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ENGINEERING'S PART IN THE DEVELOPMENT OF CIVILIZATION[1]

By Dr. DUGALD C. JACKSON

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SINCE the effects of engineering run all through living conditions, our topic is one of great importance to engineers and to engineering education. It is therefore appropriate for to-day's conference to be held here under the patronage of an important college of engineering and an organized society of engineers. The sub-topic ("The Social Significance of Engineering") which was under discussion this afternoon is a broad and pervasive one which means the import of engineering to society. The sub-topic also includes various others by implication. For example, it includes the social influence of engineering, which means the effect through the senses which engineering exerts on society; it includes the social implications of engineering, which means the intimate connections which relate engineering to social organization and social interrelations; and it also includes, among other things, the status or position of engineering as an entity with respect to society-organization as an entity. This evening I will go even more broadly into social relations and deal with the tripartite interrelations of engineering, social organization and civilization.

It is proper to here comment that true civilization grows as a consequence of community contacts among human beings, and intimate community contacts are (broadly speaking) made possible by and are dependent on the fruits of engineering. Such fruits became vaguely manifest many thousands of years ago and have steadily ripened and increased in scope and variety, through those thousands of years, down to the

[1] Evening address delivered as part of Symposium on "The Engineer's Place in Modern Civilization," held at Lehigh University on October 26, 1938, under the joint direction of the University and the Engineers' Club of the Lehigh Valley.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A NEW DISSECTING APPLIANCE

LAST fall I found one of my comparative anatomy students (name withheld by request) using a very simple and convenient device for holding his dogfish open while dissecting. It consisted merely of an elastic band with a bent pin attached to each end, making it possible to attach one hook, carry the band around the dorsal side of the animal and hook it to the cut flap of the body wall on the other side. With a little improvement I am offering the idea to the readers of SCIENCE as a convenient and inexpensive dissecting device.

With a small pair of round-nosed pliers the head end of a common brass pin can be bent into a loop and closed over one end of an elastic band. Half an inch of the pointed end is then bent into a hook and with a second pin at the other end the device is complete. Three or four hooks may be attached to a large elastic band if desired or bands may be tied or looped together. The sketch, Fig. 1, shows how it is made.

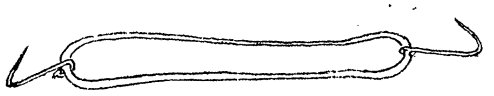

FIG. 1

Pins may be had up to 1½ inches in length or wire from paper clips may be used if large rubber bands are wanted.

The elasticity of rubber makes it particularly useful in holding back the cut flaps of the body wall while working and I like it much better than the chain hooks that are sold for the purpose. It can also be used to hold the body together when the animal is put back into the formalin tub, for if brass pins are used they will not rust.

PHILIP H. POPE

WHITMAN COLLEGE

SATISFACTORY SUBSTITUTE FOR SODA LIME IN RESPIRATION CALORIMETRY

IN a long experience with soda lime as an absorbent for CO_2, in respiration calorimetry, this laboratory never succeeded in permanently solving the practical problem of obtaining this preparation in satisfactory quality, the difficulty having been to get a product of uniformly high efficiency and one in which saturation with CO_2, and the coincident drying of the soda lime, would cause a definite change in color of the material. The results have been much waste of time and of soda lime, uncertainty of mind on the part of the worker and occasionally inaccurate results. This experience has been a common one in other laboratories.

A year ago the author suggested a substitute for soda lime which proves to have very much greater capacity to absorb CO_2, which changes color conspicuously as it comes to be exhausted and which is cheap and reliable.

This preparation is a 40 to 60 mixture of flake sodium hydroxide and granular pumice stone. It is important in the use of this absorbent, in a Schwartz U tube, to fill the hollow of the stopper of the stopcock on the incoming side with wet absorbent cotton.

E. B. FORBES

INSTITUTE OF ANIMAL NUTRITION,
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A METHOD FOR OBTAINING A CONTINUOUS MEASUREMENT OF SOIL MOISTURE UNDER FIELD CONDITIONS

A METHOD has been devised for making *in situ* under field conditions a continuous measurement of soil moisture. It consists of imbedding in the soil a standardized block of $CaSO_4$ (gypsum). The moisture content of this material varies directly with that of the soil. Since the dielectric constant of gypsum is proportional to its moisture content, a measure of the conductivity of the block is a measure of soil moisture. Conductivity determinations are easily made by means of electrodes and a form of the Wheatstone bridge.

This device measures soil moisture ranging from the wilting point to the field capacity or it is really a measure of the available water. It denotes the wilting point accurately. By knowing the wilting point and the available water, the total water content is thereby also known. The method possesses a surprisingly high degree of accuracy.

GEO. J. BOUYOUCOS
A. H. MICK

MICHIGAN AGRICULTURAL
EXPERIMENT STATION

BOOKS RECEIVED

ALLEN, VICTOR T. *This Earth of Ours.* Pp. xvii + 364. 258 figures. Bruce. $3.50.

DANTZIG, TOBIAS. *Number, the Language of Science.* Third edition. Pp. x + 320. Illustrated. Macmillan. $3.00.

DAVY, J. BURTT and A. C. HOYLE, Editors. *Check-Lists of the Forest Trees and Shrubs of the British Empire: No. 4, Draft of First Descriptive Check-List for Ceylon. January, 1939.* Pp. 115. Imperial Forestry Institute, Oxford.

ROLLEFSON, GERHARD K. and MILTON BURTON. *Photochemistry and the Mechanism of Chemical Reactions.* Pp. xiv + 445. 59 figures. Prentice-Hall. $5.75.

Texas Agricultural Experiment Station; Fiftieth Annual Report, 1937. Pp. 321. Agricultural and Mechanical College, College Station.