

## Early Science at Oxford.

November 22, 1687. Some letters were read from Mr. Cluner with Mr. President's answers concerning the squaring the Circle, and Parabola. Some moulds of old coins were communicated by Mr. Musgrave sent by Mr. Hughs out of Somerseshire. Some stones communicated by Mr. Musgrave taken out of the ureters of a man; being 7 small ones, and one very larg being an inch long, and above an inch round. An account of the dissection of Mr. Castillion who dyed of a universal Tabes, and cancer of the Stomach, was also communicated by Mr. Musgrave.

November 23, 1683. Mr. Piggot informs ye Company, that filing takes off ye attraction of iron; as, he says, was found true by a late experiment; but this was afterwards found to be true, onely when ye Iron was filed *all over*: Dr. Plot tells us farther, that of 22 sorts of Iron-ores, which were dug in Sussex, and he has by him, not one applies to ye magnet. It was ordered to be tried whether a peice of this ore will apply after a very great Calcination? as also whether a magnet, and peice of iron, being put into Mr. Boyle's Pump, and ye air exhausted, will draw one ye other? A Catalogue of Bodies Electricall was ordered to be brought in. 'Twas ordered to be tried, whether electricall bodies will operate, as such, in vacuo. Several of ye stones belonging to Mr. Ashmole's Musæum, were examined, as to their Electricity; A sapphire, a Bohemian granate, a spinall ruby, a balass ruby, and a hyacinth were observ'd to be electricall.

Dr. Pit was pleased to promise, that ye next time we met, he would give an account of some experiments relating to Digestion.

November 23, 1686. Mr. R. P., vicar of Kildwick in Yorkshyre, sent an account of a strange *eruption of waters*, June 1686, in Craven.

An account was communicated from one Tho. Wells in Oxford who cures himself of the *Gout* by drinking Beer, wherein mustard-seed has been Steeped.

He likewise gives us an account of the great *herring fishing* trade lately begun in Summerseshire, by ye coming of the Herrings up the Severn which was not known before this year.

All things were prepared by Mr. Caswell for observing ye Eclipse on the Friday night, but the cloudiness of the night hindred him from making any observations.

Dr. Plot communicated an account of a monstrous *Cucumber* growing in the garden of Dr. Wm. Jacob at Canterbury. Ye length was 3 foot ten inches and a quarter, ye girth circumference 9 inches.

November 24, 1685. An Experiment was tried before ye Society which shewed, that 12 ounces of water was enough to buoy up a vessell of more than two pounds weight, so that ye vessel did plainly swim. This experiment was made use of to confirm ye 10th Prop: of ye 4th book of Stevinus's Staticks concerning ye different pressure of ye same quantity of water in vessells differently shaped.

A Description of a new sort of Pump was read: The contriver of it has made some tryall of it, and thinks it will be usefull, where there is occasion to pump much water, and especially in deep pits.

Dr. Plot shewed us ye *Corallium Album Fistulosum* of Ferrante Imperato; and another Corall with fine small threads of a dark red not described by any, that we know of. He also shewed us an egge of the Sea-Tortoise, which was somewhat bruised, but seemed to have been exactly globular; and a piece of whitish substance very light, called cream of Soap, said to be made by ye nuns of Prussia.

## Societies and Academies.

LONDON.

Royal Society, November 12.—Sir William Bragg and R. E. Gibbs: The structure of  $\alpha$  and  $\beta$  quartz. The original investigations upon  $\alpha$  quartz left four unknown parameters, namely, the distance of the silicon atoms from the trigonal axis and the spatial relations of the oxygen to the silicon atoms. One parameter could be estimated from the results of intensity measurements, but more data were required. At  $573^\circ$ ,  $\alpha$  quartz undergoes a transition to the  $\beta$  hexagonal variety, probably with little structural change. If, therefore, the  $\beta$  structure could be determined, that of the  $\alpha$  would become nearer solution. The evidence of theoretical calculations and of X-ray rotation photographs of quartz above its transition point shows that in the  $\beta$  structure the oxygens surround the silicon atoms tetrahedrally, and that the spirals parallel to the principal axis are formed by alternate atoms of silicon and oxygen. Atomic dimensions are consistent with the normal values, and the structure agrees with requirements. The structure is consistent with the development of pyro- and piezo-electricity and compatible with the theory of electrical conductivity.—Lord Rayleigh: The light of the night sky: its intensity variations when analysed by colour filters (ii.). The observations now extend over nearly  $2\frac{1}{2}$  years. The intensities of the various chromatic components of the light undergo important variations when measured against a fixed terrestrial standard, and the components also undergo considerable relative variations when measured against one another. Attention is primarily concentrated on the spectral region transmitted by a screen designed to isolate the green auroral line as nearly as possible. Notwithstanding the definite relative variations, this auroral intensity is highly correlated with the intensity in the orange-red region, not so highly with the blue region, and still less with the photographic region centred near  $\lambda 4300$ . The values found for the correlation coefficients are: Aurora-red, 0.70; Aurora-blue, 0.66; Aurora-photographic, 0.44. On the other hand, the auroral intensity is not correlated appreciably with the degree of magnetic disturbance or the height of the barometer. The connexion with the sun-spots, if any, is not yet apparent. The intensity does not vary measurably with the sun's distance below the horizon, within the limits, evening and morning, when twilight is excluded. Parallel observations of the auroral intensity at Pasadena, and at Mt. Wilson, California, are, in the mean, more than double those prevailing in England.—W. A. Bone and G. W. Andrew: Studies upon catalytic combustion. Pt. i. The rate of combination of a (moist) theoretical mixture of carbon monoxide and oxygen ( $2\text{CO} + \text{O}_2$ ) in contact with a gold surface in a "normal" state of activity at  $300^\circ\text{C}$ . or thereabouts is always proportional to its pressure. The "normal" catalysing power of the surface at such a temperature can be (a) greatly diminished by *either* keeping it at the room temperature for some days or prolonged evacuation of it at  $300^\circ\text{C}$ ., or (b) highly stimulated by previous exposure to either of the two reacting gases at  $300^\circ\text{C}$ . Whenever, starting with the surface in a state of "normal" activity, either one or other of the two reacting gases is present in excess, the subsequent rate of combination, which rapidly becomes "supernormal," is always proportional to the partial pressure of the carbon monoxide. It is considered that an "activation" occurs of both of the combining gases of the surface, which is not confined to superficially "adsorbed" gas-films of monomolecular thickness, but extends also to more deeply occluded gases.—O. W. Richardson

and F. C. Chalklin: The excitation of soft X-rays. When the curves between efficiency of X-ray emission and primary voltage using a photo-electric method are plotted, a number of abrupt changes of slope are observed. Within the range 40-600 volts, four such discontinuities, of which the lowest one is complex, have been observed for carbon, 13 for tungsten, 10 to 13 for nickel, and 15 for iron. Some of these discontinuities are due to the excitation of characteristic X-rays and allied phenomena. The total X-radiation per electron impact is approximately proportional to the square root of the atomic number, for the target elements tested, and to the square of the energy of the impinging electrons.—R. Campbell Thompson: On the chemistry of the ancient Assyrians. Ashurbanipal's library of clay tablets inscribed in cuneiform in the seventh century B.C., excavated at Nineveh and now preserved in the British Museum, included tablets now in 24 fragments, giving the native Assyrian receipts for making glazes, glass, and their colours. The first section of these chemical texts describes the furnace for the glass, the magical formulæ necessary, and the fuel of \*Styrax-logs. The next few sections detail the ingredients for making the celebrated blue glaze, first with a frit of 10 parts sand, 15 alkali, and  $1\frac{3}{8}$  \*Styrax-gum, followed by copper-scale, prepared by heating, and the subsequent directions for its admixture. Glasses were of three kinds: *sirçu* (60 parts sand, 180 alkali, 5 salt(petre), 2 chalk); *dushû* (crystal) (60 sand, 180 alkali, 6 salt(petre),  $\frac{1}{2}$  chalk, 3 oxide of tin (?), 3/10 oyster shell (?)); and *zukkû* (components mutilated). The most interesting receipt is to make 'bahrê'-stone (red coral (?)), approximately 7200 parts of *zukkû*-glass, 32 oxide of tin (?), 20 antimony, some salt(petre), and 1 part of go(ld), which suggests the well-known Purple of Cassius.—J. E. Lennard-Jones: On the forces between atoms and ions. The repulsive fields of 20 atoms and ions have been determined. Applications of the results are made to evaluate the interatomic distances of 32 crystals, including 16 alkaline halogens. In the case of the latter, the calculated values are found to lie, with one exception, within 1 or 2 per cent. of the observed distances.—F. G. Mann and Sir William Pope:  $\beta$ ,  $\beta'$ ,  $\beta''$  triaminotriethylamine and its complex metallic derivatives. The preparation of triaminotriethylamine hydrochloride from bromethylphthalimide has been improved. This amine acts as a tetra- or as a tri-acidic base, according as the tertiary nitrogen atom exerts or fails to exert its basicity. Consequently, two distinct series of aurichlorides, platinichlorides, and rhodochlorides have been prepared. Co-ordinated derivatives of the base with divalent and tetravalent metals have been prepared: in all these compounds the amine acts as a tetracidic base, and satisfies four co-ordination valencies of the metallic complex.—K. R. Ramathan: The structure of molecules in relation to their optical anisotropy. Pt. ii.—E. V. Appleton and M. A. F. Barnett: On some direct evidence for downward atmospheric reflection of electric rays. In a study of signal variations at short distances (18-100 miles) from a short-wave transmitter, by changing the wave-length of the transmitter continuously through a small range, interference phenomena were observed, indicating the existence of two or more rays. Experiments made at Cambridge on the signals from London (2LO) have shown that the signal variations are greater on a loop antenna than on a vertical aerial, the ratio of the variations indicating that the direction of propagation of the down-coming waves makes an angle of 65°-70° with the ground. The existence of down-coming waves has been demonstrated at distances of 18 miles from a transmitter, which indicates that the ionised layer reflects waves at almost

normal incidence. The rays returned from the upper atmosphere are of complex polarisation, as is to be expected according to the magneto-ionic theory of wave propagation, and are of sufficient intensity to be responsible for the directional errors experienced in short-distance transmission. An inferior limit for the number of electrons per cubic centimetre in the ionised layer is  $10^5$ .

Royal Microscopical Society, October 21.—R. J. Ludford: Short osmic acid methods for the demonstration of the cytoplasmic inclusions of cells. After a number of experiments carried out with the view of shortening the technique previously described, shorter methods have been worked out, which give quite as satisfactory results. The tissue is fixed in corrosive-osmic, and the osmication is carried out with 2 per cent. osmic acid at 30° C., for three days, followed by water at the same temperature for another day, to complete the reduction of the acid. An alternative method is to begin the osmication in 2 per cent. osmic acid at 35° C., and dilute daily with an equal quantity of distilled water. At the end of the third day transfer to water also at 35° C. After sections have been cut, mitochondria can be stained by the modified acid-fuchsin method already described.

Physical Society, October 23.—H. E. Smith: The influence of strain on the Thomson effect. For piano-forte steel, charcoal iron, constantan and nickel, the Thomson coefficient numerically decreases with tension until the elastic limit is reached, after which it increases. With removal and restoration of tension a new definite cycle is followed. The Thomson effect in tungsten, here measured for the first time, increases with tension and also follows a cycle. No change is noticed in brass or German silver. Heterogeneity was not present in the specimens investigated.—W. Mandell: The measurement of temperature by thermocouples in unequally heated enclosures. In doing this, the recorded temperature depends upon the thickness of the couple, the nature of the walls of the enclosure and the nature of the gas. An explanation is suggested based upon the fact that the amount of radiation received and emitted by a couple depends upon its position in the enclosure, and that the amount of energy transferred to it by molecular impact varies with the nature of the gas.—W. Clarkson: On the flashing of certain types of argon-nitrogen discharge tubes. Discharge tubes having various types of electrodes, and in which the filling gas, a mixture of argon and nitrogen, had a wide pressure range, were used. At higher pressures the discharge is no longer of the "glow" type, but takes place between definite points on the electrodes.

Royal Anthropological Institute (Indian Section), October 27.—S. M. Edwardes: The population of Bombay City: remarks on its origin and growth. The history of the City falls into five well-defined periods, each of which contributed certain distinct elements of population. During the first four periods Bombay consisted of seven separate islets, which were welded together during the fifth or English period. The prehistoric period contributed the fishing-population of Kolis and their aboriginal goddess, whose title has given the name Bombay to the city and western presidency. The second or Hindu period, which lasted until A.D. 1300, witnessed the arrival of the Parsis and Beni-Israel in Western India, as well as the mixed Mohammedan population, resulting from the union of Arab traders and refugees with Hindu women of the coast. The rule of the local Silahara chiefs was responsible for the immigration of various castes of Hindus, notably the Pathars, Prabhus and Panchkalshis, and probably also the

Bhandaris, who cultivate and tap the liquor of the coco-nut palm. During Mohammedan rule the famous shrine of the Saint at Mahrin was established, while under the dominion of the Portuguese (A.D. 1524-1661) the Bombay population was considerably reduced and dispersed by the proselytising tyranny of the Portuguese religious orders, their only contribution to the population being the native Christian and Indo-Portuguese or "Topass" elements. The customs of some of these converts present an interesting study. The real growth of population commences with the arrival of the English in Bombay, and can be traced to certain definite political and domestic events, including the steady reclamation of the island from the sea, and the foundation of the local textile industry. In A.D. 1660 the population was said to be 10,000; to-day it numbers more than one million, including persons from all parts of India and Asia, Europe, Africa, and America.

## CAMBRIDGE.

**Philosophical Society, October 26.**—Sir Ernest Rutherford and W. A. Wooster: The natural X-ray spectrum of radium B.—C. D. Ellis and W. A. Wooster: (1) The atomic number of a radioactive element at the moment of emission of the  $\gamma$ -rays. The atomic number found in the case of radium B (82) is 83, and in the case of radium C (83) is 84. Since both these bodies disintegrate by emitting an electron from the nucleus, these results show that the  $\gamma$ -ray emission occurs after the actual disintegration. (2) The  $\beta$ -ray type of disintegration. In a  $\beta$ -ray disintegration the  $\gamma$ -rays are emitted after the electron has left the nucleus. This result is discussed and a general picture given of the  $\beta$ -ray type of disintegration.—D. H. Black: The analysis of the  $\beta$ -ray spectrum due to the natural L-radiation of radium B.—D. R. Hartree: Doublet and triplet separations in optical spectra as evidence whether orbits penetrate into the core. The separations of terms of all available doublet and triplet spectra are compared with Landé's formula, which is derived on the assumption that the orbit of the series electron penetrates into the core. If in any actual case the orbit does not penetrate, no agreement is to be expected. The results agree in most cases with the assignment of quantum numbers proposed by Bohr; except for lithium-like atoms, all  $p$ -terms correspond to penetrating orbits.—H. F. Baker: On the reciprocation of one quadric into another.—P. A. MacMahon: The enumeration of the partitions of multipartite numbers.—R. H. Fowler: Assemblies of imperfect gases by the method of partition functions. Theorems of statistical mechanics in a mathematically simple form, applying to assemblies of isolated systems, such as perfect gases or single crystals, are extended to imperfect gases, where the free atoms and molecules continue to act on one another with forces of short but not negligible range, and again with long range forces obeying the inverse square law. We thus recover in a new setting the usual results of the theory of van der Waals, and examine the basis of the important combined use of Boltzmann's and Poisson's equations.—J. P. Gabbatt: Note on the pedal locus.—L. H. Thomas: An extended form of Kronecker's theorem, with an application which shows that Burgers' theorem on adiabatic invariants is statistically true for an assembly.—W. F. Sedgwick: On the series of forms of Jacobi's rotating liquid ellipsoid.

## DUBLIN.

**Royal Irish Academy, November 9.**—Kenneth C. Bailey: The estimation of aldehyde in alcoholic liquors by means of Schiff's reagent. The estimation,

as usually performed, often gives very inaccurate results. The development of a colour from Schiff's reagent and alcohol, which is apparently not due to aldehyde originally present, is noted, and possible explanations suggested. A reliable technique for the estimation is proposed.

## LEEDS.

**Philosophical and Literary Society, November 3.**—C. K. Ingold: Structural relations of natural terpenes. Utilising the principle that gem-dialkyl and allied groupings appear in natural compounds only in such positions that they stabilise the structure, the number of possible natural terpene structures is shown to be limited and to conform to all recorded observations, except one—the alleged occurrence in Nature of sylvestrene.—J. Ewles: The luminescence of solids. The lines along which the theory of luminescence of solids is being developed are indicated. It is suggested that the slight trace of impurity necessary for luminescence enters into the crystal lattice of the substance in the form of solid solution. The impurity nuclei, with their linked solvent atoms, are supposed to act as the radiating system.—G. F. Brett: The photographic effect of slow electrons. For slow electrons ordinary films and plates are unsuitable and a method is described in which a fluorescent substance in the form of a thin layer of special grease is applied to the film. By this method, electrons having speeds of at least 65 volts and upwards can be registered photographically.—H. M. Dawson and J. S. Carter: A contribution to the study of the ionisation of strong electrolytes. The solubility of iodine in sodium chloride solutions of widely varying concentration shows that the halogen combining capacity of the salt is independent of its concentration. The condition of the dissolved salt thus appears to be unaffected by change of concentration in agreement with the theory that strong electrolytes are almost completely ionised.—E. Rhodes and R. M. Woodman: The fatty substances of the plant growing point. Data are supplied as to the fats present at the growing apices of root and shoot of the broad bean at different stages of growth. These are supplemented by data as to the fats formed in excised root tips kept growing in culture media under sterile conditions.—J. H. Priestley and G. Redington: The effect of diurnal periodicity upon fibre production. Plants have been grown under artificial light, some remaining continuously illuminated, other being removed to a dark chamber for 8 or 16 hours each day. A diurnal periodicity in illumination greatly favours the production of sclerenchyma.—W. T. David, S. G. Richardson, and W. Davies: The effect of infra-red radiation upon combustion of gaseous mixtures containing nitrogen. The rate of combustion of inflammable gaseous mixtures contained in a closed vessel is increased by introducing radiation into the reacting system provided that (1) the radiation is of the type which is absorbed by the combustible gas, and (2) that nitrogen is present in the mixture.

## SHEFFIELD.

**Society of Glass Technology, October 21.**—T. C. Moorshead: (Presidential Address) The glass bottle industry and its future developments. The last quarter of a century saw practically a revolution in the manufacture of glass containers. About 1900, two ideas, totally different in principle, suddenly blossomed forth. One was Homer Brooke's idea of feeding a machine with a stream of glass flowing by gravity from the furnace—the other was the application of the suction principle in feeding the machine, a process developed by M. J. Owens. From this

time progress in the development of mechanical devices for glass manufacture has been rapid. To-day many bottle manufacturing plants are mechanically operated practically throughout. In the firm belief in the feasibility of the principle of feeding and melting the batch at the same time, and with the view of blazing the trail for future and more extensive research work, the United Glass Bottle Manufacturers, Limited, are arranging to finance some experimental work based on the principles outlined by Mr. Alex. Ferguson, and described to the Society of Glass Technology in May 1923. The theoretical advantages claimed for the new process are: (1) Smaller radiating surface per ton of furnace melting capacity, the ratio being approximately 2 to 1. (2) More intimate contact between the flame and the constituents of the batch. The first mentioned, however, depends upon (a) the feasibility of melting the batch, when pulverised and fed into the furnace in fine powder, in the short time of passage through the flame; (b) the corrosive effects of the stream of melted glass on the side walls of the funnel-shaped melting chamber, as well as the effect on the glass itself.

## PARIS.

Academy of Sciences, October 5.—Maurice Hamy: Study of the photography of stars in full daylight.—H. Deslandres: Complementary researches on the structure and distribution of band spectra. Further considerations regarding the formula giving the frequency as a multiple of the universal constant  $1062.5$ .—R. Szilard: A new method of distinguishing culture pearls. The method is based on the difference in the densities of natural and cultivated pearls. The pearls are placed in a tube with methylene iodide, and bromonaphthalene added drop by drop, with shaking. For a certain mixture, some float at different heights, others go to the bottom of the tube: the latter are the culture pearls. This test is not applicable to "blue" pearls.—R. H. Germay: The cycles of periodic integrals infinitely near partial differential equations of the first order.—A. Dufour: Michelson's experiment. A correction of an earlier communication.—Mlle. Anastasie Anargyros: Colloidal oxide of manganese. Potassium permanganate, reduced in the presence of sodium protalbate, gives stable colloid solutions of manganese dioxide. After purification by prolonged dialysis, the colloid exhibits Brownian motion, is electronegative, and remains unchanged for a month.—Alfred Schoep: Buttgenbachite, a new mineral. This mineral was found adhering to cuprite from the Belgian Congo, and has the composition  $18 \text{CuO} \cdot 3 \text{Cl} \cdot \text{N}_2\text{O}_5 \cdot 19 \text{H}_2\text{O}$ .—R. Weil: The synthesis of cristobalite in the wet way. Precipitated silica and sodium silicate solution, heated in a steel tube at  $650^\circ$ – $750^\circ$  C. for seven to fifteen hours, gave crystals of quartz and cristobalite.—G. Georgalas and N. Liatsikas: The new eruption of the volcano of Santorin (August 1925). Details of observations made during the eruption, July 28–August 23.—Henry Hubert: The seasonal clouds of the rains in western Africa.—L. Petitjean: The distribution of the forces in the neighbourhood of a discontinuity.—Jacques Pellegrin: The presence in Morocco of *Pelobates caltripes*.—Armand Dehorne: Observations on *Lagis Koreni*: hermaphroditism, paramyelinic formations in the ovule; nephridian cells with capsules containing a central body.—G. Mouriquand and Leulier: Avitaminosis C (with or without tuberculosis) and cholesterol of the blood and suprarenals. It is shown that both chronic and acute avitaminosis C is accompanied by profound changes in the metabolism of the

cholesterol of the suprarenal capsules. The trouble is aggravated when associated with tuberculosis.—A. Gruvel and B. Conseil: Remarks on the biology of *Orcinus alalonga* in the sea near the Antilles.—S. Métalnikov and Rapkine: Phagocytosis and immunity in the blastula and gastrula of sea urchins. The larva of sea urchins, even in the blastula and gastrula stages, possesses a marked immunity against *Bact. tumefaciens* and Contacuzène's micro-organism. On the other hand, it is very sensitive to the cholera bacillus. It is shown that the immunity against the first two organisms is due to phagocytes detached from the summit of the primitive intestine.—E. Grynfeldt and H. J. Guibert: The alterative lesions of the lamellar tissue in the course of experimental inflammation.—Léon Binet and René Fabre: The elimination of camphor and oil, after experimental injection of camphorated oil. The camphor is rapidly eliminated, mainly through the kidneys. The oil remains for some weeks at the place of injection, and is slowly absorbed by leucocytic action.

## CAPE TOWN.

Royal Society of South Africa, September 30.—James Moir: Colour and chemical constitution. Pt. xxi.: An astronomical orbit theory of colour with special reference to the dicyclic azo dyes. In the monocyclics, colour is built up from one ring by adding a hapton; in the dicyclics colour is built down by bending the chain. The mathematical theory in the paper does not supplant the author's earlier factorial theory, but endeavours to give it a physical basis.—C. Pijper: Note on witchcraft in Europe: the case of Anne Boleyn. The motive for the execution is considered to have been the belief that Anne Boleyn was an adherent of the witch-cult. The author bases his study on the work of M. A. Murray.—Ernest George: (1) The preparation of umbelliferone.—(2) Some phthalein analogues.—T. R. Sim: The Bryophyta of South Africa.

## SYDNEY.

Linnean Society of New South Wales, August 26.—E. C. Chisholm: The Comboyne Plateau: its general conformation and flora. In this paper the flora of the Plateau is briefly dealt with from an ecological or economic point of view; and a list is given of the plants collected on the Plateau arranged in botanical sequence.—John R. Eyer: A comparison of the male genitalia of the Palæosetidæ with those of other Lepidoptera Homoneura. From a tabulation of the archaic characters of the genitalia, it is shown that the male genitalia of Palæosetidæ possess certain structures quite similar to those in Prototheoridæ and Hepialidæ. They retain more archaic characters than these two families and stand intermediate between Prototheoridæ and Micropterygidæ, the latter family having the greatest number of archaic genitalia characters among the Lepidoptera Homoneura.—Rev. H. M. R. Rupp: Notes on species of Pterostylis. Of the forty-three known species of Pterostylis the author has obtained thirty-two and has made extensive field notes regarding their character, habit and geographical distribution. One of the finest species, *P. Baphistii*, was originally found in a peaty swamp near Fivedock and was thought to be rare but has been found to be fairly abundant at Bulladelah.—Prof. M. Bezzi: On the tachinid genus Euthera, with descriptions of new species from Australia, Africa and South America. A key is given for the determination of the seven known species of Euthera, four of which are described as new.