Correspondence.

Increase of the Artillery Force.

To the Editor of the SCIENTIFIC AMERICAN:

Referring to the article upon sea coast defense in your number of November 13, in which mention is made of the large number of men required to man the guns which will be required, your correspondent begs leave to make the following suggestion:

After retaining at each post the minimum of regularly enlisted men necessary to keep the armament in order, let the full fighting force required be enlisted in the vicinity under the following conditions:

The men to serve, with pay, for a stipulated time each year, during which time they will be instructed in their duties. During the remainder of the year, except in time of war, the men to remain at their homes, without pay, subject to call when needed.

By selecting the time of service when little labor on the farm is required, an abundance of the very best material would be secured, men who would be glad to remain in the service for years, and who would be available at any time on a day's notice.

Such a force would be brought under the best possible influences for making them do their duty gallantly, for they would be fighting directly in defense of their homes under the very eyes of their friends and neighbors.

While the efficiency of this service would be equal if not superior to any other, the cost would be far less, and the money expended would go into the pockets of thrifty, worthy people, where it would do the country some good.

A similar plan is now followed in the life saving service, the men serving, on pay, for certain months of the year only, and where could a finer body of men be found than these? WM. W. BLACKFORD.

Lynnhaven, Princess Anne County, Va.

Organized Arctic Exploration.

To the Editor of the SCIENTIFIC AMERICAN:

In the number for September 25 of your valued paper I find a note on Mr. W. Wellman's proposed polar expedition.

Mr. Wellman's plan in so far coincides with what I have long considered to be the only rational solution of this problem that I am encouraged to offer a few general suggestions that may, perhaps, elicit a broader discussion of this interesting subject.

I quite agree with Mr. Wellman that up to this time all attempts to reach the north pole were dashes. Therein, in my opinion, lay the ultimate cause of their failure. I am certain that if half the energy, patience and money spent in organizing polar expeditions in this century had been applied to systematic advance, the north pole would have been reached many years ago. I shall not spend time in analyzing the psychical motives that led Franklin, Dr. Kane, Peary, Nansen and all the host of polar explorers to prefer individual feats of nearly superhuman exertion to a steady and, possibly, international action in this direction. Very probably the main reason can be found even in Mr. Wellman's words: "I am eager . . . to plant the American flag," . . . etc. The world at large has gained very little by following this plan, and many brave men and valuable lives have been sacrificed without any real necessity.

When we come to think quietly over the matter, it is difficult to see any necessity in reaching the north pole at a jump. In all probability, if even the jump is successful, the happy individual who succeeds in alighting on the spot "whence there is no direction but south," will be so utterly exhausted by the terrible strain of his feat that he will have no more energy left for steady exploration and observation that can alone be of any real use to science or humanity. All the remnant of his courage and physical endurance will necessarily be employed in attempting to jump home again.

Mr. Wellman's plan seems to me the first step in the true direction; unfortunately, I see in the plan as it now stands two elements that can bring on failure where success should be certain. One of these elements is haste and the other national and personal egotism. If, instead of fixing a term of three years, Mr. Wellman had not put any limit to his work, and if, instead of packing up only the gallant "stars and stripes," and refusing "public subscription and universal consent," he would take the international flag "Excelsior" and accept both universal subscription and universal consent, his ultimate success would, I am confident, be a matter of certainty and not of doubt. Private means and private energy may, certainly, cover the expenses and furnish the exertions of founding two or three supply stations and undertaking a three years' expedition toward the pole, but they can hardly suffice to bring that enchanted spot within the reach of continuous scientific research.

I think that the north pole should be and can be reached only by a continuous chain of stations, placed "not two or three degrees," i. e., 30 or 45 geographical miles, apart, but within an easy day's journey from each other; say at a distance of 15 or 20 kilometers. At intervals of a week's march, say at every 100 or 120 kilometers, a large depot should be constructed, where a party of 10 or 12 men and 60 dogs could live comfortably for months at a time, if necessary. The intermediate stations could be much simpler equipped, and consist of a warm shanty, with a sufficient supply of provisions and fuel to allow a party to stay over a blizzard or even a few days of exceptionally inclement weather. All the stations should be connected by a telephone line, made strong enough to insure continuous service. This line would serve also as a guide rope from station to station.

If the point of departure be Cape Flora, as proposed by Mr. Wellman, ten degrees from the pole, or about 1,200 kilometers, ten large depots and fifty smaller stations would bring the pole into constant communication with America or Europe, provided Cape Flora can be regularly reached by shipping. If not, one or two intermediate large stations should connect Cape Flora with some open port.

The cost of such a "road to the pole" would certainly be very considerable (some of the stations may possibly have to be solidly constructed house boats, heavily anchored in the open sea), but that cost will scarcely be greater than that of a first class overland railroad of the same length, and certainly not beyond the limits of international enterprise and international wealth.

The time needed to construct such a chain of stations may be ten years (at the tortoise speed of 120–150 kilometers a year) instead of three, but really, ten years are a short time for inevitable success in comparison with the seventy or eighty years already spent in more or less heroical failures. N. THISHKOV.

Timbirsk, Russia.

Miscellaneous Notes and Receipts.

The Uses of Chrome Glue Especially as Glass Cement.—Chrome glue is known to consist of a moderately strong gelatine solution (containing 5 to 10 per cent of gelatine) to which about one part of acid chromate of potassium in solution is added to every five parts of gelatine. This mixture possesses the property of becoming insoluble by water through the action of sunlight under partial reduction of the chromic acid, a property which is advantageously utilized in photography. The author coated both fractures of a glass as uniformly as possible with the freshly prepared solution, pressed them together, and fixed them in this position with a cord. The cylinder glass was exposed to the sun light and was found to be firmly united after a few hours. Even hot water did not dissolve the oxidized chrome glue, and the fracture was scarcely noticeable. Valuable articles of glass, which would be disfigured by a thick cement joint, can be very nicely repaired in this manner.

In the production of waterproof textures chrome glue is likewise of use; at least, where a certain tightness is no drawback. The fabric, after having been put in a frame, only needs to be painted one to three times with the hot chrome glue and then to be exposed to the sun light or day light.—Prof. Schweizer, in Textil Zeitung.

Mode of Preserving Flowers and Grasses.—In drying flowers and grasses, which are to retain their fresh colors and natural shades, proceed as follows: Take a box with a sliding cover, remove the bottom and immediately below the lid (inside the box) attach a medium fine wire sieve. Procure fine, clean sand, sift off the dust, wash out the sand and dry it at moderate heat. Then warm the sand again in a copper kettle and after it has become hot enough add one-half part (weight) finely scraped stearine to one hundred parts (weight) sand: this is mixed and intimately incorporated with the sand, so that each grain receives a coating of stearine. Cut well developed specimens of flowers or ornamental grasses, place the box with the sliding cover and sieve downward, put in a layer of sand about two inches high, stick the flowers, etc., into this and cover them gradually with sand, but in such a manner that the stems and leaves retain their natural position. Thus continue with alternating layers until the box is filled, then put on the bottom carefully and set the box in a warm place, which must not be too hot. After about forty-eight hours drying is finished, the box is taken down and the sliding cover pulled off carefully; the sand will fall through the sieve and the flowers, grasses, etc., remain dried in their natural shapes and colors.

Production of Printing Inks.—(a) Warm 4·5 parts Venetian turpentine with 2 parts oleic acid as free from stearine as possible, adding 5 parts soft soap. Then add 3 parts of burnt, finely sifted lampblack and a solution of 0·1 part Paris blue and 0·1 part oxalic acid in 5 parts water. (b) 9 parts Venetian turpentine, 10 parts soft soap, 4 parts oleine, 4 parts lampblack. (c) Melt together carefully 25 parts paraffine oil, 45 parts colophony at 80° (176° Fah.), and add 15 parts lampblack. (d) For web printing presses use only 40 parts colophony instead of 45 parts. (e) For perquisites use dammar resin instead of colophony.—Pharm. Zeitung.

Science Notes.

The steamer Warrimoo, from Australia, brings advices as follows: H. M. S. Penguin has just returned to Fiji after surveying the proposed Pacific cable route from Suva to Honolulu. The bottom of the ocean was found to be very uneven. One or two uncharted patches near Honolulu were discovered, but, as they have seven or eight fathoms of water over them, they are not dangerous to navigation.

Sir Rutherford Alcock, K.C.B., F.R.C.S., died recently at the age of eighty-eight years. The deceased was brought up to the medical profession, but soon gave it up for travel and the diplomatic service. He was president of the Royal Geographical Society in 1876, and also presided over the health department of the Social Science Congress a few years afterward. To Sir Rutherford Alcock we owe much of our knowledge of the far East.

Twenty million dollars is the sum which the French government proposes to devote to the Paris Exhibition of 1900. Nearly $10,000,000 will be consumed by the construction of two palaces in the Champs Elysées and those in the Champ de Mars, in the Esplanade des Invalides, and on the quays. The bridges across the Seine are to cost $1,000,000, and the mechanical and electrical services another $1,000,000. In one word, France proposes to do the whole thing on a scale of unprecedented magnificence.

The World's Columbian Exposition Company must pay the loss to the French republic and French exhibitors caused by the fire on January 8, 1894. Such is the opinion of Judge Grosscup, handed down November 8, from the Federal bench. The fire at the Casino and Peristyle showered sparks upon the wooden walk of the Manufactures building. The burning timbers fell into the building and upon the exhibits of the Frenchmen. The French republic lost some fine Beauvais and Gobelins tapestries and two magnificent Sevres vases, made for ornaments at the entrance to the Chamber of Deputies. The loss amounted to about $75,000.

The Straits Times states that, according to telegraphic advices from British North Borneo, an earthquake was felt at Kudat on September 21, as also a slight tremor at several places along the coast. About the same time a new island was thrown up from the sea between Mempakul and Lambeidan, 50 yards from the mainland, opposite Labuan. The island is of clay and rocks, and measures 200 yards long by 150 yards broad and 60 feet high. The island appears to be increasing in size, and emits inflammable gas in several places, with a strong smell of petroleum gas. The earthquake was not felt at Labuan.

Experiments made in the laboratories of Sibley College show that the usual figures for dense smoke per ton of fuel employed ranged from 10 to 12 pounds of soot; of the latter, about one-half was carbon, the remainder principally unconsumed hydrocarbons, 10 to 15 per cent of ash, and, if collected outside the furnace, perhaps 2 per cent of moisture. It was found that no smoke was ever produced in an atmosphere of oxygen. With restricted air supply the maximum just stated was obtainable; but low temperature combustion and restricted oxygen supply appeared to be the two main conditions favoring smoke production. Again, the composition of soot was found often to be substantially that of the coal from which it was produced. A reduction of the proportion of smoke made effects a reduction correspondingly, and, perhaps, proportionately, in the percentage of carbon contained in the soot.

Krupp Armor Plate Process.

According to press dispatches the Krupp armor plate process is to be adopted by both the Carnegie Steel Company and the Bethlehem Company, they having purchased exclusive rights to the process in the United States. The details of the process have not been made public, but it is claimed that the plates which are produced by it are superior to those made by the Harvey process. It is said the cost of the armor under this process will be higher than under the Harvey process. The English armor plate making firms of John Brown & Company, Cammell & Company, Vickers & Company, and the French firm of St. Chamond have also purchased rights of the Krupp process.

Mount Vesuvius in Eruption.

Mount Vesuvius is more active than it has been for years, and the eruption is daily increasing in magnitude. The volcano now presents a beautiful appearance, shooting forth immense columns of smoke and ashes, through which the fire from the central crater pours upward, illuminating the showers of cinders and the lava streams. The wind carries the ashes to Naples.

Swedish Polar Expedition.

King Oscar and a number of private persons have contributed a sufficient sum of money to insure the dispatch of a Swedish polar expedition in 1898. It will be led by Prof. Nathorst, the geologist. The cost of the expedition is estimated at 70,000 crowns.