the active hydrogen has reverted to the ordinary before meeting the stream of nitrogen. The life of the active gas seems to be not longer than two minutes. This checks very closely with the life of triatomic hydrogen formed by other methods.

These results seem to substantiate the theory of Wendt and Landauer, namely, that triatomic hydrogen ought to be produced wherever atomic hydrogen is evolved. It is reasonable then to expect that a higher per cent. of active hydrogen would be found in the gas evolved from the surface of the metal than in the molecular hydrogen subject to electronic bombardment in a discharge tube. In the former all the hydrogen evolved goes through the atomic state while in the latter case only a very small amount of atomic gas may exist at one time. The discharge would also destroy some of the active variety.

The preliminary results to determine the per cent. of activation are in harmony with this theory. Further work is in progress to determine the quantitative relations of some of the factors involved.

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## SLIDE HOLDERS FOR OVERCOMING A DEFECT IN ATTACHABLE MECHANICAL STAGES[1]

THOSE employing attachable mechanical stages no doubt have encountered, the same as the writer, an unsatisfactory feature in their construction leading to frequent annoyance and delay in examining slides. This relates to the portions of the stage between which the slide is clamped. Instead of resting all but in contact with the stage of the microscope, they frequently lie in a plane sufficiently above the same to permit slides, especially the thinner ones, to become wedged beneath, thus interfering with a free movement of the stage. Stages undoubtedly present a range of variations in this respect. The writer has found the defect present to a certain degree in all stages used by him thus far, belonging to two makes.

The devices or slide holders here described are designed to obviate the difficulty. They are designed for a Spencer stage, but there is no reason why they should not be readily adapted to other makes.

The one shown in Figure 1 was made from No. 20 brass wire. It is a little shorter and somewhat broader than the slide to be carried. The upward projecting loops at *a, b,* and *d* should be tilted inward a little. They serve as supports for the back and right edge of the slide and also prevent the holder from becoming wedged beneath the stage in the same manner as slides. The end of *c* should be bent up very slightly to avoid wedging. The portions of the back of the holder having contact with the mechanical stage should be flattened with a file to give good contact and prevent the holder from slipping up. This holder is very readily made with no more tools than a round and a flat-nosed pair of pliers. The ends of the wire should be joined by being clamped in a thin metal sleeve. The holder should be straightened and made to lie perfectly flat by testing it out on a table or some other plane surface.

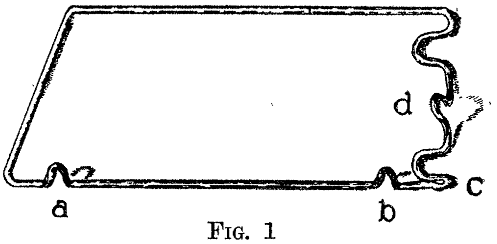

FIG. 1

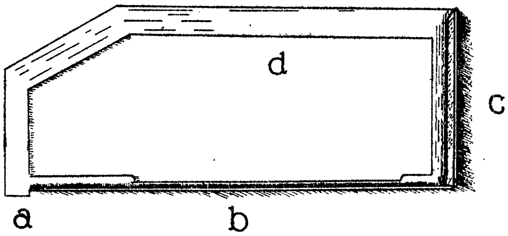

FIG. 2

The design shown in Figure 2 was cut from sheet brass of about the thickness of the above No. 20 wire. Its size is such that the end of the slide is flush with that of the holder and the front edge reaches to *d*. The edges *b* and *c* are first turned up to provide support for the

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[1] From the Department of Animal Pathology of the Rockefeller Institute for Medical Research, Princeton, New Jersey.

back and right edge of the slide. These are then cut down to a height slightly exceeding the thickness of a slide. The edge at the point *a* should not be turned up but permitted to project very slightly beyond the back line, thus furnishing a secure contact with the back of the stage. This holder is more rigid than the first but requires more time and equipment to make it.

The left front end of the holders is formed to give space to the slide clamp.

The use of the holders alters the relation of the slide to the condenser by somewhat less than a millimeter, but this has not been found objectionable for ordinary work.

H. W. Graybill

## THE AMERICAN CHEMICAL SOCIETY

*(Continued)*

### DIVISION OF ORGANIC CHEMISTRY. II.

*The action of ultra violet light upon di-ketones:* C. W. Porter. Diacetyl, $CH_3.CO.CO.CH_3$, when exposed to the radiation of a mercury arc lamp, decomposes with the production of ethane and carbon monoxide. Acetone may be an intermediate product; but acetone, under similar treatment, yields the same decomposition products. Benzil, $C_6H_5.CO.Co.C_6H_5$, in the solid or in the molten state is not decomposed by u. v. l. When vaporized and exposed to u. v. l. it slowly decomposes, forming benzophenone, carbon monoxide and a charred residue. In dry benzene solution benzil is not affected by light. An aqueous solution of benzil, in absence of air, yields benzoic acid, benzaldehyde and benzoin. Benzilic acid is not produced. Solutions of benzil in mixtures of alcohol and water yield the same products. In the presence of oxygen a water-alcohol solution of benzil (2 g. per liter) yields benzoic and salicylic acids. The reaction is completed within twelve hours.

*Motion picture demonstrations of laboratory apparatus:* H. T. Clarke.

*The determination of mucic acid:* E. O. Whittier. Mucic acid, tartaric acid or racemic acid may be determined in acid solution by oxidation with excess of standard potassium permanganate solution at boiling temperature, followed by a back titration with standard oxalic acid and standard permanganate. The relationships between these acids and permanganate are not stoichiometric, due to formation of some formic acid. Oxalic acid and mucic acid may be precipitated together quantitatively as calcium salts, dissolved and determined in the presence of each other, the oxalic acid being titrated at 50°C., the mucic acid at 100°C.

*Dipropargyl methylene ether:* Herbert H. Guest. This communication is a preliminary description of the preparation and properties of the methal of propargyl alcohol, and the attempt, so far unsuccessful, to utilize this acetal in the synthesis of the higher acetylenic alcohols of the type $RC = C—CH_2OH$. Bis (2.3 dibromopropyl) methylene ether (A) ($(CH_2Br—CHBr—CH_2O)_2—CH_2$ viscous oil $b_{10mm.}$ 220° was prepared by the action of a 2 per cent. HCl solution of 2.3 dibromohydrin on paraformaldehyde, and also by the use of anhydrous $FeCl_3$ and $CaCl_2$, respectively, as catalysts. Bis (2 bromoallyl) methylene ether (B) ($(CH_2 = CBrCH_2O)_2CH_2$, oil $b_{10mm.}$ 135—40°C, from A by the action of finely powdered KOH in $Et_2O$ solution. Di propargyl methylene ether (C), ($(CH = C—CH_2O)_2—CH_2$, oil $b_{10mm.}$ 75—80°C. was obtained in 50 per cent. yield from either A or B by heating with 4 mols. KOH dissolved in 4 vols. EtOH at 100°C. C reacts with Et Mg Br with evolution of $C_2H_6$ and formation of an oil insoluble in $Et_2O$. It gives an insoluble Ag salt ($(AgC = C—CH_2O)_2CH_2$ which explodes on heating and reacts very slowly with Na. These metallic derivatives of C were treated under varying conditions with alkyl halide, *e.g.*, $C_4H_9Br$ in the attempt to form $(C_4H_9C = C—CH_2O)_2CH_2$, but without any evidence of this reaction taking place.

*The reaction between aryl esters of sulfonic acids and organomagnesium halides:* Charles H. Meyers and Henry Gilman. In connection with a study of methods for the introduction of aryl groups, an investigation is being made of the reaction between aryl esters of various acids, organic and inorganic, and organomagnesium halides. It has been found that when aryl esters of aromatic sulfonic acids are used the chief products are sulfones.

*Secondary aliphatic—aromatic arsines, $C_6H_5$-AsRH:* C. Shattuck Palmer. This new series of arsines has been prepared by the action of alkyl halides on an alcoholic solution of the sodium derivative of phenylarsine, $C_6H_5AsNHa$. The products are colorless oils, which fume strongly in the air, but are not spontaneously inflammable. They are oxidized by air to a mixture of arsine oxide, $C_6H_5R\ As—O—AsRC_6H_5$, and arsinic acid, $C_6H_5RAsO_2H$, in which the latter constituent is present in much the larger pro-