pins and pull against short short pieces of channel which are rivetted to the channels of the lateral struts.

The intermediate struts are I beams having their webs hori-Sontal and connected to the webs of the inner post channels by hent plates. The vibration rods are connected to the upper lateral and intermediate struts by bolts. The portal struts ere connected to the webs of the inner batter brace channels by bent plates. Where vibration rods are used at the portals the webs of the portal strut channels are made parallel to the length of the batter brace, and the rods, of which there are four at each portal, are attached to pins passing through the ends of the struts. Where there are no vibration rods at the portals, the flanges of the portal strut channels are made parallel to the direction of the batter-braces, and the distance between the channels is increased so as to give a greater leverage to resist the bending moment on the strut. The lower lateral struts are of wood usually 8 x 8 in. upon which rest the joists, so that the lateral rods pass beneath and attach by bent eyes to the chord pins, or, if more than 13 inches in diameter, to vertical pins dropped through the jaws, by which the lateral struts are connected to the chord pins. The lateral strute struts are also firmly bolted to the upper flanges of the floor beams, upon which they rest. -(Eng. Club of Phil.)

THE ELECTRIC TRANSFER OF ENERGY. (Electric Review.)

RESEARCHES OF M. MARCEL DEPREZ.

Summary of Experiments.

(Continued from page 139.)

(For illustrations see pages 172, 173, 176, 177, 180 and 182.)

It was forgotten in this comparison that the latter were The was forgotten in this comparison that the latter water machines with alternating currents, but the others continuous current machines. The difference of the physiological effects is very is very great, an alternating current having a tension of 600 voltain volts is almost certainly fatal, whilst a continuous current of 1,900

1,900 volts, if not free from danger, does not kill* The report drawn up by the Commission of the Academy of results obtained by Marcel Deprez, conformable in every results obtained by M. Marcel Deprez, conformable in every resnest respect to the theoretical principles which ought to guide engineers, surpass by far all that had heretofore been accom-plished uppass by far all that had heretofore been accompliabed, by the magnitude of the work transmitted, in com-

Parison with the resistance of the transmission conductor, and are, more The commission is not prepared to judge the economical value and the interview for the results obtained; but, value and the industrial future of the results obtained; but, from the the industrial future of the results obtained the

from the industrial future of the results obtained, apparate the thorough examination which they have made of the apparate apparatus and the principles brought into play, they do not hesitate to add the principles brought into play, they do not hesitates and the principles brought have been proclaim the importance of the facts which they have been have been enabled to verify.

to congratulate M. Marcel Deprez on the important progress which he has effected in the solution of the interesting pro-blem of the electric transmission of energy, and encourage sim blem of the electric transmission of energy, and encourage him to During L. to pursue his lobors, continuing, as hitherto, to place the re-sources of an ingenious mind at the service of the best estab-lished principles of electrical science."

er of the riment.	NUMBER OF BEVOLUTIONS Der minute.		MECHANICAL WORK.		NET YIELD.
Numb /	Generator.	Recipient.	Supplied at the Generator.	Collected at the Recipient.	Transmission deducted.
125678	378 370 850 923 850 1,024	104 88 6/)2 709 643 799	3*838 3*854 9*771 10*556 9*514 12*267	0°578 0°489 3°344 3°939 3°572 4°439	0°176 0°147 0°435 0°477 0°482 0°482 0°456

The advance made, as compared with the Munich experi-ments. was certainly considerable; the force transmitted was increased from one-fourth to four and a-half horse-power, the yield had risen from 30 to 48 per cent. ; the distance, though less, was still, in effect, considerable, and the two stations were, in fact, in the same electrical relations* as if at the distance of 8.5 kilometres from each other.

In reality, as we know, they were not separated ; the Com-mission had made special electric measurements, showing that the influence of this arrangement was nil, and that the machines acted quite as if they had been at a distance ; nevertheless, this gave scope for criticism. It must be added that, in consequence of the circumstances already mentioned, the experiments had to be made rapidly; the high velocities could only be maintained during the time necessary for taking account. Scientifically the results were obtained ; industrially speaking they might require confirmation.

M. Marcel Deprez, however, had no intention of resuming these trials with the machines which he had used. Such as they were, the experiments made on the North of France Railway, joined to the numerous laboratory experiments, were sufficient for determining the proper construction of machines for transmitting great powers to long distances; he went to work, therefore, to prepare practical models. Fig. 13 shows that there were three wires; the two upper

served for the power, and the lower for communications. There were at first two telegraphic stations, but even before the commencement of the public experiments there were placed there two telephonic stations on Adee' system, which turnished an extremely convenient means of correspondence, and greatly facilitated the experiments.

We may add that in the public experiment which were made, the use of this telephone was a great attraction. Many persons requested permission to hear it, and at the end of each experiment the public took particular pleasure in seeing the results of the day exchanged, and orders for the morrow given by means of the telephone.

Fig. 15 gives, on the plan of the neighbourhood of Grenoble, the track followed by the line. Fig. 14 is a bird's-eye view of the country traversed. The line runs in the splendid valley of Gresivaudan, along a promenade named the Boulevard Saint-André, which extends nearly 10 kilometres, almost to the Bridge de Champs. It leaves the the torrent of the Drac at its junction with the Romanche, and still following the road, ascends the valley of this latter torient as far as the cement, works. The resistance of this circuit was found to be 150 ohms.

The receiver was in the centre of Grenoble, in an ancient building called the old market-hall, and which was once a Church. The site was very large and high, but nnfortunately badly covered, as was discovered too late. The upper storey was perforated with large openings, the frames of which hed disappeared long ago. In fine weather this was charming, and a delicious coolness pervaded the hall. But in bad weather the cold wind from the mountains, and the rain, raged fiercely. One day it was necessary to break off the public experiments because there fell in the ball nearly as much rain as in the neighbouring square. The engineers' warned by experience, feared lest the machines might get wet. This circumstance is mentioned here in proof that the weather was not uniformly favourable. On the contrary, the work was carried on in rough weather, and even in the midst of a heavy storm. Cold or hot, foul or fine, dry or wet, the machines did not seem affected, and went on always equally well.

Before requiring any work from the machines they were of course tried. To this effect the receiver was fitted with a Prony brake, and instructions were given to the station at Vizille to start at a velocity of about 500 revolutions, increasing slowly up to 1,200 or 1,300, which speed was to be kept up, and to work for an hour, unless a signal to stop was sent from Grenoble.

The trial gave full satisfaction. We saw with pleasure the work received rising from 3 to 4, and then to 5 horse-power, thus exceeding former results, and then still increasing to about 5 horse-lower, at which it remained during the whole time of the experiment.

It was then certain that the machines were in very good condition, that they were doing excellent service, and that they could be depended on.

* [Our readers will doubtless remember our criticisms on the me-thod adopted of joining up these machines, a method manifestly un-fair and misleading.-EDS. ELEC. REV.]