Correspondence.

The Extension of Patents.

To the Editor of the SCIENTIFIC AMERICAN:

The idea of extending patents that have been unprofitable does not insure that the extended patents will prove better, and leads to repeated extensions and therefore to perpetual patents. If that is good doctrine on patents, then whoever fails in any enterprise may call on Congress to set him on his feet again.

Patents are granted for the encouragement of the originating of *new* inventions, not to stimulate the working of *old* devices, and the absence of extensions will have not the least adverse influence on invention. If the inventor gets rich, well and good; if not, his is certainly not the only field of broken hopes.

Formerly patents were granted for fourteen years, with seven years' extension, making twenty-one years. When the extension law was repealed, patents were issued for seventeen years. That seemed a long time; but if it is thought too short, then the most we should do in justice to the public would be the twenty-one years of the old-time extended patents.

The encouragement of invention does not consist so much in the length of time for which patents are granted as in the ease with which patents can be obtained; and in this direction there is great room for improvement. The present seventeen years is long enough, and if patents were granted on hundred-year terms, it would not stimulate invention in the least over the present rate. J. F. HARTMANN.

Providence, R. I., April 2, 1906.

Chanute on the Wright Brothers' Achievement in Aerial Navigation.

To the Editor of the SCIENTIFIC AMERICAN:

Upon my return last evening from a ten days' trip to New Orleans I received your letter of 19th and telegram of 29th instant, asking me for a verification of the statement in the Illustrirte Aeronautische Mitteilungen, that I witnessed a flight of about half a kilometer by the aeroplane machine of the Wright brothers.

This is quite true. The Wright brothers have for the past two years been in possession of a successful flying machine driven by a motor, to my certain knowledge, and have been gradually perfecting it.

On the 15th of October, 1904, I witnessed a flight of 1,377 feet performed in 23 4-5 seconds, starting from level ground and sweeping over about one-quarter of a circle, at a speed of 39 miles per hour. The wind blew at some six miles per hour, but in a diagonal direction to the initial course. After the machine had gone some 500 feet and risen some 15 feet, a gust of wind struck under the right-hand side and raised the apparatus to an oblique inclination of 15 to 20 degrees. The operator, who was Orville Wright, endeavored to recover an even transverse keel, was unable to do so while turning to the left, and concluded to alight. This was done in flying before the wind instead of square against it as usual, and the landing was made at a speed of 45 to 50 miles an hour. One side of the machine struck the ground first; it slewed around and was broken, requiring about one week for repairs. The operator was in no wise hurt. This was flight No. 71 of that year (1904), and on the preceding day Wright brothers had made three flights—one of 4,001 feet for less than a full circuit of the field, one of 4,903 feet covering a full circle, and one of 4,936 feet over rather more than a full circuit, alighting safely.

The illness of a near relative, who had to be taken to the seashore, prevented me from being present at the greatly longer flights of September and October, 1905, but I visited Dayton in November, on my return, and verified the absolute accuracy of the statements which the Wrights have since made, over their own signatures, to the Aérophile of Paris and to the Aero Club of New York. There is no question in my mind about the fact that they have solved the problem of man-flight by dynamic means.

Believing that this solution had a money value, they have, until recently, preserved whatever secrecy they could, particularly when those who chanced to learn of their experiments made inquiries as to the construction and details of their apparatus; but since the French papers have published that negotiations were pending for the use of their machine, they have given some particulars of their performances. As the first use will be in war, it is my belief that the various purchasers will desire to preserve such secrecy as may be practicable concerning the further developments.

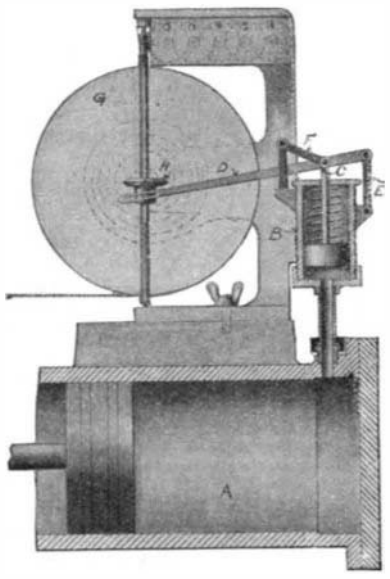
In addition to the great feat of inventing a practical flying machine the Wright brothers have, in my judgment, performed another improbable feat by keeping knowledge of the construction of a machine, which can only be operated in the open, from the incredulous but Argus-eyed American press.

I send you a page cut from The Car of London, which may prove of interest. The Aérophile of Paris for December, 1905, and January, 1906, contains fuller accounts. O. CHANUTE.

Chicago, Ill., March 31, 1906.

AN IMPROVED ENGINE INDICATOR.

A recent invention provides a simple device by means of which the actual horse-power hours delivered by steam engines may be easily and readily ascertained without the necessity of taking an indicator card and estimating the power therefrom. This end is secured by providing an instrument adapted to be attached to an engine, and by which a reading is attained accounting for the stroke, piston speed, or number of revolutions and the pressure, so that by multiplying this reading by the diameter of the cylinder in inches, the actual horse-power hours delivered may be ascertained. In practice two of these instruments are used on each double-acting cylinder. In the accompanying illustration an engine cylinder is shown in section at *A*. This is connected by a pipe with a small indicating cylinder, *B*. Within the cylinder, *B*, is a piston normally held in its lowest position by a coil spring. The piston rod, *C*, is connected at its outer end to the lever, *D*, which in turn is connected by a link, *E*, to the cylinder, *B*. The piston rod, *C*, is also connected by a link, *F*, to a fixed standard on the cylinder, *E*. The outer end of the lever, *D*, is slotted to engage a pinion on a friction wheel, *H*, which is adapted to engage a large friction disk, *G*. The wheel, *H*, is splined to a shaft, which is provided with a worm at its upper end, operating the gearing of a counting mechanism. The disk, *G*, is attached to a clock spring, as indicated by dotted lines, and is, also, connected by a cord to the cross-head of the engine, so that it is caused to revolve in one direction by the action of the cross-head, and in the opposite direction by the spring. The pressure in the working cylinder moves the arm, *D*, and in this way the friction wheel, *H*, is shifted across the face of the disk. The former is thus driven at a speed and in a direction corresponding to its position on this disk. It, therefore, follows that upon the operation of the engine, the disk, *G*, is given a back-and-forth rotation



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corresponding to the length of the stroke and the piston speed, and that this is communicated to the counter under the control of the working pressure. Hence a reading may be taken from the counter which, when multiplied by the diameter of the working cylinder in inches, will find the actual horse-power hours delivered during the period that the apparatus has been in operation. If compression exists in the cylinder, the complete return of the friction wheels to the zero position illustrated will be prevented, thus reducing the reading of the counter, and if a condenser is used the partial vacuum will cause the friction wheel to pass below the center of the disk, and the benefit of the vacuum will be recorded. A patent on this improved indicator has been granted to Mr. William F. Lloyd, care of Philadelphia Electric Company, northeast corner of 10th and Sansom Streets, Philadelphia, Pa.

The Current Supplement.

The current SUPPLEMENT, No. 1580, is opened by Dr. Erlwein with a well-illustrated article on the Sterilization of Water by Means of Ozone. Dr. Erlwein is one of the foremost authorities in Europe on this subject, for which reason his observations are worthy of more than usual attention. "Reservoir, Fountain, and Stylographic Pens" is the title of an elaborate monograph by Mr. J. P. Maginnis. The first installment appears in the current SUPPLEMENT. Of technological interest is an article on a rational process for obtaining ammonia and sal-ammoniac by the utilization of residuary and waste products. J. J. Carty, perhaps the leading telephone expert of this country, writes on the modern telephone switchboard. A second series of "Valuable Alloys" is published. A brief history of the marine turbine is presented. C. N. Edge analyzes the utilization of power in automobiles. The recent advances in the bacteriology of putrefaction are reviewed by Mr. J. T. Thompson.

Automobile Notes.

A new fuel consumption record was made recently in France by an experienced chauffeur, M. Bablot, with a 16-22-horse-power four-cylinder Berliet touring car carrying four people. This heavy machine was driven 100 kilometers (62.1 miles) in 1 hour, 21 minutes, and 11 3-5 seconds on the Salon road, with a fuel consumption of but 9 liters (2.37 gallons). This means an average speed of 45.95 miles an hour on a consumption of one gallon every 26.2 miles. When it is considered that the usual touring car of this type covers, as a rule, but 12 or 15 miles per gallon, it will be readily seen that this performance was quite remarkable. It is laid to skillful driving, an improved automatic carbureter, and the kind of fuel—"automobiline"—used. The Berliet car is made in this country by the American Locomotive Works, at Providence, R. I.

The American Automobile Association last week requested the National Association of Automobile Manufacturers to draw up a set of rules for the Glidden trophy tour of this year. After considering the matter, however, the latter association found it difficult to formulate a set of rules which would make it possible for the officers of the A. A. A. to pick the best car from among all the different types that might possibly compete, and consequently, no rules were determined upon. If we understand the matter rightly, the Glidden cup was given to be awarded annually to the best American touring car. This, we take it, means the car which will carry a given number of passengers comfortably through the daily runs of the tour at a fair average speed and with the least trouble to its occupants. Nothing was said about the cost of running, but this, it seems to us, should be the next consideration. If the contest is confined to touring cars, as it seems to have been heretofore, it would appear quite possible to formulate a set of rules which would make it easy to determine the winner, not by the mere choice of contestants, as was done last year, but from an accurate record of daily performances. This would show just what a touring car will do under actual touring conditions and would bring out both the good and the bad features of all the cars in the contest. We trust that the A. A. A. will draw up a suitable set of rules itself for conducting the 1906 Glidden tour in a scientific manner, and that thus America's great annual contest for pleasure vehicles will be put in the same class with similar contests held abroad.

The European circuit is to be one of the leading automobile events of the year. The international committee which has the affair in charge had a meeting not long ago in Paris and drew up the official rules. We give a short extract of these regulations. The French, German, Austrian, Belgian, and Italian clubs are the organizers, and the event will be an endurance test. It will be run in Europe over a 3,000-mile circuit, in fifteen stages, which vary from 150 to 250 miles. Fine expositions will be organized in France and other countries. Space will be free, except in France. In between the stages of the race the cars, although exhibited to the public, are placed in a space to which all access is forbidden, for making repairs, etc., according to what is known as the "inclosure system." Repairs must be deducted from the time of the race itself. It is decided to hold the exhibitions of the cars at Toulouse, Grenoble, Milan, Vienna, Berlin, and Cologne. Four classes are recognized for the cars: 1. Cars whose total piston surface does not exceed 86.59 square centimeters (13.42 square inches) corresponding to a 4-inch bore. A two-place car is to be used, with 170 pounds least weight of carriage body. 2. Piston surface of 226.19 square centimeters (35 square inches) or 4.8 inches bore for a two-cylinder motor. The car is of the double phaeton type, with four places. Least weight of body, 900 pounds. 3. Total piston surface 346 square centimeters (53.6 square inches) or 4-inch bore for a four-cylinder motor. Carriage body having four places and a least weight of 830 pounds. 4. Piston surface, 88 square inches. Four places inside and two in front, with a least weight of 1,000 pounds for carriage body. The engagements should be sent to the Automobile Club of France, 6 Place de la Concorde, before June 15, with payment of $200, $300, $400, and $500, according to class, together with all the data as to the cars. Each of the above clubs will send three delegates to the jury. Diplomas, in the proportion of one-fifth of the whole number of cars engaged, will be awarded for the best performance.

Consumption of Calcium Carbide in Europe in 1905.

Dr. Vogel has published statistics, from which he estimates the consumption in Germany at about 22,000 tons, and the production of German factories at 9,800 tons, leaving more than 12,000 tons for importation. The countries from which this amount is principally drawn produce altogether the following quantities: Norway, 9,500 tons; Sweden, 8,200 tons; Switzerland, 21,000 tons; Austria-Hungary, 15,000. The European countries consuming the largest quantities are Germany, France, and Italy. He estimates the total consumption of Europe at 50,000 tons, and of the whole world at 100,000 tons.