De artikelen, waarvan hieronder samenvattingen volgen, zijn gepubliceerd in de Nederlandsche taal in „Verslag van de gewone vergadering der Afdeeling Natuurkunde van 29 Januari 1944, Deel LIII, No. 1".

The articles, of which summaries follow below, have been published in the Dutch language in „Verslag van de gewone vergadering der Afdeeling Natuurkunde" of January 29th 1944, Vol. LIII, No. 1.

Les articles dont les résumés suivent ci-dessus, ont été publiés en langue néerlandaise dans le „Verslag van de gewone vergadering der Afdeeling Natuurkunde" du 29 janvier 1944, Tome LIII, No. 1.

Chemistry. — ITERSON, F. K. TH. VAN: *NaCl as a basic material for a chemical business in the Dutch East-Indies,* p. 3.
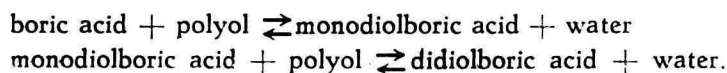
The author gives an outline of his report of 1939 to the Indian government on the establishment of chemical factories based on the electrolysis of sea-salt. His task proved to be finding an employment for the Cl_2. The author believes to have found this in the manufacture of precipitated phosphate of lime, a fertilizer of which the soil of Java is in need.

Chimie. — ITERSON, F. K. TH. VAN: *NaCl comme matière première pour une industrie chimique aux Indes Néerlandaises,* p. 3.

L'auteur donne un aperçu de son rapport remis en 1939 au gouvernement des Indes sur l'érection d'une industrie chimique basée sur l'électrolyse du sel marin. Son charge aboutit à trouver un emploi pour le Cl_2, et l'auteur croit l'avoir trouvé dans la fabrication de phosphate bicalcique, engrais dont le Java a fortement besoin.

Chemistry. — BÖESEKEN, J.: *On the connection existing between the increase in the concentration of hydrogen-ions when boric acid is added to polyalcohols and the position of two of the hydroxylgroups in space,* p. 9.

From the boric acid investigations of HERMANS, COOPS and especially VERMAAS, it may be concluded that in a watery solution of boric acid and polyalcohols in which an increase of electric conductivity is observed, combinations are found of boric acid with resp. one and two molecules of the alcohol, which are formed under dehydration, so that it may be assumed that the following equilibriums are established:

boric acid + polyol ⇄ monodiolboric acid + water
monodiolboric acid + polyol ⇄ didiolboric acid + water.

As the didiolboric acid is a very strong acid it is entirely separated into ions in the dilated watery solution.

If B is boric acid, HBD is monodiolboric acid and HBD_2 didiolboric acid, while D is the diol, the following calculations can be derived:

$$K_1 = \frac{[HBD]}{[B] \cdot [D[} \qquad K_2 = \frac{[HBD_2]}{[D] \cdot [HBD]}$$

and from this

$$K_1 K_2 = \frac{[HBD_2]}{[D]^2 \cdot [B]}.$$

Further is $HBD_2 \rightarrow H^{\cdot} + BD_2$ and therefore

$$K_1 K_2 = \frac{[H^{\cdot}]^2}{[D]^2 \cdot [B]}.$$

Not all polyolacid complexes form HBD_2, it is only the favourably disposed diol molecules which can do that. So D must be replaced by part of them

$$D_{favourable} \text{ or } D_g.$$

$$K_1 K_2 = \frac{[H^{\cdot}]^2}{[D_g]^2 \cdot [B]} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (a)$$

As we may assume that with any polyol an equilibrium will be established between the favourably disposed molecules and the total

$$D_t \rightleftarrows D_g$$

from which

$$K = \frac{[D_g]}{[D_t]} \text{ or } [D_g] = K [D_t]$$

this becomes, introduced in the above (a):

$$K_1 K_2 = \frac{[H^{\cdot}]^2}{[K \cdot [D_t]]^2 \cdot [B]} \text{ or } K^2 \cdot K_2 K_2 = \frac{[H^{\cdot}]^2}{[D_t] \cdot [B]}$$

$$\text{resp. } K \sqrt{K_1 K_2} = \frac{[H^{\cdot}]}{[D_t] \cdot \sqrt{[B]}}.$$
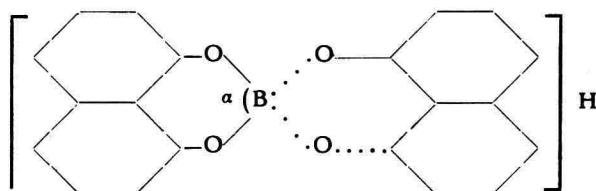
From a detailed consideration of the significance of K_1 and K_2 in the boric acid equilibriums in connection with the investigation of HERMANS for the aceton equilibriums of the polyols, it was concluded that these constants do not differ greatly for the different polyols and that therefore the expression $\sqrt{K_1 K_2}$ may be considered a proportional factor.

As in most cases there was a sufficient surplus of 0.5 mol. boric acid it could be taken that, $\sqrt{B}$ constant $= \sqrt{0.5}$ m $[H^{\cdot}]$ is formed by

electrolytic dissociation of HBD$_2$. One mol. HBD$_2$ detracts 2 mol. D, hence $[D_t] = D - 2H^{\cdot}$

$$K = C_1 \cdot \frac{H^{\cdot}}{D-2H^{\cdot}}. \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad (I)$$

H$^{\cdot}$ could be deduced from the known increases of the conductivity and from it the K/C_1 could be calculated in a number of cases.
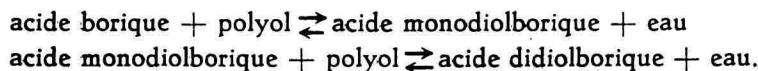

In the case of 1.8 dihydroxynaphtalene it was found that the concentration of the favourably disposed molecules must be great. When the known atom distances were introduced it could be calculated that angle α in the central borium atom must be slightly greater than 104°. which is in keeping with the high value for the constant, as this angle will be preferably 109° 28'.

From this example and a number of others it was concluded that expression I is indeed a reliable relative standard for the proportion of the favourably disposed molecules to the total number, and therefore also for the position of two of the hydroxylgroups in the polyalcohols under discussion.

Chimie. — Böeseken, J.: *Sur le rapport entre l'augmentation de la concentration des ions d'hydrogène quand de l'acide borique est ajouté aux polyalcools et la position de deux des groupes hydroxyl de ces polyols dans l'espace*, p. 9.

On peut déduire des essais sur l'acide borique de Hermans, Coops et surtout de Vermaas que dans une solution aqueuse d'acide borique et de polyalcools présentant une augmentation de la conductivité électrique il existe des compositions de l'acide borique avec un ou deux molécules de l'alcool formées avec perte d'eau, de sorte qu'on peut admettre que les équilibres suivants se produisent:

acide borique + polyol $\rightleftarrows$ acide monodiolborique + eau

acide monodiolborique + polyol $\rightleftarrows$ acide didiolborique + eau.

Comme l'acide didiolborique est un acide très fort il est presque totalement décomposé en ions dans la solution aqueuse diluée.

En appelant l'acide borique B, l'acide monodiolborique HBD, l'acide didiolborique HBD$_2$ et le diol D, les relations suivantes peuvent être déduites:

$$K_1 = \frac{[HBD]}{[B] \cdot [D]} \qquad K_2 = \frac{[HBD_2]}{[D] \cdot [HBD]}$$