Correspondence.

AIRSHIP TERMINOLOGY.

To the Editor of the SCIENTIFIC AMERICAN:

An airship is either a "heavier-than-air machine" or a "lighter-than-air machine." But these are very clumsy names. Why not call the former a "pondro," and the latter a "levitar"? These words, I think, are sufficiently "regular" in derivation to justify themselves, and they are not awkward.

Washington, D. C. AMBROSE BIERCE.

The International Aeronautic xposition at Frankfort-on-the-Main.

The first real aeronautic exposition the world has ever seen will be held from July 10th to October 10th at Frankfort-on-the-Main, Germany.

The period from now until the opening of the exposition in July will be one of strenuous activity for the management, since the buildings and grounds are not yet completed and in order.

The Grand Exhibition Hall, with its gigantic dimensions of 130 meters (426 feet) long and 65 meters (213 feet) diameter of central dome, was erected at a cost of $1,500,000. It is perhaps the most imposing exhibition hall in Germany, and countless numbers of inflated balloons of the ordinary round shape will be able to float freely under its great middle dome.

For the large dirigibles four huge balloon sheds are being built, one for the "Parseval," one for the Riedinger kite balloon, one for the Von Clouth dirigible from Cologne-Nippes, and one for the dirigible of Dr. Gans of Munich. A Zeppelin shed will be added as soon as the negotiations now pending with the Zeppelin interests are concluded. It may also be considered as certain that the new motor balloon of the Rhenish-Westphalian Motor Airship Company, now building in Elberfeld under the direction of the well-known aeronaut Oskar Erbslöh, will be shown in a special pavilion. Therefore four or five motor balloons will be constantly in view in Frankfort throughout the duration of the exposition.

The new "Parseval" airship of 6,000 cubic meters (211,890 cubic feet) capacity, which, since its brilliantly successful trial flights at Bitterfeld, has been put into commission, will make regular trips, carrying passengers, in the neighborhood of Frankfort throughout the duration of the exposition.

Since a great number of competitions for free balloons will be held during this time, the question of gas supply was a serious matter. This question has been most fortunately solved by the offer of the "Elektron" Chemical Company to furnish daily to the exposition free of charge 1,000 cubic meters (35,315 cubic feet) of hydrogen gas. A special track will be laid down for delivering the steel cylinders of compressed gas at the filling sheds. In this manner it will be possible to fill and refill the great balloons in their sheds directly from the railroad car without unloading the steel cylinders. Moreover, a strong current of illuminating gas will allow of the simultaneous filling of various balloons. For trial flights a level territory of perhaps half a square mile in extent has been provided near the exposition grounds.

Herr Mathis of Strasburg, who has bought the original Wright aeroplane, announces trial flights of this and also of a new Wright machine with a Fiat motor.

Trials of the Voisin aeroplanes will take place on the experimental field in Griesheim, which has been turned over to Herr Euler by the military authorities. Dr. Ing. Reissner and Herr Prof. H. Junkers have also entered flying apparatus. Furthermore, numerous models of flying machines, motor balloons, balloon sheds, etc., will be on exhibition. Instruments, maps, provisions for long balloon journeys in specially-prepared packages, methods of illumination, and special clothes for ballooning will be united in a special section.

The question of suitable attire for women has been taken under special consideration by the German Association for the Improvement of Women's Clothes, and the results arrived at will be made the subject of a special exhibition.

Of most particular interest will be the demonstration of a process discovered by the "Elektron" Chemical Company for the inexpensive production of hydrogen. A separate building will be erected for this purpose, and here may be seen the ascension of small balloons filled with the gas obtained.

An aeronautic experiment station will be erected by Prof. Prandtl, where experiments in air resistance, etc., will be conducted.

Connected with the exposition will be a recreation park, in which, among other things, will be shown for the first time the spectacle of a battle between naval and aerial men-of-war. Among the names of the guarantors who have up to the present time subscribed over $175,000 is to be found that of Count Zeppelin, who is down for the considerable sum of $2,500.

$200 in Prizes for the Best Garden.

If you have a small garden and you are proud of it, the readers of American Homes and Gardens want to know all about it. For the encouragement of those who have converted an unsightly lot into a lovely, blossoming piece of ground, however small, the Editor of American Homes and Gardens offers cash prizes aggregating $200.

The prizes are offered for the best-planted, developed and successful village or suburban gardens. The Editor and the readers of American Homes and Gardens want to know how you planted your garden and what success you had with it. You need not be a skilled writer to compete.

The unusual opportunity offered in the Garden Competition should call forth immediate and practical results. It is a project that should appeal alike to the owners and creators of gardens, and to those who want helpful hints and suggestions on the making of a small garden. For it is the home garden, the inexpensive home-grown garden, for which these prizes are offered. In other words, the gardens of the people, as distinguished from the gardens of the gardeners. Everyone may have a small garden, even if it be but a front yard, and it is precisely these home gardens which are made and tended by the family that are sought in this competition.

The Garden Competition raises the plain question, Who has the best garden? And the readers of the SCIENTIFIC AMERICAN are invited, with the utmost cordiality, to answer this question.

If your garden is a small one, so much the better. No garden is too unimportant for consideration in this competition, for the award of the prizes will be based on the merits of the gardens as gardens, and not on their size and cost.

This competition affords a splendid opportunity to give many persons pleasure by making known the beauties of your own garden to them; but it should help and stimulate others in new and other garden work, by giving them some detailed information as to the successful gardens others have created. And if one garden is good, two are better and three more so, until a whole community may be alive with this richest of rural treasures. The practical questions are, How is it done, and what can be done? These two questions, it is hoped, will be abundantly answered in the material sent in for this competition. We invite our subscribers and readers, and their friends, and the friends of their friends, who have gardens that they think of real interest and beauty, or who may possess choice bits of garden loveliness, to enter this competition.

The full conditions of the contest will be found in the May number of American Homes and Gardens.

New Experiments with Lippmann's Color Photography.

H. E. Ives has been seeking the causes of the difficulties which are encountered in the practical operation of Lippmann's process of photography in natural colors. The principal results of the investigation are the following:

The image obtained with monochromatic light is improved by using an emulsion containing less silver bromide than is usually employed. The smallness of the number of stationary waves observed in the film in previous experiments is attributed to the exclusive employment of pyrogallic acid as the developer. The tanning of the gelatine by the oxidation products of pyrogallic acid prevents the developer from penetrating deeply into the film. A much larger number of stationary waves can be detected when a hydrochinon developer is used, and it is advantageous to bleach the dark silver deposit with mercuric chloride. The purity of the reflected colors increases with the thickness of the sensitive layer. For the rendering of white a rather coarse-grained emulsion sensitized with isocol is most suitable. The whites are produced by fine particles of silver separated in development and diffused throughout the film. The colors of natural objects are most correctly reproduced by an emulsion containing silver bromide in particles rather larger than those which are most suitable for monochromatic pictures. The best thickness of the sensitive layer is 1/5,000 inch. The duration of exposure and development is of great importance.

As the fine-grained emulsion of the Lippmann plates is sensitive only for violet, and not even for bright blue, a sensitizer for blue is absolutely necessary. Isocol is the only sensitizer that was found to cover the spectrum without a gap.

As a substitute for the mercury mirror, Ives recommends a silvered celluloid film placed in optical contact with the sensitive layer. A plate of glass is heavily silvered and covered with a thick solution of celluloid in amyl acetate. After the evaporation of the solvent the plate is immersed in water, whereupon the film of celluloid separates from the glass and carries the silver with it.

Ives also obtained excellent results by combining the Lippmann process with the Ives three-color process.

Gold and Silver Coinage for 1908.

The United States government made a profit of $10,541,371 during the year of 1908 on the coinage of silver, nickel, and one-cent bronze pieces. These figures represent the difference between the price paid by the government for the metals and their coinage value. Silver bullion purchased for subsidiary silver coinage during the past year aggregated 18,819,279 standard ounces, and mutilated and uncurrent United States silver coin of the face value of $1,162,982 was received for recoinage. There was purchased 525,833 ounces of silver bullion for the Philippine government, the cost of which, $295,054, was reimbursed to the United States by that government.

The coinage executed by the mints of the United States during 1908 amounted to $197,238,377 in gold, of which $106,182,420 was in double eagles, and $4,829,060 in eagles of the design prepared by the American sculptor, the late Augustus Saint-Gaudens. The amount of subsidiary silver coinage was $16,530,477, which is the largest subsidiary silver coinage executed in any one year since 1877. The amount of minor coinage was $1,946,008. There were coined for the government of the Philippine Islands 25,003,915 pieces of silver coin, of the value of 18,131,793 pesos, and for the government of Mexico 1,397,291 silver 50-centavo pieces.

The figures showing the production of gold and silver for the past year will not be forthcoming for many months, the amount of production for 1907 having just been calculated. In that year the gold output amounted to $90,435,700, and silver for the same period was 56,514,700 fine ounces—$37,299,700. The total production of the precious metals of the whole world for 1907 is placed at $410,555,300 in gold, and 185,014,623 fine ounces in silver—$122,090,000. The consumption of gold and silver in the industrial arts in the United States amounted to $40,727,070 and 24,369,784, respectively.

The stock of gold coin in the world on January 1st last was $7,014,600,000; silver coin, $3,530,000,000, and of uncovered paper, $4,302,500,000, making the whole world's money value at that time amount to fourteen billion, eight hundred and forty-seven million, and one hundred thousand dollars.

The Distance Sense of the Blind.

It has long been known that some blind persons can move about in places that are entirely strange to them with a remarkable degree of certainty and without coming into collision with any large object. Half a century ago Spallanzani discovered that bats can steer clear of obstacles in total darkness. In order to make sure that the sense of sight was not employed, he blinded some bats, and found that they flew about as confidently and safely as before.

This experiment proved that warning of the presence of objects is received through some part of the surface of the body other than the eyes. In the case of blind persons, it was thought at one time that this warning was given by sound waves reflected by the objects, but this theory is disproved by a simple experiment. When a blind man's ears are stopped completely the sense of distance remains, although it is greatly diminished. This shows that the sense of distance is not identical with the sense of hearing and that a distinction must be made between the sense of distance and the directional power of the blind. This power depends chiefly on the sense of distance, but involves also hearing, smell, the temperature sense, and perhaps still other factors.

It is a noteworthy fact that the sense of distance is not possessed by all blind persons, but is found only in a few and to very different degrees in these. The blind possessors of this sense locate it in and near the forehead and say that the sensation is vague and somewhat resembles a light touch. From the experiments of Kunz, Woelfflin and others it appears very probable that the distance sense is a function of the sensory fibers of the first branch of the nervous trigeminus, which ramifies through the face. It is still unknown whether the distance sense is served by special nerves or by fibers which also serve the pressure and other senses. An investigation of the conditions which favor this sense would be very valuable, practically as well as theoretically, for thorough development of the distance sense would make the lives of the blind far safer and more independent than they are at present.—Dr. Woelfflin in Umschau.

In the production of naval stores for the year 1908, of the total 36,500,000 gallons of turpentine produced by all the naval-store producing States, the yield from Florida was more than 17,000,000 gallons; and of the total of 4,000,000 barrels of rosin, the output of this product from Florida was nearly 2,000,000 barrels. Georgia ranked next to Florida in the production of these products, yielding 1,000,000 gallons of turpentine and 10,000,000 barrels of rosin.