the Hampden Institute will receive about 50,000*l.* from the estate of Miss Alice Byington. By the death of Mrs. Loomis, the estate of the late Colonel John Mason Loomis, amounting to more than 200,000*l.*, will, it is said, go to the establishment of a technical school at Windsor, Conn.

THE College of the City of New York has acquired, says *Science*, the complete private library of the late Prof. Simon Newcomb, consisting of about 4000 volumes and 7000 pamphlets dealing with astronomy, mathematics, and physics. Both pamphlets and books are being catalogued, and are now accessible to research students, in accordance with the expressed desire of Prof. and Mrs. Newcomb.

ON October 22 Mr. T. Fenwick Harrison laid the foundation-stone of new engineering laboratories for the University of Liverpool. The cost of the building will be met by a gift of 35,000*l.* received from Mr. Fenwick Harrison, Mr. J. W. Hughes, and Mr. Heath Harrison. Prof. Watkinson thanked Mr. Harrison for laying the foundation-stone, and in the course of his remarks said it is intended to make special provision for teaching and research work in connection with all branches of engineering, internal-combustion engines, steam turbine engines, refrigeration, and fuel testing, and in this respect the laboratories will be second to none in the kingdom. The donors intend that the subject of heat engines, and particularly of internal-combustion engines, shall be developed on a much more important scale than has been hitherto attempted. As shipowners who use three hundred thousand tons of coal a year they see the advantages to be derived from the successful application of the internal-combustion engine, so far as ships are concerned, for it means the reduction of coal consumption to one-half, and possibly to one-third, of that now required for steam engines. It is humiliating, said Prof. Watkinson, that the names associated with the invention of internal-combustion engines are almost without exception German, and nearly all the internal-combustion engines being built to-day in this country are being built under licence from Germany. Greater scientific knowledge is required than in the design of steam engines, and it is reasonable to conclude that the greater success of the Germans is due to their better training in scientific principles. Last year Prof. Watkinson visited all the principal schools of engineering in the United States and in Canada, and in nearly every one he found that their gigantic laboratories were being greatly extended. Both the Germans and the Americans realise far more than we do in this country the value of a university training, and they also realise that in this age, when machinery plays such a large part in almost every industry, that this training is the best for those who are to control and direct most of the great industries. That is well illustrated, said Prof. Watkinson, by the fact that there are about 17,000 students taking a four years' course in the American schools of engineering, which is about eight times the number of students taking the normal three years' course in this country.

THE introductory address at the London School of Tropical Medicine was this year delivered by Dr. Henry A. Miers, F.R.S., principal of the University of London. The subject of the address was scientific observation, and Dr. Miers directed attention to an aspect of scientific research and of training in scientific investigation which, he said, seemed in danger of escaping notice. Under present conditions scientific research is seldom pursued save by those whose object is clear and whose minds are concentrated upon a special line of investigation in which they are alive and alert to the exclusion of any distracting side-issues. Each new discovery is pursued with ever-increasing rapidity and with a system which is fruitful in results; the searchlight of investigation is turned with mechanical precision upon every new problem, and it would appear unlikely that anything of importance should be overlooked. But teachers and investigators do not sufficiently bear in mind two possible dangers that beset them under modern conditions of work. It is inherent in our senses and our intelligence, first, that those whose attention is too minutely fixed upon one thing will fail to perceive other things which are equally discernible and equally important; and, secondly, that those who look or listen too intently for a thing may actually see or hear that which they desire, even though it be not there. Later in his address Dr. Miers gave it as his opinion that, taken as a whole, scientific men are not better general observers than other people, though some among them undoubtedly are. It has been too often assumed that scientific training has a special value as developing the general powers of observation, and that because students have been exercised in special observations they have become practised observers of things in general, whereas the reverse may be nearer the truth, and in many instances certainly is so. Some practice in all-round observation should be incorporated in the training of the specialist if we are to have our students quick to observe details that do not form part of their conscious exercises; neither should they be led to suppose that, because they have been practised in observing one thing, they are therefore good observers of everything else. To him who has eyes to see, the most trivial detail may be the germ of an important discovery. Our laboratory training gives the student his eyes, but does not always teach him to use them widely or wisely.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, October 10.—M. Émile Picard in the chair.—The president announced the death of M. Treub, correspondant in the section of botany, and of Ernst von Leyden, correspondant in the section of medicine and surgery.—Henri **Douvillé**: The formation of the loam of the plateaux. This loam, consisting of a very intimate mixture of clay and fine sand, is well developed in the neighbourhood of Paris and in the north of France. Two hypotheses have been put forward to explain its formation, deposition from water and transport by wind. The former hypothesis is shown to be in better accord with the observed facts; to explain the height above the sea at which these deposits are found, the floods carrying the deposits are supposed to have been caused by the sudden melting of snows, the lower portion of the valley being blocked by glacier.—Serge **Bernstein**: A generalisation of the theorems of Liouville and Picard.—F. **Robin**: The law of resistance to crushing of cylindrical bodies as a function of their dimensions. The general law of resistance to crushing as a function of the dimensions of the test-pieces is expressed geometrically by a hyperbolic paraboloid.—H. **Pelabon**: Batteries with antimony and antimony selenides. An element formed of antimony and antimony selenide, with an acid solution of antimony trichloride as the electrolyte, shows varying electromotive force under the action of light. If sulphur or tellurium is substituted for the selenium the phenomena described are not produced. The effect is strongest when the element is exposed to the yellow and red rays.—G. **Charpy** and S. **Bonnerot**: The reduction of oxide of iron by solid carbon. Ferric oxide and graphite, intimately mixed, were heated in a vacuum at temperatures up to 950° C., and the reaction studied by measuring the amount of gas evolved per hour. The speed of reaction diminished as the pressure maintained in the apparatus was reduced, and became practically zero when the pressure in the tube was of the order of 0·001 mm. of mercury. Hence it is concluded that solid carbon does not reduce oxide of iron at 950° C.—P. **Mahler** and J. **Denet**: The presence of a small quantity of carbon monoxide in the air of coal mines. The amounts found varied between 0 and 40 volumes per million, with an average of 19. The maximum amount of carbon monoxide corresponded with the minimum of methane, and the maximum methane was found in the sample containing no carbon monoxide.—Paul **Vuillemin**: A natural preventative to the oak-tree disease. The disease of the oak, caused by an Oidium, is kept in check by a Cicinnobolus, a parasite preventing the multiplication of the Oidium by conidia, and its preservation by the mycelium.—E. L. **Trouessart**: The mammalian fauna of Europe.—Ch. **Gravier**: The coral reefs of the Gulf of Aden and their madrepores.—Paul **Marchal**: Contributions to the biological study of Chermes.—Edouard **Chatton**: The exist-

ence of Dinoflagellæ, cœlomic parasites. Syndinium in the pelagic copepods.—A. **Fernbach** and E. **Vulquin**: The microbicidal power of macerations of yeast and cereals. The poison elaborated by yeast is not identical with that obtained from cereals.—A. **Briquet**: Geology of the Gallo-Belgic region.

October 17.—M. Émile Picard in the chair.—P. **Helbronner**: The complementary geodesic triangulations of the upper regions of the French Alps (eighth expedition). The work done included fixing the position of eighty-seven stations, twenty of which were above 3000 metres altitude.—A. **Jacquerod** and M. **Turpaïan**: The application of the principle of Archimides to the exact determination of gaseous densities. A bulb of about 200 c.c. in volume is suspended inside a tube of slightly larger dimensions by means of a platinum wire to the arm of a balance, a suitable counterpoise being suspended from the other arm. The suspended bulb is surrounded by the gas the density of which is being measured, the exact temperature being maintained by an external water bath. The instrument was calibrated by hydrogen and oxygen, the densities of which are exactly known. The accuracy obtainable is of the order of 1 in 10,000.—G. A. **Hemsalech**: The relative duration of the lines of the spectrum emitted by magnesium in the electric spark. The results tabulated confirm the view put forward in a previous paper, that the observation of the relative durations of the lines of the spectrum may, in certain cases, furnish useful indications in the analyses of bodies containing unknown impurities.—A. **Lafay**: The influence of a local heating on the value of the pressures supported by a body placed in a regular stream of air.—Léo **Vignon**: The influence of chemical affinity in certain adsorption phenomena.—Jean de Rufz **de Lavison**: The elective *rôle* of the root in the absorption of salts. The stem absorbs indifferently, and in the same proportion, salts which are presented to it in solution, whilst, on the contrary, the plant furnished with roots exercises a marked selective action on certain salts.—Victor **Henri**, A. **Helbronner**, and Max **de Recklinghausen**: New researches on the sterilisation of large quantities of water by the ultra-violet rays. A description of an improvement of the form of apparatus given in an earlier paper. Three-fourths of the rays emitted by the tube are now utilised. An experiment was carried on for six weeks continuously, during which 25 cubic metres of water per hour were passed through the apparatus, with an expenditure of 26 watt-hours per cubic metre of water, the exit water being sterile.—Jules **Amar**: A singularity in the working of the human machine.—A. **Knapen**: Should materials be impermeable or porous?—L. **Landouzy**, H. **Gougerot**, and H. **Salin**: Experimental bacillary serious arthritis.—Charles **Nicolle**, A. **Conor**, and E. **Conseil**: Some properties of the exanthematic virus.—Eugène Daday **de Dées**: A new phyllopod collected by the Antarctic expedition of the *Pourquoi Pas?*—Edouard **Danois**: The spermaceti organ of *Kogia breviceps*.—A. **Pécsi**: The lines of fracture of the earth's crust.—Louis **Besson**: Observations of the upper bitangent arc of the halo of 46°.

GÖTTINGEN.

Royal Society of Sciences.—The *Nachrichten* (physico-mathematical section), part iv. for 1910, contains the following memoirs communicated to the society:—

May 28.—L. **Geiger**: Determination of earthquake foci from the times of arrival.—D. **Hilbert**: Outlines of a general theory of linear integral equations (vi.).

July 23.—O. **Müggе**: Deformations in the crystals of potassium chlorate ($KClO_3$), according to investigations by Paul Fischer.—E. **Hecke**: Non-regular prime numbers and Fermat's theorem.

DIARY OF SOCIETIES.

WEDNESDAY, NOVEMBER 2.

ENTOMOLOGICAL SOCIETY, at 8.—Experiments in 1909 and 1910 upon the Colour-relation between Lepidopterous Larvæ and Pupæ and their surroundings: Elizabeth Briggs.

SOCIETY OF PUBLIC ANALYSTS, at 8.—The Estimation of Lactose in the presence of the commonly occurring Sugars: Julian L. Baker and H. F. E. Hulton.—The Colorimetric Estimation of Hydrogen Cyanide: A. Chaston Chapman.—The Polarimetric Estimation of Milk Sugar: H. Droop Richmond.—A New Method of Estimating Phosphoric Acid: G. F. Wesley Martin.

THURSDAY, NOVEMBER 3.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: The Origin of the Hydrochloric Acid in the Gastric Tubules: Miss M. P. Fitzgerald.—(1) Trypanosome Diseases of Domestic Animals in Uganda. II. *Trypanosoma Brucei*. (Plimmer and Bradford); (2) Trypanosome Diseases of Domestic Animals in Uganda. III. *Trypanosoma vivax* (Ziemann): Colonel Sir D. Bruce, C.B., F.R.S., and others.—Further Results of the Experimental Treatment of Trypanosomiasis; being a Progress Report to a Committee of the Royal Society: H. G. Plimmer, F.R.S., Capt. W. B. Fry, and Lieut. H. S. Ranken.—On the Peculiar Morphology of a Trypanosome from a case of Sleeping Sickness and the possibility of its being a new Species: Dr. J. W. Stephens and Dr. H. B. Fantham.—Note upon the Examination of the Tissues of the Central Nervous System, with Negative Results, of a case of Human Trypanosomiasis, which apparently had been cured for years by Atoxyl Injections: Dr. F. W. Mott, F.R.S.—On a remarkable Pharetronid Sponge from Christmas Island: R. Kirkpatrick.

LINNEAN SOCIETY, at 8.—Biscayan Plankton, Part XIII. The Siphonophora: H. B. Bigelow.—Plankton Fishing in Hebridean Seas: Prof. W. A. Herdman, F.R.S.

RÖNTGEN SOCIETY, at 8.15.—Presidential Address: Dr. G. H. Rodman.

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