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On a test for protein compounds

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2. Coagulated white of egg, treated with dilute sulphuric acid, disengages a gas which sensibly discolours lead paper.

3. Coagulated white of egg, brought into contact with a solution of acetate of lead, becomes of a light brownish tint.

The yolk of egg, under the circumstances above described, does not act upon the salts of lead.

Thus the discoloration of silver, by the action of eggs which have been heated, is owing to the reaction of the sulphuret, formed by the combination of the sulphur of the albumen on the soda which it contains.—*Journ. de Chém. et de Pharm.*, Novembre 1850.

ON A TEST FOR PROTEIN COMPOUNDS. BY M. E. MILLON.

The very acid solution which is obtained by dissolving mercury in its weight of nitric acid containing $4\frac{1}{2}$ equivalents of water, is an extremely sensible reagent for all albuminoid substances, and for a considerable number of secondary products which are connected with it.

This nitromercurial solution communicates a red colour of considerable intensity to these several substances, and it is easy thus to ascertain the presence of 1-10,000dth of albumen, and even a smaller quantity.

To give a direct idea of the delicacy of this reagent, and perhaps of the advantage which may be taken of it in studying the organism of vegetables, the author states that cotton, various kinds of starch, and gum-arabic, when put into contact with it, assume a very distinct rose tint. Urines are almost immediately coloured rose-red; after the nitromercurial solution has been added to them, and the mixture having been heated, the urea is destroyed.

The albumen of the blood and of vegetables, fibrin, casein, gluten, legumin, silk, wool, feathers, horn, the epidermis, gelatin, chondrin, protein, crystallin, the cornea, &c., are rendered of a more or less intense red colour by this solution.

When protein becomes soluble by the prolonged action of alkaline solutions, or by that of sulphuric acid, the same colour is always produced, but no insoluble matter is obtained; the solution becomes of a deep red colour, without yielding any precipitate.

Xanthoproteic acid, the chlorites of protein, and the oxides of protein derived from them, separate from the preceding products; they are not at all coloured red. This reagent exhibits differences which it is very interesting to examine. The author has already ascertained, that, by the action of chlorine upon albumen till the gas ceases to be absorbed, there are formed no less than three substances very distinct from each other.

The nitromercurial solution is prepared by adding to the metal an equal weight of nitric acid, containing $4\frac{1}{2}$ equivalents of water; reaction takes place rapidly in the cold; when it has become moderate, the solution is to be very gently heated till the metal is completely dissolved; at this point there are to be added to one volume of the mercurial solution two volumes of water. After some hours the liquid portion is to be decanted from the crystals of nitrate and nitrite of mercury. This solution reacts in the cold on albuminoid

substances; but the reaction is not complete below 60° to 70° Cent.; it is even proper to boil the mixture. Long-continued contact of excess of the reagent does not alter the red matter. The author has kept for more than twelve months strongly reddened albumen in contact with excess of the mercurial solution.

It is to be observed that the reacting power does not reside either in the proto- or pernitrate of mercury, nor even in a mixture of them. It is requisite that the solution which contains these two salts should have nitrous acid added to it; till this is done, no colour is produced. Pure pernitrate of mercury, saturated with nitrous acid, reacts sensibly, but much less than the mixture of the proto- and persalts saturated with the same nitrous acid. Thus the simplest method of preparing this solution consists in treating mercury with nitric acid in the method already described.—*Ann. de Chim. et de Phys.*, Août 1850.

METEOROLOGICAL OBSERVATIONS FOR OCT. 1850.

Chiswick.—October 1. Fine: cloudy: clear. 2. Very fine. 3. Slight rain. 4, 5. Foggy: very fine. 6. Foggy: very fine: rain. 7. Boisterous. 8. Clear: fine. 9. Slight fog: very fine. 10. Clear: very fine: rain. 11. Windy: stormy showers: clear. 12. Clear: very fine. 13. Overcast. 14, 15. Exceedingly fine: sharp frost at night. 16. Clear and fine. 17. Very fine. 18. Foggy: very fine. 19. Overcast: fine. 20. Fine. 21. Fine: clear and cold. 22. Clear: dense clouds: overcast. 23. Heavy rain. 24. Densely overcast: rain. 25. Cloudy. 26. Clear: cloudy and fine: clear and frosty at night. 27. Clear: fine: rain. 28. Rain: fine: clear. 29. Clear and fine: sharp frost. 30. Frosty: rain: clear. 31. Overcast: fine.

Mean temperature of the month ..... 44°·32
Mean temperature of Oct. 1849 ..... 49 ·55
Mean temperature of Oct. for the last twenty-four years . 50 ·51
Average amount of rain in Oct. ..... 2·67 inches.

Boston.—Oct. 1, 2. Fine. 3, 4. Cloudy. 5. Fine. 6. Fine: rain P.M. 7. Cloudy: rain early A.M. 8. Cloudy. 9, 10. Fine: rain P.M. 11. Cloudy: rain A.M. and P.M. 12. Fine. 13, 14. Cloudy. 15, 16. Fine. 17. Cloudy. 18. Fine. 19, 20. Cloudy. 21. Cloudy: rain early A.M. 22. Cloudy. 23. Fine: rain A.M. and P.M. 24—26. Cloudy: rain A.M. and P.M. 27. Fine: rain P.M. 28. Fine: rain early A.M. 29. Fine. 30. Cloudy. 31. Cloudy: rain early A.M.

Applegarth Manse, Dumfries-shire.—Oct. 1. Fair, but unsettled-looking. 2. Fair, but dull and cloudy. 3. Drizzling greater part of the day. 4. Heavy showers P.M. 5. Fog A.M.: hail: rain P.M. 6. Fog A.M.: heavy rain P.M. 7. High wind: heavy rain. 8. Fair, but cloudy. 9. Slight hail: light rain P.M. 10. Fair and frosty: shower P.M. 11. Fair and cold. 12. Fair and cold: frost A.M. 13. Moist and drizzly. 14. Slight showers. 15. Frost: high wind P.M. 16. Rainy, but slightly so. 17. Slight showers: cleared P.M. 18. Cloudy all day. 19. Slight showers. 20. Clear and fine. 21. Frost A.M.: shower P.M. 22. Frost severe: rain P.M. 23. Frost still: shower. 24. Frost severe. 25. Raw: dull: slight shower. 26. Frost hard: fair all day. 27. Frost very hard: thermometer 27°: shower P.M. 28. Thaw: fine: clear. 29. Frost again: fine and clear. 30. Rain A.M.: moist all day. 31. Fair and fine throughout.

Mean temperature of the month ..... 44°·2
Mean temperature of Oct. 1849 ..... 44 ·0
Mean temperature of Oct. for the last twenty-eight years ... 46 ·0
Average rain in Oct. for twenty-three years ..... 3·50 inches.

Sandwick Manse, Orkney.—Oct. 1. Clear: dry: aurora. 2, 3. Fine: aurora. 4. Fine. 5. Fine: showers: aurora. 6. Fine: solar halo. 7. Rain. 8. Cloudy: showers. 9. Showers: drying. 10. Showers: sleet-showers. 11. Bright: fine. 12, 13. Drizzle: showers. 14. Showers: sleet-showers. 15. Bright: rain. 16. Rain. 17. Rain: cloudy. 18. Rain. 19. Bright: cloudy. 20. Bright: clear. 21. Clear. 22. Cloudy: rain. 23. Showers. 24. Showers: clear. 25. Clear: showers. 26. Clear: frost: fine: aurora. 27. Cloudy: rain: aurora. 28. Bright: clear: aurora. 29. Sleet-showers: fine: aurora. 30. Rain: showers. 31. Bright.