attain the Italian, French and Spanish Tongues, and in Merchandizing be fit to negotiate with the greatest Princes." In a second College nothing would be spoken but Greek, and in a third Hebrew. This would attract all "forraigne Protestants of work in this western World," as well as the Jews "whose conversion is now at hand."

The vision of a truly Puritan Paradise opens up. "If London were an University, such, pluming the Crest of this Royall City, would cause it to present a more glorious aspect than all the lofty Cypresses in Constantinople doe unto all that approach unto it: yea, all the yeare long cause London to resemble Jerusalem in the Feast of Tabernacles." Not only would there be a chaplain in every house of the nobility (and even "the Citizens carry one sometimes"), but every godly merchant might have a graduate in his ship, and "Sea-men (generally so

prophane)" might become Saints and "their masters goods prosper in their hands."

That there will be objections from Cambridge and Oxford (the order of precedence is his and prompts a conjecture as to the True Lover's upbringing) is foreseen, but these, it can well be imagined, do not daunt such a buoyant optimism. Your True Lover, if he is worthy of the name, has as little difficulty with objections as with finance. Thus there are nine answers to the three objections ("weak, weaker, weakest"), not any of which are objections founded upon such base things as accommodation and finance. Perhaps, however, it was this sort of objection which prevailed with the Lord Mayor and his colleagues (to whom "Motives" are presented), and, as we know, the True Lover's University did not build Jerusalem in London. Which, perhaps, is just as well.

E. D.

Immigration and Degeneracy in the United States.¹

THE United States Government is taking measures to control immigration, so as to ensure, so far as is possible, that undesirables of all sorts shall be excluded. The present publication, which is the statement of Dr. Harry H. Laughlin made before the Committee on Immigration and Naturalisation of the House of Representatives, is witness to its activity in this direction. By estimating the actual and predicted proportions of various sorts of degeneracy contributed by the various stocks that enter the United States, it is possible, by excluding immigrants from those foreign countries that contribute more than their share, to ensure that the healthiest possible stocks only are admitted.

The statement of Dr. Laughlin covers feeble-mindedness, insanity, criminality, epilepsy, inebriacy, leprosy, tuberculosis, blindness, deafness, deformation, and dependency. It is found that each of these forms of degeneracy demand distinct methods of treatment. For example, it is comparatively easy to control feeble-mindedness, for it manifests itself early in life. Therefore it is found that the native white population contributes, proportionally, more than the immigrant white to the feeble-minded part of the population. On the other hand, insanity, which manifests itself much later in life, is not so easy to diagnose in the immigrant, with the consequence that the immigrants of the present generation have a higher incidence of mental instability than is possessed by the foundation families. Therefore it

is proposed that immigrants should come of families with no record of insanity.

The case of crime is interesting. Those countries that have contributed least to the criminal population of the United States are Great Britain, Scandinavia, Ireland, Germany, and the Netherlands; *i.e.* precisely those that have contributed the foundation stocks. The Southern European countries have contributed a far larger proportion, and this is probably due, in the opinion of Dr. Laughlin, to a change in social environment, with a consequent social maladjustment. Since criminalistic tendencies show themselves early in life, it has been possible to exclude this type with a considerable degree of success.

The analysis of figures has made it possible to reach some interesting conclusions with regard to the contributions to degeneracy made by the different constituent elements of the population of the United States, and it is evident from this report that before long we shall know much more than we do at present about the problem of degeneracy. One definite conclusion seems to have been reached by Dr. Laughlin; he states that "custodial inadequacies are for the most part recruited from a relatively small portion of the families of the whole population. This means that social inadequacy is not a result of accident or bad environment, but that primarily most custodial inadequacy is founded upon degenerate inheritance."

The ultimate effects of the prosecution of a thoroughgoing policy of immigration control will be far-reaching; for the United States will be able to absorb the healthy stocks, and to reject the unhealthy, thus greatly benefiting itself at the double expense of European countries.

W. J. PERRY.

Fire Hazards and Fire Extinction on Oilfields.

THE subject of fire-risk, prevention and extinction on oilfields is one which the public as a whole tends to take very much for granted, only being stirred to interest by press reports of oil-well fires such as occurred in Trinidad some two years ago, when thousands of pounds' worth of damage was done, or by more serious disasters on some of the American fields, involving the loss of many lives. On the other hand, those concerned with the actual control of oilfields, if not the employees themselves, are very much alive to the ever-present danger of a conflagration arising from the high degree of inflammability of petroleum and its products, and they know, usually only too well from experience, that oil-fires, from the inherent nature of the materials involved, are by far the most difficult to combat successfully.

Prof. J. S. S. Brame chose this subject as the theme of his valedictory address to the Institution of Petroleum Technologists recently, and in view of the rapid and generally unappreciated evolution of modern methods of oil-fire extinction, especially as practised in America, his dissertation was particularly welcome. It certainly stimulated members of his audience to a keener perception of the risks run by those engaged in all branches of the industry, without in any sense being either sensational or alarming.

As with other undesirable evils, prevention being better than cure, the greatest possible care is taken nowadays to meet, by precautionary measures, the contingencies of oil-well and oil-tank fires. Unfortunately, one of the chief causes, lightning, is extremely

¹ Analysis of America's Modern Melting Pot: Hearings before the Committee on Immigration and Naturalisation, House of Representatives, Sixty-seventh Congress, Third Session, November 21, 1922. Statement by Harry H. Laughlin. (Serial 7-C.) Pp. 723-831. (Washington: Government Printing Office, 1923).

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,