

THE PARIS AUTOMOBILE SHOW.

BY THE PARIS CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

Although the Sixth Annual Automobile Show, which terminated on the 25th of December, was doubtless the most pretentious exhibition of motor cars that has ever been held in Europe, it must be confessed that little, if anything, radically new was exhibited. As a whole, the vehicles which crowded the main floor of the Grand Palais, and almost every nook and corner of the huge building, showed general progress in the perfection of details, with an occasional noteworthy construction. Among the most remarkable exhibits, must be mentioned an admirable collection of automobile boats, which showed how rapid has been the progress in this particular branch of automobile engineering within the past year.

Among the more striking novelties exhibited was a frame containing a bicycle motor and all its accessories. The inventor has christened this product of his ingenuity, the "Motosacoche." Six wing nuts, *V*, as shown, attach the motosacoche to any bicycle. In the accompanying illustration, the gasoline tank is lettered *G*, the spark-coil *S*, the batteries *B*, the carbureter *C*, the oil-tank *O*, the motor-cylinder *A*, and the contact-box *D*. A jockey-pulley, *J*, keeps the belt taut. The muffler, *M*, is mounted below the motor. The spark and throttle levers, *H*, are attached to the handle-bar, and are connected with the motor by flexible cords. A twisted belt passed about a grooved pulley, clamped on the spokes of the rear wheel, serves to transmit the movement of the motor shaft. In order to draw the air past the horizontal flanges on the motor-cylinder, the motor is incased by two side covers, bulged in front to form a scoop. Not the least striking feature of this entire appliance is its light weight. The motor weighs but 15½ pounds, and develops 1¼ horse power. The carbureter, which uses either gasoline or alcohol, weighs about 9 pounds. Two cells of storage battery supply current for the ignition. The connecting wires are clamped against the lead terminal lugs, instead of being fastened with brass binding-screws, thereby avoiding oxidation and obviating the breaking of the lugs. The gasoline tank, with its capacity of 3 pints, contains enough fuel for a journey of 100 kilometers (62.1 miles). Oil is forced into the crank-case by a hand-pump, contained in the oil-tank *O*. Sufficient oil is carried for a trip of 124 miles. The weight of the bicycle is increased but little by the addition of the motosacoche, since the total weight of the whole mechanism is but 66 pounds. Of the efficiency of the appliance it may be said that in a 1,000-kilometer (621 miles) endurance test for motor bicycles, two machines equipped with motosacoche won first and second prizes.

Of the light cars, among the more prominent exhibited were the Renault vehicles, one of which made such a brilliant record in the Paris-Madrid race. The Renault car is built either as a light car or as a voiturette, using a four-cylinder or a two-cylinder motor, as the case may be. Otherwise, the general disposition of the parts is much the same in each. The accompanying illustrations depict one of the latest Renault voiturettes. The designs of the motor, the gear box, and the differential, are similar to last year's type. A number of important changes, however, may be found in the minor parts—changes which have contributed not a little to the success of the racing car. Of the light car using the four-cylinder motor, it may be said that its carbureter is of the float-feed, atomizer type, combined with a revolving valve for regulating the air admission, and with a second valve for admitting a greater or less quantity of the explosive mixture to the motor cylinders. A complete description of this carbureter, as well as of other novel features of the Renault machine, will be found in the SCIENTIFIC AMERICAN SUPPLEMENT of January 30, 1904. It may be mentioned that one of the novelties which has been specially remarked in this year's type is the device employed for

operating the inlet valves of the motor. Departing from a practice which is coming much into vogue, the valves are not operated mechanically. They are, nevertheless, arranged so as to offer a greater or less resistance to the admission of gas by means of a device which is mounted on the valve, and which is suitably connected with a small lever underneath the steering-wheel. In this way, the admission of gas to the motor is varied, without using a throttling-valve on the inlet-pipe. The ignition devices comprise the usual accumulators, induction-coils, and spark plugs, arranged, however, so as to use only one-half the number of parts ordinarily required for a four-cylinder motor. The Renault chassis, which have been lengthened to accommodate the new-style bodies, are of three different

extensible pulleys are connected by a leather belt of special construction. The pulleys are formed of two conical wheels, the spokes of which fit into each other like the interlocking fingers of two hands, thereby forming a pulley of triangular section. One of the halves is movable. By sliding it back and forth, the diameter of the pulley may be varied at will. The same lever shifts both pulleys, increasing the size of one and decreasing that of the other, thus maintaining the belt length constant. In this way, the speed of the car may be easily varied without the friction loss of ordinary gearing. Instead of the three or four speeds which are obtained in the usual transmission, the speed may be varied gradually and without shock within the speed limits.

A 150-horsepower Fiat motor for submarine boats was the object of more than one admiring group of spectators. The motor is of the four-cylinder pattern, and makes 600 revolutions per minute. Since it is difficult to start a very large motor, a dynamite cartridge is used, the explosive force of which supplies the initial impulse. A magneto is employed to produce the ignition-spark. The moment of ignition may be varied as the magneto is driven by special gearing on the main cam-shaft. The gear is mounted so as to be displaced by the action of the governor-balls. In this way, the relative position of the armature to the motor stroke is varied according to the motor speed. The second cam-shaft in the rear carries a ball-governor, which acts upon the inlet of gas to the motor.

A method of automobile construction designed by the Decauville Com-

pany is illustrated in the engraving annexed. The main feature of the construction resides in the use of a single casting to form the lower half of the crank-case and gear-changing box. In most automobiles the motor is mechanically separated from the gear-box, and by reason of the shocks of the road, each of these parts, the heaviest on the car, is likely to take a differential movement, thereby subjecting the mechanism to unequal strains. In the present construction, this difficulty is overcome by building the motor crank-case and the gear-box in a solid piece, so as to avoid any displacement between them. The arrangement gives absolute rigidity in the transmission of the power to the rear, no matter what may be the jarring of the chassis on the road. A large stamped steel plate, riveted to the channel bars which form the frame of the chassis, acts as a support for the mechanism.

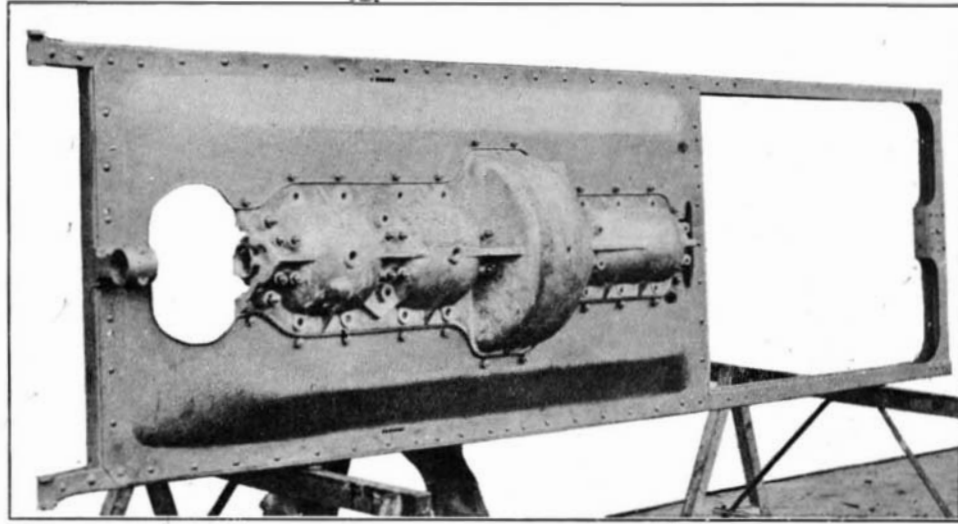
The Darracq Company have gone one step further and have brought out a complete pressed-steel frame like the Decauville, but with the apron, by which the engine and transmission are held, integrally formed with the frame instead of riveted to it. The Darracq frame is a good example of the possibilities of pressed or stamped steel construction in automobiles.

In the SCIENTIFIC AMERICAN SUPPLEMENT of January 30, 1904, will be found a complete account of the show, to which account the reader is referred for description of details.

Complete statistics from 85 per cent of the automobile manufacturers in the United States to September 3 indicate that the actual sales for the year 1903 will be 11,090 cars, valued at \$12,000,000. This is double

the business of 1902, to which must be added the foreign importation of 200 cars, valued at \$800,000. The importation of foreign cars is about the same as last year. Trade in foreign-made cars is probably at its maximum and will slowly decline, as the American manufacturers are rapidly supplying the demand.

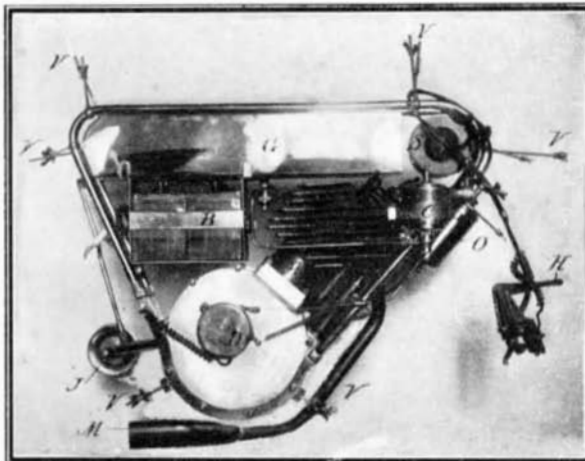
There has been exhibited in London a diamond, which is the second largest gem of its description in the world. It weighs 336½ carats. It is of a yellowish color and worth about \$10,000. If the color had been better, the stone would have been worth a fabulous amount. It was recently extracted from the Ottos Kopje diamond mines at Kimberly.



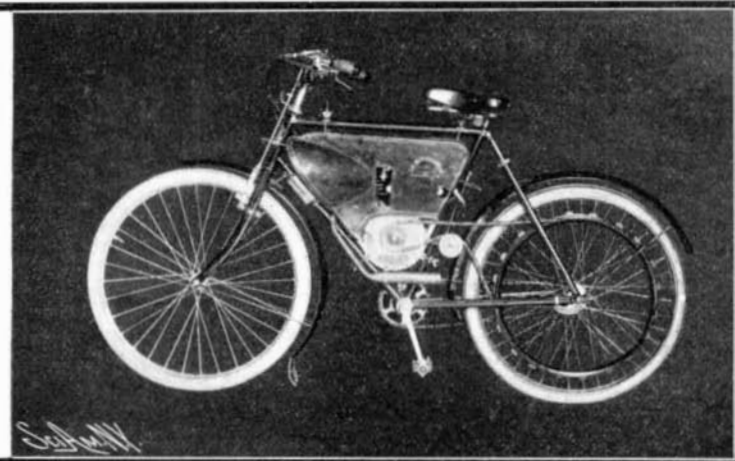
NEAR VIEW OF APRON RIVETED TO FRAME AND HOLDING COMBINED MOTOR AND TRANSMISSION GEAR CASES.

types, for 7, 10, and 14 horse power respectively. The transmission consists of two parallel shafts, the main shaft being in line with the motor crank-shaft and made in two parts which can be joined through miter gears, for a direct drive on the high-speed. For the first and second speed and the reverse, the miter gears are separated.

Still another novel vehicle exhibited at the show, which deserves more than passing attention, is the Delahaye touring car. The chassis is well pictured in the accompanying illustration. The four-cylinder motor develops 24 horse power at 1,100 revolutions per minute. One of the improvements of the 1904 model is a new carbureter, of which the details have not as yet been made public. In front, the governor, the water-pump, and the ignition contact-box are compactly mounted. The first two are driven from a gear on the end of a main cam-shaft; while the ignition-box is fixed on the end of the same shaft. The governor acts upon the carbureter by means of a lever and spring. As soon as the flywheel clutch is thrown out, the speed of the motor rises, and the governor balls fly apart, thereby operating the lever and cutting down the gas inlet. Another novelty of the Delahaye automobile is a new gear-changing box with a double sliding gear. The Delahaye automobile launch motor was



THE MOTOSACOCHÉ.



MOTOSACOCHÉ ATTACHED TO A BICYCLE.

another novelty that attracted some attention. For the purpose of securing ready access, the crank-case is opened on a hinge at one side. The present motor has two cylinders and yields twelve horse power running at 1,200 to 1,500 revolutions per minute. The gas inlet is varied either by the governor or by hand. The transmission is distinguished by the use of a cone-clutch combined with the differential in such a way that, by tightening a band brake upon the differential, the auxiliary bevel gears of the latter are blocked and the shaft is turned in the reverse direction.

The Fouillaron automobile, which also formed a noteworthy exhibit, uses a pair of extensible pulleys to transmit the movement from the motor to the rear, thus dispensing with the change-gear-box. The two