

Particulars of Some of the Cars Built for the Gordon Bennett Cup Race.

Active preparations are now being made for the Gordon Bennett Cup race. The eliminating trials in France will be held over a circuit in the Auvergne region on the 16th of June, and 24 cars are to run. These consist of the Charron, Girardot, and Voigt; Panhard & Levassor; Gobron-Brillié; Richard-Brasier; Bayard-Clement; Darracq; Renault; Automoto; De Dietrich, and Hotchkiss. The prizes which are to be awarded to the winners in this event will be nearly \$30,000. Most of the cars have been finished or are well under way, and we give herewith some of the leading features of several.

The three Panhard & Levassor cars somewhat resemble last year's type which were winners in the Ardennes Circuit and the Vanderbilt Cup. They have been modified to some extent and improved in the details. The motor has four cylinders of 170 millimeters (6.8 inches) diameter and stroke; it is said to give 120 horse-power at 1,200 R. P. M. Among the modifications we may note that the finned radiating coils have been replaced by a honeycomb radiator having a great cooling surface. An improved form of hydraulic regulator is used. The front of the car remains about the same, but the rear part has a pointed shape. The driving clutch is formed of friction plates, as this form has already proved successful. As in last year's car, the transmission from motor to rear axle is by a universally jointed propeller shaft. Magneto ignition is employed. The frame has been hung as low as possible so as to give the greatest steadiness in making the curves. The Panhard cars will be driven by Heath, Teste, and Henri Farman. The Richard-Brasier cars have also been considerably improved. The motor has four cylinders of 160 millimeters diameter and 140 stroke (6.4 by 5.6 inches) and gives from 90 to 100 horse-power at 1,200 R. P. M. A Simms-Bosch magneto supplies the ignition, with the new Brasier spark-break device. M. Brasier has also designed a new form of carbureter which is said to be much superior to the old. It uses a series of convergent jets. The governor of the motor acts upon the inlet valves, and the latter are mechanically operated. The chassis is lowered and has a relatively small wheel base, this being 2.65 meters (8 feet 10 inches), while the tread is 1.25 meters (4 feet 2 inches). The front and rear wheels are very nearly 3 feet in diameter. These cars are considerably under the regulation weight of 2,204 pounds. The construction is very solid and the exterior form somewhat resembles Thery's car of last year in which the reservoir is built around the driver's seat in the rear, thus obtaining a gain in weight. Thery, Callois, and Stead will drive these cars. But one racer has been entered by Charron, Girardot, and Voigt. It has an extra large four-cylinder motor, in which the cylinders are mounted separately. The inlet valves, which are mechanically operated, are symmetrical with the exhaust valves. All the working parts are protected by metal cases. The ignition is by Simms-Bosch magneto. The normal speed of the motor is 1,000 R. P. M., and at this speed the motor gives 90 horse-power. At 1,600 R. P. M. it gives 120 horse-power. The wheel base is relatively short, and this is well adapted for the many curves of the Auvergne circuit. A propeller shaft is used to transmit the power to the rear axle. The car has four speeds and a reverse. Girardot is to pilot this car. The Hotchkiss cars, three in number, are rated at 120 horse-power. The weight of the car is not much under the required limit. It is a little longer than last year's model, but about as wide. The wheels measure 34 inches front and 36.4 rear. This year the bonnet will not have a pointed form, but will be the standard Hotchkiss shape, namely, cylindrical, with a honeycomb radiator in front. A propeller shaft and bevel gear drive is used, and the speed changing device, which is very strong, has two sliding gear sets, and gives four speeds and reverse. A. Fournier, Le Blon, and Lavergne are the drivers.

Among the English cars which will take part in the eliminating trials on the Isle of Man on the 20th of May, we may mention the Napier, which has a four-cylinder motor of 165 millimeters (6.6 inches) diameter and 150 stroke (6.0 inches). Running at 1,000 R. P. M., it gives about 120 horse-power. The upper parts of the cylinders are cast in pairs. To give a good distribution of the weight, the motor has been shifted back toward the rear to some extent. The radiator, of the honeycomb form, is now at the rear of the front axle. This arrangement is claimed to give less fatigue on the tires when making the curves. A turbine pump worked by chain from the motor assures the water circulation. The inlet is controlled by a handle placed on the steering wheel. The governor is centrifugal, and has an accelerating device which is worked by a pedal. Three speeds and reverse are used, with bevel gear drive. This car is of light weight, not over 2,000 pounds. It has a wheel base of 110 inches and a tread of 58 inches, with 35-inch front wheels and 34-inch rear. The Wolseley cars are distinguished by the use of a horizontal motor of four cylinders. Diameter and stroke are both 6.4 inches. At 1,000 R. P. M. it gives

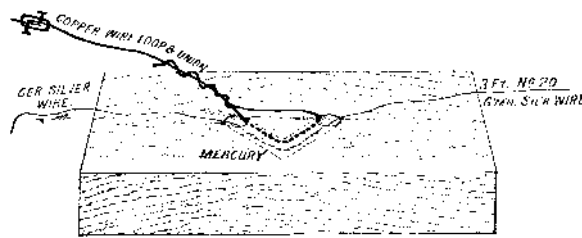
from 115 to 120 horse-power. The crankshaft is of nickel-steel. Chain transmission is another feature of the Wolseley car. It has four speeds and reverse. The wheel base is 9 feet and the tread 57 inches. The motor is placed somewhat farther in front than last year, so as to increase the adherence of the front wheels.

As to the German cars, two Mercedes have been already selected by the German Automobile Club, while the third is to be chosen in the eliminating trials which are to be held shortly. A circuit has been chosen to the north of Homburg for this purpose. The two Mercedes cars will be mounted by Jenatzy and Baron de Caters.

America will this year be represented in the great international race by one Locomobile and two Pope-Toledo cars of high power, which have been specially built for the event. The former machine is of 150 horse-power, and is constructed of nickel-steel practically throughout. It was designed by Mr. A. L. Riker, and built under his supervision for Dr. Harold E. Thomas, of Chicago, who has entered it in the Gordon Bennett race of July 5, and the Pike's Peak hill climb to take place in September.

A SIMPLE RHEOSTAT.

L. H. Batchelder, of Hamline University, St. Paul, Minn., thus describes the rheostat in the accompanying illustration: "I have long had in use in my laboratory a simple and inexpensive rheostat for maintaining a steady current of electricity. It is exceedingly convenient, for example, for maintaining a steady current in the quantitative analysis of copper or nickel salts; also in calibrating ammeters with the silver or copper voltameter. The materials required are a hardwood block about three by six inches and an inch thick, a bit of copper wire, a few drops of mercury and three or four feet of No. 20 or 25 German-silver wire. The wire must, of course, be kept bright



AN EFFECTIVE RHEOSTAT.

for good contact with the mercury. It is drawn to the left or right to be out or in the circuit as may be required to keep the current at a fixed value as shown by the ammeter in circuit."

A New Decision of the Automobile Club of France Regarding an International Race.

The controversy which has been going on for three months past relative to the Gordon Bennett cup and the different racing events has not by any means ceased. At its meeting of March 1 the Automobile Club of France made a new and important decision. This is to the effect that the committee of the club believes, in the present state of events, an annual racing event to be essential for bringing out the leading ideas and showing the progress of the industry. But, on the contrary, numerous events are ruinous for the constructors, without offering a renewed technical interest. If a single race is authorized outside of the Grand Prize, it is impossible to forbid others of the same kind. The multiple races, on account of their insufficient organization, will doubtless bring about catastrophes which will exasperate the populations and stir up public opinion against automobile events. The government will then be obliged to forbid the great annual race which is necessary for the prosperity of the industry which assures the existence of hundreds of thousands of workmen. The Automobile Club of France, upheld by the allied French and foreign clubs, by groups of the leading parties interested, and by the syndical chambers of industry, alone possesses sufficient quality and capacity for a good organization of a racing event. Owing to its influence such an event is sure to be a success, and bring great numbers of persons from other countries, to the benefit of the home industry. The safety of the public roads is a point which must be considered. Again, leading constructors express the desire to have but one race in France each year, this to be an open event, with no others. Accordingly the club declares that it is essential that the French government give its patronage exclusively to the great annual race of the club and send its delegates to this event; that it forbid all other races except the club's annual event; and that the promoters of other races abandon these projects and give their aid to the annual race organized by the club. The committee decides that in case its appeal is not favorably received, it will take the following measures, the importance of which is not to be overlooked: The constructors, organizers, chronometerers, proprietors, and conductors who take part in any other races except the annual

event which the club organizes (for 1905 this will be the Gordon Bennett Cup race) will in the future be excluded from all events which are organized by the club or under its patronage. This measure is to be officially communicated to all the allied French and foreign clubs. The Automobile Club opens a subscription list for this year's event and heads the list with \$5,000. The above decision does not apply to touring events. As a result of this decision, the Gordon Bennett Cup will be the only race organized by the club this year, and its rules will not be changed. Next year the cup race will perhaps be replaced by the Grand Prize, which will be an international and open event. The sum of \$20,000 which had been offered by the Paris journal, the Auto, for the Grand Prize, will be devoted instead to the French eliminating trials.

Explosion of Gas Buoys.

A recent explosion of gas buoys is being made the subject of investigation by the Canadian government. At the time of the explosion, the buoys had been filled with gas at a pressure of 180 pounds to the square inch, and a third was being filled when one of the other two buoys exploded, the rupture taking place along a welded seam four feet in length. Flying metal penetrated the adjoining buoy, causing it also to explode. The accident is considered to be due to defective welding, and it serves to prove that the policy of the government, in its recent adoption of low-pressure acetylene gas buoys, is a wise one. These buoys carry a charge of acetylene in a central tube on a grating. When the buoy sinks to a certain depth, sufficient water enters automatically to generate gas from the carbide. The gas expels the water, and automatically cuts off the intake of water. As the gas is consumed the water again rises, touching the carbide and producing more gas. The pressure does not exceed about three pounds to the square inch, and some of these buoys used last season have given excellent satisfaction.

The Current Supplement.

The opening article of the current SUPPLEMENT, No. 1531, describes an economical coal-handling plant. A variable-speed gear giving all speeds from zero to maximum is illustrated and fully explained. Perhaps the most efficient device which has thus far been used in detecting the presence of radio-activity is the electroscope. One of the most valuable articles in the current SUPPLEMENT is that which describes the construction of an electroscope for experiments on radio-activity. Dr. O. N. Witt presents another article on the Chemistry of Patinas. Emile Guarini writes on a new thermo-electric battery. A new secret service telephone is the subject of an article by the English correspondent of the SCIENTIFIC AMERICAN. When completed, the Japanese battleship "Kashima," recently described in the columns of the SUPPLEMENT, will be the most powerful war vessel afloat. Trials of the armor plate with which the "Kashima" is to be protected were recently carried out at Manchester. An illustrated article in the SUPPLEMENT describes the results obtained. J. E. Gore presents a popular account of stellar brightness and density. Loewy and Puiseux have been for years engaged in making a photographic study of the moon. The Paris correspondent of the SCIENTIFIC AMERICAN reviews the results of their work. The third and last installment of A. J. Hipkins's article on Musical Instruments, Their Construction and Capabilities, is presented. He deals with keyboard instruments. An excellent paper by Sir William Lockyer is that on "Our Sun and Weather."

Submarine Mines for the German Navy.

Owing to the widespread success that has attended the employment of submarine mines during the Russo-Japanese war, the German naval authorities have decided to devote greater attention to the subject of sea mines than has been their practice hitherto. A mine company comprising two hundred men has been formed, and will be stationed at Cuxhaven, this naval port having been selected as a base from which the entire defensive operations of the North Sea will be directed. There are three mine-laying vessels at present in the German navy, but these are to be partially superseded by six torpedo-boats, which have been stationed at Cuxhaven for the use of the new mine company. It is anticipated that when the men have been trained to lay mines with quick-moving torpedo-boats, it will be practicable to block the estuary of the Elbe with stationary and floating mines within a space of twelve hours.

A conference of scientific scholars is being held at Colorado College, Colorado Springs. Leading universities and colleges are represented. A number of valuable papers upon subjects bearing on the scientific problems of the Rocky Mountain country will be read, and the results of the conference give promise of much permanent value. A similar conference held a year ago at this same institution was of such importance that it led to this second series of meetings.