Cost of Living Less.

"The interesting disclosure is made," says Leslie's Weekly, "that the cost of living is less in the United States to-day than it was in 1860. Carefully compiled statistics show that articles costing $100 then cost only $75 now. It is true that a few things are more expensive, but commodities consumed generally by families, such as breadstuffs, sugar, rice, salt, woolen and cotton goods, boots and shoes and silk and rubber goods, are considerably cheaper now than they were thirty years ago. All manufactured goods, with hardly an exception, are cheaper, mainly because of improved processes of manufacture, which enable the maker to reduce the cost to the lowest point. The development of our vast arable territory in the west, northwest and southwest and the striking results of irrigation, when applied to what were formerly considered desert lands, have increased our crop supplies more rapidly than the increase of population. Despite the dire predictions that prices of wheat, corn and cotton must inevitably advance because little land remained to be cultivated in the west and south, the fact is that millions of acres are still awaiting tillage. In Texas alone an area almost as extensive as that of the original thirteen states is virgin soil. The emigrant may have to go further and work harder to establish a homestead in the United States, but the country is still rich enough to give every able-bodied, industrious newcomer a chance to own a farm."

A New Quick-Firing Gun.

A Newcastle inventor claims to have produced a new quick-firing gun that will fire 300 shots per minute, with a muzzle velocity approaching 2,000 feet per second. These shots are impelled without explosives by centrifugal motion; consequently during process of firing there is an absence of both noise and gun recoil. The gun can also be placed upon a light carriage, or motor platform for field purposes, the power being generated by a small oil motor mounted on a light gun carriage with generative electric machine, thus supplying any number of guns, over any area, from the one reservoir. The gun is worked by two men, who are effectually protected behind a light shield. It will fire round a complete circle, and passesses a vertical range of 90 deg. It stands 5 feet in height, and weighs about 6 cwt.

Aluminum as a Substitute for Copper.

Advances in the price of largely used materials suggest in a very natural way the possibility of finding substitutes for them, and we find Professor Trowbridge, the director of the Jefferson Physical Laboratory in Harvard University, led by the rise in the price of copper to discuss in the current Independent the question whether a substitute for that metal can be found. Aluminium is the metal selected for consideration, a natural choice enough when regard is had to its growing use in industry. The price of aluminium has steadily declined. In 1859 it cost $90 a pound and thirty years later it had declined to $2, while to-day aluminium castings can be produced for 65 cents a pound. The metal is being employed in the making of kitchen utensils, and a great number of small articles are made from it. In France it is used experimentally in the making of camp utensils, apparently with satisfactory results.

Aluminium is generally commended for its lightness, strength and comparative freedom from oxidization. At the same time, it has certain defects which it is well to bear in mind. These defects are largely due to the presence of impurities, a particular in which, however, commercial aluminium has much improved of late. Still the fact remains that commercial aluminium is generally impure and it is acted upon by moisture, especially if there is salt present. In regard to weight and strength, it cannot compete in price with various kinds of wood. It is not so easily worked, and is not made so homogeneous as steel. It does not enter yet into carriage manufacture or bicycle industries, or rolling stock in general, but in the electrical industries its prospects appear to be brighter than in other directions. Occasionally we hear of the employment of aluminium on a large scale in such industries. At Niagara Falls, for example, great conductors of aluminium are used to transmit electrical currents from the power house to the works. The amount of aluminium in the conductors weighs 22,000 pounds. The same work in copper would require 48,000 pounds. The conductivity of the aluminium as compared with copper is 63 per cent., but for the same weight it is more than double. Aluminium cables require more insulation, but enable longer spaces to be used, thus reducing the number of poles and insulators.

One important obstacle to the use of aluminium as a substitute for copper exists, however, in the difficulty of soldering and brazing two pieces of the metal together. Many solders or fluxes are described for accomplishing this connection, but they cannot be said to be commercially practicable, and the necessity of such an art of connection is imperative in electrical industries. Professor Trowbridge suggests that although aluminium may be used for overhead telegraph lines, it seems to be effectually barred from competition with copper in cable work for the reason that, in order to compete in electrical conductivity with copper, an aluminium wire must have nearly twice the section of a copper wire of the same conductivity. This increases the size of the cables and also increases the electrical capacity, which is detrimental to the speed and proper transmission of electrical waves. In general, it is suggested that the use of aluminium wire instead of copper would lead to a greater size of apparatus, since the conducting parts would have to be approximately twice as big. So also the element of labor in working the material in comparison with a similar employment in the case of copper and brass would have to be considered, for no mechanic would work with aluminium if he could take copper or brass. In summing up, Professor Trowbridge holds that, while aluminium may be said to be increasing in use, it has not yet become a dangerous competitor of copper.—Bradstreets.

"Does this climate agree with you?" said the solicitous person.

"Seldom," answered the man of serious mien. "I am a professional weather prophet."—Washington Star.