Naturalist are able to announce that with the next number the size of the magazine will be increased to 40 pages. Several important and interesting contributions are announced for 1872; and we hope that this useful magazine will meet with the support and circulation that it deserves.

PROF. J. LAWRENCE SMITH, in the September number of the *American Journal of Science*, gives the following analysis of the meteorite stone which fell near Searsmont, Maine, on the 21st of May of this year:—

Nickeliferous Iron	14·63
Magnetic Pyrites	3·06
Olivine	43·04
Bronzite, a hornblende with a little albite or orthoclase and chrome iron . . .	39·27

IT is stated that a crater of a new volcano has been formed on the mountain near Bivoria in the province of Girgenti in Sicily.

THE cyclone which visited St. Thomas and Antigua on the 21st of August, continued its course towards the Bahamas, and reached Turks Island on the 22nd. The storm occupied about eight hours in travelling from St. Kitts to St. Thomas, 150 miles, and so had a rate of progress of about 18¾ miles per hour, but from St. Thomas to Turks Island the velocity decreased to about 12½ miles per hour, taking about 31 hours to travel 380 miles.

A SLIGHT shock of earthquake was felt at Kingston, Jamaica, at 4 P.M. on the 3rd of September.

THE star showers of the 10th and 11th of August last were attentively watched in America as in Europe. At Sherburne, New York, according to the American *Journal of Science*, a party of six persons watched between 11.40 and 12, and saw 48 meteors. In the next hour 143 were seen, and in the first eighteen minutes of the next hour 32. The latitude of the radiant point was 1½° less than that of the nebula in Perseus.

Les Mondes gives the particulars of a remarkable meteorite observed at Marseilles by M. Coggia, on the 1st of August. It made its appearance at 10h. 43m., Marseilles mean time, at a point situated near the centre of the triangle formed by ζ Serpentis and θ and η Ophiuchi. The course was remarkably slow, in an easterly direction; at 10h. 45m. 30s. it passed between μ_1 and μ_2 Sagittarii, and at 10h. 46m. 35s. it almost occulted Saturn. The course became then still slower; at 10h. 49m. 50s. it passed a little below o Sagittarii, and at 10h. 50m. 40s. south of the star f of the same constellation. At 10h. 52m. 30s. it passed between ι and θ Capricorni, where it remained for a moment stationary, then changing its course, it took a northerly direction, leaving at 10h. 57m. 50s. the star υ Aquarii 1° 30′ to the west, and again stopping, at 10h. 59m. 30s., a little south-west of β Aquarii. Regaining its original easterly direction, it then passed β Aquarii, stopping again near ζ Aquarii, and then fell rapidly in a perpendicular direction near δ Capricorni, and leaving to the east the almost full moon. It finally disappeared a little north of θ Pisc. austral. at 11h. 3m. 28s. The diameter, which was at first about 15′, diminished rapidly, was a little over 4′ when it approached Saturn, and finally had scarcely more than the apparent size of Venus. During its perpendicular fall to the horizon, it gave out vivid scintillations.

THE *Times of India* gives the following story:—Advices from Ihangara state that at a place about forty miles distant on the hills, a thunderbolt fell on the 22nd of August after a heavy downpour of rain. The ground was literally cut up in consequence, and the whole of the huts standing there as well as their inmates were swallowed up in the chasm. Such a catastrophe has never been known in Sind. Some fifty or sixty persons perished.

ON the 11th of July a strong shock of earthquake was felt at Valparaiso in Chile, preceded by a loud rumbling noise. On the 20th, at 11 P.M., a very severe shock was felt at Santiago de Chile.

THE following account of a hairy family appears in the *Indian Daily News*:—"The hairy family of Mandalay consists of a woman of about forty-five years of age, a man of twenty, and a girl of eleven, with hair over every part of their faces, forehead, nose, and chin, varying in length from three inches to a foot, and exactly the colour and texture of that on a skye-terrier. The hair of their heads, on the contrary, is just the same as on any ordinary Burman; they appear to be quite as intelligent as the ordinary Burmans. The father of the woman was the first of the hairy progeny. He married an ordinary Burman woman, and the issue of the union was the present hairy head of the family. She married an ordinary Burman, and has issue, a son about twenty-three years of age, not hairy, and the boy and girl alluded to. The Burmese explanation of the phenomenon is, to say the least, curious, and might possibly possess a special interest for Mr. Darwin. These hairy people would be worth a fortune to the enterprising Barnum if he could get hold of them, but the King will not allow them to go out of his dominions."

SCIENTIFIC INTELLIGENCE FROM AMERICA *

THE fourth Annual Report of the Trustees of the Peabody Museum of American Archæology and Ethnology has made its appearance, and presents a gratifying picture of the progress of this great establishment. The most important additions during the year have been a collection of stone implements from Cape Cod presented by Mr. Samuel H. Russell, a series of duplicates from the Christie collection of London, and specimens obtained from explorations in Tennessee by Mr. Dunning, and in Central America by Dr. Berendt. These are supplemented by numerous single donations of greater or less value. In the course of some critical observations upon the specimens received by the Museum, attention is called to the great value of a collection of crania and human bones obtained from certain mounds in Kentucky by Mr. S. S. Lyon, in the course of explorations made under the combined auspices of the Smithsonian Institution and of the Peabody Museum. The peculiarities of the crania of the American Indians have already been referred to by various writers, but some curious facts are detailed in the report in regard to other portions of the skeleton. Thus the ulna and radius, as compared with the humerus, were found to be much larger in the mound Indians, while the length of the tibia, as compared with the femur, is longer in the whites. In quite an unusual number of Indian skeletons the two fossæ at the lower end of the humerus were found to communicate, producing a perforation. This feature, rarely met with in the white races, occurs quite frequently in the mound remains, while in the black race it appears to be still more frequent. An additional peculiarity of the mound bones consists in the flattening of the tibia, which, until the date of the present publication, has not been recorded as occurring in America, although remains from the dolmens of France, the quaternary drift of Clichy, and the burial caves of Cro-Magnon and Gibraltar, exhibit this in a very marked degree. As regards the pelvis, the breadth in the Indian races is found to be less than in the whites, while the three diameters of the brim of the true pelvis are greatest in the Indians. The transverse diameter and the size of the outlet of the pelvis are much the largest in the Indian, while the sacrum is less curved, supplying conditions which in the process of parturition are more favourable to the Indian women.—We have already referred at various times to enterprises on the part of the Peruvian Government in exploring the less-known portions of that country, and we find in late South American journals details of a movement looking toward the examination of the regions of the Ucayale and Urubamba. The object of the expedition is to find a port which will open up to the Department of Cuzco a communication with the main branch of the Amazon, and thence to the Atlantic. The work is to be under the direction of Mr. Tucker, favourably known in similar enter-

* Communicated by the Scientific Editor of *Harper's Weekly*.

prises before. The present plan is for Don Raymundo Estrella and another commissioner to start from the port of Illapani in two large canoes, and make their way by the Urubamba to Iquitos, which is the Peruvian naval station on the Amazon. This is for the purpose of obtaining such a knowledge of the rivers as may fit them to serve as pilots to the steamer which is to ascend the Ucayale and explore the Urubamba. They are to make their way back about thirty leagues from Cuzco.—The daily papers of August 29 contain the latest reports from Captain Hall and his steamer *Polaris*, in the form of a telegraphic despatch from the United States ship *Congress*, dated at St. John's, Newfoundland, August 28. It will be remembered that this vessel was detailed by the Secretary of the Navy to carry supplies of provisions and coal to be stored in Greenland for the use of the Arctic expedition. She left St. John's on her outward trip on the 3rd of August, reaching Disco on the 10th, passing hundreds of immense icebergs on the way. The *Polaris* was found at Disco, having reached that place only six days in advance, although she started long before the *Congress*. Captain Hall and his party were in good spirits, and sanguine of success. The *Congress* reports that Captain Hall left Disco on the 17th of August for the north, where communication with him will, of course, be uncertain for some time to come, unless the object of the expedition in reaching the north pole can be accomplished in time to return during the present year. It is understood that instead of going by way of Jones Sound, as was the original intention, Captain Hall will proceed along the eastern side of Smith Sound. By all accounts the water is much more open than for many years past, there being comparatively little drift-ice to bar progress. To the surprise of the officers of the *Congress*, the summer temperature of Greenland was found to be quite elevated, and there was a luxuriant vegetation to be seen around the settlement of Disco.—The Panama papers speak of the great success which several whaling ships are now meeting with in the Bay of Panama, quite a number of whales having been killed there every day for some time past. It is stated that at the time the steamship *Chile* passed Payta, a school of small whales had been there in such abundance that the boats were afraid to leave the harbour.—We have already referred to the hydrographical and other explorations in Alaska by Mr. William H. Dall, under the patronage of the Coast Survey; and we now learn that he left San Francisco for the north at the end of August, bound direct to Iliuliuk Harbour, Oonalaska, there to go into winter-quarters. It was his intention, according to his instructions, to make use of every favourable opportunity to survey the vicinity of that port, and in March to proceed westward, sounding and surveying as far as Kamtchatka, and then turning north and eastward to Cape Romanzoff, to return to Oonalaska, and thence proceed homeward. The vessel obtained for the expedition, although small, is conveniently adapted for its purpose, and can carry provisions for six months; and it is expected that fresh supplies will be forwarded from San Francisco in March next. The party, besides Mr. Dall, consists of Prof. Harrington, the astronomer, Captain W. G. Hall, sailing-master, with two mates and five men.

ON THE STUDY OF SCIENCE IN SCHOOLS *

II.

WE now come to the second heading of our discourse, viz., the objects and aims of the experimental sciences, and the reason why we study them. Now the main object of science is the discovery of new truths, and the destruction of old errors. The human mind, much as it loves truth, has in the course of ages given birth to an infinite number of fallacies, specially in regard to the operations of Nature. Fallacies handed down by tradition; fallacies elaborated in the mind of dreamers, and theorists, and believers in magic; fallacies founded upon inaccurate observation, false experiment, perverted reasoning; these have ever been the barriers which have most retarded the progress of true science; and the earlier natural philosophers had to contend against a mass of such pre-existent opinion and superstition. We can scarcely realise in the present day the amount of superstition which existed among all classes even two hundred years ago, and at an earlier period it was far more prevalent. That same Athanasius Kircher, who was before mentioned as the author of a book on light, and who also wrote on magnetism, gives a detailed account of an encounter with a dragon in one of the passes of the Alps, and illustrates his assertion by an exceedingly bold and imaginative woodcut. Metals were believed to be generated in the earth by the action of the sun. Gold had a large proportion of condensed sunbeams. A mine when exhausted was closed, and re-opened after some years in the hope that the metal would have been produced in the meanwhile. Many—among them Cardanus—believed that metals and minerals possessed a kind of life, and that certain changes in them, such as conversion into calx, were the result of their death. The air was peopled with invisible demons, who wrought all kinds of mischief, raised storms and whirlwinds, and warred against the works of man. Witches and wizards were in league with them, and could influence them, and were hence treated with extreme severity. In 1487 there was an unusually devastating storm in Switzerland, and two old women, who were believed to be witches, were arrested on the charge of having caused it. They of course denied the charge, but during the torment of the rack they confesssed they had raised the tempest. They were forthwith executed—"Convicta et combusta." These cases were by no means rare. Witches were believed to exist by the hundred and thousand, and to produce all kinds of supernatural effects. Pope Innocent VIII. issued a manifesto against them in 1488, and appointed inquisitors in all countries, armed with powers of arresting and punishing suspected sorcerors. In Geneva alone, no less than 500 persons were burned in 1515 and 1516. So late as the year 1716, two persons were executed in England for the practice of witchcraft. We can understand all this better if we bear in mind how much superstition still exists in the world. Not to mention those things which appear under pseudo-scientific names, we find in many out-of-the-way villages, specially in Ireland, a very firm belief among the uneducated in the power of charms, and the existence of witches. In a village not far removed from the outer world, a witch has been pointed out to me, and the laming of a horse and other disasters seriously attributed to her charge. Gaule, in his "Magastromancer," gives a list of *fifty-two* forms of divination, and he has omitted at least six which are found in the works of other writers. Among other forms we have divining by ashes, by smoke, by the lees of wine, by cheese, by figs, by knives and saws; you will remember also some of the forms of divination practised by the Romans. But perhaps the delusion which has most militated against the growth and progress of true natural science has been alchemy—a false science which flourished for more than 800 years, and which was firmly believed in by thousands. The alchemists devoted their lives mainly to the search for two palpable impossibilities; the Elixir Vitæ, which was believed to possess the power of conferring perpetual youth, and the Philosopher's Stone, which was believed to transmute everything that it touched into gold. The search for this substance, and the endeavours to make it by artificial means, occupied the attention of many notorious and eminent men. Albertus Magnus, who became Bishop of Ratisbon in 1259, and S. Thomas Aquinas, were particularly addicted to alchemy and magic. We hear most of their magical powers, although their writings on alchemy still remain. Between them they made a brazen statue and endowed it with the faculty of speech; but it was so garrulous that one day Thomas Aquinas, who was in vain trying to work out a mathematical problem, seized a hammer and destroyed it—at least, so say contemporary writers. Albertus Magnus once changed a severe winter into a most splendid summer within the space of his garden. Detailed accounts exist of the transmutation of lead and tin into gold. Raymond Lully states in one of his works that he converted 50,000 lbs. weight of quicksilver, lead, and pewter into gold. Pope John XXII. was a great alchemist, and had a laboratory at Avignon. He wrote a work on the transmutation of metals, and at his death left a sum of eighteen millions of florins, the existence of which according to contemporary alchemists, proved the possibility of transmutation. And thus one might continue to give a long list of known men who devoted themselves to these useless pursuits; and the unknown men could be counted by thousands. Here, then, we have some of the fallacies which it has been the object of science to disprove, and which, so long as they existed in full vigour, effectually prevented the progress of science. The disproval of these could only result in the discovery of new truths. There is an intense satisfaction in the discovery of absolute truth; truth which stands every opposition, which has been weighed in many balances and not found wanting; which has been submitted to every process of reasoning and of experiment, and has come out uninjured. Taking this discovery of new

* Conclusion of a Lecture delivered at Marlborough College as an introtion to the commencment of Science teaching, by G. F. Rodwell.