

and SUPPLEMENT for December 5, 1903. He also brought the description down to date.

After the destruction of the slender spine in the latter part of July and the early part of August, 1903, the "cone" of the new cone rose bodily until it had regained a large part of the height lost by the spine. Then after the great activity of September, 1903, had lessened, the cone was seen to be altering its contour from day to day, the southwestern side of the top being blown away by the numerous small eruptions, leaving a pronounced narrow ridge along the northeast side of the top of the new cone. In December this showed an almost overhanging face toward the southwest, while a new spine or obelisk was becoming prominent on the site of the earlier one. In January, 1904, the reports state that the new cone presented a double summit, the one very sharply conical and the other jaggedly turreted. There is but little activity now, though steam rises copiously from time to time, and an occasional "dust-flow" descends upon the upper portion of the Rivière Blanche gorge.

The slopes of the mountain which were protected from the fury of the volcanic hurricanes are now thickly covered with grass, and the greater part of the town is green, too. Comparatively few walls are standing, and the site of St. Pierre looks like a plowed field.

The officers of the club are: President, Prof. R. T. Hill, geologist, and secretary, Mr. H. H. Smith, of the Washington bureau of the World. The next meeting will be held in New York in the fall.

#### The Commercial Far East.

"Commercial Japan in 1904," "Commercial Russia in 1904," "Commercial Korea in 1904," and "Commercial China in 1904" are the titles of monographs just prepared by the Department of Commerce and Labor through its Bureau of Statistics. These monographs, which discuss commercial and other conditions in the countries in question, are now in the hands of the printers and will be published as a part of the Monthly Summary of Commerce and Finance, a portion in the issue to be made within a few days, and the remainder in the issue at the close of the present month. They discuss commerce and commercial conditions in each of the countries in question, not only at the present time, but the history of their commerce, their trade relations with the various parts of the world and with each other, the total value of their present commerce compared with that of earlier years, their trade with the United States, with other leading countries of the world, and with each other. Many other important facts regarding conditions in those countries are also discussed, such as railways, telegraphs, routes of communication, manufacturing industries, the class of merchandise imported, and the class of merchandise exported.

The total commerce of the territory fronting upon and immediately adjacent to the scene of present hostilities aggregates, in round terms, about \$600,000,000, of which considerably more than one-half is imports. Japan's commerce is about equally divided between imports and exports, but in the case of China and Asiatic Russia imports greatly exceed exports, and this is also true of Hongkong, which passes most of its imports on into China and draws from China most of the articles which become its exports. Probably three-fifths of the total commerce of the countries in question, taken as a whole, is in the form of imports, and the United States is year by year supplying a larger share of those imports of the countries in question and gaining upon other countries in the relative share which it supplies thereof. Of the exports from the countries named, the United States is the largest single purchaser. The tea, the raw silk, the manufactured silk, the rice, the matings, and other products of this character which form the bulk of the exports of China and Japan go more largely to the United States than to any other single country of the world, while as to Asiatic Russia and Korea, their exports are at present so small as to be of little importance in a discussion of the commerce of the countries in question.

The more important of the exports of the United States to the section in question are cotton and cotton goods, kerosene, flour, lumber, manufactures of iron and steel, manufactures of leather and tobacco. Raw cotton exported to this particular section of the world goes chiefly to Japan, and the market in Japan for American cotton is influenced largely by the surplus of cotton in India, which is of shorter staple and therefore of lower price. In years of short supply in India Japan turns to the United States for its raw cotton, but in years of plentiful supply in India a large proportion of the raw-cotton purchases of Japan are the product of India. In cotton manufactures China is the most important customer. The exports of cotton manufactures to China in the past year have materially fallen off, though the reduction in imports of American cottons into China is no greater proportionately than the

reduction in such imports from other countries. This reduction in importations of cotton goods into China is due in part to the unsettled conditions which have prevailed during the year, and in part to the increased importations of cotton yarn and increased domestic production of cotton goods.

Kerosene is an even more important item in our exports to the Orient, and in this article the trade is barely holding its own, kerosene from Russia and Sumatra proving a very active competitor. To China the exports of mineral oils from the United States fluctuate greatly, ranging all the way from 20 to 55 million gallons per annum. In 1901, for example, the total was 27 million gallons; in 1902, 57 millions, and in 1903, about 20 millions. To Hong-Kong the shipments are more steady, ranging from 15 to 18 million gallons per annum. To Japan the shipments also fluctuate in some degree, though not so greatly as in the case of China. In 1899 the total to Japan was 32 million gallons; in 1902, 59 millions, and in 1903, 35 millions.

Flour as a factor in our export trade to the Orient has of late attracted considerable attention, but the total is not large, nor the growth rapid. The total value of flour exports to the Orient from the United States in the last fiscal year was: To Hong-Kong, \$4,628,224; to Japan, \$2,247,199; to China, \$289,637, making the total to the countries under consideration \$7,165,060, or less than 10 per cent of the total exports of American flour in 1903.

#### The Mystery of Worlds.

"Few people need to be told that a rotating fluid mass is shaped very much like an orange," says Miss Agnes M. Clerke, writing in Knowledge on "The Fission of Rotating Globes." "It assumes the form of a compressed sphere. And the reason for its compression is obvious. It is that the power of gravity, being partially neutralized by the centrifugal tendency due to axial speed, gains progressively from the poles, where that speed has a zero value, to the equator, where it attains a maximum. Here, then, the materials of the rotating body are virtually lighter than elsewhere, and consequently retreat furthest from the center. The 'figure of equilibrium' thus constituted is a spheroid, a body with two unequal axes. In other words, its meridional contour—that passing through the poles—is an ellipse; while its equator is circular. Now we know familiarly, not only that a spinning sphere becomes a spheroid, but that the spheroid grows more oblate the faster it spins. The flattened disk of Jupiter, for instance, compared with the round face of Mars, at once suggests a disparity in the rate of gyration. But there must be a limit to the advance of bulging, or the spheroid, accelerated *ad infinitum*, would at last cease to exist in three dimensions! Clearly this unthinkable outcome must be anticipated; at some given point the process of deformation must be interrupted. A breach of continuity intervenes: the train is shunted on to a branch line. Nor is it difficult to divine, in a general way, how this comes to pass. Equilibrium, beyond doubt, breaks down when rotation attains a certain critical velocity, varying according to circumstances, and the spheroid either alters fundamentally in shape, or goes to pieces. So much plain common sense teaches; yet the precise determination of the course of events is one of the most arduous tasks ever grappled with by mathematicians. M. Poincaré essayed it in 1885; it was independently undertaken a little later by Prof. Darwin; and the subject has now been prosecuted for eighteen years, chiefly by these two eminent men, with a highly interesting alternation of achievement, one picking up the thread dropped by the other, and each in turn penetrating somewhat further into the labyrinth."

#### The Current Supplement.

Mr. Waldon Fawcett opens the current SUPPLEMENT, No. 1471, with a well-illustrated, instructive article on the manufacture of emery wheels. Mr. Charles Stevenson's excellent paper on whale oil is concluded. The Baltimore fire was made the subject of a careful study by Mr. F. W. Fitzpatrick. His conclusions are published in the current number of the SUPPLEMENT. "A Capture of Elephants at the Kraal of Ayouthia, Siam," is the title of a descriptive article that will surely be of interest to many readers. The building of Harbin is described in a paper on the conditions in Manchuria by United States Consul Miller, of Niuchwang, China. The behavior of selenium with regard to light and temperature, a subject which has been of considerable importance to physicists ever since the invention of Prof. Bell's radiophone, is recounted in a brief but valuable discussion.

A yield of 5 cubic feet of acetylene gas from every pound of calcium carbide is guaranteed by manufacturers in the United States. In Germany acetylene gas is mixed with a gas of lower candle power, containing about 25 per cent acetylene, and used in railway cars.

## Correspondence.

### The Origin of the Sheepeater's Monument.

To the Editor of the SCIENTIFIC AMERICAN:

I have noted with interest your illustration, in your issue of February 13, of "Sheepeater's Monument" in Idaho, with its accompanying article; but the writer of the article does not seem to have made it very clear precisely how the column was formed, which he ascribes to the action of "wind and weather." In fact, he explains its origin in the following language: "At first a cloudburst, possibly, formed a channel; this became a cañon, and as the sides of the mountain washed away, a column-shaped mass, which was more resistant and harder than the rest, was left. Accident made the top of the column larger, as chance shaped the lower portion."

The author of the paper thus apparently regards the stone capping of the column as a mere incident having nothing to do with the formation of the column. May I be permitted to say, this is an explanation which does not explain. Besides, it is not easy to see how "a column-shaped mass harder than the rest," and positioned exactly vertical to the horizon, could have existed in the original mass from which the column was formed.

From the published photograph and description it seems to me clear that the column is the work of rain, and of rain only; and that wind, and, in a general sense, "weather," had nothing to do with it; and that so far from the capping-stone being an accident, the column owes its existence to it. Such stone-capped pillars are found in greater or less degrees of perfection in various parts of the globe, especially in mountainous districts; they are, I believe, always found in unstratified material containing boulders or flat stones, always on the flanks of ravines, and always taper toward the top. In several ravines near Botzen in the Tyrol (southern watershed of the Alps) are found hundreds of such columns consisting of indurated mud containing boulders, varying in height from 20 to 100 feet and usually capped by a single stone. Their mode of formation is described by Lyell in "Principles of Geology," I., 331, and a diagram shows the outline of an original valley excavated in red porphyry, and partly refilled by a glacial moraine, comprising hard, red mud containing boulders. This mud, after a rain, being heated by the sun, cracks; succeeding rains enlarge these cracks to furrows, and the furrows to gullies, till the material is cut up into a series of columns or pillars. The tops of these pillars are gradually worn off by succeeding rains, until a stone is exposed, which protects the material immediately beneath it, and thus the column is carved out, beginning with the top, so to speak, and becoming longer and longer as the unprotected mud is washed away on all sides. Some are found where large flat stones appear resting on a mere point, giving an umbrella-like appearance; in others the stones have fallen off and the column then wears away rapidly, until, perhaps, another stone is reached which for a while prevents further disintegration. The upper part of the column is always thinner than the lower part, because it has been longer exposed to the action of the rain. Further, the sectional contour of the pillars conforms to that of the capping-stones, and they are therefore like the "Sheepeater's Monument," more often pyramidal than conical.

I have inclosed you a sketch (from the same source) of the "Dwarf's Tower" near Viesch in the canton of Valais (Switzerland), composed likewise of hardened mud and gravel, and capped by angular blocks of gneiss.

I judge that the "Sheepeater's Monument" consists of a similar mixture of indurated clay and gravel and that it is the remnant of a glacial moraine which formerly filled the valley to a point above the level of the capping-stone and in which moraine the existing ravine has been scooped.

As to the senseless name "Sheepeater's Monument"—it would be interesting to know if it were not originally named by its discoverer after Jupiter, whose appellation was subsequently corrupted by the natives into something they could understand.

GEORGE W. COLLES.

Milwaukee, February 23, 1904.

It not infrequently happens that, in any new development, some minor detail gives more trouble than all the rest of the apparatus. In this respect, automobiles are notably weak in two points. Tire troubles are probably responsible for the greatest number of breakdowns, and the tire itself requires constant watching and care. The other weak point is the apparent lack of an entirely reliable igniter. At the recent motor car trials, held in London, England, in September, under the auspices of the Automobile Club of Great Britain and Ireland, no fewer than forty-one per cent of the cars that stopped did so on account of trouble with ignition.—Electrical Review.