

of air from all sides to the central parts of London during dense fogs.

(6) No severe fog occurred with an air temperature above 40° F. The minimum air temperature prior to fog coming on averaged 9° below the normal mean temperature for the day. The relation between the occurrence of fog and the minimum temperature in November and December, 1901, is shown in Fig. 1.

(7) During the period of observations, in twenty-two cases out of twenty-five during the nights preceding days of fog, a thermometer on the grass at Regent's Park fell much below the river temperature, the amounts of difference on these occasions varying from 6° to 25° F.

Attention is called to one point of special importance in connection with temperature observations, which requires to be followed up. On March 7, during fog, the temperature in the streets of London was nearly 10° F. below that on the roof of the Meteorological Office, the elevated stations, and the surrounding country on the southern and western sides.

The outstanding parts of the inquiry are:—

(1) To ascertain whether the proposed scale of classification of fogs puts the observations of locality upon a more satisfactory footing, and whether additional observations throw any further light on local distribution.

(2) The further investigation of temperature conditions, including temperature observations in the early morning (5 a.m.), and vertical distribution of temperature.

With regard to the last point, we learn that an opportunity was recently afforded for determining the conditions

The council of Owens College, Manchester, has, under a scheme of the Board of Education, resolved to establish a scholarship and exhibition in zoology and botany out of the accumulations of the Robert Platt fund, which has hitherto been applied only to physiology. The scholarship will be of the yearly value of 50*l.*, will be open for competition to persons who have studied zoology or botany in any university or college laboratory, and will be awarded to the candidate who shows most promise and ability for the prosecution of research in zoology or botany.

AN interesting ceremony took place at the gardens of the Royal Botanic Society on Wednesday, April 1. The Earl of Aberdeen presided, and Mr. Alfred James Shephard, chairman of the Technical Education Board of the London County Council, declared the newly erected laboratory open for botanical and horticultural work. Instruction on the lines of the syllabus of the Board of Education will be given in botany, and attention will also be paid to horticultural chemistry, elementary and advanced, in connection with the practical gardening school. Other classes will, if necessary, be carried on and research work undertaken. The school of which the laboratory is the outcome was, as Dr. C. Adams pointed out at the opening ceremony, started five years ago with nine students; now there are thirty-five—of whom twenty-one are boys and fourteen girls. Some 200*l.* has been spent over the undertaking, of which the Technical Education Board has provided 85*l.* The work has been very successful, and no difficulty has been found in obtaining appointments for the students who have been through the

three years' course. Mr. Shephard in his speech pointed out that to endeavour to grow plants with only practical knowledge was like attempting to cure the sick after the fashion of a quack doctor, without having mastered the science of medicine. Miss Shephard presented diplomas to successful students at the school, and Dr. Kimmins, Dr. Garnett and Mr. Brinsley Marlay also spoke. The Royal Botanic Society is decidedly to be congratulated upon adding theoretical instruction to the practical teaching already carried on, though it seems advisable that the special principles underlying horticultural practice should figure in the syllabus as well as pure botany.

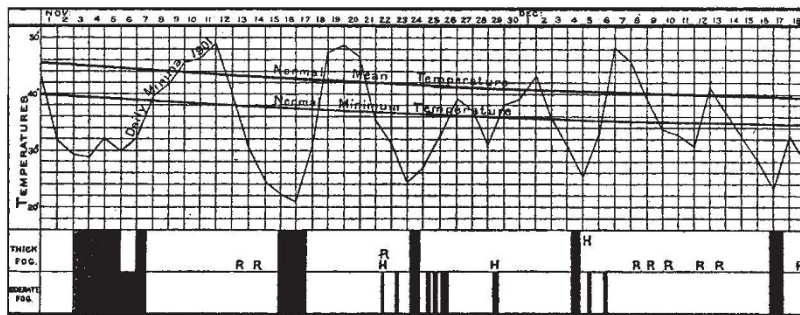


FIG. 1.—Part of diagram showing the occurrence and duration of fog in London and the daily minimum of temperature at Kew. H signifies "high fog," K a rainfall of 0.05 inch or more.

under which such investigation could be carried out in London by the loan of a captive balloon and self-recording instruments. Captain Carpenter was himself unable, on account of his health, to continue the conduct of the inquiry beyond the close of the winter of 1901-2. The conclusions drawn in his report are based exclusively upon observations during that period, and are expressly subject to possible revision in the light of further observations. At his suggestion the observations were recommenced in September, 1902, and have been continued during the winter; they include a number of special observations of temperature at 5 a.m. The continuation of the inquiry has been under the superintendence of Mr. R. G. K. Lempfert, of the Meteorological Office.

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

THE annual exhibition of scholars' work from the Board Schools of London will be held at the Examination Hall, Victoria Embankment, W.C. (adjoining Waterloo Bridge), on Saturday, May 9, and on the following Monday, Tuesday and Wednesday (May 11-13). The exhibition will be opened by Lord Reay (chairman of the Board), and will include among the exhibits specimens of modelling, science apparatus and metal-work from the day and evening schools, and also work from the schools for the blind, deaf, special instruction, truant, and industrial schools.

THE Education Bill for London was introduced in the House of Commons on Tuesday. It is proposed to make the London County Council the education authority, so that the London School Board will disappear. The new education committee will contain ninety-seven members, this total being made up as follows:—Representatives of the borough councils—one for each borough and two each for Westminster and the City of London—31; London County Council, 36; representatives (including women) of various secondary schools, the University of London, technical institutions and bodies contributing to the maintenance of education, 25; and (for the first five years) representatives of the London School Board, 5—total 97. The object of the Bill is thus to abolish the School Board, and to link education in London with municipal government. The County Council, as the education authority, is to have the rating powers of a county borough under the Education Act of 1902. The management of public elementary schools is to be entrusted to the borough councils, subject to the general direction of the education authority, which is to have complete financial control. The borough councils are to have the right to appoint and dismiss teachers, the custody of the buildings, and the right to select the sites for new schools in their prescribed areas. These powers, however, do not apply to secondary schools and technical institutions.

A BIRMINGHAM correspondent describes in the *Times* for April 2 the four great German commercial high schools, those namely at Aachen, Cologne, Frankfurt, and Leipzig. There is a special appropriateness just now about such a



study, since during the present period of organisation and development at the University of Birmingham it is of importance that those responsible for its new commercial department should be intimate with German experience. It is not sufficiently remembered, the writer of the article insists, that these German institutions are new and in an experimental stage, that they are characterised by great diversity of organisation, and are the outcome, not of Governmental initiative, but of the demands of the commercial classes; in most cases, indeed, their financial basis was provided by private generosity and municipal support, not by grants from the State. At Aachen, where the commercial "course" is simply a department of the technical college, the authorities abide by the general rule for admission to universities and technical colleges, and refuse to receive into full membership any who have not passed the leaving examination of the Gymnasia, Realgymnasia, or Ober-realschulen. In most cases the certificate is not secured until nineteen. The three other institutions admit men who have left school three years earlier (with the certificate shortening their military service to one year), on condition that they have spent the three following years in an apprenticeship or in some definite business experience. At present the Aachen plan is hardly practicable, and tends to restrict the numbers. "The German movement is," the article shows, "full of interest and instruction for foreign observers. Its ideals are rising; and the two years which form the present period of study are already beginning to seem inadequate. There are grave difficulties to be met; but an amount of ardour, of ability of a high order, and, what is not unimportant, of money also, is being devoted to the task, which ought to sting a reflective Englishman with a sense of shame."

#### SCIENTIFIC SERIAL.

*Biometrika*.—The last three numbers continue to record results of high biological interest. The excellence of Prof. Karl Pearson's elaborate studies in statistical theory is becoming widely recognised, and his comments and criticisms add much to the value of the work of other contributors. In vol. i. part iv. Mr. F. Galton states a new problem in the variation of a population with respect to a given character, which, generalised in a note appended by Prof. K. Pearson, is seen to be likely to have important results in statistical inquiry.—The same part contains an attempt by Dr. J. Y. Simpson, good as far as it goes, to demonstrate the inequality of results in the binary fission of the Protozoa. Dr. Simpson's conclusions so far recall those of Maupas, but the difficulties in the way of a successful investigation of this problem are extreme, and it cannot be said that he has met every possible objection. The inquiry is obviously of importance for the general theory of variation, and it is to be hoped that in spite of their difficulty the observations will be continued.—The thorough-going study of the Naqada crania carried out by Miss Fawcett with the help of Miss Alice Lee and other biometric students at University College occupies the bulk of the present issue, and the part concludes with a careful research, by C. Hengsen, on the variations of *Helix nemoralis*.—The subject of gasteropod shells (*Nassa obsoleta* and *N. trivittata*) also finds a place in the opening part of vol. ii., in which number will likewise be found Prof. Weldon's strictures on the ambiguity of some of Mendel's categories, e.g. "green" and "yellow" as applied to the cotyledons of peas.—The co-operative paper on inheritance in the Shirley poppy marks another long step towards the establishment of a working theory of heredity, the results reached being in general accordance with Galton's law.—Among the "Miscellanea" may be noted Mr. Whitehead's paper on variation in *Adoxa moschatellina*, and the first instalment of what promises to be a most important series of test experiments, by Mr. Darbishire, in the Mendelian theory of heredity. Japanese "waltzing mice," the colour of the coats of which is white with patches of pale fawn, were crossed with European albinos, the hybrids being crossed *inter se* and also with the albino parent stock. These experiments, some later results of which are recorded and discussed in vol. ii. part ii., have yielded data which are by no means easy of interpretation,

and their further outcome will be awaited with keen interest. One remarkable result is that every hybrid of the first generation was dark-eyed, though the eyes of all the parents were pink. In a certain proportion, however, of the progeny of the first hybrids the pink eyes reappeared, as did some other parental characters. A recent letter in *NATURE* shows that Mr. Bateson, at all events, is not disposed to admit that the facts so far obtained are discordant with Mendel's law, but it must be allowed that much of the evidence is *prima facie* in favour of ancestral inheritance.

#### SOCIETIES AND ACADEMIES.

LONDON.

**Physical Society**, March 27.—Dr. R. T. Glazebrook, F.R.S., president, in the chair.—On refraction at a cylindrical surface, by Mr. A. Whitwell. The object of the paper is to describe and illustrate the position and form of the focal areas produced by the refraction, at a cylindrical surface, of light diverging from or converging to a point. In general, if a plane can be drawn through the point to cut the surface symmetrically, then all the light passes really or virtually through an area in this plane. In the case of the cylinder there are two such planes. One contains the radiant point and the axis of the cylinder, the other contains the point, and is normal to the axis. The equation of the locus of intersections of symmetrical rays which intersect in the first plane, for small apertures, is obtained in terms of the distance of the radiant point from the axis of the cylinder  $a$ , the radius  $r$ , and the index of refraction  $\mu$ . The loci of the intersections of symmetrical rays which intersect in the second plane, when the aperture is small, are shown to be circles described about the radiant point as centre and having radii equal to  $(\mu-1)(a-r)$ .—The evaluation of the absolute scale of temperature, by Dr. R. A. Lehfeldt. Formulæ are given for the constant-pressure and constant-volume thermometers. An attempt is made to work out the latter with the aid of existing data. It is found that  $T_0 = 273.18$  from hydrogen and  $273.2$  from nitrogen. The deviation of the constant-volume scale from the absolute scale is indicated by curves. At  $100^\circ$  absolute the constant volume (hydrogen) thermometer reads  $0.1$  or  $0.2$  too low.—Prof. Callendar, in a communication sent subsequent to the meeting, said that in his paper on the thermodynamical correction of the gas thermometer (*Phil. Mag.*, January) he had incidentally mentioned that the correction for the constant-volume gas thermometer could not be directly deduced from the Joule-Thomson cooling-effect alone, without additional data, unless a formula were assumed for the variation of the cooling-effect with temperature; but that the value of the absolute zero could be deduced from the pressure coefficient if the Joule cooling-effect in free expansion were known. The experimental measurement of the latter was, however, impracticable.—Mr. Blakesley exhibited and described a lens possessing the following properties:—The two conjugate foci always move with the same relative rate along the axis. The size of the object always bears to the size of the image the same ratio, so that using the same object the image is always of the same size. The instrument is of one piece of glass, and constitutes a telescope the magnifying power of which is the ratio which the object bears to the image in size, linear. The relation of the rate of motion of the object to that of the image is the square of the magnifying power.

**Chemical Society**, March 18.—Prof. J. Emerson Reynolds F.R.S., president, in the chair.—The following papers were read:—Essential oil of hops, by Mr. A. C. Chapman. This oil consists principally of two terpenes, one being identical with that present in oil of bay, and named by its discoverers myrcene, and the second a sesquiterpene, which has been named humulene; there are present in addition to the foregoing small quantities of the odoriferous alcohols linalool and geraniol, the latter being present in the form of its isonoic ester.—A compound of dextrose with aluminium hydroxide, by Mr. A. C. Chapman. When dextrose dissolved in alcohol is treated with aluminium chloride there separates a white amorphous compound of the formula  $3C_6H_{12}O_6 \cdot 5Al_2O_3 \cdot 11H_2O$ .—Action of phosphorus haloids on dihydroresorcins. ii. Dihydroresorcin,