illumination with that of the standard light. Experiment had shown that the sensitiveness of the instrument is greatest when the difference of the contrasted illuminations is 3 per cent., and amounts then to ¼ per cent. He further gave an account of experiments which he and Dr. Lummer had made on the utilization of glow-lamps as standards of comparison. When fed by accumulators these lamps yield a light which only varies by 1 per cent. during a period of 200 hours provided the E.M.F. of the accumulators is kept constant. The authors are now busy with the endeavour to construct a standard glow-lamp for comparison with unknown sources of light. Dr. Lummer demonstrated Abbé's apparatus for testing transparent films with plane-parallel surfaces. After briefly describing the interference phenomena produced by thick plane-parallel glass plates, he explained how Tizeau's bands and Newton's rings are employed for testing the plates, using monochromatic sodium-light. The light passes through a reflecting prism and through a lens, and then falls on the plate, from which it is reflected and passes back by the same path to the eye, being now passed through a second lens by means of which the bands or rings may be seen. The occurrence of interference-bands is entirely dependent upon the thickness of the plate: if this is absolutely uniformly thick throughout, the interference phenomena show no change if the plate is moved from side to side in its own plane, and by so doing the parallelism of its sides may be rapidly tested.

AMSTERDAM.

Royal Academy of Sciences, February 22.—Prof. van de Sande Bakhuysen, in the chair.—Prof. Behrens added a number of reagents for microscopical analysis to those already known from former publications by himself and MM. Streng and Haushofer:—

For K and Na: sulphate of bismuth.
,, Ba, Sr, Ca: chloride of tin and oxalic acid.
,, Ba, Sr: bichromate of ammonium.
,, Sr, Ca, Mg: tartrate of sodium and potassium.
,, Al: fluoride of ammonium and sulphate of thallium.
,, Be: chloride of mercury and oxalic acid.
,, Ce, La, Di: oxalic acid, ferrocyamide of potassium.
,, Zn, Ca: acetate of aluminium and oxalic acid.
,, Zn, Cn, Co: sulphocyanide of mercury and ammonium.
,, Co, Ni: nitrite of potassium and acetate of lead.
,, Pb, Bi, Fe: bichromate of potassium and potash.
,, Bi, Sb, Sn: oxalic acid, chloride of rubidium.
,, Sb, Sn, Ti: chloride of barium and oxalic acid.

Details will soon be published, when the necessary finish has been given to the methods for separation, hitherto somewhat neglected.—M. Martin read a paper on the geology of the Kei Islands, and, in connection therewith, on the Australian-Asiatic boundary line. In accordance with the fact that in Great Kei we meet with nothing but a Tertiary formation, and that the nature of the rocks of Great Kei agrees with that of the coast of New Guinea, M. Martin inferred that this boundary line must be drawn geognostically, to the west of Great Kei and to the north-west of Timor.—Dr. Beyerinck treated of the luminous food and the plastic food of phosphorescent Bacteria. Of the six species of phosphorescent Bacteria hitherto known, four—viz. the alimental gelatine non-melting *Bacterium phosphorescens* and *B. Pflügeri* of luminous fish, and the Baltic phosphorescent Bacteria, *B. Fischeri* and *B. balticum*, require, besides peptone, a second carbonic combination, as glycerine, glucose, or asparagine, for their complete nourishment, *i.e.* to "phosphoresce" and grow. They may be called peptone-carbon-bacteria. The gelatine quick-melting phosphorescent bacteria from the West Indian Sea and the North Sea, *B. indicum* and *B. luminosum*, can phosphoresce and grow on peptone alone. They are, therefore, peptone-bacteria. Again, other bacteria can derive their nitrogen either from amids, the amid-bacteria, or from ammoniac, the ammoniac-bacteria. Also moulds, yeasts, and some Protozoa may be classed in this system. The *Bacterium Pflügeri* does emit light with peptone and glucose, but not with peptone and maltose, while the *Bacterium phosphorescens* emits light both with glucose and maltose. Now if we mix some starch in a phosphorescens-peptone-gelatine, obtained by mixing this gelatine with a very great number of *B. phosphorescens*, and place upon this some ptyaline, pancreas-diastase, or urindiastase (nefrozymase), fields of light make their appearance; if, however, we placed these same sorts of diastase on a Pflügeri-peptone-starch-gelatine, then no fields of light would appear, which proves that in this instance no glucose whatever is formed, as was lately believed to be the case. The development of luminosity is constantly accompanied by the transition of peptones into organized, living matter, under the influence of free oxygen, with or without the concurrence of another carbonic combination.

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