Science News a Century Ago

Schools of Engineering, Mining and Surveying

"As very great ignorance seems to exist among the would-be political economists as to the state and progress of the schools for engineering, mining and surveying, we are induced to publish the following remarks :—The Government have the departments at Sandhurst, Woolwich and Chatham ; the East India Company have also a college ; the Royal Dublin Society have long given regular courses of lectures and instruction, under the superintendence of Mr. Griffiths ; and surveying has been so effectively taught at the Agricultural School of Templemoyle, that the Ordnance Survey Department there has received considerable assistance from it. Surveying is one of the regular branches of instruction at Elizabeth College, Guernsey, and we believe also at King William College in the Isle of Man.

"But if any deficiency of these institutions exists it will be fully supplied by the facilities established at Durham and in University and King's College, London. . . ." (*Civil Engineer and Architects' Journal*, Jan. 1839).

Statistics Applied to Medicine

BEFORE the Statistical Society on January 23, 1839, a paper was read by Dr. Guy, professor in forensic medicine, King's College, London, entitled On the Value of the Numerical Method as applied to Science, but especially to Physiology and Medicine".

"The success," said the author, "with which calculation has been applied to unorganized matter, and the confidence with which the natural philosopher resorts to it on all occasions, have not failed to exert a powerful influence on those who pursue the study of organized beings, and a growing disposition to apply calculation to the phenomena of life is one of the characteristics of the age in which we live." Having referred to the application of statistics to insurance, crime, bills of mortality, etc., he went on to say that "it often happens that an event is attributed to a cause which varies in intensity under different circumstances or in different localities, and we have no other means of testing the accuracy of our opinion than by comparing the frequency of the event in question, with the varying influence of the assumed cause ; and should the same numbers be obtained in every case we are justified in rejecting that cause. If this rule be applied to the received opinions on the subject of phthisis pulmonalis, we should soon see how void they are".

Dr. William Augustus Guy (1810–1885), the author of this paper, edited the *Journal of the Statistical Society* from 1852 until 1856 and served as president of the Society during 1873–75. He was a vice-president of the Royal Society and a founder of the Health of Towns Association.

Geology of Portugal

ON January 23, 1839, Daniel Sharpe (1806–56), a business man who had resided in Portugal, read a paper to the Geological Society "On the Neighbourhood of Lisbon". "In few countries," he said, "can the separation between the tertiary and secondary formations be more strongly marked than in the neighbourhood of Lisbon. The rocks of the latter class were distributed and denuded before the commencement of the tertiary epoch, and a vast mass of basalt, covering an extensive district to the west and north of Lisbon, is interposed between the youngest of the secondary and the oldest of the tertiary strata". "The 'Hippurite' limestone," he said, "consists in the upper and middle parts of marls and argillaceous limestones, containing layers of flint, and in the lowest of a beautiful hard marble. It occurs only on the Lisbon side of the Tagus." The 'Espichel' limestone is composed of shale and grey limestone. It constitutes the Cape after which it is named."

Sharpe at the time of his death was president of the Geological Society.

Societies and Academies

Edinburgh

Royal Society of Edinburgh, January 9.

F. I. G. RAWLINS : Physical methods in the investigation of paintings (address). A painting, considered scientifically, is an essentially stratified structure, consisting of the support (stone, wood or canvas), the ground (gesso or priming), the paint-film, and the varnish film. These layers may themselves be complex, and they are rarely independent as regards forces of binding, expansion and contraction. Methods of investigation, therefore, have been developed akin to those which have proved valuable in petrology, surface-chemistry and crystal structure. The chief aims of a picture laboratory are (*a*) the study of condition, (*b*) study of technique of pure examples of the chief schools. X-rays, ultra-violet and infra-red rays are all of use. Also microscopy, with polarized light, is employed.

K. FUCHS : Invariance of quantized field equations. It is proved that the theory of quantum dynamics as developed by Heisenberg and Pauli is invariant not only against Lorentz transformations but also against all transformations allowed by the general theory of relativity. Although it is impracticable to write the quantized Hamiltonian equations and the quantum conditions in tensor form (the canonically conjugate variables do not form a tensor), it can be shown that the complete system of field equations plus commutation relations does not depend on the co-ordinate system.

Paris

Academy of Sciences (*C.R.*, **207**, 1341–1456, Dec. 27, 1938).

H. DESLANDRES : Application to some interesting molecules of the new analysis of molecular spectra.

H. COLIN and M. SIMON : Nitrogen, organates and saccharin richness of the sugar-beet.

F. GRANDJEAN : Neoteny (presence of immature characters in the adult) in the Acarids.

G. GIRAUD : A new extension of the theory of elliptic equations.

J. HAAG : A biharmonic problem.

D. RIABOUCHINSKY : Interpretation of theoretical movements of fluids by 'animated' diagrams.

G. DENIGÈS : Very sensitive micro-crystalline reactions of bismuth and antimony metalloids.

L. DANIEL : Two new cases of xenia in the apple-tree.

H. DAVENPORT : Sums of integral powers.