NARD[5] who compared the extracellular volume calculated from the course of the glucose tolerance test and by the SCN method and arrived at similar results. We evaluated our own intravenous glucose tolerance tests and those from literature[20] by means of the new and by HOENIG's method as well. The values of *Cl* were plotted against *K*. A better correlation was found between *K* and *Cl* as determined by the new formula (Fig. 3). The values of *Cl* also depend on the volume of distribution,

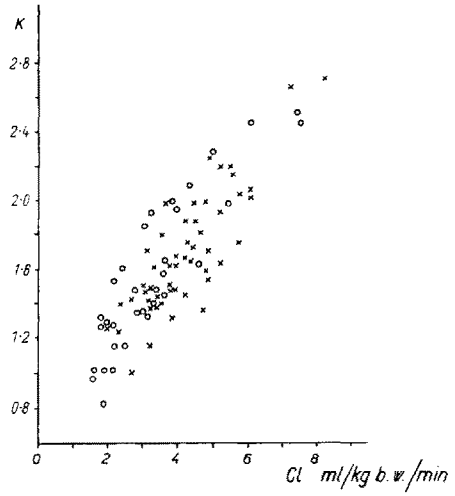

Fig. 3.—The clearance of glucose is plotted against the rate of disappearance $K \times 10^2$.

are inversely proportional to the time in which the blood sugar value declines to the fasting level and to the $\log_e$ of the concentration found after 60 min. The average value $K \times 10^2$ of healthy adults, similary as in CONARD's series[5] is 1·69 ± 0·27, the mean values for *Cl* are: Cl_{total} 220·56 ± 54·9 ml/min and for unit of weight 3·29 ± 0·92 ml/min/kg b.w.

L. MACHO, V. LICKO

Endocrinological Institute of the Slovak Academy of Sciences, Bratislava, Czechoslovakia, November 20, 1956.

Zusammenfassung

Es wird eine abgeänderte Formel für die Berechnung der Glukose-Clearance nach intravenöser Applikation vorgeschlagen.

Das arithmetische Mittel und die Standardabweichung der Clearancewerte bei Gesunden betragen 220,56 ± 54,9 ml/min, das heisst 3,29 ± 0,92 ml/min/kg Körpergewicht.

[20] V. CONARD, *Mesure de l'assimilation du glucose* (Bruxelles 1955). – D. S. AMATUZIO, F. I. STUTZMAN, J. M. VANDERBILT, and S. NESBIT, J. clin. Invest. *32*, 428 (1953).

PRO EXPERIMENTIS

The Determination of Volatile Aldehydes in Gases and Vapours

In the analysis of gaseous mixtures, a very accurate process is seldom necessary to determine volatile aldehydes such as acetaldehyde, propionaldehyde, and n-butyraldehyde. The present note gives a very precise method, as far as we know not yet described in the chemical literature, for the determination of such vapours in presence of volatile saturated and unsaturated hydrocarbons, carbon dioxide, carbon monoxide, oxygen and nitrogen, using an Orsat apparatus. The process consists in bubbling the mixture of gases through an absorption solution described below.

The experiments necessary to determine the selective absorption of the aldehydes were made in the following manner:

Liquid acetaldehyde, propionaldehyde or butyraldehyde, distilled with a fractional distillation column with fourty theoretical plates, were introduced into a gas sampling pipette, filled with clean and dry mercury. The level of mercury can be lowered by lowering the bulb attached to the inferior part of the pipette, thus vaporizing the aldehyde.

The pure aldehyde vapour was then introduced into the volumetric burette of the Orsat apparatus, its volume read at atmospheric pressure and then the other gases were introduced under the same conditions and their volumes recorded.

The known volume of the gaseous mixture was then bubbled several times through the solution below proposed for aldehydes absorption, until the difference between two volumes determinations was equal to the experimental error. Usually only 4 to 5 slow passages each involving 3–5 min are necessary.

After the absorption of the aldehyde, the residual mixture is passed through other absorption solutions in order to effect the selective absorption of the other gases. The preparation and composition of the absorption solutions that we have used are well described by BURKE, STARR, and TUEMMLER in their book[1].

The results obtained with mixtures containing from zero to 50% in volume of acetaldehyde, zero to 32% in volume of propionaldehyde and zero to 6% in volume of butyraldehyde, were very good, given results affected always with errors less than ± 0,1.

In all the experiments the absorption mixtures were previously saturated with the gases analyzed, as is commonly done in the gas analysis technique. Beside these experiments, we studied the absorption of the following gases mixed with air and found total recovery of them. Gases tested:

CH_4, C_2H_6, C_3H_8, C_2H_4, C_3H_6, C_2H_2, CO_2, CO, N_2, H_2 and O_2.

Preparation of the absorption solution.—15 g of 98% sulfuric acid were dissolved in 220 ml of a saturated solution of sodium sulfate (at 20°C), and 46 g of chromium trioxide were then introduced. The orange-red solution so obtained is ready for use after the necessary saturations.

R. CIOLA[2]

Physical and Chemical Department of the Instituto Tecnológico de Aeronáutica, São José dos Campos, São Paulo, Brazil, December 3, 1956.

Zusammenfassung

Es wird eine neue Methode vorgeschlagen, Acetaldehyd, Propionaldehyd und Butyraldehyd in Gegenwart von CH_4, C_2H_6, C_3H_8, C_2H_4, C_3H_6, C_2H_2, CO_2, CO, N_2, H_2 und O_2 quantitativ zu bestimmen. Die Methode besteht darin, das Gasgemenge mit Hilfe eines Orsatschen Apparates durch eine bei 20°C gesättigte, Chromtrioxyd und Schwefelsäure enthaltende Natriumsulfatlösung zu schicken, welche die oben genannten Aldehyde selektiv absorbiert.

[1] O. W. BURKE, C. E. STARR, and F. D. TUEMMLER, *Light hydrocarbon analysis* (Rheinhold Publ. Co., New York 1951), Method LH-302-304.

[2] Present address: Chemistry Department, Northwestern University, Evanston (Illinois).