

mersion of the sand in a fluid of a specific gravity of 2.88, invented and described by Dr. J. L. C. Schroeder van der Kolk, formed the subject of a report drawn up by Mr. Van Diesen and Dr. Behrens—Mr. Schols and Mr. Martin reported upon an essay by Mr. J. J. A. Muller, in which the author calculated the dislocation undergone by some parts of the mountain system of Sumatra, in consequence of the earthquake of May 17, 1892. These calculations, which are based on data supplied by the measurements executed in the said island, on behalf of the secondary triangulation, prove with great certainty a horizontal shifting of the following three points to the extent, and in the direction indicated:—

Sorik Merapi .. .. .	1° 23 M.	344° 57'
Tor Si Hite .. .. .	0° 64 M.	149° 2'
Goenveng Malintang ..	1° 24 M.	304° 28'

the directions being counted from the north point, going round through the east.—Dr. Jan de Vries discussed some methods of deducing from given configurations more complicated configurations. In particular a series of configurations, first described by Andreef, was deduced from the tetrahedron by means of a system of polar coordinates.—Dr. Bakhuis Roozeboom, in considering the experiments of Prof. Spring, on the conversion of black into red  $HgS$ , showed that this author was mistaken in the nature of the phenomenon, which belongs to the category of the conversion of unstable modifications into stable ones. The pressure required for a conversion of this description does not admit of being expressed by a simple law.—Dr. P. van Romburgh has examined, in the laboratory of the "culture" garden at Tjikeumeuh, a number of coca-leaves grown in Java, in order to ascertain their volatile constituents. Those of *Erythroxylon Coca Lam.* var., *Spruceanum* (Burck), when distilled with water, produced methyl-salicylate (about 20 c.c. was obtained from 140 kgrs. of fresh leaves). In the water was also found a little acetone and methylic alcohol, and perhaps also traces of salicylic aldehyde. The quantity of methyl salicylate decreases in proportion as the leaves grow older; in fresh unexpanded top leaves Dr. van Romburgh found 0.13 per cent., in young leaves from 0.06 to 0.07 per cent., in old leaves even less than 0.02 per cent. The leaves of *Erythroxylon Bolivianum* (Burck) were also proved to contain methyl salicylate, but only 0.004 per cent., as well as those of *E. ecarinatum* (Burck), but not those of *E. Burmanium* (Griff) and *E. longepetatum* (Burck), while in the case of *E. spec. insul. Comor* the results were doubtful.—Prof. Kamerlingh Onnes read a paper on the Kryogene Laboratory at Leyden, and on the production of extremely low temperatures. The object of the author in starting his investigations, upwards of ten years ago, viz. the combination of Wroblewski's and Olszewski's labours with those of Pictet, has been quite satisfactorily attained with the least possible means. Liquid oxygen is stored in a glass vessel adapted for experimenting and observing purposes; the oxygen vapours are continuously compressed, liquefied, and again poured into the said vessel, so that the evaporation from the surface takes place at a level pretty nearly constant. With the aid of a small quantity of circulating oxygen, a bath of liquefied gas of quarter to a half litre can be maintained under normal or reduced pressure, *ad libitum*. With this method no use is made of Dewar's vacuum vessels. The vessel is protected from convective transference of heat by the oxygen vapour, which cools a special chamber with plate-glass windows. These windows remain quite free from hoar-frost, and do not interfere with the formation of images. The condensation of oxygen is obtained in a spiral tube immersed in liquid ethylene boiling in a copper flask connected with a conjugate vacuum pump and compressor. The circulating ethylene is liquefied in a condenser cooled down to  $-80^{\circ}$  by a circulation of methyl chloride, or in some cases by carbonic acid. The apparatus is so arranged, and the flask especially is so devised, that only a minimum of condensed gases is required. Only one and a half kilogrammes of ethylene is used in the author's ethylene circulation to obtain the above-mentioned permanent liquid oxygen bath, in contradistinction to the great quantities mentioned in the accounts of Dewar's experiments.—The purifying of gases by means of fractionating at low temperatures was also treated, and a modified form of Cailletet's mercury plunger compressor, used specially for this purpose, was described. The author concluded with a few observations on certain investigations and apparatus in course of execution, and intended to be preparatory to the manipulation of liquid hydrogen in the Kryogene Laboratory of the future.

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## GÖTTINGEN.

Royal Academy of Sciences.—In the *Nachrichten*, part 4 (1894), the following papers of mathematical and physical interest appear:—Fv. Schilling, the fundamental polygon of Schwarz's  $s$ -function for the case of complex exponents; O. Bolza, a  $pu$  function for the general hyperelliptic case; R. Dedekind, on ideals (in the theory of numbers); E. Riecke, the equilibrium between a deformed homogeneous solid and liquid in contact with it; E. Riecke, Clausius' condition equation; A. Hurwitz, on the theory of ideals; R. Haussner, the numerical coefficients of Weierstrass's  $\sigma$ -series; G. Pick, invariant processes for higher binary forms; A. Schönflies, the hexagonoid of Eberhard; P. Bachmetjew, results as to electrical earth-currents in Bulgaria; E. Ritter, extension of the Riemann Routh theorem to sets of forms; A. Sommerfeld, mathematical theory of the inflexion of light and electricity; W. Voigt, on piezoelectricity in crystals without a centre of symmetry.

## BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—Cod-Liver Oil and Chemistry: Dr. F. A. Möller (Peter Möller).—Mechanics, an Elementary Text-Book, Theoretical and Practical. Dynamics. R. T. Glazebrook (Cambridge University Press)—Colour Vision: Captain W. de W. Abney (Low).—The Student's English Dictionary: Dr. J. Ogilvie, new edition (Blackie).—The Story of the Stars: G. F. Chambers (Newnes).—Universal Electrical Directory, 1895 (Alabaster).—On the Geographical Distribution of Tropical Diseases in Africa: Dr. R. W. Felkin (Edinburgh, Clay).—Philosophy of Mind: Prof. G. T. Ladd (Longmans).

PAMPHLETS.—Le Service Chronométrique a l'Observatoire de Genève, &c.: Prof. R. Gautier (Genève, Aubert Schuchardt). Origen Polidrico de las Especies: A. Soria y Mata (Madrid, Establecimiento Tipografico).

SERIALS.—Engineering Magazine, February (Tucker).—Journal of the Franklin Institute, February (Philadelphia).—Himmel und Erde, February (Berlin, Paetel).—Internationales Archiv für Ethnographie, Band viii. Heft 1 (K. Paul).—Journal of the Anthropological Institute, February (K. Paul).—Journal of the Asiatic Society of Bengal, Vol. lxxiii. Part 2, No. 3 (Calcutta).—Astrophysical Journal, February (Wesley).—Journal of the Chemical Society, February (Gurney).

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