THE MOUNTAINEERS OF TONKIN.

FATHER PINABEL'S "Notes sur quelques peuplades sauvages dépendant du Tong King" is timely. He describes the mountaineers of the valleys of the Maa and Chou rivers, who are called Phou-Tays or Tays, but are commonly known to the Annamites as 'savages.' They reside in villages, are divided into tribes, each having a chief to whom great respect and obedience are accorded. Although, since 1834, Annamite mandarins have been appointed to each tribe, yet the Tays refer all disputes among themselves to their own chiefs, whose authority they recognize as superior to that of the mandarins. Medicine as an art is unknown: each family, however, has some recipe whose preparation is a jealously guarded secret.

The houses are made of bamboo, with roofs covered with palm-leaves; the whole raised upon piles to four feet above the ground. Below is the poultry-yard, where, if the owner is rich, pigs, oxen, and buffalo are kept with the fowl. The square fireplace is made of boards covered with earth. There is no chimney. Upon the hearth are three large stones, arranged as a tripod, on which, if nearly meal-time, rests a pot of boiling water, which supports a bamboo tube containing rice. This tube is pierced so as to permit the steam to pass through the rice, by which it is delicately cooked. The women stay about the cooking-fire, while the men resort to another fireplace at a lower level. If any one wishes to build a house, all the inhabitants of the village come to help, for no other remuneration than the customary feast when the house is finished. To celebrate this event, the head of the family kills a pig or a beef, and offers wine. The wine is made from rice and bran, and left to ferment for about a month in a jar hermetically sealed. When it is opened, water is added, and the guests seat themselves around it, and suck up the liquor through long reeds. The wine, which is sour but agreeable, contains so little alcohol that it is extremely rare to see a person stupidly drunk. After taking the wine, they gather in groups of four about little tables, and eat. This is followed by drinking tea and smoking.

Although amiable and conciliatory, these people are somewhat careless and apathetic, without solicitude for the morrow. Rising with the dawn, they smoke, fritter away some time in the house, start out fasting, and work until ten or twelve, when they return to dine. This repast over, they rest, take a *siesta* in summer, and in the afternoon return to the mountain fields for a few hours, or fish, hunt, or look for bamboos to make palisades about the fields lest the buffalo eat the newly planted rice. The evening is passed quietly in the corner of the hearth, and about eight o'clock supper is served. There are but two meals a day. The women's duties are more arduous than the men's, since, besides those within the house, it is theirs to pick, transport, and store the rice, and to fetch firewood from the mountains.

After death, they bathe the body, clothe it, and envelop it in a coverlid and a mat. Sugar-cane, rice, and salt are put into the mouth, — the sugar-cane to request the *manes* of the dead to be favorable, the salt to beg the deceased to preserve a good heart towards his parents. A rude coffin is made by felling a tree, cutting out of the trunk a piece of sufficient length, which is split and each half hollowed out. The day and hour of placing the body in the coffin are carefully chosen, for fear of evil consequences to the survivors if an unfortunate choice should be made. Before closing the coffin, the body is uncovered, the eyes opened that he may see the heavens, and then the coffin carefully closed. If the means are not at hand to defray the expense of burial, the coffin is preserved in the house, in some cases even for months.

On the day of the final ceremony, if the family is rich, a buffalo is killed, which is offered to the parents and inhabitants of the village, so that they may make charcoal. This charcoal is intended to put into the grave to preserve the coffin from dampness. Another buffalo is killed, so that the assistants may prepare a little hut to be placed over the tomb. A third buffalo is killed for those who inter the body. The site of the tomb is chosen in the forest, where it is forbidden to cut trees, or whatever may grow there, for fear the *manes* of the dead may avenge the outrage. At the end of the ceremony the parents seek the mountain stream. There a diviner has set up two reeds to form a pointed arch, beneath which each parent should pass. They are sprinkled with the water in which the rice was washed, and, after washing their garments, return to the house. At the foot of the ladder, before entering, they tear their hair. The bereaved eat rice from a sort of basket, and leave every thing in the house in disorder to witness to their grief. To the diviner, who reproaches them, they answer, "Our father is dead, and we no more know what to say or do." The diviner then restores the house to order, and sprinkles it with various herbs to chase away evil spirits, that in the future the house may enjoy peace and happiness.

THE WORK OF THE SIGNAL-OFFICE UNDER GENERAL HAZEN.

THE recent examination by the joint commission of General Hazen and other witnesses, as to the efficiency and economy of the present administration of the signal-office, is said to have brought out several statements as to the character of the work done by the weather-bureau, and the progress made by it during the last few years. The following is a brief summary of these, and especially of Professor Abbe's statement showing the status, and work being pursued, during the present fiscal year: —

The signal-service employs one chief, fourteen second lieutenants, and five hundred enlisted men, of whom one hundred and fifty are sergeants, thirty are corporals, and two hundred and twenty are privates, but all generally known as signal-service observers. These five hundred and fifteen persons constitute the signal-corps proper: but six officers detailed from the

line of the army are also temporarily attached to the service; and these have control of the disbursements, the property, the weather-predictions, the display of signals, the testing and comparison of instruments, the arctic stations, the international bulletin, the monthly weather-review, the Pacific coast section, and other main divisions of work.

These six officers, by the operation of the present laws, are being diminished in number by two annually, their places being filled by promotions from among the sergeants of the corps; so that in a few years the service will employ only officers and men of the signal-corps proper. This elimination of officers who have had from ten to twenty years' experience in the signal-service and the army is somewhat deprecated by General Hazen, who is very naturally loath to lose their services, while they themselves are loath to go; although it is evident that the corps proper already contains abundant and excellent material for the future needs of the service.

The signal-service also employs a number of civilians — namely, two chief clerks, several clerks of lower classes, and a scientific staff of three professors, four junior professors, and one bibliographer, and a large number of civilian observers, printers, messengers, artisans, etc. — at various points throughout the country. The number of civilian employees at the central or Washington office is sixty-four, all of whom give their whole time to the work. The total of those employed at other stations is apparently much greater than this; but each is employed only a short time daily, and most of them receive but twenty-five cents per day for some one special observation and record. The enlisted men of the service occupy about two hundred stations scattered throughout the United States, including Alaska, at an average distance of two hundred miles apart. About an equal number of stations are also occupied by civilians, observing the height of water in the rivers, or displaying storm-signals. From about forty-five hundred other civilian observers, reports are received gratuitously by mail on weekly or monthly forms. These observers are classified about as follows: voluntary land-observers, 270; voluntary marine-observers, 480; international observers, 330; Canadian observers, 18; state weather-service, 450; tornado-observers, 1,200; thunder-storm reporters, 2,000.

The following are some of the more prominent and important steps of progress taken during General Hazen's administration: —

The introduction of consulting specialists and civilian experts into the available working-force of the office; the assignment of selected sergeants and privates to work demanding a higher education and special aptness for investigation or study; the organized study of tornadoes, thunder-storms, atmospheric electricity, and other important novel fields of meteorological study; the introduction of weather-signals upon railroad-trains for the benefit of the farmers, and of local town-signals for the benefit of each community; the establishment of more severe rules for the verification of predictions, so that the eighty-five per cent claimed at present means much more than it did a few years ago; the enlistment of a higher grade of men; the improvement of the courses of instruction for men and officers; the compilation of a working-index to the literature of meteorology and the signal-office library; the organization of new divisions in the office, especially of the study-room, the physical laboratory, the marine division, and the examiner's division; the publication of a monthly summary of international simultaneous observation, with a weather-chart showing especially the storms on the Atlantic and Pacific oceans that affect the United States; the special study of atmospheric moisture with a view to improved methods of determining this factor; the special study of the exposure of thermometers, and correct methods for determining the temperature of the air; the maintenance of two polar and several auxiliary stations in pursuance of an international system for the study of the meteorology of the polar regions; the adoption of many of the recommendations of the European international meteorological congresses looking to uniformity of methods throughout the world; the adoption of improved methods of reducing barometric observations to sea-level; the stimulus given to the formation of state weather-services (this great advance has been wholly due to General Hazen, who has not hesitated to declare himself in favor of co-operation, and not monopoly; by his circulars and assistance, over fifteen states have been led to develop minute internal systems for the study of local climate and the dissemination of weather-predictions); the stimulus given to higher scientific work by members of the signal-service, by requiring and publishing professional papers, signal-notes, treatises, etc.; the addition to the signal-office of a few experts in scientific matters, who are responsible for the proper conduct of work requiring special study; the establishment of a high class of standard instruments, and more exact methods for testing-apparatus furnished to the stations, thus assuring against any deterioration in the accuracy of the work through many years to come; the encouragement and co-operation in scientific work, bearing on meteorology, by outside parties, such as spectroscopy, the study of solar heat and atmospheric absorption, and the prosecution of balloon-voyages; the adoption of a uniform standard of time for all observers; the adoption of a uniform standard of gravity for barometric reductions; the introduction of new special cautionary signals for high north-west winds and cold waves; the extension of signal-service stations in Alaska for the proper study of storms that strike the Pacific coast, and are followed by the severe cold waves from Manitoba.

In the prosecution of these and other multifarious labors, the signal-service certainly demands a high degree of organization, discipline, and intelligence; and it is by no means clear that this can be obtained in any better way than by a proper combination of military and civilian observers and scientific men.