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THE DECADENCE OF THE APPRENTICESHIP SYSTEM.

We, who are privileged to live in the closing years of the nineteenth century, are for ever telling ourselves what a magnificent age it is; and we never weary of hearing and repeating the count of our numbers, our wealth, and our wisdom. More often than not, this self-satisfied recital is rounded off with a contrast between what our forefathers were and what we have grown to be. In the main, the comparison is a just one, for as a matter of fact man, individually and collectively, is to-day better clothed, better fed, has more money in his pocket, and is cleaner in morals and person than he was fifty or one hundred years ago. In the midst of this general advance, and in some measure as the result of it, the student of social economics can detect here and there the signs of a decided retrogression. Happily such cases are few; but they exist, and no amount of material prosperity should be allowed to blind us to the fact. Among the many customs of our forefathers that have fallen into disuse, there are some whose lapse can only be regarded as a misfortune, and whose revival would prove to us that these customs were the outcome of experience, and that they were prompted by solid wisdom.

There was a time in this country when the entrance door into every trade was strictly guarded, and the boy who aspired to the dignity of being ranked as a journeyman carpenter, machinist, or builder could only hope to do so by becoming bound in an apprenticeship of greater or less duration. His instruction, which was carried out with the characteristic thoroughness of former days, commenced with the very alphabet of his trade; and each department was fully mastered before he was passed to the next. He attained at once manual dexterity and a knowledge of detail; and incidentally he acquired also a thorough respect for his trade, efficiency in which could only be gained after so many long years of training. At the close of his apprenticeship he was entitled to be called a skilled workman, and could command a journeyman's wages.

But to-day as the French would say, "we have changed all that." Apprenticeship is no longer the invariable rule—it is the rare exception. The careful, detailed instruction of the apprentice by the master mechanic has given place to a "hit-or-miss," "get-there" system, or, rather, lack of system, in which the boy's instruction is dependent upon the caprice of the journeyman whom he is told off to assist. In place of the regular day-by-day instruction of the apprentice, who, by virtue of his articles of agreement, was entitled to continuous employment, the boys of to-day have to take their chance of picking up knowledge and acquiring manual skill at the odd times when they may be so fortunate as to secure employment.

Under the old arrangement, the boy was sure of receiving instruction—his master was pledged to give it him; and, moreover, he would be at times intrusted with a job which was a little beyond his powers. It was taken for granted that he would spoil some of his work; and to a certain extent he in this way offset the profit accruing to the master from his unremunerated labor.

Under the present system there is no obligation, and certainly no disposition, to give the boy helpers any work which they are likely to spoil. They are engaged to do menial labor, and it is only in rare cases of emergency that they get an opportunity to try their hand at a more important class of work. A "green" hand in a machine shop is never regarded as a pupil. He is judged from the standpoint of profit making, and the tendency is to keep him at work indefinitely at the machine with which he is familiar. The apprentice was moved from drilling machine to shaper; from shaper to lathe; from lathe to vise; and by this varied experience he acquired an all round knowledge and efficiency. But the specialization of work in these days has limited the range of a boy's opportunities to such an extent that he can never hope to gain much knowledge or execution outside the particular class of work to which he is assigned.

It must be admitted, however, that excellent as were the results under the old apprenticeship system, it would be impossible to carry it out under the present industrial conditions. The apprentice was "bound" to his master, lived under his roof, and ate at his board. Modern social conditions and the modern temperament would not lend themselves to a compact in which the position of the boy was one of very pronounced servitude; and the keen competition in the various industries, the close margin upon which the master mechanic has to figure in competing for a share of the trade, the speed and thorough system which are necessary in a modern workshop, all render the careful training of green hands in the shops a practical impossibility. Neither the master mechanic nor the journeyman can spare the time for such personal oversight; and work which has been contracted for upon the smallest margin of profit cannot be trusted to the clumsy, if willing, hands of a beginner.

But if the old system, good as it was, is impracticable to-day, and the methods of to-day are so faulty, what, it will be asked, is to be the remedy? We think

that it will be found in an arrangement which shall embody the best features of both systems, and which shall be supplemented by that admirable institution known as the trade school.

The idea of oversight was an excellent one; and, so far as it can be exercised without interference with shop routine, it should be encouraged—at the same time the term of service should be very much reduced, and the relation of the boys to the master mechanic rendered more elastic.

The National Association of Builders has recommended that a lad who wished to enter a trade should go first to a trade school, and discover in which direction his tastes and aptitude lay. After passing an examination by a committee of master mechanics at the close of his course, he should enter the workshop as a junior. Here he would acquire speed and execution, and by the time he was capable of doing a "full day's work" he would be subjected to a second examination, the passing of which entitled him to be ranked as a journeyman. "Proof of ability, not length of service, is the test of what constitutes a mechanic in this system."

These suggestions are excellent, and they are thoroughly practical. The hope for the future of the American workman lies in the hearty co-operation of the master mechanics and the journeymen with the trade school system. If the American boy is to have any chance of holding his own against the incoming tide of skilled foreign labor, some radical change must be made in existing conditions. As we have shown, it is now well nigh impossible for him to attain the all round efficiency which marks the foreign journeyman, and enables him to secure work almost at the first application. If the master mechanics would follow some such scheme as was outlined by the national association, the inefficient, or, as he is expressively known, the "botch" workman, would cease to exist.

THE SPEED TRIALS OF THE BROOKLYN AND THE OREGON.

During the past week two notable ships of the new navy have had their speed trials, and in each case the contract requirements have been exceeded by over a knot an hour. On May 11, the Brooklyn, an improved and enlarged New York, during a builders' trial of three hours duration, using forced draught, maintained an average speed of 21.07 knots an hour, which is 1.07 knots above the contract speed. The average revolutions of the screws were 132, and the steam pressure averaged 155 pounds. It is gratifying to learn that there were no signs of distress either in engines or boilers. As compared with the New York, the Brooklyn is of 670 tons greater displacement, measuring 9,150 tons against the New York's 8,480 tons. She is 400 ft. long, has 64 ft. 8 in. beam, and 24 ft. mean draught. She is armed with eight 8 in. guns—two more than carried by the New York—ten 5 in. guns, and sixteen 6 pounder rapid-fire and machine guns. She is protected by a complete steel deck, 3 in. thick on the flat, and 6 in. on the slope, and by a water-line belt of 3 in. steel plate backed by a double thickness of hull plating over the whole length of the "vitals." Moreover, the 8 in. guns are protected by 10 in. and the 5 in. guns by 4 in. of steel.

The performance of the Brooklyn on the Atlantic was excelled, relatively speaking, by that of the first-class battle ship Oregon, in Pacific waters, a few days later. The Oregon is a sister ship to the Massachusetts, which we illustrated in a recent number. The latter ship, it will be remembered, broke the record for her class by steaming 16.15 knots for four hours; but on Thursday, May 14, the Oregon exceeded this speed by $\frac{1}{100}$ of a knot, maintaining the high rate of 16.78 knots on a four hours' continuous trial. This is more than $1\frac{1}{2}$ knots above the contract requirements, and unless there are tidal deductions to be made from her speed, she will earn a bonus of \$175,000 for her builders, the Union Iron Works, of San Francisco.

Platino-Cyanids.

Arnulf Schertel describes, in the last Berichte, a new method of preparing platino-cyanids. Platinum chlorid is precipitated by hydrogen sulfid at 60° to 70° and the well washed platinum sulfid is dissolved in a warm solution of potassium cyanid. On evaporation the potassium platino-cyanid, $K_2Pt(CN)_4 \cdot 3H_2O$, crystallizes out, and equal parts of potassium sulfid and potassium thiocyanate remain in the mother liquor. If a solution of barium cyanid is used, the barium platino-cyanid is obtained. With commercial potassium cyanid containing large quantities of sodium cyanid, Schertel obtained the beautiful double salt $KNaPt(CN)_4 \cdot 3H_2O$, described by Martius. In view of the fluorescence of the barium and other salts of the platino-cyanids under the Roentgen rays, this simple method of preparation is of considerable interest.—Science.

At a recent meeting of the Paris Academy of Sciences M. Balland presented a memoir describing an analysis of a sample of rice over a century old. He found the rice only slightly deficient in fat.