surface is the first of the kind ever published.

NOTES.

WORD has been received of the death, on October 25th, of Dr. Alberto Sanchez, director of the Meteorological and Astronomical Observatory of San Salvador.

A PAPER on Climate was read by Dines before Section III. of the Sanitary Institute, at its meeting at Newcastle-on-Tyne last summer, and has been separately published as a reprint from Vol. XVII., Part III., of the Journal of the Sanitary Institute.

R. DEC. WARD.

HARVARD UNIVERSITY.

NOTES ON INORGANIC CHEMISTRY.

IN the last number of the *Chemical News*, Prof. Crookes describes an examination of the alleged new element 'Lucium' which was patented by Barrière. The lucium was furnished by M. Barrière, and after both spectroscopic and chemical investigation was found to be impure yttrium. Didymium, erbium and ytterbium were also found to be present, which may account for the atomic weight given for lucium, 104, that of yttrium being 89. Prof. Crookes also worked up a specimen of monazite according to Barrière's patent and found that the 'lucium' obtained was the same impure yttrium.

In the same number of the *Chemical News*, Prof. Fresenius makes a disclaimer of any confirmation of Barrière's discovery of lucium.

THE constitution of the so-called nitrogen-iodid is the title of a paper in the Proceedings of the Chemical Society (London) by F. D. Chattaway. This explosive substance, the exhibition of which is familiar to every student of elementary chemistry, has had several different formulæ assigned to it, but its composition has never been satisfactorily settled, in spite of the numerous chemists who have studied it. The author concludes that it is not a mixture, and that its formula is either NHI_2 or NH_3I_2, most probably the latter, which would make it an additive and not a substitution product. This suggestion appears never to have been put forward before, and accounts well for many of the reactions of the substance.

S. HAGA in the same Proceedings considers how mercurous and mercuric salts change into each other. In general mercuric salts are changed into the mercurous when in contact with mercury and water. Mercurous salts in solution or moist when exposed to strong daylight are dissociated even at ordinary temperature into mercury and mercuric salts. In boiling water the change takes place more readily, the mercury distilling with the steam. Only at a higher temperature than boiling water are mercurous salts oxidized to mercuric, at lower temperatures the change being a dissociation. This would seem to offer an explanation of the darkening which sometimes takes place in calomel. Exposed to sunlight when slightly moist it would dissociate into mercury (occasioning the darkening) and corrosive sublimate. Old calomel is sometimes considered to be dangerously active. The physiological action of calomel would also seem to be due, not to an oxidation to the bichlorid, but to a slow solubility of the calomel in the fluids of the stomach and intestine. J. L. H.

PSYCHOLOGICAL NOTES.

THE January number of the *American Journal of Psychology* will contain a characteristic and very interesting article by President G. Stanley Hall entitled 'A Study of Fear.' President Hall sent out from Clark University thirty-two questionnaires relating to the child's mind and its development, and has secured in answer to these an enormous mass of material. He has worked over the data of one of the syllabi only, that concerned with fear, and though

the exposition is condensed it will occupy one hundred large pages. Psychology may have been lacking in concrete facts until recently, but now it seems in danger from a plethora of facts. The nearly 2,000 people who have sent in returns have described 6,456 fears. It seems that thunderstorms are feared most frequently and next reptiles; then follow strangers, darkness, fire and death. Boys report on the average 2.21 fears, while girls report 3.55. There is an increase in the number of fears up to the age of fifteen for boys and up to the age of eighteen for girls, but this is probably due to fuller descriptions from those who are older. President Hall classifies the kinds of fears, and under each heading gives a number of examples followed by a discussion. Some of the fears, such as those connected with high places, with loss of orientation and with being shut in, are psychologically of much interest. President Hall adopts an extreme genetic standpoint. He holds that "the conscious ego is but a very inadequate and partial manifestation of the soul, that it is a feeble, flickering taper in a vast factory full of machinery and operatives, each doing its work in unobserved silence." Instinct is much older than intelligence; it is inherited not only from our anthropoid ancestors, but from remotest times, associated with the persistency of cells or protoplasm rather than with a developed nervous system. The fear of high places, President Hall thinks, is a vestigal trace, like the gill slits under the skin of our necks, antedating limbs and inherited from our swimming and floating ancestors. It would be difficult to disprove President Hall's theory, but it does not seem to follow from his facts. Many prevalent fears, as of weather and serpents, are not in accord with our urban civilization, but I doubt if they will persist a century hence, let alone through millions of years. The three children of which the present writer knows most have not shown the slightest fear of thunderstorms, and had to be taught to fear snakes owing to the presence of poisonous species. Fears of death, of disease and of the end of the world are among the common ones, and these are not inherent in protoplasm. Children undoubtedly show instinctive fears, but I believe that most of their fears are learned and not inherited.

The forthcoming number of *The Psychological Review* will contain an experimental study of the physiology and psychology of the telegraphic language, by Prof. W. L. Bryan and Mr. Noble Harter, of Indiana University. Mr. Harter is himself an expert telegrapher, and has examined the methods and results of several hundred operatives, making special experiments on a large number. The highest sending record so far as known is forty-nine words per minute, by the Morse code, which would be about eight taps in each second. With those unskilled the ability to send is greater than the ability to receive, but with experts the reverse is generally the case. Twenty to twenty-four words of four letters each may be taken as an ordinary rate. Elaborate curves are given in the paper showing improvement with practice week by week. The sending curve rises more rapidly and more uniformly than does the receiving curve from the beginning of practice to the learner's maximum ability. The receiving curve rises more slowly and irregularly and shows a failure to rise for several months in two places. The curves may represent the rate of other acquisitions and show interesting differences between motor and apperceptive processes. Each operator has an individual language and none conforms exactly to the type. In order to appreciate the extensive results and many inferences drawn from them the reader must refer to the paper which is a contribution of value to the

motor problems now prominent in psychology.

WHILE experimental psychology has been successful in extending its work from sensation to movement, it has found great difficulty in devising suitable experiments on the feelings. We may, therefore, welcome a paper by Prof. Joseph Jastrow, which will appear in the January number of the *Popular Science Monthly*, entitled 'The Popular Æsthetics of Color.' At the Columbian Exposition Prof. Jastrow arranged a psychological laboratory and many visitors were tested. The results have not yet been published, but the preferences of 4,500 people for color were separately determined, and these have now been collated with interesting results. J. McK. C.

SCIENTIFIC NOTES AND NEWS.

PROF. G. SCHIAPARELLI, the Italian astronomer; Prof. A. Heim, the Swiss geologist; Prof. G. Lippmann, the French physicist, and Prof. G. Mittag-Leffler, the Swedish mathematician, have been elected foreign members of the Royal Society.

THE subject of the lecture by Mr. Alexander Agassiz before the American Society of Naturalists will be 'Methods and Problems of Deep Sea Investigation.'

DR. FRITZ WESTHOFF, docent in zoology in the Academy at Münster, died on November 12th at the age of forty years. He had published several works on the natural history of Westphalia. Dr. Strauss, professor of pathology at the Paris Medical School, known for his writings on tuberculosis and cholera, has died at the age of fifty-one. Dr. Ernst Engel, formerly director of the Prussian Statistical Bureau, has died at Lössnitz at the age of seventy-six. The death is also reported of M. Alfred Nobel, the inventor of dynamite.

LORD RAYLEIGH and Prof. W. Ramsay have been elected corresponding members of the Berlin Academy of Sciences.

THE celebration of Lord Kelvin's jubilee as professor of natural philosophy in the University has been followed, says the *Lancet*, by the recognition of his jubilee as a member of the Glasgow Philosophical Society. The society have presented Lord Kelvin with an address and elected him an honorary member. A bust, subscribed for by the members, has been placed in the Society's rooms and a replica presented to Lady Kelvin. The proceedings in connection with these events were presided over by Dr. Ebenezer Duncan, the president of the Society, and the address was read by Dr. Freeland Fergus, the honorary secretary.

A MONUMENT in honor of the engineer Grashof was unveiled at Karlsruhe on October 26th. An address was made by Prof. J. Hart, giving an account of Grashof's contributions to Science.

THE annual *Fest Sitzung*, of the Munich Academy of Science was held on November 14th. Prof. Walther Dyck made an address on the relations between pure and applied mathematics.

THE German Geographical Congress will hold its eleventh meeting at Jena on April 21st, 22d and 23d. Among the subjects proposed for discussion are polar investigations, physical questions (earthquakes, etc.), biological geography, the topography and natural history of Thuringia, and the teaching of geography in schools.

THE celebration at Lisbon of the fourth centenary of the discovery of the maritime route to India, by Vasco da Gama, has been postponed from July, 1897, the anniversary of his sailing from Lisbon, until May, 1898, the anniversary of his arrival at Calicut.

UNDER the auspices of the Academy of Science, Letters and Arts of Rovereto, a committee has been appointed which is making arrangements to celebrate at Rovereto, in the spring of 1897, the centenary of the birth of the eminent philosopher, Antonio Rosmini.

THE *Lancet* states that there will be held in Berlin in October, 1897, a conference of delegates of different Governments to discuss the steady increase of leprosy and the apparent failure of all measures to check this plague. The date of the conference had been fixed for the month of March, but Prof. Koch's absence necessitated a