recommend such a combination except for cases where the amount of available urine is small.

In order to obtain reliable results by this method it is necessary to observe certain precautions.

No time should be wasted after the alkali has been added to the standardized iodine solution because the potassium hypoiodite in the latter changes gradually to potassium iodate which is not available for the formation of iodoform. The alkaline iodine solution must not touch rubber. The absorption tube must therefore not consist of two tubes joined by a rubber stopper as I have heretofore used them in ammonia determinations but must be connected by the glass blower. Eimer and Amend have made me some excellent tubes suitable for this purpose. Finally no one should attempt to use the method on unknown solutions or urines until he has satisfied himself that he can get accurate figures with known acetone solutions. Such solutions can be made and standardized in a few minutes by direct titration with the iodine and thiosulphate solutions. Ten c.c. of pure acetone diluted up to one-fourth of a liter and twenty c.c. of this solution diluted to half a liter makes a suitable test solution of acetone.

The addition of an excess of sodium chloride as described above is important and should not be omitted. Acetone is insoluble or at least very little soluble in saturated sodium chloride solutions.

I am now investigating the acetone and diacetic acid contents of diabetic urines by the help of this method. Most such urines even when rich in diacetic acid contain surprisingly little acetone.

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On magnesium and contractile tissues.

By **PERCY G. STILES.**

[*From the Biological Department of the Massachusetts Institute of Technology.*]

The experiments reported extend and confirm the findings of Meltzer and Auer. Magnesium is found to have a direct inhibitory effect on automatic tissue (plain and cardiac muscle) and a depressing effect upon the irritability of the non-automatic striped muscle.

This influence is slow to wear off after the application but seems generally to favor the later activity of the muscle — in other words, it is conserving in character. Magnesium appears to be the element to which we may look with most reason when seeking an agent that shall suspend katabolic changes without permanently damaging living structures. It is clearly less hurtful than potassium in like concentration. Comparison of magnesium with potassium shows that the former is not so distinctly the antagonist of calcium as is the latter. It also seems probable that the power to mediate vagus inhibition which Howell fixed upon potassium is a unique property of that element and not shared by magnesium.

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On the extracellular and intracellular venom activators, with special reference to lecithin, fatty acids and their compounds.

By **HIDEYO NOGUCHI.**

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Calcium chloride stops venom hemolysis caused in the presence of oleic acid or soluble oleate soaps, but not that induced by lecithin. In the majority of serums, including those of man, horse, guinea pig, rabbit, cat, rat, hen, pigeon and goose, there exist greater or less amounts of venom activators, and they can be completely inactivated by calcium chloride. Judging from the fact that lecithin in an available form is not affected by this salt it is not likely that these serums owe their venom activating property to lecithin. As these activators are also extractable with ether they probably are nothing else than certain fatty acids, and, probably, soluble soaps. Dog's serum is an exception to this, and contains, besides fatty acids and soaps, also activators of the nature of lecithin, for calcium chloride fails to stop completely its venom activating property. This lecithin-like activator is not extractable with ether, but is precipitable by half saturation with ammonium sulphate together with the serumglobulin. While the serum globulin falls out as a precipitate during dialysis this activator remains in the solution, from which a large percentage of lecithin is extractable with warm alcohol. In many respects this appears to be a protein compound of lecithin and possibly is identical with