masses is unwise, impolitic, and sure to arouse the antagonism of those whom the increase affects.

Of course, it will be absolutely essential for publishers to increase the price of their periodicals mailed to Canada on all new business, but as eighty per cent of subscriptions are contracted for during the months of November, December, and January, the injustice done the publishers is apparent, owing to the season at which the change in rates becomes effective.

The publishers are forced to bear the burden of the increased rate without compensation, and this loss will in the aggregate amount to hundreds of thousands of dollars. As a matter of fact, the financial loss to the publishers of this paper arising out of the change in rates will be between two and three thousand dollars.

## RULES GOVERNING THE COMPETITION FOR THE SCIENTIFIC AMERICAN FLYING MACHINE TROPHY.

A special committee of the Aero Club of America, appointed for the purpose, has formulated the following provisional rules governing the competition for flying machines of the heavier-than-air type, which will be inaugurated at the Jamestown Exposition on September 14 next.

It is the intention of the SCIENTIFIC AMERICAN, in offering this trophy, to have it always open to competition by inventors the world over. Should the trophy be won by the representative of a foreign aeronautical club, this club, if a member of the Federation Aeronautique Internationale, may become the custodian of the trophy; but the future competitions, even if held abroad, shall be carried out under the same rules and conditions used by the Aero Club of America in the competitions held here.

RULES GOVERNING THE COMPETITION FOR THE SCIENTIFIC AMERICAN AERONAUTICAL TROPHY.

1. This competition will be held annually, and the conditions of the trials will be progressive in character, so as to keep abreast of the state of the art. The first contest will be held at the Jamestown Exposition on September 14, 1907, and all entries for this contest must be made in writing and sent to the secretary of the Aero Club of America, 12 East 42d Street, New York city, prior to September 1, 1907. The rules governing future contests will be formulated by the contest committee of the Aero Club of America in accordance with the results obtained and the lessons learned in this first contest.

2. All heavier-than-air machines of any type whatever (aeroplanes, helicopters, orthopters, etc.), shall be entitled to compete for the trophy; but all machines carrying a balloon or gas-containing envelope for purposes of support are excluded from the competition.

3. The machine which accomplishes the required flight in the shortest time and with the best display of stability and ease of control, shall be declared the winner. If several machines perform equally well, the committee shall have the right to demand further flights in order to determine which is the best. If no machine makes the required flight on the date set for the contest, the one that subsequently first accomplishes such flight shall be declared the winner, and shall not be entitled to make a further flight until the next year, under the changed conditions of the contest.

4. The flights shall be made in calm air, if possible. If a wind of over 20 miles an hour is blowing, no trial need be made. Aeroplanes may start by running along on wheels on the ground under their own power, but no special track or launching device will be permitted. A smooth, level roadway, or a reasonably smooth, turfed field will be provided from which to make the start. Machines need not fly more than a few feet above the ground, or higher than is necessary to avoid obstacles. They should be capable of being steered both horizontally and vertically, and of alighting without being damaged. If there is a wind blowing, the flights shall be made in such direction as best suits each operator. The start should preferably be made against the wind.

5. The committee shall make arrangements to accurately time and measure all flights, as well as the distance traversed and time taken in starting and stopping. Accurate observations of the speed of the wind and other weather conditions at the time of the flight shall also be made and recorded by the committee. Complete specifications of the competing machines, giving weight, supporting surface, details of motors and propellers, etc., together with a description of any performance that the machine has made, shall be forwarded to the contest committee with the entry or when application is made for a trial.

6. Anyone desirous of making a flight at any subsequent time can arrange for such a test by communicating with the contest committee of the Aero Club of America, at least fourteen days in advance, and asking this committee to appoint a suitable time and place for the trial. If the committee believe the machine to be impractical, it can require the inventor either to prove the incorrectness of such belief by an informal demonstration with the machine itself, or by demonstration in some other satisfactory way which will show that the machine is operative.

7. The first flight shall be for a distance of one kilometer (3,280 feet) in a straight line.

8. After every competition, the name of the winner will be inscribed upon the trophy. If it is won three times in different years by any competitor, the trophy will then become his personal property.

### Aeronautical Competitions, Jamestown Exposition, Norfolk, Va., April 28 to November 30.

No. 1. Special race limited to members representing recognized aero clubs for club championship, May 4.

No. 2. Dirigible balloon competition, June 1.

No. 3. Competition of balloons for distance, June 15.

No. 4. Competition of balloons for duration, August 3.

No. 5. Competition of balloons for objective point, September 7.

No. 6. Competition of balloons for altitude, November 16.

No. 7. Competition of balloons in pursuit of pilot balloon, August 17.

No. 8. Competition of carrier pigeons; flight from aeronautical concourse, exposition grounds, May 18.

No. 9. Simultaneous release of large number of small balloons carrying messages, May 18.

No. 10. Flying devices heavier than air, with motor and operator, September 14.

No. 11. Flying machine models with motor, August 24.

No. 12. Flying machine models without motor, and carrying operator, September 14.

No. 13. Kites for altitudes, November 2.

No. 14. Kites for steepest angle of flight, November 9.

No. 15. Kites carrying operators, November 16.

No. 16. Registering balloons, July 13.

No. 17. Competition of balloons and automobiles. (Date to be coincident with the arrival of the automobile tour.)

No. 18. Competition of dirigible balloons and automobiles, May 25.

No. 19. Competitions of photographs taken from balloons or kites.

No. 20. Competition of photographs taken of balloons, aeroplanes or other aeronautical objects.

No. 21. Competition of photographs of meteorological phenomena. (Exhibits for Nos. 19, 20, and 21 to be ready April 26, and continuing on exhibition throughout the exposition.)

No. 22. Signaling competitions with balloons or kites, October 12.

No. 23. Hot air balloon competition, October 5.

No. 24. Dropping (harmless) shells nearest selected objective point or target.

No. 25. Competition for longest trip, open during exposition.

### New Means of Producing Ballast for Balloons.

A new method of producing ballast during a balloon trip has recently been tried in Berlin. In a balloon ascent just made by Capt. Von Krogh, the pilot of the Parseval balloon, a quantity of chemicals were carried, which have the property of absorbing moisture, and thus increasing their weight in a damp atmosphere. The experiments took place under the superintendence of Dr. Knochs of the Meteorological Institute, and as far as can be gathered at present, were of a successful nature. The ascent was made in the spherical balloon "Betzold" from Tegel (Berlin). After reaching a height of 5,904 feet a landing was effected at Ratteick near Koslin, 186 miles distant. Time taken was about six hours.

### The Building of the United Engineering Society.

The dedicatory exercises of the new building of the United Engineering Society, at 25 West Thirty-ninth Street, New York city, to which Andrew Carnegie gave $1,500,000 for construction and still more when it came to raising an endowment fund, were held on April 17, 1907. The exercises were in the assembly hall of the new building, which is one of the finest auditoriums of its kind in the city.

Mr. Carnegie shared attention with the venerable Dr. Edward Everett Hale, President Arthur T. Hadley, of Yale, Ambassador Creel, of Mexico; Sir William H. Preece, president of the Institute of Electrical Engineers of England, and John Fritz, of the building committee, who received the most prolonged applause of any of those present.

Charles Wallace Hunt, who presided, had as a gavel the setting maul which Mrs. Carnegie used when she laid the cornerstone of the building. T. C. Martin, president of the Engineers' Club, read this telegram of congratulation from President Roosevelt:

The White House, Washington,
April 13, 1907.

My Dear Sir: I heartily congratulate you on the opening of the building of the Engineering Societies. The building will be the largest engineering center of its kind in the world. It is, indeed, the first of its kind, and its erection in New York serves to mark and emphasize the supremacy which this country is steadily achieving through her proficiency in applied science. The whole country is interested in the erection of such a building, and particularly, of course, all of those who follow either the profession of engineering or any kindred profession, and in no branch of work have Americans shown to greater advantage what we like to think of as the typically American characteristics.

With all good wishes, believe me, sincerely yours,

THEODORE ROOSEVELT.

Mr. T. C. Martin, 114 Liberty Street.

President Hadley delivered the principal address and declared that a combination of ethical and technical standards would produce the best professional service.

Ambassador Creel voiced the greeting of President Diaz of Mexico, and a letter was read from Charles A. Haswell, who, at the age of 97, is the dean of New York's community of engineers. Just before Mr. Carnegie was introduced, Charles F. Scott, the chairman of the building committee, delivered an historical address.

When Mr. Carnegie rose to speak, he asked the audience not to applaud him too long, lest he should conclude that they did not want to hear him.

"It is the spirit of the men that does the work," said Mr. Carnegie; "the safety of human society lies just here. Whenever we coalesce to do some good, a unification takes place and a consolidation; and whenever men meet to conspire against the public good—to do some evil—they find themselves unable to trust each other. That's why you needn't lie awake nights and worry about the future and about what problems society is going to meet. As sure as the sunflower turns toward the sun so the human race turns toward better things.

"This is the rock on which I rest, and on which I meditate sometimes. Nor can you deny this, that, quite apart from whatever evil exists, there is that principle of improvement inherent in us. To-day is better than yesterday and to-morrow will be better than to-day. So I look forward to the future of this building and I know that the organizations to whom it is devoted will advance and continue to meet the developing needs of our age."

### Peary's Proposed Arctic Trip.

Commander Robert E. Peary has definitely decided to make another attempt to reach the North Pole. He stated that he would sail from New York as near July 1 next as possible. Sufficient money had been raised, he said, for repairing his ship, the "Roosevelt," and a fund of $100,000 necessary to equip the expedition would be available before July 1.

Commander Peary said that he expected to arrive among the ice fields by the middle of July. His equipment and crew, he said, would be practically the same as on his recently completed expedition. He will buy two hundred dogs when he arrives in Greenland. He expects that the trip may be made in about the same length of time as the 1905 trip, which required sixteen months.

### The Current Supplement.

In the current SUPPLEMENT, No. 1634, the article on "How Coke is Made," begun in the last number, is concluded. Charles S. Walden writes on multiplex telephony. Some highly interesting experiments on the behavior of thin aluminium sheets in electrostatic fields are recorded. Prof. H. Geitel, well known for his splendid work in radioactivity, contributes an authoritative article on radioactivity and atmospheric electricity, which may safely be accepted as the latest utterance on the subject. An exceedingly interesting piece of physical apparatus, and one that any amateur can make and use, provided he has a little knowledge of electricity and a source of direct current at his command, is the speaking arc. In the current SUPPLEMENT Mr. A. Frederick Collins describes very explicitly how such an arc can be made at home. Prof. C. E. Lucke and S. N. Woodward have for months past been conducting an elaborate investigation for the purpose of ascertaining the comparative efficiencies of alcohol and gasoline in farm engines. The results of their investigations are published in the current SUPPLEMENT. G. K. Gilbert's most interesting monograph on the rate of recession of Niagara Falls is concluded. Sanford E. Thompson, a well-known authority on concrete, writes exhaustively on forms for concrete construction.

### Ira Remsen Chosen President of National Academy of Sciences.

The National Academy of Sciences has elected Prof. Ira Remsen, of Johns Hopkins University, president, vice Prof. Alexander Agassiz, who retires after five years' service. The vacancy in the vice-presidency caused by the promotion of Prof. Remsen was filled by the election of Charles D. Walcott, secretary of the Smithsonian Institution.