Science News a Century Ago

Heating and Ventilation of Public Buildings

A CENTURY ago much attention was being paid to the heating of both domestic and public buildings, and stoves of many kinds were being placed on the market. Patents for steam-heating apparatus had been taken out in the eighteenth century, and at the same time the hot-water heating system had been adopted for various purposes. At a meeting of the Institution of Civil Engineers on June 11, 1839, the subject was dealt with by Charles Hood in a paper entitled "On Warming and Ventilating Public Buildings and Apartments, with an account of the methods which have been most successfully employed in insuring a healthy state of the Atmosphere". In this paper he described the constitution of the atmosphere, the artificial changes produced in it and the effect of those changes upon annual economy. He pointed out the consequences of heating by very hot iron surfaces, or by a 'hot air cockle', and said that the systems of Mr. Bernharat and Dr. Arnolt were open to the same objections. Referring to the use of the more moderate heat of steam or hot water in pipes, he said the latter was the more economical and simple plan. The amount of heating surface depended on the building, but an approximate rule for a public building was its cubic contents divided by 200 to give the square feet necessary to maintain a temperature of 55° to 58° in the coldest weather in Great Britain. When speaking of ventilation, he said that the amount of air to be changed was $3\frac{1}{2}$ cubic feet per minute per person. Natural ventilation through openings in the ceiling was the best for ordinary purposes, but in all extraordinary cases ventilation by mechanical means was the only efficacious method.

Trigonometrical Survey of India

ONE of the papers read at the Astronomical Society on June 14, 1839, was entitled "Some account of the progress of the Trigonometrical Survey now carrying on in India, extracted from the Correspondence of Colonel Everest". During the earliest operations the stations were the highest points of the mountains or hilly land; but a new district was about to be traversed where such advantages did not exist. This district, described as the Doab, was a country devoid of all natural elevations, but having mounds which appear to have been raised by the native inhabitants. For the operations in the Doab, Col. Everest contrived masts 70 ft. high, from the top of which by means of a bamboo staff an ignited blue-light was raised still 20 ft. higher. The site he chose for a base line was at Dhera Dun, near Sisee Bara on the verge of the Asan River. He had a complete set of compensation measuring rods like those used by Colonel Colby in Ireland. During his observations he had encountered some extraordinary phenomena of refraction; in many instances the distant helioscope, instead of exhibiting a round disk, appeared in the form of a tall column. His possession of the compensation bars had induced him to re-measure the base line at Seronge which he had measured in 1825 with a steel chain, and his experiences led him to the opinion that it would be necessary to revise the whole of Colonel Lambton's work before it could be joined on to the series of triangles recently completed with the new instruments.

Societies and Academies

Paris

Academy of Sciences (*C.R.*, 208, 1257–1368, April 24, 1939).

M. MOLLIARD: New researches on the production of tubercles on potato in an aseptic medium.

H. DEVAUX: Remarkable relation between cellular constitution and 'wettability' of mosses.

C. EHRESMANN: Topology of simple closed groups.

H. HOPF: Topology of closed Lie groups and their generalizations.

P. HEBRONI: Linear differential equations in a ring of certain continued matrices (hyperbolic matrices) and their applications to certain integro-differential equations.

N. OBRECHKOFF: Zeros of some polynomials.

J. MARCINKIEWICZ: Interpolation of operations.

L. BERS: An integral representation of biharmonic functions in domains possessing an observable boundary surface.

P. COUDERC: Luminous aureoles of novæ.

C. SĂLCEANU and H. MCCORMICK: New method for the determination of the surface tension of liquids, based on the weight of falling drops.

E. BAUMGARDT: Measurement of certain adiabatic elastic constants of crystals, by the ultrasonic method.

MLLE. A. DAMMANN: Analysis of musical sounds. Sounds of different instruments have been recorded by a cathode ray oscillograph; the results have analysed by a Coradi harmonic analyser.

M. PARODI: A phenomenon of the propagation of waves. Application to thermodynamics.

O. TE-TCHAO and H. LE BOITEUX: Coefficient of absorption of small ions by neutral particles suspended in air.

M. ROUAULT: Fourier analysis of the diffraction of electrons by free molecules.

C. S. PIAW: Absorption spectra of salicylic acid and of its alkaline salts in aqueous solutions.

P. ROUARD: A phase change of 2π in [optical] metallic reflection.

S. S. LU, C. HUNG-CHI and L. TA-YUAN: Influence of pressure on photographic sensibility to X-rays.

G. DUPOUY and C. FERT: Magnetic rotatory power of heavy water. Dispersion and variation with heat.

MLLE. C. CHAMIÉ: Grouping of atoms of radio-colloids.

T. SAN-TSIANG: Groups of protons emitted during bombardment of hydrogenous substances by α-rays.

V. KOSTOMAROFF: Influence of 'chemical tensions' and size of grain on the magnetic properties of a pure iron and of a silicon-iron.

MLLE. S. VEIL: Introduction of further solutes into aqueous potassium iodide, and electrostatic effects.

E. DARMOIS and MLLE. M. THÉODORESCO: Raman spectrum of neutral molybdates, in the crystalline state and in aqueous solution.

M. BALLAY: Properties of some aluminium bronzes with beryllium.

MME. P. RAMART-LUCAS: Structure and absorption of hydroxylated colouring matters derived from triphenylmethane; existence of two coloured isomeric forms of phenolsulphophthaleins and of phenol phthaleins.

D. BODROUX and R. THOMASSIN : Some derivatives of *ortho*- and *para*-cyclohexylphenols.

R. QUELET and J. DUCASSE : Chloroalcoholation of *para*-propylanisol ; application to the synthesis of some derivatives.

R. PAUL : Action of Raney nickel on alcohols ; probability of combination of the catalyst with hydrogen receptors.

R. LOMBARD : Contribution to the study of pyro-abietic acids.

Z.-C. GLACET : Condensing reductions [in organic chemistry].

J. H. BRUNN : New observations on the south-west border of the Albano-Thessalian fold in Greece.

J. LUGEON : An integrating altimeter for aerological sounding.

A. ARNULF, R. BERNARD, D. CAVASSILAS and G. DÉJARDIN : New description of the spectrum of the night sky in the ultra-violet region.

G. DEFLANDRE : The 'stephanoliths', representatives of a new type of coccoliths of the Upper Jurassic.

P. DANGEARD : Some new marine algæ of western Morocco.

MLLE. M. FOURCROY : Non-continuity of the internal generating zone of young roots.

R. SOUÈGES : Embryogeny of the Polemoniaceæ ; development of the embryo in *Polemonium cœruleum* L.

R. GAUTHERET : Measurement of the growth of tissues of carrot cultivated *in vitro*.

G. GUITTONNEAU and MLLE. S. HAAS : A *Sporotrichum* agent of normal maturation of certain cheeses.

M. RANGIER and P. DE TRAVERSE : Urinary glycuronic acid and urochrome.

L. DAUTREBANDE : An anti-gas filtering cannister of high neutralizing capacity and responding to the exigencies of respiratory physiology.

R. CATALA : Acceleration by shock of the metamorphosis of caterpillars of *Chrysiridia madagascariensis* Cram. (Uraniidæ).

A. VANDEL : Researches on the genetics of *Armadillidium vulgare* (Latr.) in relation to monogeny.

A. PEYRON : Homologies between the embryonic vesicles of the human ovum and those of the parthenogenetic *embryomes*.

J. LOISELEUR : Mechanism of the action of diastases of the trypsic group.

J. LAVOLLAY and MME. F. LABOREY : Definition of the coefficient of action of magnesium for *Aspergillus niger* ; its variations with the composition of the medium.

R. DUSCHINSKY and J. JEANNERAT : Obtaining natural amino acids, starting from the racemic forms, by means of the *d*-amino-acid oxidase.

MLLE. S. VILLENEUVE-BRACHON : Division and formation of the peristome of *Licnophora* (L. Chattoni n.sp.) [Ciliates, Heterotrichs].

MLLE. G. CORDIER : Adsorption of aphthous virus by bone charcoal and tricalcium phosphate ; application to immunization of the guinea pig.

M. PIÉRY, J.-F. MARTIN, J. ENSELME and C. PESCHIERA : Experimental study of the biological influence of a prolonged stay at an altitude ; pulmonary modifications. Geese and rabbits were kept at the Jungfraujoch station for six months ; hearts of the former show no lesions ; of the latter, variable lesions. Lungs are all congested, the iron content being greatest with much congestion.

Dublin

Royal Irish Academy, May 8.

KENNETH C. BAILEY : Retardation of chemical reactions. (9) Choice of retarders in liquid phase oxidations. The results of nearly two hundred investigations of oxidations in the liquid phase have been summarized in tabular form, and the cases in which particular groups of retarders have been found to be successful or unsuccessful have been noted. No substance is known to retard all types of liquid phase oxidation. Deductions have been made as to the retarders likely to be helpful for particular groups of oxidizable compounds, and samples are given of retarders which, having been found of value in certain cases, would repay further investigation.

Rome

National Academy of the Lincei (*Atti*, **28**, 283–330, 1938).

E. BOMPIANI : Projective geometry of a homogeneous linear partial differential equation. (1) Classification of the quasi-asymptotics. (2) Invariant systems associated with a system of quasi-asymptotics.

M. VILLA : Quasi-asymptotic curves (2).

T. VIOLA : Limits of an integral in the ordinary form depending on equal and uniform Lipschitz functions with first derivatives.

G. SCORZA DRAGONI : Criterion of existence for a problem of limiting values.

L. GIALANELLA : Heterochromatic photometry and colour index of the planets Neptune and Vesta.

Tokyo

Imperial Academy (**15**, No. 3, 69–100, March 1939).

RYOJI SAKATA : A problem concerning transformations of polyhedra to spherical surfaces.

YUKIYOSI KAWADA : Characters of linear groups.

KOITI KONDO : A proof of Toeplitz of the normal matrix.

AKITUNE IMAMURA : Land deformations and seismic activity in the Mutu-Dewa district.

SHIGEHIKO SUGASAWA, KÜTI SAKURAI and NORIO SUGIMOTO : Synthesis of some 1,2-polymethylene-tetrahydro-iso-quinolines. Analyses were executed by Miss K. Serikawa.

HISAKATSU YABE and TOSHIO SUGIYAMA : Discovery of a Mesozoic hexacoral in a green schistose rock of the Kamuikotan system of Hokkaidô.

HARUO KINOSTA : Electrodialytic 'washing' of *Paramecium*. Unlike most living cells, by this method, *Paramecium* can be repeatedly washed in distilled water practically indefinitely, provided that the water is free from oligodynamic impurities.

TADAO YOKOYAMA : Circulation of blood in the silk worm. The generally accepted circulatory course of the blood is disproved.

EIJI FUKUSHIMA : Acenaphthene as a polyploidizing agency. Young archesporial cells are affected by acenaphthene and produce polyploid pollen grains. The polyploidizing value on late archesporial cells and cells in the meiotic stage is much lower.