BRAIN AND HAND

"THROUGH the eye and brain to the hand" is the germ sentence of a recent inspiring study by Prince Kropotkin, an economist who has taken a foremost place among writers upon the labor problem. In this study, the author discusses a question which may be entitled: "the economy of energy required for the satisfaction of human needs." He makes a strong, convincing plea for the union in one person of the scientist and craftsman; citing as examples of such union: Galileo and Newton, who made their telescopes with their own hands; Liebnitz, whose mind was pre-occupied with windmills and horseless carriages, as deeply as with philosophical speculations; and Linnaeus, who became a botanist while aiding a practical gardener—his father—in the minutiae of daily labor.

Prince Kropotkin continues that the learned men of to-day have raised the contempt of manual labor to the height of a theory. He represents them as saying:

"The man of science must discover the laws of nature, the civil engineer must apply them, and the worker must execute in steel or wood, in iron or stone, the patterns devised by the engineer. He must work with machines invented for him, not by him. No matter if he does not understand them and can not improve them: the scientific man and the scientific engineer will take care of the progress of science and industry."

That such is indeed the attitude of the educated class toward the workman, in America as well as in Europe, no one can deny. But yet it is a statement which must be made calmly and in no spirit of resentment toward those favored by birth and position. The existing situation has grown out of the division of labor, which has specialized the task of the workman to
such a degree that he has lost all mental pleasure in his work. This result was inevitable, but it must be regarded as a definite stage in the evolution of industry, and, as a stage, necessarily temporary. For even now, a reaction is upon us, and there is a revival of the mediaeval handicrafts which can not but result in a renewed sense of the dignity of the craftsman.

In relation to the minute subdivision of labor now in force throughout the industrial world, Prince Kropotkin asks the question:

“What can a weaver invent who merely supervises four looms without knowing anything either about their complicated movements or how the machines grew to be what they are?”

Further accentuating the same idea, he relates with pictorial power a scene witnessed by him in a lace-factory in Nottingham, where “full grown men with shivering hands and heads feverishly bind together the ends of two threads from the remnants of cotton yarn in the bobbins. Their celerity is so great that one hardly can follow their movements. But the very fact of requiring such kind of rapid work is the condemnation of the factory system. What has remained of the human being in those shivering bodies?”

Through these impassioned words it is plain to perceive the Russian thinker who more deeply and practically than a man of other nationalities, knows the meaning of injustice, oppression and despotism, and whose heart throbs with what the Germans call the “world-pain.” Yet, once again, toleration is here necessary. As Mr. Carroll Wright, the American economist, has logically shown, the factory system has been productive of certain good results, chief among which is the extensive employment of the unskilled and the ignorant, who otherwise would go to swell the dangerous classes. And this is especially true in the industrial centres of England, notably in Manchester, where the so-
called "cellarage population" disappeared as a consequence of the establishment of the great industries.

Passion and sentiment do not aid the understanding of economics, and it is well to remember that "the mills of God grind slowly." The English cottage industries of the early eighteenth century, as described by Mr. Wright, were pursued in huts rather than dwellings, in a germ-laden atmosphere, and amid conditions of low morality. When the system declined, owing to its failure to meet the demands of the age, the factory was censured for inherited evils. Certain of these hostile to health, morals and the personal liberty of the workmen were abolished by a series of legislative acts begun in the first years of the nineteenth century, and ending in its last quarter. The greatest remaining evil—the subdivision of labor—now prevailing universally, is revealing its unhappiest results, and will, as all other imperfect systems before it, fall through its own weakness.

The remedy suggested by Prince Kropotkin is what has been named in France: l'education integrale, in other words, a knowledge of scientific principles joined to a practical use of a handicraft: this training to be given by the State. The value of the workshop, as a school, is illustrated by the clever writer in an allusion to the steam engine, which he says can not be known in drawings and models only, but must be studied in its breathings and throbings, as he alone can do who daily stands by it. And as is usual, the statement is fortified by the anecdote: this time concerning the early theoretical mechanics, in whose engines a boy had to open the steam valve at each stroke of the piston. The device necessary for the automatic opening of the valve failing to occur to the men of science, was at length found by one of the boy tenders, who contrived to connect the valve with the remainder of the machine, in order that he might run away to play with other children.

The student, continues Prince
Kropotkin, must not be sent to a workshop to learn some special handicraft, that he may earn his existence as soon as possible; but science must be taught hand in hand with its application. Drawing the writer recommends as the first step in technical education, and following this, carpentry, the making of patterns in wood, practice in casting, and finally work in the smith's and the engineering workshops: a system first attempted in Moscow, and afterward, in part applied in the Boston School of Technology and the Chicago Manual Training School.

Specialization, even in manual training, Prince Kropotkin would have avoided; since in his opinion, no one can be a good manual worker, without having been accustomed to good methods of handicraft in the broadest sense. He indicates that each machine, however complicated, can be reduced to a few elements, and decomposed into a few modifications of motion. Consequently, each handicraft is capable of a similar reduction, and the student who has learned to handle the type-tools which number less than twelve, and to transform one kind of motion into another, has already acquired the half of all possible trades.

The plea of Prince Kropotkin for reform in public education can therefore be briefly summed up as a demand that science shall not be separated from handicraft; that general knowledge shall precede special acquirements; and that all members of society shall produce as well as consume.