tical electrical engineer added to the committee, and suggested the name of Mr. Kennelly, Chief Electrician of the Edison Laboratory.

DR. MASSEY remarked that his studies had been in the line of the primary current—in the way of contracting of muscle, that such current will contract a soft myoma to a certainty—that different coils produce different results.

DR. MORTON reporting as an individual member of the committee, pointed out the difficuties the committee had to contend with if the mere question of frequency of interruptions alone were to be considered, since variations per second from about 20 to about 5,000 produced muscular contractions and effects upon sensory nerves. The electrical engineers had found the subject of transformers a very abstract one, and he thought another year would be none too much time for the committee to devote to the subject.

It was resolved that Mr. Kennelly be added to the committee.

Report of Committee on Arrangementts : DR. GOELET of the committee, expressed his regrets that Dr. Newman was ill, and therefore unable to be present to explain the program. Read an invitation from Metropolitan Telephone Co. to visit their rooms, and announced that the Electric Club had tendered the privileges of the club house for two weeks to members of the Association, and also had invited the members to a social reunion at the Club this evening.

The reading of papers was then begun.

Tuesday, October 4, 1892.

Afternoon session—Meeting called to order at 3 P.M. The President, Dr. W. J. Morton, in the Chair. The Secretary being absent, Dr. Charles R. Dickson, of Toronto, Canada, at the request of the President, acted as Secretary *pro tem.* for the balance of the sessions.

DR. HUTCHISON exhibited his singing rheothome constructed of a ribbon of phosphor bronze, the pitch of which can be readily raised or lowered. All pain takes the same pitch, but resistance has to be largely taken into consideration. In sciatica he used C major and found it best.

MR. CARTY : The quality of the material of construction enters very largely into the effect to be produced irrespective of the speed of vibration.

DR. GOELET agrees with Dr. Carty, and thinks there is a difference due to the quality of the iron in the coil.

DR. KELLOGG asked Mr. Carty : "Do the vibrations of the rheotome correspond with the movements of the current?" but Mr. Carty replied "No." Dr. Kellogg said that by making his instruments revolve very rapidly he can measure very rapid alterations.

DR. GOELET thought Dr. Hutchinson did right to call attention to the difference in the resistances encountered in different classes of medical work. He did not think the electrical engineers exactly understand our position. They have to deal with definite known resistances which are comparatively low, while the resistances encountered in medical work vary greatly, and are usually enormous by comparison. Their estimate of the induced current (or what we know as the faradic) is based upon its character while traversing a wire with little or no resistance ; therefore, they regard it as an alternating current. The make and break currents are equally appreciable through a low resistance, such as a wire, but when applied to the resistances of the human body, the make current is so feeble that as it possesses so little electro-motive force that it is inappreciable, and only the break current, which is computed to be thirteen times stronger, exerts an appreciable effect. Then, too, he does not believe they appreciate fully the stress we lay upon the variation of the tension and volume of the different currents derived from coils of different size and length of wire. To do so, it would be necessary to understand the different conditions we have to deal with. The current of tension or higher electro-motive force is used for the relief of pain, and the current of volume, or lower electro motive force, for muscles stimulation. These qualities of the two currents are, of course, more manifest in gynæcological work where both poles are applied to a moist mucous surface which offers less resistance to the penetration of the current than the outside or skin surface.

DR. NUNN has been working along the same lines, and thinks the ribbon vibrator a grand discovery. He thinks the plan is an internal percussion of the nerve interfering with its vibrations, besides this we get the effect of the current between the percussions.

MR. CARTY.—Take the terminals of your apparatus ; attach small metal plates ; bring them together, and they will attract each other, and will produce the percussion alluded to. He thinks that if this is done with plates, a tone is given out, and this would furnish a testing instrument.

DR. HERDMAN.—May not all this be explained on purely mechanical grounds ?

DR. DICKSON.—Electricity is only *one* of the forms of motion in matter ; sound is another, and sound is made use of in treating some of the diseases of the ear by means of the phonograph, its action being mechanical.

DR. MORTON, replying to Dr. Herdman as to vibratory treatment, alluded to recent papers in the *Electrical Engineer* and *Progrès Médical.*

DR. CAMPBELL asked if complete anæsthesia could be produced.