

move an objectionable building, on the motion of parties who averred that the building was only a fog-bank which would be carried away by the first breeze.

Our readers will be interested in knowing what the complainant now says about the state of Bell's knowledge of telephonic transmission during the critical period under consideration. We have alluded to the claim of the Pan-Electric Company, that Bell well knew his apparatus to be a speaking telephone, but cunningly and wrongfully withheld that knowledge from the examiner of the Patent-office. We have also discussed the claim of another party, that he did not discover his apparatus to be a speaking telephone until some time later. On this critical point we find that the Government counsel sweep away both hypotheses by claiming that the apparatus was not a telephone at all, and "lacked in description or drawings any machine then, or at any time, capable of transmitting speech." Here again we find a remarkable silence on the burning question why the Government should spend money in invalidating a patent for such a cumbrous and worthless piece of apparatus. It is curious to see the same fallacy coming in from beginning to end of the paper. It again calls the attention of the court to what has been considered the great fact justifying the suit, namely, that only the Government and not a private citizen can bring suit to repeal a patent. It ignores in the most extraordinary way the fact that the laws make ample provision against any necessity for such repeal, by legislation which protects every person against a suit for infringing a patent which there is any grounds for repealing.

We have looked in vain through the document for any allusion to the supposed fraudulent alteration of Bell's application by the addition of new matter. As this fraudulent proceeding is one which the Patent-office and its clients have been engaged in every week of its existence, we apprehend that the proper formulation of the complaint in this case must have caused some embarrassment to counsel, and that the matter was dropped in consequence.

THE NAVAL OBSERVATORY.

WITH the publication of each new document on the subject, it becomes more and more apparent that the reasons advanced in favor of the removal of the Naval Observatory are balanced by evidence that an improved organization is more urgent than a removal. It therefore provokes no small degree of surprise that the advocates of its removal continue to press the matter. To expect Congress to make bounteous provision for the purpose on such a showing is, to say the least, somewhat vain.

Executive Document 67, embodying a letter from the Secretary of the Navy to the President of the Senate, forms a new contribution to the literature of a subject already threadbare, and one in which many of the leading men of science of the country long ago lost all interest. Fourteen pages of this document are occupied with the report of a committee of seven members of the National Academy of Sciences, a minority of whom are practical astronomers; but the Committee unani-

mously concur in the conclusion (1) that it is advisable to proceed promptly with the erection of a new observatory upon the site purchased in 1880 for this purpose; (2) that it should be under civilian administration, and called the National Observatory of the United States, (3) that all except three of the instruments of the present Naval Observatory, together with a good part of its library, should be transferred to the Naval Academy, Annapolis, with such members of the staff as may be required to operate them, while what is left (library, instruments, and officers) is to become the nucleus of a new national observatory to be built in Georgetown or West Washington.

Leaving out of consideration here, what is probably true, that the proposed site possesses only meagre advantages over the present one, it is to be noted that the present Observatory buildings are somewhat dilapidated and unsuitable for observatory use; that they are located in a spot which, in the opinion of many, has been notably malarious and may perhaps continue so; that the observers on night duty have no houses near their instruments, as they ought to have; and that, from the proximity of the Potomac River, fogs and vapors sometimes exercise a baleful influence upon the astronomical work. The Committee think the sanitary question the most serious one, but are compelled to state that, while their evidence is mainly drawn from documents prepared eight years ago, the matter has since assumed a different aspect, as the flats or marshes about the Observatory are now in process of being rapidly filled up; so that it is the belief of some of the medical men of Washington that, with their reclamation, the deleterious influences of which they have been the cause will cease to be exerted. As authorities on the subject are at variance, and it would at the most be a matter of only a few years when a positive conclusion might be reached, a prudent conservatism would say that it is advisable to wait and see. As for the obstruction to observation by fogs, the Committee consider it not a matter of gravity; while the dilapidated state of the building may, they say, be a reason for repairing, or, if necessary, reconstructing it, but it is not in itself a reason for a change of site.

The Committee contribute an elaborate and very just estimate of the astronomical work of the Observatory; and, in reply to the question whether its superintendent should be a line officer of the navy or a practical astronomer, they find that the views of Professor Newcomb, expressed in 1877, are so perfectly their own that they have no hesitation in adopting his letter entire. His view is, of course, that the Observatory should have a scientific head, (1) because of the generally recognized necessity that every office should, as far as practicable, be under a head professionally acquainted with its routine of business; (2) because the Observatory should be administered with well-defined objects in view; and (3) because individual astronomers of talent are more secure in the recognition of their scientific claims under a head professionally interested in the advancement of science. Also, "the proper essential business of a State Observatory"

is defined by the Committee in terms which admit of no doubt, and which the future management of the Observatory, whatever it may turn out to be, will do well to keep continually in mind. Examining the publications of the Observatory itself, the Committee do not hesitate to announce their detection of many features which are far from satisfactory, while the volumes themselves show sufficiently the absence of any preconceived plan directing the operations of the institution. Recognizing the truth of this charge, the Committee seem to be justified in recommending the practical dismemberment of the present Observatory, in the hope, it may be, of getting something different or better in the new and disconnected organization which they propose in its stead.

Though not himself a member of the Committee, but as a member of the Academy, the views of Professor Holden, an astronomer of mature experience at the Naval Observatory itself and subsequently at the Washburn Observatory, Wisconsin, and now Director of the Lick Observatory, are worthy of note here, especially as he appears to take the broadest view of the question, and the Committee append his letters to their own report. He expresses himself unqualifiedly "not in favor of a change of its site now or at any time, under the present condition of the improvements to the harbor of Washington"; and subsequently, in response to a letter from the Chairman of the Committee, he says: "I am decidedly of the opinion that this change [of site] is unnecessary and unwise." At the same time he advocates the very common-sense plan of selling the new sites, and using the funds to extend the grounds about the present Observatory, thus affording the needed room for observers' quarters. Furthermore, Professor Holden does not believe that the architect's plan of the proposed new observatory would "receive the unqualified approval of competent astronomers. . . . The best modern observatories, Potsdam, Strassburg, Mount Hamilton, and others, are built on different, and, I think, better principles." The Committee do not seem to attach the importance they should to Professor Holden's testimony on the subject of the malariousness of the present site. He lived in the immediate vicinity of the Observatory for eight years, and says: "None of my family were ever ill from malaria, and I myself had only two or three very slight attacks." Professor Newcomb also, on duty at the Observatory for sixteen years, and engaged in night-service the greater part of this time, though residing in a remote part of the city, in his letter to the Committee says: "I cannot say that I personally suffered greatly in health from the cause alluded to. I had occasional malarial attacks, but they were no worse than before my connection with the Observatory." Professor Newcomb disposes of the fog business by simply directing attention to the fact that nobody has ever made simultaneous observations at the new site, only a short distance from the present one, to see whether fogs at the latter may not cover the former too.

On the whole, the evidence now in must quite suffice to show that the chief reason why the Government is expected to expend half to three-quarters of a million dollars in building a new observatory is because a half-dozen

or so of the observers at the old one are occasionally ill with malaria—and that, too, without any attempt to investigate the very pertinent question whether these same observers would not be just as ill if they stayed at home all the time.

THE IRISH LANDLORDS.

The probabilities seem to be at present that when Mr. Gladstone produces his scheme of Irish home rule to the House of Commons, nearly all opposition to it will have vanished. The solid and very effective support which the Irish have been giving to the Radicals in their assaults on what used to be called the "Throne and Altar," is frightening not only the Tories but the Whigs into acquiescence in almost anything that will take the Home Rulers away from Westminster. In fact, it seems now doubtful whether even the House of Lords will make their customary one attempt to stem the tide.

Nothing very definite seems to be known about Mr. Gladstone's plan; but it is almost certain that he will so combine the expropriation of the landlords with the restoration of the Irish Parliament that they will have to be swallowed together in one dose. In other words, when "Grattan's Parliament" is set up again, the class to which Grattan belonged, and which in Grattan's day carried on the Government of Ireland, will have virtually disappeared. Here and there an Irish landlord may survive the general wreck, but the main body will be known no more in politics or society. There are but very few who have managed to pass through the last ten years without becoming fatally embarrassed. Most of the estates have either been mortgaged, or saddled with settlements and annuities at valuations which even the good old times of high rentals did not warrant. These rentals have been reduced by the operation of the Land Acts on an average 25 per cent. The great fall in agricultural produce within the last two years has carried them still lower, or rather has left the tenants unable to pay even the reduced rate.

An Irish estate used to sell, in the days before the land agitation, for about twenty times the amount of the annual rental, or "twenty years' purchase," as it was called. But the rental no longer affords a basis for valuation. Not only has the amount of the rental become very uncertain, but the willingness of the tenant to pay any rent at all has seriously diminished. It is only very resolute men who now attempt to collect rents by force. Collecting them by force means calling on the police and the soldiers to assist the sheriff in seizing and selling the stock or evicting the tenant. It is all but certain that under the present Ministry this aid will be furnished very charily, which means that evictions and seizures for rent will be practically brought to an end. With such drastic legislation pending as Mr. Gladstone is said to be preparing, probably few landlords will feel disposed to bother themselves about arrears.

Most of the money paid for expropriation, however, will go to the mortgagees, who are generally English insurance and other cor-

porations. The landlords themselves will get very little. The main body of them will be thrown on the world in very bad times. There is very great poverty among them already, but they have house-room, some little credit, and the produce of their farms. These will now also be lost, and they will literally have to seek their fortunes over again in very bad times. There will be something very dramatic in this ending to the great attempt made by England in the sixteenth and seventeenth centuries to Anglicize Ireland. It has proved a prodigious failure. The Scotch settlement in Ulster was greatly reduced toward the close of the last century by the exactions of the landlords, which caused a large emigration to America and furnished some of their stoutest soldiers to the Revolutionary armies. There is no doubt, too, that the Cromwellian soldiery, who settled in considerable numbers on the forfeited lands in the midland and eastern counties, rapidly abandoned their faith, forgot their origin, and became part and parcel of the Celtic population. This Cromwellian element is very strong on the rich lands of Tipperary, and it showed itself in the stern and implacable hostility to the landlords for which that county was remarkable fifty years ago. It was there that assassination as a mode of reducing rents first excited serious attention in England. The Tipperary peasantry literally "shot their rents down," as some one humorously said, long before resistance had become really ferocious in other parts of the country; and the county during the last thirty or forty years has been comparatively peaceful. Finally, to crown all, in spite of the constant support and protection of the English Government, or perhaps we should say in consequence of them, the proprietors of the soil, after an experiment of 200 years, have to abandon it bankrupt and despairing. There is no more striking illustration in modern history of the powerlessness of force against a tenacious moral resistance.

But for English protection, the Irish land question would have been settled probably early in the eighteenth century. Left to their own resources, the landlords would have come to terms in some way with the tillers of the soil. Either they would have become blended with the native population, as the earlier Norman settlers were, or would have established friendly and sympathetic relations with them, or, in other words, would have come to regard them as their countrymen, and share their hopes and ideals in spite of the barrier of religion. This result would probably have come about by this time, had the Irish Parliament continued to exist and helped to keep the gentry in Ireland, and to cherish among them the feeling of Irish nationality. But reliance on the British troops and the British Treasury to pull them through all scrapes perpetuated the separation of feeling between the two classes, and kept alive the hard, cold, alien seventeenth-century temper of the dominant class toward the peasantry; and this has finally brought their ruin. Had they had to stand alone, either a revolution like that in France would have swept them away generations ago, or they would have avoided it by concessions which would have put them in the position of national leaders in a country where leader-

ship has always been easy. But they kicked against the pricks, and set their teeth, and tried to remain Englishmen when they should have become Irishmen, in spite of a hundred warnings, until the democratic tide rose in England to sweep them away.

They were in their day, however, it must be admitted, a body not without merit. They furnished England with some of her greatest soldiers and administrators, and have served her well in every quarter of the globe. But they kept singularly apart from the moral and intellectual currents of later days. Probably no educated class of later days has been less touched by philanthropic movements or sympathies, or has concerned itself less about the condition of the poor, or has remained more persistently Tory and reactionary in its politics than the Irish landlords.

LA BOURBOULE AND ITS WATERS.

ONE cannot examine the history of the thermal waters of central France without feeling anew the complexity of modern rivalries and the novelty of the forms in which they clash. That of La Bourboule in Auvergne, aside from its therapeutic and its geological interest, is a story of applied science and of business rivalry which is paralleled only, but only in some points, by that of certain oil-wells in our own petroleum districts. An account of the development of these mineral springs should precede a description of their curative virtues.

La Bourboule, until recently an insignificant and torpid village, now a thriving town, is situated in the centre of the springs of Auvergne, the richest, most varied, and most abundant group of mineral waters in the known world. They number about six hundred separate springs; and in the department of the Puy-de-Dôme alone, Dr. Petit of Royat, in his excellent chart of mineral waters (1878), indicates two hundred and seventy. Those of La Bourboule are the most important of known arsenical waters. Their history is modern, and it does not begin, like that of Mont-Dore, Royat, Plombières, Luxeuil, Aix, Vichy, and a score of other French mineral springs, with a Roman inhabitation and bath-installation. Duclos, in his 'Observations sur les eaux minérales de plusieurs provinces de France' (Paris, 1675), makes the first mention of La Bourboule as a mineral spring, remarking that the solid constituents of the waters amounted to 1-170 of their weight, and that these constituents could be partly dissolved in vinegar, being "semblable au sel commun." Their chemistry was not understood until long after this time; but mention of the waters and of their special virtues is not infrequent. Légrand d'Aussy, among others, in his 'Voyage dans l'Auvergne,' remarks the anomaly of a cold and a hot spring pouring from the same rock at a distance of but four feet from each other. At this time (1787) the place, though little known, already had, as he tells us, its establishment on a small scale, and cures were wrought here in cases for which even the waters of Mont-Dore were inefficacious. "In spite of all these miracles," he adds, "La Bourboule remains unknown, while Mont-Dore is famous. What a book could be made on the capriciousness of fame! Whoever may write it will not fail to instance the neglect of La Bourboule among the thousand and one illustrative facts which he will find ready to hand." Fame, as we shall see, came in course of time. The curative results obtained at La Bourboule were remarkable, and medical men had long recognized them as having much scientific interest. But it was not until 1854 that the waters were analyzed. Thénard then showed