# Correspondence.

### Phonogram.

To the Editor of the SCIENTIFIC AMERICAN:

Noticing the propositions of a name for the messages by telephone I am led to offer one. My choice would be "phonogram." It seems to me that it would be appropriate and expressive.

Penfield, Pa., July 20. ALLEN ROSENKRANS.

### The First Bear-Trap Dam.

To the Editor of the SCIENTIFIC AMERICAN:

William Gilbert Irwin, in his interesting article entitled "Waterway Improvement on the Ohio," while referring to the "bear-trap dam," says: "All the dams in operation and building on the Ohio are of the movable type, the Davis Island dam at Pittsburg, which was completed in 1885, being the first dam of that type ever built in this country."

This is an error, in correcting which I will give you a few points in the early history of coal mining in Pennsylvania. The Lehigh Coal Company, after several unsuccessful attempts to get their coal to market, leased, early in 1818, 10,000 acres near Mauch Chunk, Pa., to Josiah White and his two partners, for twenty years, for *one ear of corn a year*, if demanded, and from and after three years to send to Philadelphia at least 40,000 bushels of coal per annum, on their own account, so as to be sure of introducing it into the market.

The lessees began immediately to improve the Lehigh River by the construction of wing dams, etc., for the purpose of deepening the water in the channel and making it navigable for coal barges. But early in the following year they discovered that they had not sufficient water for their purposes. Josiah White, in his autobiography, says: "We found the natural flow of the water in the Lehigh was insufficient, the water subsiding much below the mark we had made, on the best information we were able to procure from those on the river who professed to know all about it, and we were obliged to make a great experiment to obtain the water by artificial freshets; and if we failed in this, our whole work would be exploded and have to be abandoned. I devoted myself for several weeks to form a plan of sluice that would answer, and be cheaply made, and safe at all stages of the water. I succeeded in producing the lock and sluice called the 'bear-trap,' a name the workmen gave it while we were experimenting with it on Mauch Chunk Creek, to elude the curiosity of persons who teased them with inquiries as to what we were making. We put up about twelve of the locks and dams in 1819, and I took out a patent for them in the twelfth month, 1819."

In 1873 three of these dams were still in use on the upper Lehigh between White Haven and Stoddartsville.

JOSEPH J. WHITE.

New Lisbon, N. J., August 18, 1903.

### Windmills in India.

To the Editor of the SCIENTIFIC AMERICAN:

Any one who has lived in India, where the winds are sufficiently strong to warrant their erection, recognizes that India in the near future will prove an excellent market for windmills.

Mr. Chatterton's report shows that the government is awake and is accumulating facts as to the usefulness of the windmill for purposes of irrigation, by most careful and prolonged experiments. Undoubtedly there is here a wide field for American enterprise.

The people in India must be educated and made aware of the utility of the windmill, and when once convinced, they will undoubtedly purchase liberally. The Europeans will be the forerunners in their general introduction, as the natives are extremely conservative and unwilling to make an outlay of money unless convinced of speedy returns.

The field should be most carefully studied by experts who should then adapt the windmill to best meet the needs.

The addition of a "second pump" mentioned by Mr. Chatterton should receive careful attention. Companies competing for the market must be prepared to supply a number of varieties and sizes depending upon the height the water that must be raised. For example, in the part of the country where I am located, the water would only have to be raised 25 feet at the most for irrigating purposes, whereas further from the coast it would be considerably more.

A matter touched upon in the report which should receive the most careful attention is that of "breakages." Europeans who have not lived in India little realize the ignorance of the natives when dealing with home-made devices and their unwillingness to adapt themselves to new conditions. They are not "Jacks of all trades," but are bound down by caste and custom to be "Jacks of one or no trade." There are places where it would be necessary to send hundreds of miles to get a thread cut on a bolt when at home it can be done "around the corner." Because of this ignorance, the employing of an experienced fitter for each windmill is necessary.

When striving to open markets in the East, manufacturers must provide: (1) The very best material; (2) the simplest mechanism; (3) the highest development of skilled workmanship, and (4) the counterparts of all portions which are in the least liable to get out of order, together with (5) a clear outline of instructions. Then only will the people be prepared to purchase, and when once convinced of an article's usefulness, they are prepared to pay liberally.

Windmills for India should be constructed wholly of iron or steel. Wood is quickly destroyed by white ants and other insects, or, owing to the terrific power of the rays of the sun, will become weakened and soon have to be replaced.

Any successful water-raising apparatus is sure to command a wide market in India, whether it be the windmill, the sun motor, or an engine. First of all people must be educated. The erection of windmills, etc., at the various centers in India as practical illustrations is most desirable. Literature has its place, but is not of very great importance.

(Rev.) WALTER T. SCUDDER.

Tindivanam, Madras Presidency, India, July 13.

[Lack of space prevents us from publishing the report referred to. Our correspondent's letter is, however, sufficiently clear to show the requirements that must be met in India.—ED.]

### The Langley Airship.

Prof. Langley has issued the following statement:

To the Press:

The present experiments being made in mechanical flight have been carried on partly with funds provided by the Board of Ordnance and Fortifications, and partly from private sources, and from a special endowment of the Smithsonian Institution. The experiments are carried on with the approval of the board of regents of the Smithsonian Institution.

The public's interest in them may lead to an unfounded expectation as to their immediate results, without an explanation, which is here briefly given.

These trials, with some already conducted with steam driven flying machines, are believed to be the first in the history of invention where bodies far heavier than the air itself have been sustained in the air for more than a few seconds by purely mechanical means.

In my previous trials success has only been reached after initial failures, which alone have taught the way to it, and I know no reason why prospective trials should be an exception.

It is possible, rather than probable, that it may be otherwise now, but judging from the light of past experience it is to be regretted that the enforced publicity which has been given to these initial experiments, which are essentially experiments, and nothing else, may lead to quite unfounded expectations.

It is the practice of all scientific men, indeed, of all prudent men, not to make public the results of their work till these are certain. This consideration, and not any desire to withhold from the public matters in which the public is interested, has dictated the policy thus far pursued here. The fullest publicity consistent with the national interest (since these recent experiments have for their object the development of a machine for war purposes) will be given to this work when it reaches a stage which warrants publication.

S. P. LANGLEY.

Smithsonian Institution, August 19.

### The Current Supplement.

The current SUPPLEMENT, No. 1443, opens with a fully illustrated article describing a great California seed farm. Leigh Page presents a *resumé* of the traces thus far discovered of the habitability of Mars. An article on the mechanical sorting of postal packages tells much that is interesting of French methods. Prof. F. C. Robinson discusses the new views of the constitution of matter. Irwin S. Sperry describes how a black color on bronze can be produced. Another installment on the Serpollet steam automobile is presented. Among the minor articles may be mentioned those entitled "The Nernst Incandescent Lamp," "The Roman Foot in Measuring," "Proportions in Architecture," "Mechanical Stokers," "A Botanical Exploration of Cuba," and "Inducing Character of Radium."

### Observation of Brooks's Comet.

A telegram has been received at the Harvard College Observatory from Prof. W. W. Campbell at Lick Observatory stating that Brooks's periodical comet has been observed on its return by Aitken on August 18, 8.50.0 G. M. T. in R. A. 21h. 02m. 50.2s. Dec. —27 deg. .04 min. 9 sec. Also the spectrum of Nova Geminorum was observed by Curtiss August 17 and found to be of the nebular type.

The "Cave of Giants" is the name which has been given to a new mammoth cave discovered in southeastern California in the heart of the Providence Mountains. The cave was discovered by George L. Berg, to whom its existence was revealed by a native Indian who lives on the west slope of the range.

### Engineering Notes.

The North Eastern Railway Company has now decided to establish a regular motor car service on the old Bridlington coaching highway between Beverley and several of the outlying villages as far as Beeford, distance 13 miles. The motor cars will provide accommodation for sixteen passengers, with half a ton of luggage on the roof.

According to an English expert the supply of coal yet remaining to be mined in the United Kingdom amounts to 80,684,000,000 tons, which, at the present rate of mining, would last 370 years. The same authority gives the total output of the world in 1900 as 767,636,204 tons, of which Great Britain produced 229,000,000 tons, or 30 per cent, and the United States 245,000,000 tons, leaving a balance of about 35 per cent for the rest of the world.

In order to facilitate and accelerate railroad traffic through the Severn Tunnel, which is 4 miles 600 yards in length, a system of electrical automatic signaling is to be installed so that a train will be able to enter the tunnel while another is already progressing through in front. Under the present block system arrangements a train cannot enter the tunnel until the preceding one has emerged from the other end, thus entailing several minutes' delay to the waiting train. For the purpose of signaling the tunnel is to be divided into sections of 1,200 yards. Notwithstanding the fact that a powerful fan extracts 447,000 cubic feet of air per minute from the tunnel, the atmospheric conditions are not suitable for the employment of simply the usual semaphore signals at the sides of the track. Therefore, to insure perfect safety to the trains, the semaphore signals will be supplemented by "repeat" signals indicated in the cab of each locomotive before the eyes of the engineer.

A French locomotive on the De Glehn four-cylinder compound system is to be tried on the Pennsylvania Railroad. Engines of this system, of the eight-wheel and Atlantic types, are extensively used on the principal French railways for fast and heavy passenger service, and one is now being built for the Great Western Railway of England. These engines have two outside high-pressure cylinders driving the rear pair of driving wheels, and two inside low-pressure cylinders driving the crank axle of the front pair of driving wheels. An engine of a somewhat similar design was built about a year ago for the Plant System of railways in Florida by the Baldwin Locomotive Works, but in this engine the four cylinders all drove the first driving axle. The French engine for the Pennsylvania Railroad will be delivered next year, and after some experimental service will be sent to the St. Louis Exhibition as a part of the railway company's exhibit. Eventually it will be put in regular service.—Engineering News.

The inaugural address of Mr. J. C. Henshaw at the opening meeting of the new session of the London Institute of Civil Engineers dealt with the world's supply of timber. Engineers, he remarked, could not do without timber, and it was worth while considering whether the supply of that material was likely to continue to be equal to the demand. It was calculated that the number of timber sleepers on the railways of the whole world did not fall far short of 1,495,000,000 and a low estimate of their value was $900,000,000. This alone constituted a serious drain on the timber supplies of the world. The president next reviewed the measures which had been taken in other countries to secure the control of forests and their management on scientific principles, and expressed the hope that the labors of the committee recently appointed by the Board of Agriculture, and at present sitting, would result in removing from Great Britain the reproach of being the most backward country in respect to forestry. Turning to means of cheap transport, he suggested that the time was coming when the main roads should be placed under one management throughout the country, and become a national charge instead of a charge on the local rates. Good roads, with organized steam traction, would be more useful to farming than would light railways. Considering next the generation of power, Mr. Hawkshaw remarked that water power possessed important advantages in its cheapness and also in its certainty, which was assured as regards the minimum supply; moreover, its cost was practically independent of the fluctuating cost of fuel and labor. Up to the present it was the electro-chemical industries which had taken most advantage of cheap water power, and some of its applications in this direction were briefly alluded to. The difficulties connected with the utilization of water power arose out of the necessity of storage for regulating the flow, a matter of little difficulty where lakes could be used for storage in uncultivated country, but entailing works of almost prohibitive cost where any alteration of the accustomed water-level led to interference with vested interests. The address concluded with some remarks on the relation of the biological sciences to the work of the engineer.