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**THE CHEMIST AGAIN PROVES HIS WORTH**

TO the chemist, the engineer owes many debts. Yet most of the chemist's work is fruitless without the added knowledge and ability of the engineer. The two professions are mutually dependent upon each other for some of their greatest triumphs, and the co-operation between them is only beginning. Chemistry will play an ever-increasing part in engineering.

In the last issue of "The Little Journal," an interesting "house organ" published by Arthur D. Little, Inc., chemists, of Boston, Mass., there is related a striking instance of the assistance that chemists can give to engineers and contractors. In one of the Southern concrete shipbuilding yards, all conditions were favorable except that there was no rock or gravel at hand. Sand was in abundance and so was clay.

Clay is curious stuff. Chemically speaking it is a mixture of hydrated aluminium silicates, with impurities in great variety. Its geologic history, however, is often more important than its exact chemical composition, for the conditions under which it has existed for the preceding hundred thousand years or so, have a great bearing upon the size and structure of its particles; and in practice the physical nature of the particles of a substance has a great deal to do with its chemical behavior.

The children of Israel needed straw to make brick, not that the straw fibre should serve as a binder, but because of a colloidal substance contained in straw which caused the particles of defective clay to bake into first quality product. It was a mean trick of the Egyptians to withhold straw, and it was bad manufacturing practice, too.

Research with the Southern clay showed that if it is fixed at the proper rate and temperature, very hard and

porous lumps of the desired size result. Concrete made with them has practically the same crushing strength as that made with crushed rock. So proper apparatus was installed and the product was used as aggregate. Owing to its porous nature, the aggregate is very light, but the completed ships stood up to all the tests and proved to have a carrying capacity compared to dead weight considerably above that of wooden or other concrete ships, and nearly equal to ships built of steel. The yards did not have to be moved nor did gravel or crushed rock have to be hauled long distances to the yards,—thanks to the engineer's good friend, the chemist.

**THE CONTROL OF INDUSTRY**

THERE is a constitutional way of dealing with labor demands and the relation of labor to any particular industry, and there is the way of the I.W.W. and the Bolsheviks. In the United Kingdom, the Dominions and the United States both labor and capital have made most progress by negotiation, deliberation and compromise. Some of the labor unions have achieved prosperity for their members and the good-will of the employers by the fairness of their attitude to capital and the judicial stand they have taken. There is not wanting evidence, however, that goes to show that the tried leaders of some of the most important unions on both sides of the water are being browbeaten and threatened by that type of agitator who has done his best—or his worst—work in Russia. In the United Kingdom, for example, the shop "stewards" have usurped functions never entrusted to them, and are virtually ignoring trade union leaders in all matters of dispute that arise between master and men.

The high wages, high prices and general scarcity of labor during the war have caused many workers to lose all sense of proportion in presenting their demands to capital. It was possible to pay high wages during the past two or three years for the simple reason that market prices were high. But these high prices cannot continue: already there has been a sharp decline of prices in some directions and a heavy falling off of orders. It is certain that the European countries devastated by war will buy only imperatively necessary supplies at present prices. They will wait, to secure the materials required, until prices have fallen, or until they can be supplied by their own labor and industry. Labor cost is almost always the biggest factor in the costs of production, and it cannot go beyond a definite level without putting an end altogether to the industry in question.

The Colorado Iron and Fuel Corporation has made remarkable progress within the last two or three years in harmonizing the interests of employer and employes. Boards, in each industrial centre, have been established upon which the men and the company are alike represented. By friendly negotiation and compromise, wages, hours of work and general social conditions have been established to the satisfaction of all concerned. Those who recall the strikes, the turmoil and disturbances that almost approached civil war in Colorado, because of the gulf that formerly separated the company and the men, will realize best what a wonderful change has taken place. And in Great Britain Lord Leverholme, the director and business manager of the great industries at Port Sunlight, has announced recently that he proposes to overwork machinery rather than men, and cut the working day to a minimum. It is the sheerest absurdity to assert that it is impossible, under the present organization of business, to get labor and capital together to their mutual benefit.

The Russian Soviets have demonstrated what the common ownership and control of the machinery of production will do for a people. To-day Russia is not merely on the brink of starvation—the people are actually dying by the thousands from want and starvation. Yet, in the United Kingdom and the United States and elsewhere, labor agitators and visionaries demand that private enterprises be appropriated for the benefit of the working class. It is even suggested at Washington that the railroad brotherhoods take over and operate the railways of the United States. How efficient and effective committee management by workers can