primary" (p. 135).

Professor Merriam himself thinks that the advantages of the direct primary outweigh the defects, but he points out that there are possibilities of abuses that have already begun to excite demands for further reform. Some of the defects are decidedly curious. For instance, Mr. Anderson has a substantial advantage over Mr. Zimmerman in candidacy, because of mere alphabetical priority. To secure equity in this respect, it is suggested that "the order of printing may be changed in such a way that the name of each of the candidates shall appear first an approximately equal number of times" (p. 143). Another point is advantage derived from casual notoriety:

> There is much evidence tending to show that the well-known man, regardless of what he is known for, has an advantage in the race for the nomination over one better qualified, but less generally known (p. 122).

So then, when the suffragettes get their inning, the name and fame of a Lydia Pinkham may become a valuable political asset. The expense of the direct primary is also a trouble. Professor Merriam admits that there is serious dan-

ger that "the man without large means may find it almost impossible to enter the primary lists, or that he may incur obligations of a character that may interfere with his usefulness to the public." It is suggested that this danger may be mitigated by public appropriation "to defray a part of the expenses of candidates in primaries" (p. 174). In support of this suggestion reference is made to President Roosevelt's recommendation of public subsidies to party campaign funds. The adoption of this policy would be a new point of departure for evolutionary process that should yield interesting developments. Infant industries in party-manufacture and candidacy would naturally claim generous consideration.

Altogether, the facts presented by Professor Merriam abundantly sustain his conclusion:

> No friend of direct nomination should indulge the pleasant dream that the adoption of a law providing for such a system will, of itself, act as a cure for the present-day party evils.

Indeed, the great merit of this work is that it is a timely demonstration of the absurdity of the present multiplicity of elective offices. While he is an advocate of the method, Professor Merriam admits that the direct primary "will not achieve its full results until the number of elective offices is materially reduced." Perhaps, then, the importance of the whole subject may be correspondingly reduced.

Science.

THE MESSINA EARTHQUAKE: PREDICTION AND PROTECTION.

When the man of science is asked "What caused the earthquake?" he must confess to ignorance. It was either subterranean steam, or unequal yielding to internal contraction of immense blocks of the earth's crust, or deep-seated movements of lavas slowly rising under Ætna. Or, what is still more likely, it was all three of these in mutual dependence. If we maintained earth observatories as we do astronomical ones, we might know, and we might perhaps have predicted and forewarned.

This new catastrophe is the thirteenth of the century, and brings the death-list to about 300,000, or 100 persons a day since January 1, 1901. An eruption of Ætna is also beginning and may still further swell the fatal roll. The record includes Guatemala, Martinique, St. Vincent, Mobile, Galveston, San Francisco, Valparaiso, Jamaica, Kartaghan, India, Calabria, Vesuvius, and Messina. The property loss is countless millions. Eight of these places are American. At all of them the destruction has been wrought by natural agencies. In the cases of Mobile and Galveston, there was definite prediction by the Weather Bureau. This office, which systematically records the movements of the atmosphere at widely distributed stations, is now recognized as one of the most efficient, valuable, and humane scientific organizations in the world. Similar meteorological establishments are maintained by all civilized nations. The other disasters were occasioned by volcanoes or earthquakes. The coast-lines of the world are dotted with volcanoes, and no region is known which is exempt from earthquakes. No geologist in the United States would venture to deny, for example, the statement that New York city is just as liable to a great earthquake disaster as was Charleston in 1886. With these facts before us, it would seem justifiable to call science to account for its attitude with regard to the lithosphere (or rock-crust) as contrasted with its point of view concerning the atmosphere. Sometimes a great affliction, like this which has stunned and mutilated Italy, may work beneficently by stimulating men to a new vision of their usefulness.

A great convention of American geologists has just completed its deliberations in Baltimore. All of these men are interested in earthquakes, but probably not half a dozen members of the society have any technical or mathematical knowledge of them, and not many more have ever experienced one. The idea that such experience is important for a geologist would be scouted as a jest. Many of these men are teachers in universities. If a Martian astronomer were to appear suddenly among them, after returning from a visit to the Lowell observatory at Flagstaff, where his own existence had been so wonderfully interpreted, the following dialogue might be expected:

"Where you know the heavens so well, of course your own earth is to you as an open book?"

"Yes," reluctantly.

"You have observatories for the recording of all earth phenomena?"

"No."

"What! Did you not learn everything about local terrestrial motions before you studied the stars?"

"No, we do not know anything about terrestrial movements."

"Do you mean to tell me that you have not many instruments for observing them?"

"We have the seismograph, but none of us understands it, and as for other earth motions, all we know we have learned from the physicist and the astronomer."

"But you live on the earth, and have to meet every crisis as it arises; can you foretell nothing?"

"Well, you see, we don't think of it that way. We treat it historically, and make notes, and use a hammer and a compass, and are very much interested in the bones of Jurassic reptiles and in making maps of the rocks, and in finding out all about iron and coal. But we have no such precise knowledge as the astronomer."

"But surely, in teaching your young men in the universities, you begin by precise instrumental study of the present earth and its processes, and have a vast accumulation of experience concerning those processes, in the form of tables, measurements, formulæ, curves, diagrams, and computations?"

"No, almost nothing has been done in accumulating experience or empirical data, *except by the Japanese.* When a volcanic eruption or an earthquake occurs we send a geologist to study the results, and he writes a thick and learned report. We do not know anything about what the conditions were during the months before the disaster. We teach our young geologists first a little physics and chemistry, and a few generalities about earth process, and then set them to work mapping ancient rocks. The *highest* development of geology is the unravelling of the history of the past. We haven't time to go into prediction and humanistic geology."

The above is not exaggerated. The blame does not rest with the geologist, it rests rather with the haphazard growth of the science. The very proximity of the earth has made terrestrial observation and measurement difficult, in view of the littleness of man. This plea, however, can no longer be urged in extenuation of the neglect of the study of earth process. We have a considerable knowledge of physical science, and there are many instruments applicable to the earth. There is a very precise science known as geodesy, which has for its object the determination of the figure of the earth. There is geology, which aims to decipher earth history. Between these two there is needed a new science, many phases of which are now being studied, and this might well be named geonomy, the science of the laws which govern the earth.

There is one grave difficulty in the way of rapid development of this science, and that is expense. It is a science that calls for the establishment of observatories in many lands. These observatories will have for their objects the study of the changes which are going on in the crust of the earth under them and the relations of those changes to astronomical and meteorological changes. The new science, like astronomy and the study of the atmosphere, deals with moving things and so requires continuous local records, through weeks and months and years. Seismographs, microphones, magnetographs, gravity, pendulums, pyrometers, tromometers, gas-collecting apparatus, and many special instruments adapted to