difficult to safeguard against, and the loss of oil by ignition of the associated gases during storms is a formidable problem, especially in certain parts of the United States. In the Mid-Continent field, for example, as much as 1,000,000 barrels of oil per annum has been lost in this way.

Preventive measures consist for the most part in the employment of specially designed storage tanks, the wooden top surmounting the metal body being a favoured form in America. This type of tank is open to the objection that continuity of metal is broken, so that perfect protection from lightning cannot be assured. In this country, all-metal tanks are preferred; sometimes steam-lines are led to the tops of the tanks for discharging steam freely at the approach of a thunderstorm, though in the case of large tank-farms the method proves impracticable. Tanks are usually built in the centre of sump-holes, while a clearance of 200 feet between the site of each tank is desirable. Probably the most recent method for preventing oil-tank fires is that concerned with the use of "Sealite," an artificial preparation consisting of a mixture of glucose, glycerin, calcium chloride, glue and starch. This mixture can be rendered lighter than oil by aeration, and when pumped into the tanks it floats on the oil, thus preventing evaporation and also combustion. The better-known "Foamite-Firefoam" system of fire-extinction is only applicable once a fire has started; this depends on the foaming reaction set up by bringing together alum and licorice, by which carbon dioxide is generated, thus effectively choking the fire.

Oilfield fire may of course be due to other causes besides lightning; the friction of the crown-pulley when bailing operations are in progress on the rig; crossed guy-lines or wires causing sparks which ignite the volatile gases; the throwing down of lighted cigarette-ends (regarded as a criminal offence in some countries—and rightly so); spontaneous combustion of gas-lines; leaky pipe-lines; all these contribute to the possible risks to be guarded against.

A somewhat novel and generally unsuspected cause of petrol-fires is the power which the mobile spirit has of generating static electricity. Ignition of volatile oils through static discharge has been known in hairdressers' shops, in garages where men have chanced to clean their hands with silk rag soaked in petrol, in filling up petrol tanks of motor cars using a piece of chamois leather for filtration purposes. A still more curious case is that of the chauffeur who was drawing from a self-measuring tank into a can bearing a wooden handle; he hung the can by this handle, thus insulating the receptacle, and under these conditions the oil caught fire on two successive occasions.

The moral of these examples is obvious. They serve to show, however, the meticulous care necessary in handling petroleum under all conditions, and it speaks volumes for the administrative and technical ability of those responsible for storage and distribution of oils, that the disasters attending oil-fires are so few, not only in Great Britain but also in America, where such vast quantities of inflammable spirit are dealt with annually. H. B. MILNER.

The Greenwich Magnetic Observatory.

PROPOSED REMOVAL TO HOLMBURY HILL.

MAGNETIC observations were commenced at the Royal Observatory, Greenwich, in the year 1840. They included absolute observations of the magnetic elements together with eye-observations, obtained at first every two hours and afterwards every hour, for determination of the variation of the elements. In 1847, continuous photographic records of the elements were introduced and have been continued until the present time. The length of this continuous series of observations provides valuable material for the study of the phenomena of terrestrial magnetism. It was by their means that Mr. Ellis demonstrated the 11-year periodicity common to the variations in the diurnal ranges of the magnetic elements and to the sun-spot period, and that Mr. Maunder established the connexion between the recurrence of magnetic storms and the rotation of the sun. More recently, Dr. Chapman, by using the Greenwich observations, combined with similar records of one or two other observatories which have a long series, has been enabled to put forward a comprehensive theory connecting magnetic storms and the regular diurnal variations of the elements with the electrification of and movements in the atmosphere, caused by the discharge from the sun of electrified corpuscles. The Admiralty magnetic charts are constructed at Greenwich, the last issue in 1922 consisting of three large-scale maps showing the magnetic variation, and three smaller maps showing the magnetic variation, dip, and horizontal intensity for the whole world.

During the last twenty years the magnetic observations have all been transferred to buildings constructed of non-magnetic materials in a special enclosure in Greenwich Park away from the iron in the Observatory. The instruments have also been modified and improved. With the growth of electric traction in the latter part of the last century, steps had to be taken to safeguard the Observatory from disturbances due to leakage currents. Since 1903, a protective clause has been inserted in all Parliamentary Bills for electric rail- or tramways running within five miles of Greenwich, and a clause requiring insulated returns if running within three miles. With these safeguards, the disturbances, though perceptible, have been kept within reasonable limits.

On the decision of the South Eastern and Chatham Railway Co. to electrify its local services which run in the near vicinity of, and on both sides of, the Observatory, the question of safeguarding the interests of the Observatory was taken up with the Ministry of Transport. It was ultimately agreed that the most satisfactory arrangement for both parties, and the cheapest for the railway company, would be to move the magnetic observatory to another site, the railway company defraying the costs of the removal and the extra cost of maintenance thereby involved. A site near London was desirable, not only so that supervision from Greenwich would be easy, but also in order to maintain a first-class magnetic station in the south-east of England. After examination of all sites within fifty miles of Greenwich which were at least three miles from any existing railway, the region which seemed to offer least probability of being affected in the future by railway extensions or building operations was that around Holmbury St. Mary in Surrey. The site finally chosen as the most suitable in the neighbourhood is on the lower slopes of Holmbury Hill.

Some opposition has been aroused owing to it being common land. The buildings to be erected on it would be low and not unsightly, and would not interfere with the amenities of the district. The fact of being on common land would, on the other hand,

afford a guarantee against disturbance by possible future building operations. The Admiralty has undertaken to meet the wishes of the Commons and Footpaths Preservation Society by acquiring an equal area of land adjacent to the common and adding it to the common so that the total area of the common will not be reduced.

Academic Biology.

UNDER the title "The Dry-rot of our Academic Biology," Prof. W. M. Wheeler delivered a most provocative address to the American Society of Naturalists, which is printed in *Science* (vol. 57, pp. 61-70). The address may have been written under the reaction from the author's labours upon a volume of 1100 pages upon ants, but it provides food for thought for the teacher of biology. The title seems to have been chosen in part with an impish desire to lead the librarian astray, so that future students of the fungi may find it "reposing unashamed between such monuments of cryptogamic erudition as the 74 folio volumes of Professor Farlow's 'Toadstools of God's Footstool' and the 27 quarto volumes of Professor Thaxter's 'Laboulbeniales of the Universe'"; in part to indicate Prof. Wheeler's foreboding as to the devastating effect of academic biology upon the young minds exposed to the danger.

Apparently 25 per cent. of the young men and women graduating in the United States have had at least the equivalent of an elementary course in botany or zoology, but of these very few exhibit a vital and abiding interest in biological inquiry. This seems to have led to this interesting analysis of the relative ineffectiveness of biological teaching (tinged, perhaps, with the after effects of eleven hundred pages upon ants!). Some of the suggested defects will certainly provoke sympathetic response in Great Britain, for instance the complaint that biologists are compelled to be most active pedagogically during the annual "glacial period," with a consequent reliance upon preserved material of convenient types and a great restriction of field studies. The mature student who, after four years in a divinity school, relinquished attendance upon a course in genetics because the professor's mental processes were so similar to those of his divinity teachers when they held forth on predestination, salvation through grace, etc., is cited as part of a general indictment which suggests the reflection that the best culture medium for the academic dry-rot fungus consists of about equal parts of narrow, unsympathetic specialisation, and normal or precocious senile abstraction. There are redeeming features, however, and the author rejects a friend's remedial proposal that staffs should be completely changed and buildings burnt out or thoroughly disinfected every 25 years! Another tendency which is deplored is the migration of the American graduate to the German laboratory and the teaching of authority, instead of spending the few precious post-graduate years among the problems provided at her door by the flora and fauna of the tropics.

Two positive suggestions for improvement are made: first, that teaching should be more ecological in a very wide sense of the term, and botany is certainly moving very rapidly in this direction in Great Britain; secondly, that opportunities should be provided for the amateur naturalist to meet the young student both in the laboratory and in the field, and so counteract the paralysing influence of academic formalism by his unprofessional enthusiasm and interest.

University and Educational Intelligence.

LONDON.—The work of the Ramsay Memorial Department of Chemical Engineering at University College will begin in October. The department has been instituted with the object of enabling young graduates in chemistry and engineering, who have already obtained a good training in the fundamental sciences of chemistry, physics, and mathematics, to direct their studies and investigations towards the application of the principles of physical chemistry to the scientific design and operation of the apparatus and processes of chemical industry in general. Mr. E. C. Williams, of the University of Manchester, has been appointed professor in charge of the department. An assistant lecturer, who must have had an engineering training, will shortly be appointed by University College Committee.

THE Folland scholarship in metallurgy, in connexion with the University College of Swansea, is to be offered in competition on September 10 and following days. The scholarship is of the annual value of 50*l*., and tenable for three years. Further particulars are obtainable from the Registrar of the College.

A LIMITED number of grants in aid to junior assistants in chemical works and laboratories in or near London, desirous of extending their knowledge of chemistry, will shortly be allocated by the committee of the Salters' Institute of Industrial Chemistry. Applications must be sent before September 15 to the director of the Institute, Salters' Hall, St. Swithin's Lane, E.C.4.

APPLICATIONS are invited by the Royal College of Physicians of Edinburgh for the Parkin prize, value 100*l*., which is open to competitors of all nations, for the best essay on "the curative effects of carbonic acid gas or other forms of carbon in cholera, for different forms of fever and other diseases." Competing essays, which must be written in English, must reach the Secretary of the College not later than December 31 next, bear a motto, and be accompanied by a sealed envelope bearing the same motto outside, and the author's name inside. It is stipulated that the successful candidate shall publish his essay at his own expense, and present a printed copy of it to the college within the space of three months after the adjudication of the prize.

MUCH of the scientific information latent in government publications fails to reach those to whom it would be of the greatest utility. An example of how such information can be made more generally accessible is the index issued by the United States Bureau of Education to documents having a bearing on the subject of home economics. This (revised March, 1923) includes not only 55 of the Bureau's own pamphlets, but several hundreds of others issued by the Department of Agriculture, the Bureaus of Standards, of Mines, and of Fisheries, the Labour Department Children's Bureau, the Public Health Service, the Federal Board of Vocational Education, and the American Red Cross.

"THE janitor of a modern school building is, next to the principal, perhaps the most important officer in the school." This pronouncement by Dr. Dresslar, an American authority on school hygiene, is quoted with approval by the author of "The School Janitor: a study of the functions and administration of school janitor service," Bulletin, 1922, No. 24 of the United States Bureau of Education. The writer goes on to show that although the average annual salary of school janitors is 980 dollars, or more than 50 per cent.