M. M. P. Muir (*Chem. News*, XLV, 69) detects TIN IN THE PRESENCE OF ANTIMONY by boiling the HCl solution for 10 minutes with copper turnings which reduces it to stannous form and permits of its being detected by $HgCl_2$.

To detect SMALL AMOUNTS OF SILVER IN LEAD (reduced from galena, etc.) *J. Krutwig* (*Ber. D. Chem. Ges.* xv, 307) dissolves in nitric acid and precipitates with large excess of NaHO. Silver plumbate remains insoluble. By extracting with ammonia, evaporating to dryness, dissolving in nitric acid and separating the lead by H_2SO_4, a solution is obtained in which the silver may be detected with H Cl.

To SEPARATE GALLIUM from zinc and ferrous oxide *L. de Boisbaudran* (*Comptes Rendus*, 1882, *No.* 17) uses cupric hydrate instead of barium or calcium carbonate. The copper may afterward be separated by dissolving and adding H_2S.

ABSTRACTS.

Abstracts from *Journal of the Chemical Society*, London, by Arthur H. Elliott, Ph. B., F. C. S.

On some Higher Oxides of Manganese and their Hydrates.

(Part II., Vol. XL., p. 56). BY V. H. VELEY, B. A., F. I. C.

The higher oxides of manganese, when heated in dry nitrogen at temperatures ranging from 60°—200°C., are simply dehydrated without loss of available oxygen; the dehydrated oxide formed readily absorbs oxygen. The oxides, when heated in dry hydrogen, are simultaneously dehydrated and reduced; a hydrate of the red oxide is formed which readily absorbs oxygen. The quantity of water retained by the peroxides when heated to 200°C. in dry hydrogen, is greater than that retained by the same oxide at the same heat in air, oxygen, or nitrogen.

On a New Alkaloid from Cinchona Bark.

(Vol. XL., p. 66) BY DAVID HOWARD AND JOHN HODGKIN.

The alkaloid is obtained from *China Cuprea* of Dr. Fluckiger. Its specific rotary power is very near that of quinine: 100 cc. of ether free from alcohol dissolves 0.57 of it at 12°C. Ether containing 8 per cent. of alcohol dissolves 2.27. Alcohol of 90 per cent. at 12°C. dissolves 7.64 per 100 cc. When impure or mixed with other alkaloids it is much more soluble. Authors describe the sulphate, bisulphate, oxalate, tartrate, hydrochloride, and the iodosulphate ; also the platinum salt and the action of chlorine and ammonia.

Contributions to the Chemistry of Rare Earth-Metals. (Vol. XL., p. 68). BY B. BRAUNER, PH. D.

The object of this research is the study of the cerite metals, with special reference to their position in the periodic system. The metals cerium, lanthanum, and didymium, are each found to occupy its own characteristic position in the system.

Note on Certain Photographs of the Ultra-violet Spectra of Elementary Bodies. By W. N. HARTLEY, F. R. S. E. Vol. XL., p. 84. An account of the application of the new dry plate process of photography to the production of spectra-photographs By means of prisms and lenses of quartz or Iceland spar, photographs were obtained which contained the whole of the lines of metallic spectra completely in focus on one plate, and extending from the blue to the extreme ultra-violet rays. By prolonged exposure of gelatin plates photographs to the red end of the spectrum may be obtained. The paper is illustrated with Woodbury-types of the spectra.

The Chemistry of Bast Fibres. By C. F. CROSS and E. J. BEVAN. Vol. XL, p. 90. Authors give an account of their researches upon the action of halogens upon jute and their fibres; more especially the action of bromine. Also the action of dilute sulphuric acid upon fibres. They are led to conclude that jute fibre is composed for the most part *not* of cellulose, but of a transition form of cellulose from that of the original carbohydrate to its ultimate modification of a soluble astringent. They call the transition modification of cellulose *Bastose*, and give the name *Bastin* to the aromatic derivatives of cellulose. Incidentally they discuss Glycolignose and Glycodrupose; the origin of tannins; reactions of the jute substance under high pressure; reduction of indigo by jute; and reaction of linseed oil with sulphuric acid. In conclusion they give a diagram showing the passage of cellulose into aromatic bodies allied to the tannins.

A New Apparatus for the Determination of Melting Points. By C. F. CROSS and E. J. BEVAN. Vol. XL., p. 111. A small cup is attached to the bulb of a thermometer, and in this cup some of the body to be tested is melted. While the body is still liquid a minute bulb tube, with a piece of platinum wire fixed in at the bottom, is dipped into the liquid and allowed to stay there till the whole is solidified. To determine a melting point the combination is placed in mercury, the latter is heated, and when the body melts the bulb tube rises to the surface and the thermometer registers the melting point at that instant. Authors state that no stirring is necessary during the heating of the mercury.

On the Reaction of Chromic Anhydride with Sulphuric Acid. By C. F. Cross and A. Higgin. Vol. XL., p. 113. Authors examined the insoluble bodies formed by the action of sulphuric acid upon chromic anhydride. They find they are only approximately constant in composition, and give as an average formula $4 \ Cr_2 O_3 . \ 7 \ H_2O . \ 13 \ SO_3$, or $2 \ (2 \ Cr_2 \ O_3 . \ 3 \ SO_3) \ 7 \ H_2 SO_4$. These bodies are entirely insoluble in water, and are attacked with difficulty by solutions of alkaline hydrates. Potassium dichromate and sulphuric acid give coarsely granular precipitates that contain potassium.

On Some Decompositions Produced by the Action of Chloride of Aluminium. By C. Friedel and J. M. Crafts. Vol. XL., p. 115. Paper contains remarks upon E. H. Rennie's note (p. 33) on the action of ethyl chlorocarbonate on benzene. Authors state that they had attained exactly the same results, and described them in Compt. rend., June 18th, 1877. They are now engaged in the study of the destructive action of aluminium chloride upon hydrocarbons, and state that the higher homologues of benzene lose their side groups and tend to be resolved into benzene when heated with aluminium chloride. Hexmethyl-benzene is easily reduced to durene and simpler hydrocarbons.

Chemical Examination of the Buxton Thermal Water By J. C. Thresh, B. Sc., Vol. XL., p. 117. The density of the water at 25°.8 C. was 0.99686; and when compared with pure water at the same temperature was 0.99992. The author gives minute details of his methods of analysis in which he follows the course of procedure recommended by Bunsen. The paper contains elaborate tables showing the analyses of the portions of the total residue both soluble and insoluble in water.

For comparison with the results of other analysts the author gives his results in the following form; in which the constituents are arranged as parts in 10,000.

Temperature of water	81.7° F
Specific gravity	0.99992
Total solids	2.934

Ca 0.567—Ba 0.004—Sr trace Mg 0.195—Na 0.213—K 0.040—Li trace—NH_4 0.0001—Al trace—Fe 0.002—Mn 0.0014—Pb trace—CO_3 1.238—Fl 0.0014—Cl 0.370—I nil—SO_4 0.160—NO_3 0.003—Organic matter 0.003—$Si O_2$ 0.136—PO_4 trace.

And the following elements were detected in the sinter Mo, Cu, Co and Zn.

The gaseous constituents in cubic centimetres per litre at 0° C and 760 m. m. pressure were CO_2 14.56—N 22.13.

The ammonia was determined by distilling with sodium carbonate and estimating with Nessler's solution in the distillate. The nitric acid was obtained by digesting with zinc-iron couples and then distilling and estimating the resulting ammonia by Nessler's solution. Nitrous acid was sought but not found.

Dibenzoylaniline and its Isomerides. By A. Higgin, Vol. XL., p. 132. The author has repeated the work of Gerhardt in obtaining dibenzoylaniline by the action of benzoyl chloride upon monobenzylaniline; also the work of Losanitch in obtaining phenyldibenzoylamide by the action of benzoic acid upon phenyl thiocarbimide at 130–150° C. The author states that it is necessary not to use the thiocarbimide in excess. Phenylbenzoyl-benzoylamide was prepared by acting upon phenylbenzoylamide with benzoyl chloride in presence of zinc chloride. It crystalizes in colorless plates melting at 150°; and when decomposed with dilute hydrochloric acid yields benzoic acid and a solid base, benzoylphenylamine. The sulphate of this base was made, also the chloride and a platinochloride. In the alcoholic solution from which the phenylbenzoyl-benzoylamide had crystallized an isomer of this body was obtained.

Contributions to Our Knowledge of the Composition of Alloys and Metal Work, for the Most Part Ancient. By WALTER FLIGHT, D. Sc., F. G. S. Vol. XL., p. 134.

Author gives a number of facts relating to the history of copper-nickel coinage. Coins of Ancient India 500 B. C. contained Ag 89.120—Ag Cl 1.328—Au 1.253—Cu 4.337—Pb 3.735—Graphite 0.075. A figure of Buddha contained Ag 57.701—Ag Cl 4.113—Cu 37.548—Au 0.483—Graphite 0.403. Bidrai Ware contained Zn 94.552 to 93,516—Cu 3.920 to 3.278—Pb 1.400 to 2.171

—Au nil to 0.690—Fe 0.128 to 0.345. A sickle found by Belzoni under the feet of a sphinx at Karnak, Egypt, contained: Silica 11.884—Magnetite 5.111—Calcium carbonate 0.172—Ferric oxide 64.604—Water 18.229—Nickel trace. A double hook of "Bronze" found in one of "Dixon's Passages" of the Great Pyramid contained Cu 99.521—Fe 0.479. "Bronze" figures from Egypt contained Cu 68.421—Fe 4.694—Pb 22.759—Ni (Co) 0.782—Sn 0.938—As 1.479—Sb 0.668. Another "Bronze" figure from Egypt contained Cu 82.19—Pb 15.79—Sn 2.02. Three copper spear heads from Cyprus contained :

	I.	II.	III.
Cu................	97.226	98.398	99.470
Fe................	1.322	0.729	0.384
Ni................	—	0.153	0.084
Au................	0.279	0.305	—
Pb................	0.076	—	—
Sn................	trace	—	—
As................	1.348	trace	trace
S................	—	0.305	—

All contain traces of P.

Copper axe-heads from Beth Saour, near Bethlehem, Holy Land, contained 99.557 and 99.93 per cent. of copper, with traces of As, Fe, Ni and S. Hebrew shekel contained Ag 97.674—Au 0.676—Cu 0.642—Graphite 0.034. The following bronzes : I, sword or dagger blade from Cyprus ; II, Part of figure of Mercury, of Romano-British times, from Leadenhall street, London ; III, Handle of vase, found at Island of Tilos, of about the time of Alexander the Great ; IV, Roman bronze figure in the Blacas Collection of British Museum, had the subjoined composition :

	I.	II.	III.	IV.
Cu.........	88.771	78.355	81.764	87.158
Sn.........	8.508	10.018	10.901	10.724
Pb.........	1.504	9.302	5.246	2.005
Fe.........	0.476	0.715	0.153	trace
Co.........	0.304	—	1.222	—

Ni, P, Au and Ag were only found in traces.

An Incas Pin, found on a mummy at Arica, S. Peru, after earthquake 1868, contained Ag 82.222—Ag Cl 1.388—Au 0.406—Cu 16.100—Fe 0.119. Bronze bar, from ruins of Temple in Bolivia contained Cu 93.26—Sn 6.52—Fe 0.26—Ni and As traces. These results are given with a great many interesting details as to the origin and antiquity of the various objects examined.

Abstracts from *Berichte der Deutschen Chemischen Gesellschaft,* by L. H. Friedburg.

Relations between the amounts of rotation on the plane of polarization, F. Flawitzky (Vol. XV., p. 5).

Critique of Krecke's first law: "An optically active substance, forming a combination with an optically non-active one, or modified by chemical agents, either maintains its molecular power of rotation unchanged, or the latter is a simple multiple of the former." The author finds that under certain conditions and regarding substances genetically related, the relations between the molecular power of rotation are independent of concentration. Such an independence might indicate eventually the immutability of optical activity in chemical transformations.

The Molecular Power of Refraction of the Terpenes. F. FLAWITZKY. (Vol. XV., p. 15).—The difference of molecular refraction of the Terpenes correspond to their atomicity.

On the Action of the two Isomeric Mono-Brom-Cinnamic Acids with Conc. Sulphuric Acid. R. LEUCKART. (Vol. XV., p. 16).—A remarkable difference is manifested in treating either Alpha or Beta mono brom-cinnamic acid with conc. sulphuric acid, which acts as an agent of condensation. Pure Alpha acid is hardly attacked, if at all, whilst the isomeric Beta acid is decomposed, though the products of decomposition and the constitution of these products are not yet either fully studied or known.

A constitutional similarity between these acids and fumaric and maleic acid seems possible.

Azodyestuffs. O. WALLACH. (Vol. XV., p. 22).—Diazo compounds and phenols have of late been combined to a large series of dyestuffs. The general formula of these might be expressed thus:

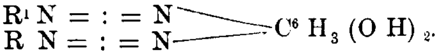
$$R - - N = : = N - . - Ph.$$

R meaning any monovalent radical of an aromatic compound (thus: C_6H_5 — . —; $C_6H_4SO_3H$ — . —; $C_{10}H_7$ — . — &c.) and Ph understood as any monatomic rest of a phenol (e. g.: C_6H_4OH — . —; $C_6H_3(OH)_2$ — . —; $C_{10}H_5(SO_3H)(OH)$ — . — &c.

Combinations with more than one azo group have been prepared only sporadically, and such with *different* azo-groups in *one* rest of phenol only once by Griess.

Wallach prepares combinations of diatomic phenols with two similar or dissimilar diazo-rests.

General formula:



$$\left.\begin{array}{l} R^1\,N = : = N \\ R\;\;N = : = N \end{array}\right\rangle C^6\,H_3\,(O\,H)_2.$$

In which R and R^1 may be identical or different.

Further on the question is put, whether it makes any difference, or not, in what consecutive order *different* azo-rests are incorporated into a diatomic phenol.

In pursuing those questions, the author obtains a series of new dyestuffs, the preparation of which has been patented.

On Caffein. EMIL FISCHER. (Vol. XV., p. 29).—The author continues experiments to prove the constitutional formula of his synthetic caffein, and consecutively he gives such fourmula for caffolin, hydroxy•caffein, apocaffein, hypocaffein. Finally his endeavors have resulted in producing a caffuric and hydrocaffuric acids, and theobromin.

The Action of Chloride of Aluminium on Mono-Brombenzol. O. V. DUMREICHER. (Vol. XV., p. 33).

On Gum Arabic.—HEINRICH KILIANI, (Vol. XV. p. 34). A comparison of ten different samples of gum arabic, (including two samples of arabic acid) in regard to rotatory power and percentage of mucic acid.

Occurrence of large Crystals of Ammonium Magnesium Phosphate in Urine Nearly 100 Years Old. H. SCHWANERT. (Vol. XV. p. 37). A bottle with urine was found some time ago in a coffin along with a perfectly preserved human skeleton. The coffin was found underneath a street at Wadersloh, in Westphalia by Dr. Gruwe. The street bordered an old cemetery, not used since 1830 as burial ground. In 1827 or 1828 this street was built on part of the cemetery. The bottle with urine, a green, short-necked cylindrical bottle, stoppered with a dark-brown colored cork, pressed somewhat into the neck, had most likely been put into the coffin from superstitious motives. Such superstition exists even to day in that part of the country.

The sediment of the urine consisted of microscopical white and brown particles, the former being carbonate of calcium the latter urate of ammonium showing the murexide reaction. The three larger crystals, one of which was 8 mm. long were ammonium magnesium phosphate.

Expulsion of the Sulpho-Group by Bromine. WERNER KELBE. (Vol. XV. p. 39). Sulphurous acid, bromine and water, yield hydrobromic and sulphuric-acids.

An aromatic sulpho-acid, (which can be regarded as a substituted sulphurous acid) bromine and water, yield at a certain temperature hydrobromic and sulphuric acids, and a monobrominated hydrocarbon.

Kelbe thus prepared: Alpha—Brommeta-iso-cymol and Beta—Brommeta-iso-cymol.

Reaction of Phosgen on Diazo-Amido Compounds. A. SARAUW, (Vol. XV. p. 42). This research shows, that neighboring positions must be ascribed to: the imido-group and the tolyl-rest in diazo-benzol-para-toluidide; the imido group and the carboxyl benzol-rest in diazo—amido—benzoic acid; the imido-group and the bromphenyl-rest in diazo-benzol-parabrom-anilid. Therefore it is likely, that in the mixed diazo-amido-compounds, the imido group is combined with the more negative aromatic rest.

On Tetrabrombenzol. RICHARD MEYER, (Vol. XV. p. 46). Bromine and nitrobenzol brought together at a high temperatures from the *same* tetra-brombenzol as is generated by the reaction between para-di-brombenzol and an excess of bromine at + 150°C.

Hence Kekule was right, in supposing that his combination, in spite of great differences in the data of Riche and Bèrard, was the same, which these gentlemen prepared by means of paradibrombenzol.

Halogenized and Hydroxylized Organic Acids. E. ERLENMEYER and C. L. MULLER (Vol. XV. p. 49).

Combination in the Indigo Group. ADOLF BAEYER (Vol. XV. p. 50). The intermediate products between ortho-nitro-phenylpropiolic acid and indigo are here studied by the author because he thinks, that the formation of indigo out of the first named product is due to an intermediate product formed, and by oxydation transformed into indigo.

Consequently ortho-dinitro-diphenyl-diacetylen was prepared, which, treated with fuming sulphuric acid gives rise to diisatogen, a substance of remarkable interest. Of all artificially prepared substances it stands nearest to indigo and is easiest transformed into indigo ; ammonic sulphydrate transforms it, cold, quantitatively into indigo.

$C_{16} H_8 N_2 O_4 - 2O + 2H = C_{16} H_{10} N_2 O_2$.

The color is formed directly, without preliminary formation of indigo white or indoxyl, the diisatogen in contact with reducing agents becoming blue without either being dissolved or changing in form.

Syntheses by Means of Phenyl-Acetylene and its Derivatives. Adolf Baeyer and Ludwig Landsberg (Vol. XV. p. 57). Prepararation of diphenyl-diacetylen, and other derivatives.

Nicotinic Acid from Pyridin. Otto Fischer. (Vol. XV., p. 62.) Pyridin-sulpho-acid was transformed into cyanpyridin, which, treated with conc. hydrochloric acid, gave pyridin-monocarbonic acid, which latter is identical with nicotinic acid. A comparison of this acid and the nicotinic acid prepared from chinolin showed no difference whatever in properties.

Phoron from Glycerin. K. E. Schulze. (Vol. XV., p. 64.) Production of phoron from glycerin by fermentation.

Refraction and Heat of Combustion. Julius Thomsen. (Vol. XV., p. 66.)

Normal Cyanic Acid and Derivatives. E. Mulder. (Vol. XV., p. 69.) Preparation of ethyl ether of cyanic acid.

The Reducing Properties of Living Cells. J. Reinke. (Vol. XV., p. 107.) Controversial.

Contributions to the Chemistry of the Cerium Metals. B. Brauner. (Vol. XV., p. 109.) Studies in regard to the periodical system of the elements.

Synthesis of the so-called Alkyldisulphoxides. Robert Otto. (Vol. XV., p. 121.

Contributions to the History of Atropin. A. Ladenburg. (Vol. XV., p. 133.) Controversial.

On Determination of the Density of Gases. Heinrich Goldschmidt and Victor Meyer. (Vol. XV., p. 137.) Description of apparatus, &c.