istry, especially in connection with the rarer elements. The ultimate aim of this work is to determine more accurately the relation of the elements to each other, and incidentally it is doing much to clear up the Periodic Law. Considering the gaps and discrepancies in the work that has been done upon the element *thallium* since its discovery by Crookes in 1861, it is hardly strange that two workers should have selected this for investigation. In the last *American Chemical Journal* a paper by Professor Cushman, of Bryn Mawr, takes up the first chapters of a study of the halogen compounds of thallium; while the last number of the *Zeitschrift für anorganische Chemie* contains a long article by Professor Richard Jos. Meyer, of Berlin, on trivalent thallium, with especial reference to the halogen compounds and the nitrates. There are some very considerable discrepancies between the observations of these two chemists, which will doubtless be cleared up by further study and by comparison. The most important result of Cushman's is the preparation of two isomeric compounds of the formula $Tl_4Cl_3Br_3$, or as they may be written, $TlCl_3 3TlBr$ and $TlBr_3 3TlCl$. Isomerism of this character, while common in organic chemistry, is very rare in inorganic chemistry, and many have asserted that it does not exist. Meyer has added to our knowledge a large series of new thallium salts, and brings out very beautifully the analogies which exist between thallium and gold. As both these authors are continuing their researches, there may be expected decidedly interesting and valuable contributions to our knowledge of thallium in the near future, as each profits by the work of the other.

A NEW and important addition to our knowledge of the chemistry of radium appears in the *Comptes Rendus*, from the pen of Madame Curie. By carefully fractioning many samples of radiferous barium, she has gradually accumulated small quantities of nearly pure radium; indeed, one specimen of a few centigrams was pronounced practically pure and was used for spectroscopic observations. With a specimen of 0.4 gramme concentrated radium, which, however, contained more or less barium, an atomic weight determination was made. This gave an atomic weight of about 174, while the atomic weight of barium is 137.5. This figure of 174 is a minimum, and M. Demarçay considers from spectroscopic observation of the specimen that there was rather more radium in it than barium. In any case it would follow that the atomic weight of radium must be decidedly higher than 174. This would seem to be very strong evidence that radium is an individual element and not a peculiar form of barium.

J. L. H.

ACADEMEI DEI LINCEI OF ROME.

AT the anniversary meeting of the Academei dei Lincei of Rome, Professor Cremona read a biographical notice of Professor Beltrami, who was president of the Academy at the time of his death. The prizes of the Academy announced in the *Atti* are summarized in *Nature* as follows: For the Royal prize of 1000 francs for normal and pathological physiology six candidates entered, and a large number of essays of considerable merit were submitted by them. The prize has been adjudged to Professor Giulio Fano, of Florence, for sixteen papers, dealing, amongst other subjects, with the physiology of the embryonic heart, the doctrine of experimental psychology, the organ of hearing, the graphic registration of respiratory chimism and reflex movements, the latter being a continuation of previous researches on the organs of *Emys Europea*. Of the six candidates for the Royal prize for geology and mineralogy, two were considered worthy of the award, which was therefore divided equally between them. One of the successful candidates, Professor De Lorenzo, chose geological subjects, and sent in about twenty essays, the most important of which dealt with the Trias of the environs of Lagonegro, the Mesozoic mountains of Lagonegro, geological observations on the Apennines of the southern Basilicate and geological studies of the southern Apennines. Professor Giorgio Spezia's work, on the other hand, was entirely mineralogical, dealing with the influences of temperature and pressure, respectively, on the chemical metamorphism of rocks and minerals. From a long and laborious series of experi-

ments, many of them occupying five or six months, the author concluded that pressure has little or no effect, while the influence of temperature is considerable. The results have a special bearing on the theory of quartz formation. The Royal prize for advances in archeological science was adjudged to Dr. Paolo Orsi, of Roveredo, for his investigations of the antiquities of Eastern Sicily. Dr. Orsi has thrown quite a new light on the prehistoric development of the people known as the Siculi, from the neolithic epoch down to the period of expansion of the Greek colonies. A special prize for philosophy and moral science had been offered for an essay dealing with either the theory of consciousness or the foundations of practical philosophy. This prize has been divided equally between Professor Bernardino Varisco and Professor Francesco de Sarlo. The Minister of Public Instruction offered a sum of 3400 lire for two prizes in the physical and chemical sciences, and a like sum for two prizes in the philological sciences, the prizes being confined to teachers in secondary schools. The committee for the prizes in the physical and chemical sciences have awarded two equal prizes—one to Professor O. Marco Corbino, more especially for his work on light traversing metallic vapors in a magnetic field, and the other to be divided between Professors Carlo Bonacini and Ricardo Malagoli, more especially for their joint papers on Röntgen rays. In philology, the prizes have been divided up into a number of minor awards, distributed between Signori Giuseppe Vandelli (whose work stood first), Antonio Belloni, Astorre Pellegrini, Giuseppe Rua, Giuseppe Lisio, Augusto Balsano, Giovanni Negri and Guglielmo Volpi.

THE IMPORTATION OF LIVING ANIMALS.

THE Hon. James Wilson, Secretary of Agriculture, has given notice that under the authority vested in the Secretary of Agriculture by Section 2 of the Act of Congress approved May 25, 1900, entitled 'An Act to enlarge the powers of the Department of Agriculture, prohibit the transportation by interstate commerce of game killed in violation of local laws, and for other purposes,' the list of species of live animals and birds which may be imported into the United States without permits is extended as hereinafter indicated. On and after October 1, 1900, and until further notice, permits will not be required for the following mammals, birds and reptiles, commonly imported for purposes of exhibition: *Mammals*—Anteaters, armadillos, bears, chimpanzees, elephants, hippopotamuses, hyenas, jaguars, kangaroos, leopards, lions, lynxes, manatees, monkeys, ocelots, orang-outangs, panthers, raccoons, rhinoceroses, sea-lions, seals, sloths, tapirs, tigers or wildcats. *Birds*—Swans, wild doves, or wild pigeons of any kind. *Reptiles*—Alligators, lizards, snakes, tortoises or other reptiles. Under the provisions of Section 2 of said Act (as stated in Circular No. 29 of the Biological Survey, issued July 13, 1900), canaries, parrots, and domesticated birds such as chickens, ducks, geese, guinea fowl, peafowl and pigeons are subject to entry without permits. But with the exception of these species and those mentioned above, special permits from the Department of Agriculture will be required for all live animals and birds imported from abroad, and such permits must be presented to the collector of customs at the port of entry prior to delivery of the property.

STREET CARS IN GLASGOW.

THE street car system of Glasgow is owned and operated by the city under the direct supervision of a committee of the town council. The report for the year ended May 31, 1900, as abstracted by our consul, shows that the total length of double track operated by the city is 41 miles. The gross capital expenditures for the system since 1894 (independent of operating expenses) have been $5,164,975, and the present indebtedness is $4,061,806. The capital invested is $4,559,502. Of the 41 miles of double track, five miles have electric traction, the rest being operated by horses. The total receipts of the system during the year were $2,286,850. The working expenses were $1,676,412, leaving a balance of $610,438, of which there was expended some $84,000 for interest on capital, $57,501 for sinking fund, $156,096 for depreciation written