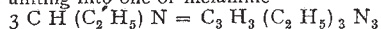
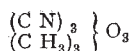


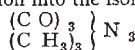
Chloride of ethylidene and ammonia produce collidene. Professor Hofmann, in continuance of former researches, has transformed methylated and amylated sulpho-ureas into trimethylated and triamylated melamines by the action of oxide of mercury. This reaction however is but secondary, the first products being substituted (neutral) cyanamides, which by repeated evaporation become suddenly transformed into alealine melamines. The ethylic, and the phenylic sulpho-ureas behave in the same manner. The transformation consists in three molecules of cyanamide uniting into one of melamine—



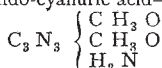
The same chemist, in conjunction with Dr. Olshausen, publishes researches on polymeric modifications of cyanetholine, and its homologues. These researches are connected with the foregoing paper by the following consideration. A certain analogy between ethylcyanamide $\text{C N (C}_2\text{H}_5\text{) H N}$ and cyanetholine— $\text{C N (C}_2\text{H}_5\text{) O}$ allows us to predict that the latter will treble, in the same way that the former does. This has been found to be the case. By passing chloride of cyanogen into methylate of sodium, the cyanetholine of the methylic series (an oil) forms at the same time, with crystals of the formula—



cyanurate of methyl. These crystals fuse at 134° but are transformed by distillation into the isomeric compound—



fusing at 175° . The former treated with potash yields cyanuric acid, and methylic alcohol; the latter carbonic acid and methylamine. The former, treated with ammonia, forms the dimethyl ether of amido-cyanuric acid—



The same compound is formed (together with cyanurate of methyl) when chloride of cyanogen is passed into methylate of sodium, and may be separated from the cyanurate, by the action of ether, in which it is insoluble. The circumstance that the corresponding ethyl-compound dissolves in ether, renders the investigation of the transformation of cyanetholine more difficult. Analogous results have been obtained when chloride of cyanogen was passed into amylate and phenylate of sodium.

Professor Rammelsberg, in a paper on the phosphates of thallium, stated that isomorphism exists between

1. $\text{H Tl}_2 \text{ PO}_4 \text{ H}_2 \text{ O}$ and $\text{H}_2 \text{ Na PO}_4 \text{ H}_2 \text{ O}$
2. $\text{H}_2 \text{ Tl PO}_4$ and $\text{H (NH}_4\text{)}_2 \text{ PO}_4$
3. $\text{H Tl}_2 \text{ PO}_4$ and $\text{H}_2 \text{ (NH}_4\text{)}_2 \text{ PO}_4$

This he considers as the first proof of the isomorphism of hydrogen with monatomic metals. The same is stated of a phosphoborate of magnesium found in the saltlayers of Liineburg, and analysed by Nöllner, who gives it the formula $\text{Mg B}_2 \text{ O}_4 \cdot 2 \text{ H Mg PO}_4$. De Koninck and Marquardt have investigated Bryonicine, one of the two bases contained in the roots of *Bryonia dioica*, and give it the formula $\text{C}_{10} \text{ H}_7 \text{ N O}_2$. P. Marquardt described polybromides of tetraethyl ammonium. Dr. Coninck described modifications of Bunsen's sucking apparatus for filtering, and of Mitscherlich's potash bulbs for combustion. M. Ballo recommends the preparation of binitronaphthol by oxidising naphthylamin with nitric acid. By the action of monobrominated naphthalin on rosaniline, he has produced a violet colouring matter, not yet analysed. W. Doer has prepared azonaphthaline by heating nitronaphthaline with zinc powder. F. Rochleder has found four new colouring substances in madder, $\text{C}_{14} \text{ H}_8 \text{ O}_4$ isalzarine; and its homologue, a very similar substance, $\text{C}_{15} \text{ H}_{10} \text{ O}_4$; a third called hydrisalarin, $\text{C}_{28} \text{ H}_{18} \text{ O}_8$, and a fourth, homologous with the foregoing, $\text{C}_{29} \text{ H}_{20} \text{ O}_8$. The proportions in which these substances occur in madder are minute. N. Bunge on electrolysis communicates that nitrophosphate of potassium yields to the anode nitrophenol and oxygen. Thiocetic acid and thiobenzoic acid yield bisulphide of acetylene, and bisulphide of benzoyl. But sulphocyanide of potassium, instead of yielding bisulphide of cyanogen, gives pseudo-sulphocyanogen. L. Henry has proved the identity of tribromhydrine of glycerine with the tribromide of allyle, from which it has hitherto been considered to differ. N. Lubarin, in submitting chloraluric acid to a renewed investigation, has arrived at the conclusion that it is impure parabanic acid mixed with chloride of ammonium. A. Ladenburg has found that, in support of Dr. Wanklyn's opinion, acetic ether perfectly free from water is not attacked by sodium

below 100° C. , and that in this reaction no evolution of gas takes place. For decomposing the water and alcohol generally contained in what is called pure acetic ether, the chlorides of silicium or of phosphorus were employed. Lastly, M. Vogel reported on Camuzet's experiments on gun-cotton, which differ so entirely from everything hitherto asserted, that they require confirmation. According to Camuzet, water dissolves the greater part of gun-cotton, separating at the same time the remaining part into a flocculent mass (the explosive ingredient of gun-cotton), and a granular non-explosive powder, which falls to the bottom of the vessel.

DIARY

THURSDAY, MAY 5

ROYAL SOCIETY, at 8.30.—On the Pre-Carboniferous Flora of North-Eastern America, and more especially on that of the Erian (Devonian) Period (Bakerian Lecture): Principal Dawson, F.R.S.

SOCIETY OF ANTIQUARIES, at 8.30.—On the Date of the Discovery of the American Continent, by John and Sebastian Cabot: R. H. Major, F.S.A.

LINNEAN SOCIETY, at 8.

CHEMICAL SOCIETY, at 8.

ROYAL INSTITUTION, at 3.—Electricity: Prof. Tyndall.

FRIDAY, MAY 6.

ROYAL INSTITUTION, at 8.—Star-grouping; star-drift; star-mist: R. A. Proctor.

SATURDAY, MAY 7.

ROYAL INSTITUTION, at 3.—Comets: Prof. Tyndall.

MONDAY, MAY 9.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.

LONDON INSTITUTION, at 4.—Botany: Prof. Bentley.

TUESDAY, MAY 10.

ETHNOLOGICAL SOCIETY, at 8.30.—(Special meeting at the Museum of Practical Geology). Opening address: Prof. Huxley. On the Influence of the Norman Conquest in the Ethnology of Britain: Rev. Dr. Nicholas.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Discussion on the Strength of Iron and Steel. Recent Improvements in Regenerative Hot Blast Stoves, for Blast Furnaces: E. A. Cowper.

ROYAL INSTITUTION, at 3.—On the Principles of Moral and Political Philosophy: Prof. Blackie.

PHOTOGRAPHIC SOCIETY, at 8.

WEDNESDAY, MAY 11.

GEOLOGICAL SOCIETY, at 8.

ROYAL MICROSCOPICAL SOCIETY, at 8.—On a new form of Binocular and Stereoscopic Microscope: Mr. Samuel Holmes.

ARCHAEOLOGICAL ASSOCIATION, at 8.

THURSDAY, MAY 12.

ROYAL INSTITUTION, at 3.—Electricity: Prof. Tyndall.

ZOOLOGICAL SOCIETY, at 8.30.—Notes on some points in the anatomy of certain Kingfishers: Dr. Cunningham.—On the taxonomic characters afforded by the muscular sheath of the oesophagus in Saurapsida and other Vertebrates: Mr. George Gulliver.—Notes on the myology of *Platydaetylus japonicus*: Mr. Alfred Sanders.—On the Hirundinidae of the Ethiopian region: Mr. R. B. Sharpe.

LONDON MATHEMATICAL SOCIETY, at 8.—On the Mechanical description of a nodal bicircular Quartic: Prof. Cayley.—Concerning the ovals of Des Cartes: Mr. S. Roberts.

BOOKS RECEIVED.

ENGLISH.—Choice and Chance: Rev. W. A. Whitworth (Deighton and Bell).—Blanford's Natural History of Abyssinia (Macmillan and Co.).—The Lifted and Subsidised Rocks of America, by Catlin (Trübner and Co.).—The Yosemite Guide-book: J. D. Whitney.

FOREIGN (through Williams and Norgate).—Ornithologie Nordost Afrikas Th. von Heuglin: Elektrische Untersuchungen, achte Abhandlungen über die thermoelektrischen Eigenschaften des Topases: W. G. Hanke.—Bestimmung der Sonnenparallaxe durch Venus-vorübergänge vor der Sonnenscheibe: P. A. Hansen.—La psychologie anglaise contemporaine: T. H. Ribot.—Das Verhalten der Eigenwärme in Krankheiten: D. C. A. Wunderlich.—Verhandlungen der k. k. Zoologisch-botanischer Gesellschaft in Wien 1869.—Berichte über die Verhandlungen Ost Afrika.

CONTENTS

| | PAGE |
|--|------|
| TO OUR READERS. BY THE EDITOR | 1 |
| THE VELOCITY OF THOUGHT. BY DR. M. FOSTER | 2 |
| CHOICE AND CHANCE. BY PROFESSOR STANLEY JEVONS | 4 |
| OUR BOOK SHELF | 5 |
| LETTERS TO THE EDITOR:— | |
| The Sources of the Nile.—DR. CHARLES BEKE | 6 |
| Why is the Sky Blue? | 7 |
| Curious Facts in Molecular Physics.—W. H. HARRISON | 7 |
| SIR EDWARD SABINE'S CONVERSATIONE | 8 |
| RECENT ACCESSIONS TO THE ZOOLOGICAL SOCIETY'S GARDENS (With illustrations) By P. L. SCLATER, F.R.S. | 9 |
| NOVEL TELEGRAPHY—ELECTRIFICATION OF AN ISLAND.—PROF. FLEMING JENKIN, F.R.S. | 12 |
| NOTES | 12 |
| THE GRESHAM LECTURES | 15 |
| SCIENTIFIC SERIALS | 15 |
| SOCIETIES AND ACADEMIES | 16 |
| DIARY AND BOOKS RECEIVED | 20 |

ERRATUM.—By an error of the press, Prof. Duncan's Table of Madreporaria dredged up in the 'Porcupine' Expedition (No. 26, p. 666), was designated "Madreporaria of the Red Sea," instead of the "Deep Sea."

The INDEX and CONTENTS for Vol. I., will be published with an early number.