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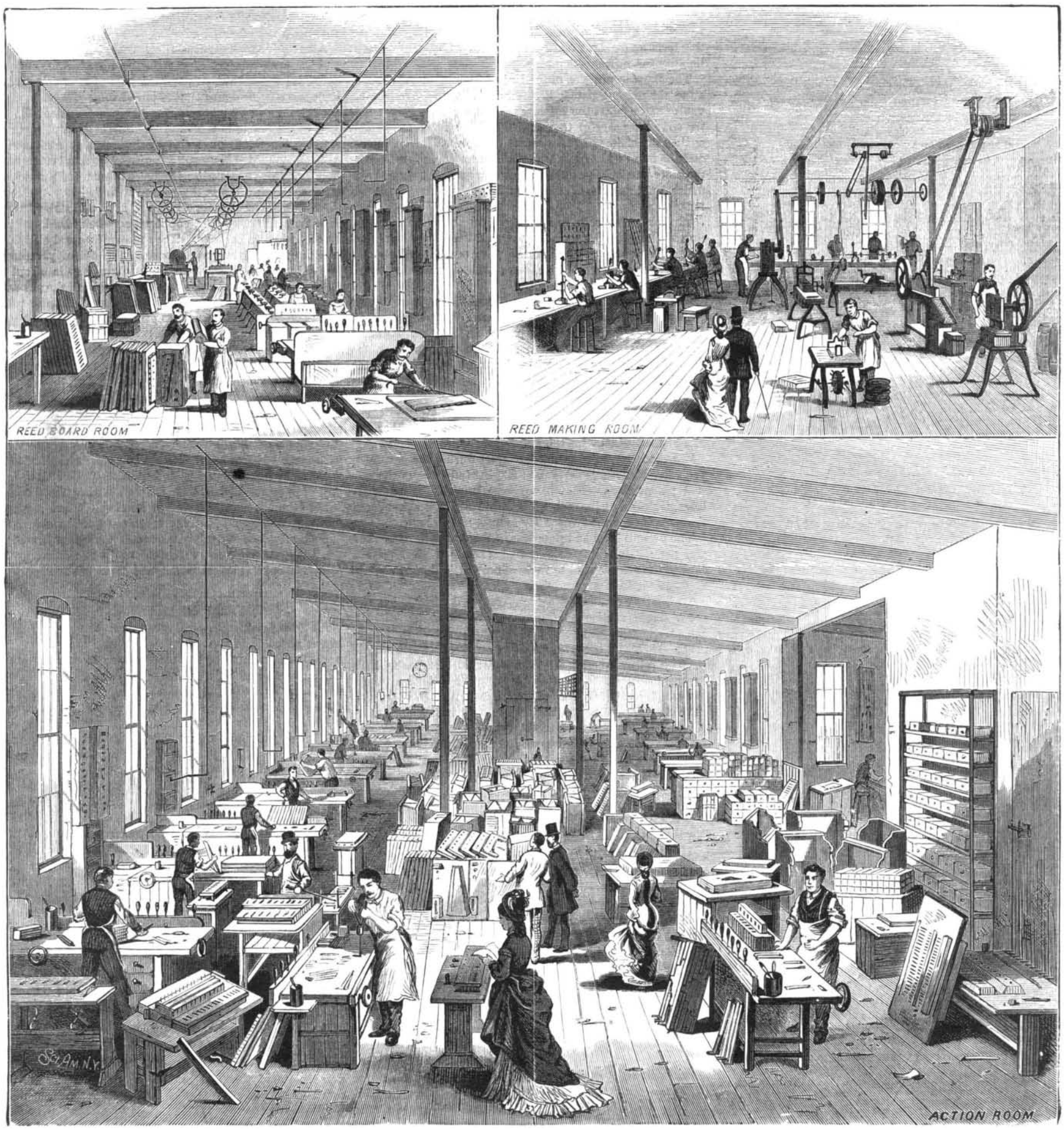
THE MANUFACTURE OF REED ORGANS.

In articles of luxury and refinement Europe, by virtue of long experience, low priced labor, and commercial prestige, in former years received a disproportionate share of trade, but more recently, especially within the last few years, there are strong indications of a change in favor of our own country. To our European neighbors this is unwished for and unwelcome, but to our own citizens it is a matter of intense satisfaction. This state of things is exhibited by many branches of American manufacture, but we do not know that it is anywhere more clearly manifested than in the manufacture and sale of reed organs, one hundred of which are now exported for every one imported.

The honor of bringing these instruments to the degree of perfection which has given them a high reputation, both at home and abroad, belongs chiefly to the Mason & Hamlin Organ Co., several departments of whose extensive works we illustrate in our present issue.

At the late fair of the Mechanics' Charitable Association, in Boston, the jury, after much deliberation, and the careful examination and comparison of organs submitted to them, and after a review of the history of the growth of this branch of industry, said in their Report that "the specialties of Messrs. Mason & Hamlin have commended the reed organ to artists and men of genius, both in this country and in Europe, in a degree claimed by no other manufacturers;" and still further, "it is not too much to repeat that Messrs. Mason & Hamlin have done more to bring the instrument in general favor and repute, both at home and in foreign countries, than all other manufacturers." This high tribute is just.

(*Continued on page* 114.)



THE MANUFACTURE OF REED ORGANS.

[*Continued from first page.*]

Prior to 1861, only a few reed instruments, known as seraphines, melodeons, etc., were made in America. In that year Messrs. Mason & Hamlin introduced important improvements, changing the form, improving the mechanism, and otherwise modifying the instrument, so that it was deemed worthy of the name which it has since borne. The improvement was so great that large popularity followed; sales rapidly increased, and numbers of other reed instruments ceased their manufacture, making organs instead. In numbering their instruments, Mason & Hamlin have already reached 103,000, having actually made and sold nearly this number.

In 1867 these makers, having taken highest honors at the more important industrial exhibitions in America, sent their new instrument to the World's Exhibition in Paris, placing it in comparison with instruments of the class from European makers. Its great merits were at once recognized; the jury awarded them the first medal, and even rival makers pronounced the Mason & Hamlin organ "worthy of imitation." At every one of the world's exhibitions since, Mason & Hamlin have boldly placed their organs in competition with the best similar productions of the world, and at every one have borne away the highest honors. At the Paris Exhibition of 1878 they received the only gold medal awarded to any American musical instruments, and, in addition, the highest co-laborer's medal.

And this suggests the fact that while their success as manufacturers is to be largely ascribed to the peculiar skill of those who have associated themselves in this company, which has enabled them to introduce so many improvements, it is in no small degree due, also, to the high standard which they set before themselves at the start, and to which they have rigidly adhered. Any mechanic who visits their factory will see evidence of the scrupulous selection of only best material, and the employment of every machine and facility for best work. The temptation to manufacturers during the last few years to lower their standard, and be satisfied with something less than the best, has been very great because of the strong competition in prices; and this has been especially the case in the manufacture of articles like organs, in which there is such abundant opportunity to cheapen. But the Mason & Hamlin Company have successfully resisted this temptation. The standard of their work is as high today as ever, and the excellence of their organs the makers state to be greater than ever before.

The New York office of this company is located at 25 Union Square; their factories are in Cambridgeport, Mass., virtually a part of Boston. Obviously we cannot represent in detail many of the various steps in the manufacture of these instruments.

The reeds, which are the most important part of the organ, are made from brass by the automatic machinery and mechanical appliances, shown in the upper right hand view in the title page engraving. Each reed consists of a block of brass having an oblong aperture, to which is fitted a tongue, secured to the block at one end, the other being left free to vibrate. The tongues of the reeds used by this company are secured by iron rivets, experience having shown that this mode of fastening is preferable to all others, the reeds secured in this way being less liable to loosen in the operation of voicing, or by long continued vibration. The shaping of the parts of a reed and the fastening of them together is comparatively a simple matter, as the greater portion of the work is done by presses and other machinery adapted to the purpose; but the voicing, as it is technically called, is quite a different matter. Here neither machinery nor mechanical appliances are of any avail, the success of the process being dependent chiefly upon a nicely trained musical ear. Voicing, which is the most difficult and important process in making an organ, consists in shaping the tongue of the reed so as to secure the best effects. This art was originated by Mr. Hamlin, of the Mason & Hamlin Organ Co., in 1848, and is now practiced, professedly at least, by all American and many European makers. It is an art that can be acquired by practice only, and it is found that but few are able to master it. The room in which the voicing is done is shown in Fig. 4. From this apartment extraneous noises must be excluded, otherwise slight defects in quality or timbre might not be discovered.

Each reed must vibrate in a cell of proper proportions, by which it is isolated from the others; these cells vary in size and form, according to the reeds which they are to receive, and are cut from the solid piece of wood which forms the reed board. The machinery employed in doing the work is shown in the left hand figure at the top of the front page engraving; it is of novel and ingenious character, and insures greater accuracy and uniformity than can be attained by handwork.

In the action rooms—one of which is the subject of the lower view on the front page—is made the apparatus which actuates the valves when the keys are depressed, a part of the organs that must be delicate and yet strong, and very precise in its operation. In this department many ingenious machines are employed in forming the several parts, each of which is made absolutely perfect, so that when all of the pieces are assembled the completed action is as perfect as machinery and skilled artisans can make it.

Fig. 4.—VOICING ROOM.

The organ cases are made in the department illustrated in Fig. 5. The mode of manufacture is similar to that of furniture generally. This company have received much credit for the tasteful designs and excellent workmanship displayed in their organ cases.

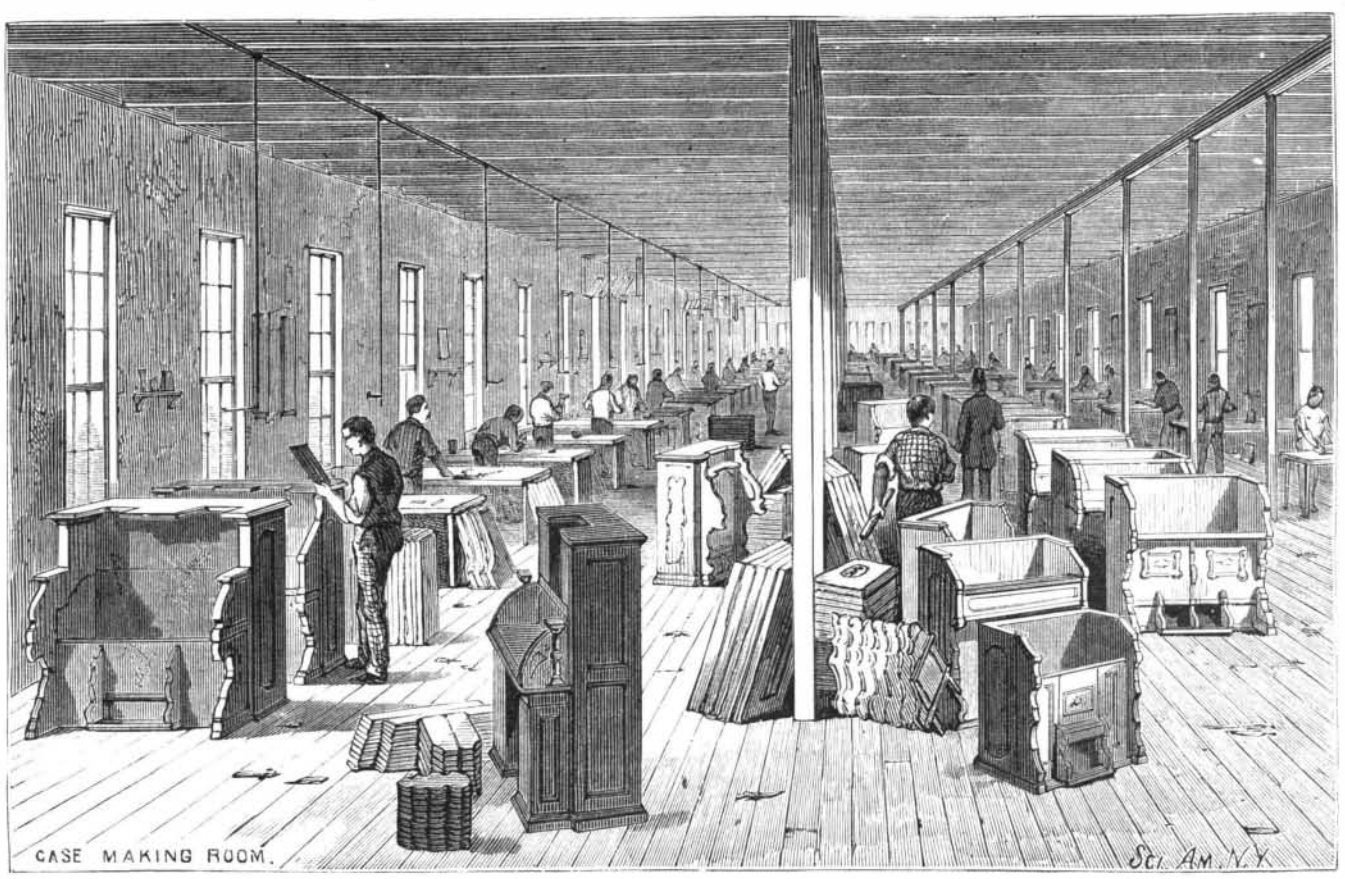


Fig. 5.—CASE MAKING.

Progress of Petroleum.

The oil business for the year 1878 presents a great contrast with that of the preceding year. The year 1877 was marked by considerable and certain prosperity both to the refiner and the producer; while the year just closed has been one of exceedingly small margins and low prices.

The chief causes for the low price in the producing regions have been the increased certainty with which oil has been obtained and the extent of territory which has been developed during the year. The Bradford field has steadily increased in yield and importance, and almost all the old operators have become attracted there. The Bradford field at the beginning of the year yielded 8,750 barrels per day from 1,100 wells, and at the end of the year it yielded 23,700 barrels per day from 2,950 wells, showing a very marked increase in the activity of the operators, and an increase of 14,950 barrels in the daily yield. This increase more than compensated for the falling off in the production of all the other districts; and the aggregate yield of the year is in considerable excess of the aggregate production of the preceding year—showing 15,163,462 barrels against 13,135,671 barrels for the preceding year; an increase of 2,027,791 barrels during the year just closed. The daily average production was 41,543 barrels against 35,988 barrels. Thus it will be seen the production of the year 1878 was largely in excess of any year in the history of the trade. The prices of crude at the wells have ruled quite low, and with slight fluctuations have gradually declined during the year.

The stocks of crude have been considerably larger than those carried in any previous year, but they have been carried with greater ease than heretofore, as the tankage and pipe line facilities have been largely increased. The export of refined and crude (in the absence of the official figures we have estimated it as equivalent to 10,000,000 barrels of crude) compared with the exports of the previous year (which were equal to 10,425,502 barrels of crude) shows a decrease of 425,502 barrels. With the exception of London, the principal old European ports have taken considerably less oil this year than last; but the ports of China and the East Indies have more than doubled their receipts.

The number of producing wells in Pennsylvania at the close of December, 1878, was 10,337. The average production per well was 4·1 barrels.—*Stowell's Reporter.*

The Value of Practical Men.

In a recent lecture on electric lighting, Professor Tyndall took occasion to say a good word for inventors, practical men, who take up the results of purely scientific investigation and turn them to public advantage. Speaking of the problems involved in electric lighting, Professor Tyndall said that all the laws of the subject were known, and there was no room for a discovery in the scientific sense, but there was room for the application of such mechanical ingenuity as had given us the sewing machine, the phonograph, and many other things. The investigator and discoverer pursued his theme for the sake of gaining knowledge; the inventor's aim was generally to make money, though he gladly recognized that in many cases the inventor was stimulated by love of his art. Sometimes these men spoke disrespectfully of each other, as Cuvier despised the man of practical application, probably not taking into account that the application of science reacted on science.

The amelioration of the condition of the community was, at any rate, an object worth laboring for. Still, it was well to remember that those discoveries and applications which struck the public mind and excited so much discussion, often com from men whose sole stimulus was an intellectual one. As to the philosophic aspect of the question, there was a small cohort of social regenerators, men of high aims, and for whom he had great respect, who would hand over science and scientific men to a hierarchy which would determine the particular subjects that the scientific man ought to pursue. Where that hierarchy was to get its wisdom they never explained. Those writers denounced and scorned all reference to what they considered to lie far apart from human needs, and yet upon sensible conceptions—as of molecules, for instance—sometimes depended the greatest discoveries. When the feeble magneto-electric spark was first introduced, an Oxford don expressed his great regret that such a discovery should have been made; for, he said, it put a new and facile instrument in the hands of the incendiary. Let them imagine that hierarchy of which he had spoken watching Faraday piddling over his magnets. They would certainly have sent him back to the bookbinder's bench as a far more dignified occupation. Yet it was Faraday's spark that now shone, and which he hoped would illuminate our quays and halls, and esplanades and squares, and possibly also our homes.