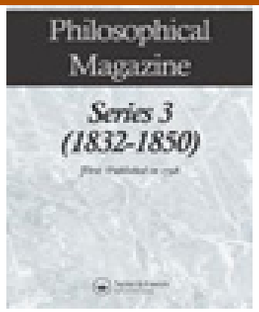

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Preparation of ferrocyanic acid

M. Posselt

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When sufficient chlorine has been added to decompose the whole of the alkaline bromide, the paper immersed is not immediately coloured, for then the iodine exists in the liquor in the state of bromide, and no longer acts upon the starch; but this remarkable circumstance occurs, that the paper being withdrawn from the liquor and exposed to the air, the moistened part assumes a reddish tint in about two minutes, then becomes violet, and afterwards blue; the same reaction occurs, but in a longer time, when the starched paper is left to macerate in the liquor.

This effect, unquestionably owing to the decomposition of the bromide of iodine by the organic matter of the paper, or perhaps even of the starch itself, admits of detecting minute quantities of iodine in the alkaline bromides.—*Journal de Chim. Médicale*, Septembre 1842.

PREPARATION OF FERROCYANIC ACID. BY M. POSSELT.

This acid, now sometimes also termed hydroferrocyanic acid, was discovered by Porret, and called by him ferrochyazic acid. According to M.Posselt the following is an improved process for obtaining it:—agitate with æther a concentrated aqueous solution of ferrocyanic acid as obtained by the decomposition of ferrocyanide of lead by means of sulphuric or hydrosulphuric acid, the acid separates immediately and may be obtained by filtration; this remarkable separation of the acid from the water which holds it in solution, requires but little æther. If the solution is moderately concentrated, the whole forms a thick mass by agitation, and after some time the ferrocyanic acid suspended in the æther, separates from the water saturated with æther, and swims on the surface. The water is to be removed by a pipette; the thick mass is to be put on a filter and washed repeatedly with a mixture of alcohol and æther, containing a considerable portion of the latter; it is then to be passed between folds of absorbent paper to remove the moisture, and afterwards to be perfectly dried over sulphuric acid in the air-pump.

In order to avoid preparing ferrocyanide of lead and the aqueous solution of ferrocyanic acid, a concentrated solution of ferrocyanide of potassium may be prepared in boiled water, and it is to be allowed to cool, entirely excluded from the air; it is then to be mixed with an excess of hydrochloric acid, also deprived of air, and this mixture is to be shaken with æther in the manner described. The acid separates in the same manner, and is to be dissolved in alcohol, to which a little sulphuric acid is to be added to combine with the potash which it may still contain; the liquor is to be filtered if it is not clear, and this alcoholic solution is to be agitated with æther; this again separates the acid, which is to be dried as before described.

This substance possesses all the properties of an acid, and presents a complete analogy with other hydracids. It has a very sour taste, an acid reaction, decomposing the carbonates with effervescence; it also decomposes with the greatest facility the acetates, tartrates and

even the oxalates. It does not when cold dissolve binoxide of mercury; but if it be heated the acid is decomposed into hydrocyanic acid, which forms a cyanide with the mercury of the binoxide, and into cyanide of iron, which is additionally oxidized at the expense of a part of the binoxide of mercury, and metallic mercury separates.

The ferrocyanic acid prepared by the process described is in the state of a white powder, frequently with a slight blue or yellow tint. When it is perfectly dry it may be long exposed to the air without alteration, when moist the decomposition takes place more rapidly; the acid becomes gradually blue, and is slowly and totally converted into Prussian blue.

It may be long exposed in a covered platina crucible to a temperature of 212°, and excluded from the air, without losing weight or suffering any sensible change; eventually, however, it is decomposed under these circumstances.

When it is more strongly heated, hydrocyanic acid is disengaged and cyanide of iron remains, which is oxidized. If it be heated in a current of carbonic acid gas, and the temperature be not raised above 212°, hydrocyanic acid is evolved and white cyanide of iron is left, and this decomposes also at a temperature somewhat above 212°. It is, as is well known, very soluble in water, and the solution submitted to ebullition in contact with air becomes blue; but without the presence of air it deposits, on the contrary, white cyanide of iron.

Ferrocyanic acid is even more soluble in alcohol than in water. It forms a syrupy, transparent solution, which decomposes either by long exposure to the air or ebullition. This solution under the air-pump, yields mammillated hard crystals of a yellow colour.

The acid obtained as described is anhydrous, not losing, as already mentioned, any weight at a temperature of 212°. Two analyses gave the following results as the composition of this acid:—

	I.	II.	Calculated.
Cyanogen	72·71	73·33	73·09
Hydrogen	1·99	2·27	1·84
Iron.....	25·22	25·08	25·06
	99·92	100·68	99·99

Journ. de Pharm. et de Chimie, Août 1842.

PREPARATION OF FERRIDCYANIDE OF POTASSIUM.

M. Posselt remarks that it is well known with what facility an excess of chlorine, when passed through a solution of ferrocyanide of potassium, decomposes the ferridcyanide of potassium as it is formed, and the difficulty which exists in completely separating the green substance which is then produced, because it readily passes through the filter. It is only by repeated crystallizations that the crystals are completely freed from it, and these operations are always attended with loss.

The following process is stated by M. Posselt to give pure and very fine crystals at once:—Pass chlorine gas through a very dilute solution of ferrocyanide of potassium, and evaporate it when the

oxidation is complete, and add to the boiling liquor, when it is near its crystallizing point, a few drops of solution of potash; the green substance is then decomposed, and flocks of peroxide of iron separate. It is very easy to observe the moment at which the object is attained, and care must be taken not to add too much potash, because an excess of it would convert the ferridcyanide of potassium into ferrocyanide. The solution is to be filtered hot to separate the peroxide of iron; it possesses a deep purplish red colour, is to be cooled very slowly, and then fine crystals of the salt are obtained. —*Ibid.*

OBITUARY.

We record with much regret the decease of our highly distinguished correspondent Mr. Ivory, Fellow of the Royal Society, and Member of the Institute of France, who died at Hampstead on the 21st of September, aged 77 :—Also the death of our much respected and venerable friend Mr. Peter Ewart (an occasional contributor to our Journal), occasioned by an accident in the proving of a chain cable, to which he was attending in the discharge of his duties at Woolwich.

METEOROLOGICAL OBSERVATIONS FOR AUGUST 1842.

Chiswick.—August 1. Overcast: very fine. 2. Sultry. 3. Sultry: distant thunder. 4. Sultry: high temperature maintained day and night. 5. Cloudy and fine. 6. Cloudy: rain. 7—9. Clear, hot and dry. 10. Sultry: excessively hot and dry: heavy thunder-storm at night, with rain in torrents. 11. Cloudy: clear and fine. 12. Clear and fine throughout. 13. Overcast: clear and fine. 14. Sultry. 15. Cloudless and hot. 16. Hot and dry. 17. Dry easterly haze: very hot. 18. Excessively hot and sultry: lightning in the evening. 19, 20. Cloudy: fine. 21. Very fine. 22. Hot and dry, with easterly wind: lightning. 23. Cloudless, hot and dry. 24. Hot and dry: lightning, distant thunder, with wind and rain at night. 25. Overcast: heavy thunder-showers in the evening. 26. Hazy: sultry. 27. Cloudy and fine. 28. Rain: cloudy and fine. 29. Heavy thunder-showers early A.M.: violent thunder-storm commenced four P.M., with very heavy rain: clear at night. 30. Hazy. 31. Clear and fine.—Mean temperature of the month 4° above the average.

Boston.—Aug. 1—3. Cloudy. 4. Fine. 5. Cloudy. 6. Rain. 7—9. Fine. 10. Fine: rain, with thunder and lightning P.M.: thermometer 85° three o'clock. 11. Fine. 12. Cloudy. 13. Cloudy: thermometer 79° two o'clock P.M. 14. Cloudy: thermometer 80° two o'clock P.M. 15. Fine: thermometer 80° eleven o'clock A.M. 16. Foggy. 17. Cloudy. 18. Fine: thermometer 83° two o'clock P.M. 19. Cloudy. 20. Fine. 21, 22. Cloudy. 23. Fine: thermometer 82° two o'clock P.M. 24. Cloudy: rain with thunder and lightning at night 25—28. Cloudy. 29. Cloudy: rain A.M. 30. Fine: rain P.M. 31. Fine.

Sandwick Manse, Orkney.—Aug. 1, 2. Clear. 3. Cloudy: damp. 4. Rain: showers. 5. Showers. 6. Drops: clear. 7. Bright: showers. 8. Clear: rain. 9. Clear: cloudy. 10. Damp: thunder: rain. 11. Showers: rain. 12. Showers: cloudy. 13. Bright: rain. 14. Drizzle: cloudy. 15. Drizzle: rain. 16. Clear. 17, 18. Clear: cloudy. 19. Fog: thunder. 20. Cloudy. 21. Showers: clear. 22. Bright: clear. 23. Rain. 24. Clear. 25. Clear: cloudy. 26—28. Clear. 29. Clear: cloudy. 30. Rain: clear. 31. Clear.

Applegarth Manse, Dumfries-shire.—Aug. 1—3. Very fine. 4. Showers. 5. Showery. 6. Fine. 7. Slight showers. 8. Rain P.M. 9. Showers. 10. Heavy rain and thunder. 11. Fair and bracing. 12. Cloudy and drizzly. 13. Fair and fine. 14—16. Very fine. 17, 18. Very fine: very hot. 19. Showers. 20. Heavy showers. 21, 22. Fair and bracing. 23. Fine: one shower: thunder. 24. Wet A.M.: cleared up. 25—27. Fair and fine. 28. Fair and fine, but hazy. 29—31. Slight showers.