advancing rapidly. Public regulation of water power, the only alternative restraint, therefore becomes by so much a necessity.

Electric transmission has worked this change within the last decade. As now commercially practicable, such transmission allows a given water power to reach a market area of at least 80,000 sq. mi. It has raised water power from purely local work and made it the vital energy for great communities and distant enterprises. It has brought her waterpower resources suddenly within the sweep of great economic forces.

What are these forces? Within these market areas just described, there are strong practical reasons for consolidation of water powers-what is known as "coupling up." A power plant must be constructed to meet the highest point of its expected demand-the "peak of the load." The nearer the "load" (the power demand) approaches that peak for all the time, the more fully will the entire fixed investment be earning a return. Suppose there are two independent power plants in two neighboring communities where the demand in one community is mainly for power during the day time, and in the other at night. These plants can advantageously combine, throwing the surplus of their joint power by day to one place and by night to the other, thus bringing their normal load in each case up nearer to the peak. Similarly, such coupling up is obviously advantageous in two neighboring watersheds where the excess water power occurs at different times. In general such combining of varying conditions to produce a closer parallelism of supply and demand is in itself an entirely proper industrial development. We have no reason to oppose it if accomplished by fair methods; we must simply be prepared to regulate such monopolistic power as may result therefrom.

What has thus far resulted? The investigation of developed water powers now being made by the Bureau of Corporations shows that up to date 18 concerns or closely allied interests control over 1,800,000 H.P. of the water power developed or in process of construction, and in addition over 1,400,000 H.P. of undeveloped water power. As to undeveloped powers, this information was secured merely as an incident to our main work and certainly much understates the case. As it stands, however, it makes a total water power controlled by these 18 groups of over 3,200,000 H.P.

Here let me give a few comparative figures. The total water power in use in the United States in 1908, as estimated by the Census and the Geological Survey, was only 5,300,000. And this total includes a very large number of small powers which the Bureau did not include, as it dealt almost wholly with powers of over 1,000 H.P. The total now commercially capable of development is variously estimated at from 30, 000,000 to 60,000,000 H.P., the smaller figure being the preferable one. Our power demand as measured by the total unduplicated capacity of all prime movers—steam, water, and gas—is now at least 30,000,000 H.P.

It is obvious, also, that a local monopoly of power covering simply one market area is nevertheless as complete in its effects on the inhabitants of that area as if it covered the entire country. Conditions in separate sections are therefore important.

In California, for example, four principal hydro-electric companies dominate the waterpower industry. They have a total developed horsepower of 250,000, with probably 500,000 H.P. additional undeveloped, and a very strong hold on the most important power markets. And between these four concerns there is also evidence of considerable harmony.

This is not a unique case. Conditions somewhat like this exist in the Puget Sound territory, in the Southern Peninsula of Michigan, in Colorado, in Montana and in the Caro-

linas. In each of these sections one or at most two great concerns are predominant in their control of water powers, public service companies and power markets. The great bulk of both developed and undeveloped water power lies on the Pacific Coast, the Northwest, Northeast, and the South Atlantic States.

The horsepower figures, however, do not fully represent the extent of actual commercial control. The best powers have of course been developed first. These will always hold a disproportionately dominant position over later developed and less favored powers, because of their lower operating cost and prior hold on the important power markets.

The foregoing represents one phase of concentration. But there is also going on a concentration of a wider sort a process of deep significance, but as yet little recognized. There is a marked progress toward a mutuality of interest among public-service companies generally: electric light, power, gas, and street railway concerns. The significant identity of officers and directors in a large number of such companies throughout the United States is very remarkable

In part this is due to specialization by financial houses in given lines of investment; in part to the common employment of certain eminent engineering firms; and in part to relations with certain leading equipment companies. Electric equipment is usually supplied by one of a few great equipment concerns and frequently paid for, at least in part, in the securities of the proposed project. Thus the equipment company acquires interests in widely separated power and light concerns.

Take a single example, the General Electric Company, which is the most powerful electric equipment concern in the world. Men who are officers or directors of the General Electric Company or of its three wholly controlled subsidiary companies, are also officers or directors in many other corporations. These other companies, with their subsidiaries, and with the General Electric and its subsidiaries, make thus a group interconnected by active personal and financial Observe that I said "interconnected," not relationship. "merged." But the interconnection is of a substantial character. This one group includes 28 corporations that operate hydro-electric plants, with at least 795,000 H.P. developed or under construction, and 600,000 undeveloped, in 16 different states, a total of 1,395,000 H.P. (equal to more than 25 per cent. of all the developed water power in the United States in 1908). This group includes also over 80 public-service corporations, not counting their minor subsidiaries; more than 15 railroads; 6 companies that use their power in the manufacture of cotton goods, with 35,000 hydraulic horsepower developed; and over 50 banks and financial houses, many of them in the first rank of importance. This remarkable financial connection in itself is very significant. Fiftythree General Electric men, in all, constitute this chain of connection. Nor are these men, as a rule, of the figurehead type; their presence on a directorate means something. Of course these facts in no sense always mean identity of control. They certainly do mean a striking degree of nonconflicting interests and personal relationship which makes further concentration easily possible.

This wider concentration is still in a formative stage, developed almost wholly within the last decade. The forces compelling thereto are still operative. It is like a physical solution of chemical elements which is still in suspension but which a single jar may precipitate into crystallization. Water power, being naturally allied with public-service business, will be included in a movement that affects that business. So wide is this interrelationship, and so comparatively few are the constantly recurring names in the directorates, that a few brief conferences, given the necessary impetus, might conceivably at any moment concentrate into definite legal