

puff had its characteristic black colour, due to the quantity of accessory sand and dust.

At 22 o'clock, the upper crateret gave out a little vapour and a little lava, but again became quiet. At 23 o'clock, the lower crateret showed new cracks around about it, with the escape of vapour.

During the night, between the 4th and 5th, the lava again increased, so that it is reported the next morning to be advancing at the rate of 25 m. per hour. It had turned to the west, and flowed down on the south side of the Lion's Paw, or the Observatory ridge, and had divided into two main streams, which subsequently subdivided into minor ones that radiated in different directions.

On July 5, the explosions at the central crater were powerful, so as to form from time to time pine-shaped vapour plumes over the volcano. At others, the vapour was bent over the Atrio by the sirocco wind, so as to spread a shower of dust and sand right across that depression. One of these is well indicated in Fig. 4.

So far no damage has been done except to a private carriage road that crosses the Piano di Ginista to the lower railway station. No cultivated land has been reached. The lava is, however, on a steep slope, and is flowing in the direction of the valley called the Cupa Pallarino, over the edge of which a magnificent cascade of incandescent rock was formed in 1872.

The eruption is quite identical in all its details with the usual antecedent ones, resulting from the formation and extension outwards of radial dykes. Many of such eruptions I have described in these pages and elsewhere, and fully explained their mechanism, production, growth and closure.

Three results may happen: (1) The radial sheet of rock may cool and seal the rift so that the volcano will soon return to the cone-forming stage, as seems to be indicated by the appearance of pasty lava cakes amongst the ejecta on July 5. (2) The fissure may enlarge and extend downward with the outflow of lava, as in 1872, with the formation of a much larger central crater. (3) It may follow the more usual course, as its immediate predecessor, and give issue to a small but almost continuous outflow of lava during months or years.

H. J. JOHNSTON-LAVIS.

*P. L. CHEBYSHEV (TCHEBICHEFF).*

THE death of Prof. Chebyshev has hardly been noticed in the English papers; and even in Russia, except for a short sketch in the University *Bulletin*, and in a speech of Prof. Markoff's with reference to him, which is reported in the *Bulletin de l'Académie impériale des Sciences de St. Pétersbourg*, no biographical notice has appeared on this celebrated mathematician.

Paphnyty Levovitch Chebyshev was born on May 14, 1821, at Akatovo, in the government of Kaluga; and after being educated privately, entered Moscow University; he completed the usual courses, and took his Bachelor degree. In 1846 he received his Master's degree at the same university for his "Essay on the elementary analysis of the theory of probability," and in the following year commenced a series of lectures as assistant lecturer in Petersburg University. He received the Doctor's degree in 1849 for his well-known "Theory of Comparison," which contained a model exposition of the formation of the theory of numbers, and clearly proved the strength of his mathematical genius. In 1852 Chebyshev was promoted to an extra professorship, and in 1860 to a regular professorship. During 1853-59 he was elected successively assistant, extra, and ordinary tutor in the Academy of Sciences. He remained a professor, doing active work of the most valuable kind, thirty-five years, during the course of which, at various times, he lectured on every branch of pure mathematics, and during one period—in 1849-51—on practical mechanics.

In his numerous writings Chebyshev left a very great deal to the reader's imagination, often giving deductions simply without proofs, but in his lectures he never left a point without the fullest explanation; and his lectures are distinguished not only for elegance and accuracy, but for their extraordinary simplicity; the already-mentioned "Theory of Comparison" may serve as a good example, as well as his proof of Bernoulli's theorem, which is now given in all works on the theory of probability.

The professorial services of Chebyshev had a great significance to the Petersburg University. He placed the teaching of mathematics on a firm basis, and formed an independent school of thought. All the present staff of mathematical teachers in the Petersburg University, except a very few of quite the youngest, are his pupils and follow in his footsteps. His moral influence did not, therefore, cease when he resigned his professorship in 1882. The Council of the University elected him an honorary member, and his pupils kept up the habit of going to him on certain days to have lively discussions on various scientific subjects, in which his indomitable energy acted on his hearers in the most animating manner. He was always to be found engaged either on some complicated calculation or on models of mechanism he had invented.

Everything Chebyshev did bore the impress of genius; he invented new methods for the solution of difficult problems, which had appeared and had remained unsolved; he suggested himself a series of most important problems, and worked at them till the end of his life. His very first writings on the theory of numbers, devoted to the problem of the inter-dependence of the prime numbers, and on limits, gave him a European reputation, and his succeeding investigations on irrational differentials, and maximal and minimal quantities, assured his position as the most original mathematician of the nineteenth century.

He died November 26, 1894; his works will shortly be republished by the Petersburg University.

NOTES.

As already briefly announced in these columns, the Institute of France will celebrate its centenary next October. The programme of the *fêtes* which have been organised in connection with that event has just been sent to the Members and Correspondants of the Institute, the intention being that the centenary shall be marked by a reunion of all the men of light and leading who belong to the Institute. On the afternoon of October 23, there will be a reception in the Palais de l'Institut of the Foreign Associates and Correspondants and of French Correspondants, and in the evening the Minister of Public Instruction will hold a reception. On October 24, a meeting will be held in the Great Hall of the Sorbonne, at which the President of the Republic will attend. Discourses will be delivered by the President of the Institute, the Minister of Public Instruction, and M. Jules Simon. A banquet, to which all the Associates and Correspondants are invited, will take place on the evening of the same day. On October 25, there will be a special performance at the Comédie Française, and a reception will be held by the French President. The celebration will be concluded on October 26, by a visit to the Château de Chantilly. It will be seen from this that the hundredth anniversary of the foundation of the Institute of France will be celebrated in a manner worthy of the high position which the Institute holds among the world's societies of science, art, and literature.

THE seventh session of the Australasian Association for the Advancement of Science will be held in Sydney, from January 3 to 10, 1897, under the presidency of Prof. A. Liversidge, F.R.S. The Presidents and Secretaries of the Sections are