with the juice of the upas-tree, projected from a hollow cane, and, for very large game, use a bamboo bow and arrows. They live in bamboo huts about eight feet high, thatched with palm-leaves. They are ugly and timid, but inoffensive. They wear the hair flowing, instead of tied up as the Malays do, and are shorter than the latter, but resemble them in other physical characters. They are gradually becoming accustomed to Europeans; and one or two Malays are attached to each community, on the part of the government, to protect the people from injury or imposition.

The Malpais in Michoacan, Mexico. — Carlos Naulleau has visited the Malpais in Michoacan, Mexico, and from his account we extract the following notes of interest: The Malpais is situated four leagues from Panindicuaro, and is a region four leagues long and two wide, covered with fantastic emissions of a now extinct volcano. The pinnacles and blocks resemble a ruined city, and are so rough and angular that one would need steel armor to make one's way among them unwounded. There are many caverns, natural pits, and shafts to be avoided. The scene is extraordinary: the twisted and sombre rocks are destitute of the smallest sign of vegetation. It is said that in this retreat the ancient Indians fortified themselves against Cortes and his followers. The place is a natural citadel, within which, it is asserted, the aborigines built themselves a town surrounded by a triple wall with only one entrance. One legend states that thousands found a refuge here, and that the place was twice visited by a pestilence, the second time only sixty persons escaping to Zacapu. There, in the library of the Franciscan fathers, the Rev. Fermin Martinez, who has given the subject much study, has found some records relating to the fugitives. Among the higher parts of the confused masses of lava are several structures formed like teocallis, surrounded with a narrow stairway, and connected with each other by paths made of blocks of lava. There are also several ruined houses in different places. The most remarkable teocalli measures at the base thirty-five by twelve varas, and is fifteen varas high. It has been excavated for antiquities. At a depth of three or four varas were found several small cells built of adobe, each containing a skeleton with a small jar of pottery, many arrow-heads, and a few knives made of obsidian. The investigations were interrupted by banditti, who doubtless supposed that treasures of gold or jewels were being secured by the diggers.

Return of Aubry. — Aubry, who for two years and a half has been travelling in Shoa, Galla- and Somali-land, on a mission from the Ministry of public instruction, has safely returned to Paris. His companion, Dr. Hamon, succumbed to fever on the eve of his return, and died by the Hawash River, between the Abyssinian mountains and the Gulf of Aden. Aubry was obliged to fight to escape the Somalis. In the confusion his collections of zoölogy and botany were lost; the mineralogical and geological collections, however, were saved, as well as all his note-books, maps, etc. The results of his work will soon be made public.

ASTRONOMICAL NOTES.

Comet 1885 V (Brooks). — We learn from Mr. Barnard of the Vanderbilt observatory, Nashville, Tenn., that he found this comet independently on the evening of Dec. 27, 1885, and telegraphed immediately to Swift his discovery, receiving in reply the announcement that he had been anticipated one day by Brooks. Mr. Barnard had resigned on the 30th of August, 1885, the zone ($+15°$ to $-45°$) originally allotted to him, and carefully watched since 1882; and it was only in casually devoting a few hours to the field in which he has been so successful that he picked up the new comet. An orbit computed by Chandler and Wendell shows that the comet is decreasing in brightness, having passed perihelion on Nov. 29, 1885.

The Lick observatory. — Professor Holden has written an interesting article for the *Overland monthly*, sketching the history of the observatory to the time of his taking charge. In regard to the immediate inception of astronomical work, he says, "It is of the first importance to find some means of paying the salaries of one or two observers for the years 1886 and 1887, in order that the magnificent equipment may be at once put to its legitimate uses. No great sum is required, but a few thousand dollars at this time would be of real service." It is stated that the first volume of publications of the 'Lick observatory of the University of California' is now in course of preparation, under the direction of the Lick trustees, by Capt. Richard S. Floyd and Professor Holden.

NOTES AND NEWS.

WE take the following from Governor Robinson's message to the Massachusetts legislature: "Although no legislation seems to be needed upon this subject [topographical survey], it will not be inappropriate to emphasize the importance of the work, and to commend its successful prosecution under the direction of the state commissioners, acting in co-operation with the U. S. geological survey. During the year 1885 about two

thousand five hundred square miles, nearly one-third of the area of the state, have been covered. The cost of the field-work will very nearly correspond with the original estimate of ten dollars per square mile. Of the $15,000 appropriated last year, the sum of $12,750, or about $5.14 per square mile, has been expended. The United States has also made an outlay, by the coast and geodetic survey, in behalf of the commonwealth, of nearly $1,300 in the triangulation of the valley of the Connecticut River. This sum has been supplemented by $470.47 out of the state appropriation, in the determination of the boundary-lines of cities and towns, for which the triangulation is the basis. The city and town boundary survey has been commenced in the counties of Suffolk, Norfolk, Plymouth, and Bristol; and it is expected that the work will be continued, and extended into other counties, during the current year, with all practicable despatch. I commend to your favorable consideration the reasonable requirements of the commission, in order that you may provide the means to meet the necessary outlay."

— The long voyage of the derelict schooner 'Twenty-one friends,' as reported on the latest 'Pilot chart,' now extends from March 24, off Hatteras, to Dec. 4, when it was entering the Bay of Biscay, twenty-three observations having been made on it during the drifting passage.

— The *American* (Philadelphia) of Jan. 2 contains a readable article of a page on 'The New Jersey shore,' describing briefly its mild climatic features, which make it valuable as a winter sanitarium as well as a summer resort. Some account is given of the different types of beach which make up the coast there, and of the island near Cape May known as Five-mile beach. Here a neglected herd of cattle ran wild several years, and survived the winters, unprotected and unfed, except in the coppice and holly groves: the latter are remarkably fine on this island. The bays of Barnegat and Little Egg harbor are described as sunken meadows traversed by a network of submerged channels, and enclosed from the sea by long strips of sand beach and dunes.

— The prizes awarded at the annual meeting of the French academy, on the 21st of December, were as follows. Geometry: for general studies on the problems of excavation and embankment, divided between Mr. Appell and Mr. Otto Ohnesorge; to Mr. Emile Barbier the Francoeur prize. Mechanics: the grand prize of six thousand francs, for the progress of efficiency in naval forces, was divided among Messrs. Hélie and Hugoniot, for their treatise on experimental ballistics; Mr. Ph. Hatt, for his 'Suggestions on marine phenomena;' Mr. Lucy, for his geographical index; and Mr. Doneaud du Plan, for various works. Other prizes were given to Mr. Henri Poincaré, for his mathematical works; Mr. Amsler-Laffon, for his construction of the instrument called the 'polar planimeter;' Mr. Bienaymé, for a work on the steam-engine; Mr. Daymard, for researches on the calculation and graphical representation of ships; Mr. Felix Lucas; and to Mr. Jean-Daniel Colladon, the Fourneyron prize, increased to the value of three thousand francs, for his 'Theoretical and practical study of hydraulic accumulators, and their applications.' Astronomy: to Mr. Thollon, for his chart of the solar spectrum; and to Dr. Spoerer, for his work on sun-spots. Physics: the Bordon prize, for researches on the origin of atmospheric electricity, to Mr. Edlund; and the Lacaze prize to Mr. Gernez, for various studies in chemical physics. Statistics: the Montyon prize was divided equally between Dr. P. de Pietra-Santa, for his 'Contributions to the study of typhoid-fever in Paris;' and Mr. O. Keller, for his statistics of mineral industry, etc. Chemistry: to Mr. Prunier, for his researches on the carburets of the American petroleums, etc.; and Messrs. R. D. Silva, G. Rousseau, and Prof. A. Ditte, for various researches. Geology: to Mr. de Lapparent, for his memoir on the country of Bray; and Mr. Alfred Caraven-Cachin, for his 'Geographical and geological sketch of the department of the Tarn.' Botany: to Messrs. Dubois, Heckel, and Schlagdenhauffen, for various researches; to Leclerc du Sablon, for his researches on the hepaticae; and to Mr. Patouillard, for his work on fungi. Anatomy and zoölogy: the grand prize to Dr. Joannès Chatin, for his unpublished work entitled 'Researches on the tactile organs of insects and crustaceans;' and to Mr. Paul Girod, for his studies on the cephalopods. Physiology: to Mr. Duclaux and Mr. Remy, — the latter for his nerve studies. Medicine and surgery: to Dr. L. H. Farabeuf, for a treatise on manual operations; Dr. Augustin Charpentier, for memoirs on the function of the retina; J. Regnauld and E. Villejean, for researches on the anaesthetic properties of formines, and their chloric derivatives; to Dr. E. Gavoy, for invention of the instrument named 'cerebrotome;' to Mr. P. Redard, for his works on military transportation of the sick, and medical thermometry; to Dr. Paul Topinard, for his anthropological works; to Dr. Mahé, for memoirs on the cholera; to Drs. L. Bouveret, Gabriel Pouchet, Émile Rivière, and A. Villiers, for various cholera studies; to Dr. Ernest Desnos, for 'Studies of a particular cause of urinary retention;' to Dr. Grasset, for a 'Practical treatise on the diseases of the nervous system.'

Other prizes were awarded to Mr. Ch. Girard, for various physical and chemical works; Mr. Van Beneden, for researches on the development of the lower animals; Mr. Bourbouze (photography); Mr. Sidot (chemistry); Mr. Valson; Mr. G. H. Halphen (mathematics); and Mr. Sappey, for his work entitled 'Anatomy, physiology, and pathology of the lymphatic vessels, considered in man and other vertebrates.'

— Letters had been received at Vienna, Dec. 29, from Professor Lenz, of the Austro-Hungarian Kongo expedition, dated Ango-Ango, Oct. 31. He announces his departure for Stanley Pool, his assistant, Dr. Baumann, having succeeded in obtaining at Nyombi 80 natives as porters. It is difficult to secure these auxiliaries. The French missionaries, who are also travelling up the Kongo, meet with even greater difficulties, their porters having run away. A similar misfortune has happened to the German expedition under Lieutenants Knuth and Tappenbeck. The health of the members of the Austro-Hungarian expedition is satisfactory, although the transition from the dry to the rainy season is very dangerous to Europeans.

— Why Labberton's 'Historical atlas' (New York, *Townsend, MacCoun*) should have reached an 'eighth edition,' is one of the mysteries of book-publishing in this country. The maps, many of them, are of the rudest description. In fact, so bad is the workmanship, that in some cases important cities are laid down miles away from their actual sites. Nor is the selection much better. There are sixteen maps of Britain, no less than twelve of which relate to a period anterior to the reign of King Aelfrid. The last of the set is a map showing the Norman conquest. Of England since 1071, nothing is given except a few miserable maps in the corners of the maps of Europe. The Puritan revolution is utterly ignored. The 'explanatory text,' so loudly announced on the titlepage, adds little to the worth of the book, while 'the carefully selected' bibliography can appear of value to those only who are ignorant of the literature of the subject. The maps showing the growth of our own country are based on such an inadequate knowledge of our history that they are little more than a mass of error. In fine, although the plan of the atlas is good, the selection and workmanship are so poor, that we lay it down as one of the most unsatisfactory books of the past year. Much better in every respect is the 'Standard classic atlas,' bearing the following imprint: "Copyright, 1885, by Ivison, Blakeman, Taylor & Co., publishers, New York and Chicago." The maps are well drawn, and admirably chosen. In fact, we were just beginning to congratulate ourselves on the advance which American map-makers had made during the last few years, when suddenly our attention was drawn to the following words, attached to map 18: "Engraved by Becker's patent on steel, Stationer's Court, London." So, after all, this is an English book which in some way or other these publishers have copyrighted. If such actions are legal, what need have we for an international copyright law? As to the book itself, it is a good one, and contains besides the maps a very useful alphabetical index, giving the position of about ten thousand places, with their ancient and modern names.

— To judge from the statements made in the introduction to a treatise on 'A system of iron railroad-bridges for Japan,' by J. A. L. Waddell, published by the University of Tokio, many of the iron bridges erected by foreign contractors, and now in use in Japan, are of inferior construction. Professor Waddell, who occupies the chair of civil engineering at the University of Tokio, has here aimed to make clear to Japanese engineers the method of designing the class of structures mentioned, and he has covered the ground in an extremely satisfactory manner, and with much minuteness of detail. The book must prove a great benefit to Japan by securing improved construction, and there is much in it that will be serviceable and suggestive to American engineers, even if they should not agree entirely with him in the discussion; for his devices and methods are not always those which are commonly employed in the United States. He analyzes in all its parts the American type of bridge as adapted to the conditions of the Japanese narrow-gauge railroads. He gives tables and strain-sheets, the preparation of which must have required a vast amount of labor, and which by themselves make a large atlas. Some portions of the memoir have appeared in this country as papers submitted to different technical societies. It is a most agreeable surprise to find that the University of Tokio endeavors to extend its usefulness by publishing treatises of so eminently practical a character.

WASHINGTON LETTER.

SCIENCE and the scientific have in some degree indulged in that suspension of activity which is the recognized privilege of the more serious occupations during the holiday season. Some of the societies have suspended their meetings for a period of two or three weeks. When they are resumed, the season's work will begin in earnest, as it is said that papers of considerable importance, growing out of the field-work of last summer, are nearly