

Mr. Carty on a Specimen of diseased Wheat. 199

November 4, 1844.—The President in the Chair.

The following presents were announced to the Society's Library and Museum since the last Meeting:—

"Lectures on Agricultural Chemistry and Geology," by James F. W. Johnston, M.A., F.R.S., Parts 2, 3 and 4, from the author.

Johnston's "Elements of Agricultural Chemistry and Geology," from the author.

"Beiträge zur Physikalischen Chemie," von C. F. Schönbein, Professor of Chemistry in the University of Basle, from the author.

"On Isomeric Transmutation," by G. Wilson, M.D., from the author.

"Journal of the Franklin Institute," No. 1, vol. viii., from the editor.

"An Inaugural Lecture on Chemistry," read at Queen's College, Birmingham, October 7, 1844, by Thomas G. Tilley, Ph.D., from the author.

"First Report of the Health of Towns' Commission," Parts 1 and 2, vol. i.

Four Pictures taken by his Energiatype process, from Robert Hunt, Esq.

A Specimen of Butter, supposed to be 300 years old, discovered in a Bog near Downpatrick in June 1844, from John F. Hodges, M.D.

Numerous Specimens of Organic Compounds and Salts, from Frederick C. Calvert, Esq.

A Specimen of Tartrate of Antimony and Potash in large Crystals, from M. Scanlan, Esq.

Remigius Fresenius, M.D., was elected a Foreign Member of the Society; and James Sheridan Muspratt, Ph.D., Robert Hunt, Esq., and E. H. Durden, Esq., were elected Members.

Mr. Reekes exhibited a Specimen of Etching on Steel by Galvanic Electricity, as described by Mr. Pring.

The following communications were then read:—

A Letter from Mr. Charles F. Burnard, describing a Modification of the Apparatus for Estimating the Carbonic Acid in Carbonated Alkalies, &c.

"On the Analysis of the Mineral Water of Bonnington, near Leith, Scotland," by E. G. Schweitzer, Esq., was commenced.

CXV. Examination of a Specimen of diseased Wheat.

By Mr. J. CARTY.

MY attention was lately directed by Mr. Briggs, of Overton, near Wakefield in Yorkshire, to a kind of disease which he considers to be burnt ear, and analogous to smut, which had attacked some wheat growing on his land. The stalk of the wheat was of the usual height and strength, and the ears seemed externally healthy; but on breaking into the grain it was found to be filled with a black powder, instead of the white, thick juicy substance found in healthy wheat at the

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same period of growth. It was a thick-set red wheat, sown in December on a light and good turnip soil, to which an unusually large quantity of guano (4 cwt. per acre) had been applied as a manure. About one-tenth of the whole quantity was diseased, while several other kinds of wheat, sown in the same field, but to which no guano had been applied, were perfectly sound.

The ears had a much greener appearance than the same kind of wheat in a healthy condition, and emitted a very disagreeable smell, which is not easily described.

On close examination the grains were found filled with a black unctuous powder in place of the milky pulp of the healthy seed. This powder was separated in quantity by bruising the ears in a mortar and sifting through fine muslin, and submitted to chemical examination. It had the same disagreeable smell as the ears, but stronger; it was oily to the touch, and heavier than alcohol and water. When heated in the air it burned with a bright flame, leaving a residue of charcoal, and eventually a trace of white ash. When heated in a tube, it gave off water, empyreumatic and oily matters, and a little ammonia. It was insoluble in a solution of potash and in hydrochloric acid; nitric acid made it yellow, and hot sulphuric acid dissolved it with purplish-red colour. Boiled with water, it yielded merely a little gum and bitter brown extractive matter, the greater part remaining undissolved. Alcohol extracted a fat oil, and a waxy or resinous matter; the undissolved portion appeared to consist of lignin mixed with charcoal. The black powder greedily absorbed oxygen from the air when in a moistened condition, giving rise to carbonic acid.

A carefully conducted proximate analysis of the substance led to the following results:—

Wax or resin with fixed oil . . .	7.0
Gum and extractive matter, &c. . .	7.8
Lignin and charcoal	82.7
Ashes	2.5
	<hr/> 100.

The ash consisted chiefly of earthy phosphates and silicate of potash.