

March 5, 1885.

THE TREASURER in the Chair.

The Chairman mentioned that Professor Fowler, President of Corpus Christi College, Oxford, had, on the part of the subscribers to the Henry Smith Memorial, offered to the Society a replica in marble of the bust of the lamented H. Smith; that the Council had accepted the offer, and that the bust could be seen in the anteroom.

The thanks of the Society were given to the donors.

The Presents received were laid on the table, and thanks ordered for them.

In pursuance of the Statutes, the names of the Candidates recommended for election into the Society were read from the Chair, as follows:—

Atkinson, Prof. Edmund, Ph.D.	Galloway, William.
Baird, Major A. W., R.E.	Goodeve, Professor Thomas Minchin, M.A.
Bidwell, Shelford, M.A.	Hicks, Henry, M.D.
Boys, Charles Vernon, A.R.S.M.	Hicks, Professor W. M., M.A.
Buchanan, John Young, M.A.	Japp, F. R., Ph.D.
Burdett, Henry Charles, F.L.S.	Jervois, Sir William Francis
Buzzard, Thomas, M.D.	Drummond, Lieut.-Gen. R.E.
Carpenter, Philip Herbert, D.Sc.	Kennedy, Professor Alexander
Cash, J. Theodore, M.D.	Blackie, M.I.C.E.
Clark, Sir Andrew, Bart., M.D.	Latham, Peter Wallwork, M.D.
Claudet, Frederic.	Lewis, Timothy Richards, M.B.,
Common, A. Ainslie, F.R.A.S.	Surgeon-Major A.M.D.
Conroy, Sir John, Bart., M.A.	Lyster, George Fosbery, M.I.C.E.
Creak, Ettrick William, Staff	MacGillivray, Paul Howard, M.A.
Commander R.N.	Manson, Patrick, M.D.
Cunningham, Allan Joseph Champ-	Marshall, Prof. A. Milnes, M.D.
neys, Major R.E.	Martin, Prof. Henry Newell, D.Sc.
Davis, James William, F.G.S.	Maw, George, F.L.S.
Divers, Professor Edward, M.D.	Meldola, Raphael, F.R.A.S.
Douglass, Sir James Nicholas.	Milne, Professor John, F.G.S.
Ewart, Professor J. Cossar, M.D.	Moxon, Walter, M.D.
Festing, Edward Robert, Colonel	Muir, M. M. Pattison, M.A.
R.E.	Nobel, Alfred.
Forbes, Professor George, M.A.	

O'Sullivan, Cornelius.	Tidy, Professor Charles Meymott, M.B.
Perry, Professor John.	Tonge, Morris, M.D.
Pickard-Cambridge, Rev. Octavius, M.A.	Tribe, Alfred, F.C.S.
Pogson, Norman, C.I.E.	Ulrich, Professor George Henry Frederic, F.G.S.
Pritchard, Urban, M.D.	Unwin, Professor W. Cawthorne, B.Sc.
Pye-Smith, Philip H., M.D.	Vines, Sidney H., D.Sc.
Ringer, Professor Sydney, M.D.	Warington, Robert, F.C.S.
Rodwell, George F., F.R.A.S.	Wharton, William James Lloyd, Captain R.N.
Sanders, Alfred, F.L.S.	
Snelus, George James, F.C.S.	
Stevenson, Thomas, M.D.	
Tate, Professor Ralph, F.G.S.	

The following Papers were read:—

- I. "On the Extraction of Uric Acid Crystals from the Green Gland of *Astacus fluviatilis*." By A. B. GRIFFITHS, Ph.D., F.C.S., Lecturer on Chemistry and Physics, Technical College, Manchester. Communicated by Sir RICHARD OWEN, K.C.B., F.R.S., D.C.L. Received February 6, 1885.

The so-called green glands of the fresh water crayfish lie in the cavity of the head below the front part of the cardiac division of the stomach. The openings of these organs are to be found at the base of each antenna. The organ carefully dissected out of the head of a freshly killed crayfish is seen to consist of two principal parts: an uppermost one which is a transparent and delicate sac-like body filled with a clear fluid, and an underlying portion of a green colour, glandular in appearance, containing granular cells.

In 1848 Professors Will and Gorup-Besanez (see "München Gelehrte Anzeigen," No. 233, 1848) said that this organ probably contained guanin, and from this supposition this green gland has been considered as a secretory organ.

The secretion of this gland is acid to litmus-paper, and on treating the secretions obtained from a large number of green glands with hot dilute sodium hydrate solution, and then adding hydrochloric acid, a slight flaky precipitate was obtained, and on examining these flakes under the microscope they were seen to consist of small crystals in rhombic plates. On treating the secretion with alcohol, these rhombic crystals are deposited; they are soluble in boiling water.

When these crystals are precipitated from the secretion and moistened with dilute nitric acid, alloxanthine ($C_8H_4N_4O_7$) is produced, and on heating this body gently with ammonia, reddish-purple *murexide*, or the "ammonium purpurate" ($C_8H_4(NH_4)N_5O_6$) of Prout

is obtained. This murexide so obtained crystallises in prisms, which by reflected light exhibit a splendid green metallic lustre, and by transmitted light are a deep reddish-purple.

On running in a solution of potassium hydrate upon a microscopic slide containing some of these murexide crystals they were dissolved. From these reactions it is evident that these rhombic crystals are deposits of *uric acid* ($C_5H_4N_4O_3$) from the secretion of the green gland of the crayfish.

On examining the uric acid crystals (deposited from the secretion by means of alcohol) under the microscope, they are seen to be covered more or less with a very thin and superficial coating of some brown colouring matter, probably some pigment.

But, beyond this discovery of uric acid in the secretion of the green gland of *Astacus fluviatilis*, I have found that on treating the secretion with boiling hydrochloric acid a solution was obtained containing in suspension flaky uric acid which was filtered off, and on allowing the filtrate to cool a few crystals (guanine hydrochlorate) separate which are soluble in hot water, and on the addition of ammonia to this hot aqueous solution a precipitate is obtained of *guanine* ($C_5H_5N_5O$), the precipitated guanine being made up of numbers of minute microscopic crystals. On running in warm dilute nitric acid (upon the slide) these crystals disappeared, but were precipitated again on adding a drop of silver nitrate in the form of the nitrate of silver compound ($C_5H_5N_5O, AgNO_3$) of guanine.

I think this investigation proves that this so-called green gland of *Astacus fluviatilis* is a true urinary organ, its secretion containing uric acid and very small traces of the base guanine: the green gland is, therefore, physiologically the kidney of the animal.

II. "On the Atomic Weight of Glucinum (Beryllium). Second Paper." By T. S. HUMPHREY, Ph.D., B.Sc., Professor of Chemistry in the University College of Wales, Aberystwyth. Communicated by Prof. E. FRANKLAND, F.R.S. Received February 27, 1885.

(Abstract.)

This paper is a continuation of one previously communicated to the Royal Society.* The author has prepared a sample of metallic glucinum, having the composition—

* "Proc. Roy. Soc.," vol. 35, p. 137.