the prospect of good average crops for the year 1883, and the fact that values of almost all commodities are considerably lower than for many months past, and are approximately without any inflation, leaves the inference that the foundation of trade is substantial, and there is therefore reason for anticipating an improvement in general business. The speculative interest has suffered severely the last three months, and very many are compelled, from stress of circumstances, to limit their transactions within a circumscribed compass. The legitimate (non speculative) trade is very fair, but increased speculation is essential to invest the various markets with any degree of interest. The statistics embodied in this review speak for themselves, and it is quite unnecessary to analyse them at this time.

The American Clock.

The American clock is one of those Americanisms with which there is no competition. The American clockmakers are to-day sending clocks to every quarter of the globe not excepting Australia, India and Japan.

The invention of the clock was of gradual growth. First a wheel and index were attached to the clepsydra. Then weights were substituted for running water, and 1,000 years after the opening of the Christian era a crude escapement movement was invented. From this simple arrangement the simple yet accurate movements of the present day have been developed. In 1807 Eli Terry, of Plymouth, Conn., who was manufacturing clocks in a small way, set himself about the herculean task o making 200 clocks. People deemed him crazy, and declared that he would never live to finish the task, and if he did he could never dispose of such a large number of clocks.

Chauncey Jerome, who may fairly be regarded as the father of the clock manufacture in that State, was a pupil of Terry, and of him learned the business. In those days a good clock, including case, could be bought for $40, To-day a very excellent clock, a reliable timekeeper, can be purchased for $5, and for even a less sum.

Eli Terry at first made only wooden clocks, and these by hand, laboriously cutting out the wheels and teeth with a saw and jackknife. He would make two or three trips a year to New York city and state, carrying with him three or four clocks on each trip, which he w uld sell and return, He received for these about $25 each, without cases. Later he purchased a small building and introduced machinery, which was regarded as a great innovation and of doubtful expediency. It was at this time that he started upon his plan of making 200 clocks, which excited so much ridicule. A few years later Mr. Terry disposed of his business to Seth Thomas and Silas Hoadley, who were formerly in his employ. Other manufactories sprang up, and competition soon reduced the cost of clocks, and resulted also in the making of valuable improvements. In 1814 Eli Terry made the first shelf clock, which produced a revolution in the manufacture of clocks, and the old-fashioned "hang up" clocks fell into disuse, A little later the circular saw was introduced into the clock manufactories and was regarded as a great curiosity. Chauncey Jerome, when his time of service with Eli Terry expired, commenced the manufacture of clocks in a small way. He had been discouraged from attempting to learn the business at the outset by an elderly man who expressed the opinion that there were so many clocks making that the country would soon be flooded with them, and that the business would be good for nothing in two or three years. The young man, for such he was then, was diligent at his business and consequently prosperous. He soon invented a new style of clock, which was attractive in apperrance and commanded a ready sale, and in 1825 was selling them throughout the country, many going to the south. From this point the history of the manufacture of clocks is one of daily increase. The demand soon came for a low-priced twenty-four hour clock. Heretofore such clocks had been made of wood, while eight-day clocks had been made of brass. Mr. Jerome supplied the need with a brass twenty four hour clock, which met the popular demand, and of which millions were sold.

To follow the many improvements which have been made in time-pieces during the last seventy-five years would be a difficult task. We can only look back to the old wooden "hang up" clock and compare it with the magnificent piece of workmanship which are seen in every house and every workshop to-day.

Needle Making.

Almost all the needles made in England are made at Redditch. The wire is of the best quality of steel, and is supplied in coils varying from 1,200 to 3,000 yards in length, and from 1·22 inch to 1·100 inch in thickness. The processes passed through are as follows: the wire is cut to lengths of two needles, by hand or machine shears; these lengths are annealed in bunches of about four inches diameter; while still hot, and held together by rings, the bundles are rolled over by hand-pressure on an iron table, so as to straighten each other; they are then pointed at both ends successively upon quick-running grindstones, being rotated between two india-rubber bands, travelling over a grindstone with concave face; by a blow from a falling die the two heads are shaped, and gutters marked for the eyes; the eyes are pierced by a pair of punches in a delicate hand-press; the needles are threaded upon a pair of fine wires, and filed to remove the burr made in stamping; they are then broken across through the thin fin left between the heads, and the heads themselves rounded by filing; they are then heated in small iron trays, and dropped separately into an oil bath, to harden them; after which they are tempered on a hot plate, or in a stove, and straightened by a hand-hammer on a small anvil, to remove any warping due to the hardening. The needle has now assumed its final condition, but is not yet finished. The next operation is scouring, for which a number of needles, mixed up with soft soap, emery and oil, are wrapped up with canvas into a roll about two feet long and three inches diameter, and then rolled backwards and forwards under runners worked by a crank from the engine This process goes on for eight hours, during which the needles are continually rubbing against each other, and it is repeated from two to eight times, the final scouring being with putty powder. In some cases the straightening and scouring are performed at the same time by machinery. When perfectly scoured the needles are shaken up in a tray until they all lie parallel and then, by a dexterous motion of the hand, they are shifted so that all the points are in the same direction. Next, defective needles are picked out of the lot by hand; the eyes are "blued" or softened by traversing them over a gas flame, and in some cases the eye is smoothed on each face by a fine countersunk drill. The needles are then strung on horizontal wires, carried on a reciprocating frame; the wires have serrated surfaces, which smooth the inside of the eyes as the needles swing to and fro; this process is called burnishing. Lastly, the heads and points are finished off by grinding first on a 9-inch running grindstone, and then on an emery-roller, the workman holding a number of needles in his hand together, and rolling them between his finger and thumb. It now only remains to stick the needles side by side in sheets of paper, and pack them for sale.

High Buildings and Fires.

The increasing tendency of land owners and builders in large cities to utilize the ground area as much as possible by erecting lofty buildings, requires some commensurate means to prevent fires and to stay their progress. Our best fire engines are wonderful improvements on the old time hand engines, and they can force an unbroken stream of water in round, solid column for a considerable distance from the nozzle, unless exposed to a high wind or the direct heat of a raging fire. But these adverse conditions often exist, and turn the water column into diffused spray, or dissipate it into mist or vapor, when most of its effective force is lost.

Recent experiments, however, suggest that if the force of the engine could be exerted on a confined column of water rising vertically to the roof, sufficient power would remain in the impulse from the engine to deliver streams of solid water over the area of any ordinary city building. A steam fire engine was recently tested which threw water 156 feet horizontally from a one inch nozzle attached to a 2½ inch hose running 2,700 feet on a level and 200 feet above the engine. In this instance a very large column of water was made to deliver a moderately small column at a great height above the engine; but by the employment of two or more engines on the same hose, by means of the two-way or the four-way butt, a result may be reached which will place the roofs of the highest buildings under the control of the firemen.

This can be effected by a fixed stand pipe attached to the building so as to be easily reached by the firemen from the street. This stand pipe is, in effect, a prolongation of the ordinary engine hose, and the nozzle, with a convenient length of handling hose, may be attached to the top of the pipe, or to an opening on any floor.—*Scientific American.*