

benzidine reaction. This reaction can also be used to differentiate between bleeding into the fluid at the time of lumbar puncture from subarachnoid hæmorrhage. In the latter case the test is still positive after high-speed centrifuging of the fluid, whereas after puncture bleeding the centrifuged fluid gives a negative reaction.

G. W. T. H. FLEMING.

*Quantitative Spectrographic Analysis of Biological Material. I: A Method for the Determination of Lead in Cerebro-spinal Fluid.* (Proc. Roy. Soc. [Lond.], A153, pp. 141-52, 1935.) Foster, J. S., Langstroth, G. O., and McRae, D. R.

0.08 c.c. of the fluid to be analysed is placed on the movable plane electrode of a point plane pair, dried at low pressure, and sparked with a d.c. spark, which is photographed with a quartz spectrograph. The exposure is 1.5 minutes. A second exposure is taken with a sample of the same fluid to which a small definite amount of a known solution of  $\text{Pb}(\text{OAc})_2$ ,  $\text{PbCl}_2$  or  $\text{Pb}(\text{SO}_4)_2$  is added. The Pb line intensities are measured with a Moll microphotometer and compared with those of some other element in the sample, in this case magnesium. The concentration of Pb in the sample is given by  $R_1/R_2 = C/(C + C_1 \Delta v/v)$ , where  $R_1$  and  $R_2$  are the measured Pb/Mg intensity ratios for untreated and treated samples, C is the unknown Pb concentration,  $C_1$  the known Pb concentration in the standard solution, and  $\Delta v$  the volume of the standard solution added to a volume  $v$  of the sample. The method is valid for concentrations between  $1 \times 10^{-8}$  and  $2 \times 10^{-5}$  g./c.c. The precision of a determination is better than 15%.

JANET E. AUSTIN (Chem. Abstr.).

*Determination of Phenols in the Cerebro-spinal Fluid.* (Prensa Med. Argentina, Aug. 30, 1933, sep. 16 pp.) Castex, M. R., and Arnaudo, A. F.

Theis and Benedict's method for blood phenols was used for determining phenols in the cerebro-spinal fluid. To 10 c.c. of cerebro-spinal fluid add 13 c.c. of water, 1 c.c. of 10% sodium tungstate and 1 c.c. of 2/3 N sulphuric acid (dilution 1 : 2.5). Proceed as with blood. A standard is made so that 10 c.c. = 0.0125 mgrm. phenol. The normal amount of phenols in the cerebro-spinal fluid is between 0.20 and 0.36 mgrm. per 100. These phenols exist mostly as free phenols. In several diseases of the central nervous system a normal amount of phenol was found.

E. S. G. B. (Chem. Abstr.).

*Phenols in the Cerebro-spinal Fluid in Pathologic Conditions: Their Clinical Importance.* (Rev. Franco, No. 1, 1935, sep. 15 pp.) Castex, M. R., and Arnaudo, A. F.

The amount of phenols in the cerebro-spinal fluid is normally about 20% of that in the blood. In severe renal insufficiencies there is an increase of phenols in the cerebro-spinal fluid.

E. S. G. B. (Chem. Abstr.).

*A New Investigation into the Presence of Formic Acid in the Cerebro-spinal Fluid* [Nouvelles recherches sur l'acide formique dans le liquide céphalo-rachidien]. (Ann. Méd. Psych., vol. xv [1], p. 28, Jan., 1936.) Hamel, J., Buisson, R., and Chavarot, M.

This inquiry follows the method and supports the thesis of Toye. The latter writer believes that there is a close association between tuberculosis and dementia præcox, basing this assumption upon the frequency with which he has found formic acid in the cerebro-spinal fluid of cases of dementia præcox.

Here 28 cases of dementia præcox were investigated, 21 showing the presence of formic acid. Of the 16 non-dementia præcox cases examined 10 gave negative reactions, while of the other 6, 5 cases had definite tubercular lesions.

It is concluded that it is as yet impossible to say whether the presence of formic