great interests committed to us, we have need to take counsel together for we cannot say of each other, no more than the foot to the hand, I have no need of thee!

Motive power until the days of Watt was limited to the use of wind and water. The invention of the steam engine gave to Engineers a new and constant power, unlimited in its application and extent, and has revolutionized navigation. But it was the much later application of steam to locomotion which gave birth to the Railway system, and is revolutionizing the world. The Mining Engineer gives us the coal, the Mechanical Engineer the stationary, locomotive, and marine engine, as well as the metal steamship, the Railway Engineer supplies the road for the locomotive, and the Hydraulic Engineer the harbor and docks for the commerce which they create.

The extension of commerce due to steam transportation by land and water has vastly increased the population of the older cities and created new ones of fabulous growth, and the Municipal Engineer, in giving drainage, water-supply and fire protection—whereby the terrible destruction of life and property due to plague and fire so common in the middle ages has been arrested—provides for the health, comfort, and safety of the citizens.

In addition to these five branches of Engineering there is another and most important one, a great power in Nature,—electricity, until recently with little commercial value, and valuable chiefly for electro-plating or as a health officer in dispelling a sultry or vitiated atmosphere, but inestimable in value if admitted to be the agent through which the clouds "drop down their fatness" on the earth. Invisible like steam, and like it known chiefly by its effects, its range is universal,—in the heavens above, and in the earth beneath, and apparently in all things living, in all animal and vegetable life. It transports with equal velocity the weakest tones of the human voice, and the irresistible force of the thunderbolt. It traverses the ocean as well as the continent. It lights the harbor, it moves the car, it pumps the mine, it welds the metals, it vitalizes the human frame. We cannot forecast its future, or limit its possibilities of production. Economically, it may yet become the cheapest source of power with the exception of wind, water, gravity, or the sun, and by chemical energy may become as constant and universal in its application as the sun itself, to which in common with the other natural powers we may ascribe its origin, even though that be the limit of our knowledge concerning it.

Thus are we the complement one of the other, and thus has grown up in the present century a great army of Civil Engineers with different branches of service, but all working together for the same end—"the directing the great powers in nature for the use and convenience of man."