and with a correspondingly conservative process of inference and generalization, so that intelligence may have really free play to make its fullest contribution to the changing social order.

And in conclusion:

. . . Nor should it be forgotten that many of the highest and purest values in life lie within the area of feelng and emotion. Beauty is not the child of science, and neither its creation or its enjoyment waits upon scientific methods. The world of ethics and religion and spiritual insight is also beholden in part only to science. To impregnate our culture through education with a genuinely scientific spirit should therefore exercise no malign influence on these other integral elements of a civilization.

The second lecture was delivered on December 11, also at the U. S. National Museum, by Dr. H. A. Spoehr, chairman of the Division of Plant Biology of the Carnegie Institution, on "The Nature of Progress in Science." Dr. Spoehr illustrated the methods of scientific research by describing the steps taken in investigating the process whereby green plants under the influence of the sun's rays convert inorganic compounds into substances used by man and contrasted the mode of thought employed in the field of science and that which prevails in the field of social endeavor, saying:

Intrinsically there is no reason why there should be any difference in fundamental development in different fields of human endeavor, such as appear to be in the fields of social activity and those of natural science. They are the products of the same culture, of the same human stock and of the same stage of development. This, however, seems certain, that natural science has been tremendously stimulated by the realization that continuous change must be expected of all things and that such change is not unrelated to past experience.

He emphasized especially the necessity, in attacking any problem, of analyzing the various factors that are involved and of attempting to define these in terms of existing knowledge. To quote Dr. Spoehr:

. . . This is frequently the most difficult and discouraging stage of the scientific approach to a problem and involves a laborious and time-consuming period of fact finding and sifting of data. . . . The first step is frankly to recognize that there is a problem. This in itself involves a large element of intellectual honesty and avoids much haphazard guessing and fumbling opportunism.

Moreover, in speaking of one of the most characteristic and fortunate aspects of the development of scientific thought, Dr. Spoehr said:

The immensity of its problems has been very generally recognized by its adherents. The constitution of matter, the forms of energy, the nature of life are all subjects about which we wish to know more. But science has attacked these problems in a stepwise manner. It does not hope to arrive at ultimate truth by one master move or a single brilliant idea. It has long realized that the development of concepts is a matter of evolutionary development and it has planned its attack accordingly. One small and carefully planned advance has secured a position from which another advance could be made and so on, step by step, the development has been secure and remarkably rapid.

F. F. B.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

ON d-XYLOMETHYLOSE (5-DESOXY-XYLOSE)

OUR laboratory has been engaged for a considerable time in the study of methyloses. In view of a very recent publication by Swan and Evans[1] on the preparation of l-arabinomethylose (l-5, desoxyarabinose), we wish to report on the synthesis of d-xylomethylose (d-5, desoxyxylose). The sugar itself has not yet been obtained in crystalline form. The syrup, however, has the correct composition.

Calculated ..... C 44.75, H 7.5.
Found ..... " 44.52, " 7.5.
$[\alpha]_D^{20} = -2.16°$ (in ethanol).

Of this syrupy sugar three derivatives were obtained, two of which were crystalline.

(1) *Mono-acetone Xylomethylose.*
Specific rotations: $[\alpha]_D = -20.99°$ (water, c, 3.047).
$[\alpha]_D^{24} = -18.22°$ (U. S. P. chloroform, c, 3.046).
Melting point, 69–70°; boiling point, 86–87°/0.2 mm.
Analysis: Calculated ..... C 55.17, H 8.1.
Found ..... " 54.88, " 8.1.

(2) *3-Acetyl Mono-acetone Xylomethylose.*
Specific rotation $[\alpha]_D^{24} = +2.55°$ (U. S. P. chloroform, c, 3.136).
Boiling point, 79–80°/0.2 mm.
Analysis: Calculated C 55.55, H 7.4, CH_3CO, 19.91.
Found ..... " 55.47, " 7.8, " 20.70.

(3) *d-Xylomethylose p-Bromphenylhydrazone.*
Specific rotation, $[\alpha]_D^{20} = -26.05°$ (dry pyridine c, 2.38).
Softens, 65°; melting point 69–70° (with foaming).
Analysis: Calculated ..... C 43.58, H 5.0, N 9.24, Br 26.37.
Found ..... C 43.78, " 5.1, " 9.05, Br 26.21.

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[1] *Jour. Am. Chem. Soc.*, 57: 200, 1935.