

diseases of our livestock—such as tuberculosis and foot-and-mouth disease—in the vain hope that laboratory science will find a remedy for what common sense should prevent. The microscope and the methods of Pasteur and of his successors can never hope to achieve a permanent and effective cure of such diseases. The cause lies much deeper than anything which is likely to be ascertained in the laboratory. It is in all probability malnutrition following closely in the wake of long-continued mismanagement of the land”.

It is true that I introduced the word “immunity”, but, remembering that it carries only a relative meaning, I feel that it was justified, though, perhaps, “resistance” would have been better.

THE WRITER OF THE ARTICLE.

#### Heidelberg, Spinoza and Academic Freedom

IN the issue of February 22, under the above heading, a correspondent writes that a visitor to Heidelberg on June 30 of this year may celebrate the events associated with that day (familarly known as the ‘clean up’) simultaneously with the 550th anniversary of the foundation of the University. He has, however, fallen into the same error as the

Rector and Senate of Germany’s most ancient seat of learning. June 30, 1936, is the anniversary of the ‘clean up’ which established more firmly the present dictatorship in the German Reich and its dependant universities, but the academic year 1935–36 is not the 550th but the 549th from the foundation of the University of Heidelberg.

On October 23, 1385, a charter was issued to the Elector of Palatine by Pope Urban VI for a “Studium generale”—the old term for a university—at Heidelberg. The first session began on October 19, 1386, and the first academic year then opened.

Thus for purposes of celebrating a jubilee—a custom of Hebrew origin—three choices were open: (a) October 23, 1935, or near date, being the 550th anniversary of the issue of the Charter; (b) October 19, 1936, or near date, being the opening of the 550th academic year; (c) June 1937, or near date, being the end of the session 1936–37 and the completion of the 550th academic year.

June 27–30, 1936, has no relation to any of these dates. June 30 is, however, the anniversary of the firmer establishment of that regime on which depends the University of Heidelberg, as now constituted.

9, Lansdowne Rd.,

M. GARDINER.

W.11.

#### Points from Foregoing Letters

DRS. O. R. FRISCH and G. Placzek state that they have carried out experiments with boron and cadmium in order to determine whether, as suggested by theory, the capture cross-section for slow neutrons is inversely proportional to their velocity. From their experiments it appears that cadmium, though a very efficient absorber for neutrons of thermal energies, becomes almost transparent for neutrons of energies not higher than one volt; their results, together with those recently obtained by Rasetti, indicate that the capture probability in cadmium has a maximum between 1 volt and 0.03 volt.

New and more accurate values for the atomic masses of carbon, helium and of light and heavy hydrogen are submitted by Dr. F. W. Aston. These were obtained by means of his new mass-spectrograph, from observations on doublets (atoms and groups of atoms having nearly the same mass/charge ratio).

The energy and the sign of the electrical charge of the more penetrating components of cosmic rays have been determined by L. Leprince-Ringuet from the curvature of the ionised tracks obtained in a large expansion chamber, placed in a powerful magnetic field (13,000 gauss). The results agree with the assumption that the more penetrating cosmic rays consist of both positive and negative electrons and of protons.

Objections to the thesis developed by Dr. H. H. Thomas, that the greater variety of species at high altitudes may be related to the greater intensity of cosmic rays there, are raised by Drs. M. Delbrück and N. W. Timoféeff-Ressovsky. From the known rate of mutation induced experimentally in fruit-flies by X-rays, also beta and gamma rays, they suggest that only a small percentage of the naturally-occurring mutations could be accounted for by cosmic ray action. Dr. H. H. Thomas, while not denying that other factors may be responsible for natural muta-

tions, points out that there are essential differences between X-rays and cosmic rays (for example, the ability of the latter to produce ‘showers’) and consequently the effect of cosmic rays cannot be deduced quantitatively from that of X-rays.

Commenting upon the recent article on “Gases of War”, Dr. H. Levinstein brings evidence showing that mustard gas was successfully manufactured in England during the War and that the British process was adopted in America in preference to the French or the German.

Dr. Norman R. Campbell analyses the meaning of ‘academic freedom’; he considers that academic persons should not publicly express themselves on certain disputed matters in which a neutral judicial attitude may be expected of them.

The X-ray structure of the orthorhombic variety of the cancer producing substance 1:2:5:6-dibenzanthracene is described by John Iball.

Dr. J. Ferguson finds that, if the logarithms of the molar doses producing equally intense physiological responses are used as the basis of comparison, an accurate linear relationship holds between the boiling points of series of related volatile compounds and their logarithmic indexes of toxicity. The existence of this relationship in a series of substances is taken to show that the members of the series differ from each other only in ‘toxic availability’ and not in absolute toxicity.

Experiments with one thousand mice having inheritable characters attributed to genes of known positions in one of their chromosomes have given offspring with characters showing more than 50 per cent crossing-over (separation of characters so that they no longer occur together). The existence of such ‘recombinations’ in excess of 50 per cent is, according to Prof. R. A. Fisher and Dr. K. Mather, definite proof of chromatid interference.