## Scientific American.

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#### A NEW USE FOR MACHINE GUNS.

man, Admiral Sir Edmund Commerell, alluded to their render both impossible. present Maxim guns as the finest pieces of workman- As the electric street car only became a success when not do the same thing.

inch trees, probably it would be stuck if directed against some of the larger trees, such as those of Washington, where a diameter of six feet is not uncommon. The machine gun operates with great precision, and perhaps it could be applied with success to all sizes of lumber trees; on the score of economy, however, probably it would fail.

## ACCIDENTS ON TROLLEY CAR LINES.

### It is a fair general assertion that of all forms of energy and of all methods of transfer and transformation of energies those dependent on electricity approach the nearest to perfection viewed from the standpoints of adaptation to varying conditions. The block system •n railroads involving the automatic operation of hun dreds of semaphores or visual signals, and perhaps the turning of switches and other work, may be executed are controlled by electricity. By the use of electricity enforced blocking has been devised in various shapes. applicable especially to systems of electrically prothe speed of a motor can be controlled by simply changing the intensity of the field of force.

deriving all its power from an electric conductor.

ure was attributed to too cheap construction. The and, from the technical side, are great successes. Yet it is a great error to suppose that they are perfect. The recent indictments brought against them for destroying water pipes and gas mains by electrolysis are •f their circuits designed t• prevent such occurrences •r t• reduce the extent •f damage. These troubles are of little moment, when the record of the destruction of life, which attends upon the operation of such roads in cities, is considered. In Brooklyn, the number of serve instead of rivets. deaths and casualties due to collision with and running •ver by trolley cars is large. Most of these casualties are the result of excessive speed. The cars are far heavier than ordinary street cars, and their energy. when in rapid motion, is very great. At high speed, especially if the rails are slippery, they require some <sup>15995</sup> distance to stop. In the time a person would occupy

to cross their track they might run their own length. There have been many suggestions made for preventing this less of life. Under present conditions it is invited. An engine of many horse power, capable of moving at twenty miles an hour or more, is put into ive decoration to an otherwise commonplace room. 

than the electric current itself. At present it is the in-It is gratifying to know that the machine gun, strument of constant transgression. The braking of hitherto exclusively devoted to the deadly purposes of the cars could be effected by electricity even more war, may possibly find place among the useful arts of effectually than by air. At present the hand brake is peace. At a recent meeting in London of the Maxim- esteemed sufficient. The means are present in abund-Nordenfelt Guns and Ammunition Company the chair- ance for perfect control and blocking; they are used to

ship to be seen anywhere. He said their 0 303 Maxim money was put into the systems, so will they be rengun had cut down a tree seventeen inches in dia-idered safe only by the use of more refined appliances. meter in one minute. (A director: "A quarter of a The floods of electric energy distributed over the lines minute.") He (the admiral) would throw in the other give the requisite for attaining safety. The rest is in three-quarters. He would not only defy any other gun the hands of the law, of inventors, and of the compato do this, but he would give any battalion in her nies themselves. In the near future we shall have elec-Majesty's service five hours' firing as much as they tric lines without any ground connections to corrode liked, at whatever range they pleased, and they would all neighboring pipes-they will work on a completely insulated metallic circuit. The circuit will be of  $\mathsf{l}\mathsf{\bullet}\mathsf{w}$ This indicates that perhaps the machine gun could resistance to avoid loss of energy. It is to be hoped be used in felling forest trees in place of saws and axes. I that they will then be regulated by advanced instead While the gun appears to be efficacious on seventeen of crude methods, and that the great quantity of surplus energy available will be utilized to prevent accidents of all kinds, not to cause them.

#### Amateur Blacksmithing.

The amateur light blacksmith, says the N. Y. Sun, may get from his work a deal of discipline and pleasure. It requires for success moderately strong hands, a certain mechanical deftness that is instinctive with many persons, a degree of taste, and a true eye. Nine-tenths of the amateur work in all departments of art and mechanics is bad, and Venetian iron work is no exception to the rule. The worst products of the amateur light blacksmith are almost as bad as some things turned out when hammered brass was in favor with amateurs.

The outfit of the light blacksmith costs from \$3.50 to \$10, and includes a vise of peculiar pattern, a binding tool, a pair of pliers, a pair of shears for cutting iron, by hydraulic and pneumatic power, but its operations and half a dozen smaller tools, together with the necessary materials. The bulk of the material consists of narrow, pliant iron strips, to be bent into curved forms in making the body of the design. Then pelled railway cars. Going to the very base of the there are small connecting pieces, and a variety of tiny science we find in counter-electromotive force an un- ornaments ready formed for those that don't care to failing regulator of the electric motor, so much so that exercise their inventive genius in designing such things.

The amateur may buy his designs or may invent An electric read receiving its energy from a distant them from such hints as he may get out of his own station through miles of aerial or underground wire brain. One amateur in fifty perhaps can be trusted offers, it would be supposed, exceptionally favorable to design. As a matter of fact, any man with an eye conditions for control from the central station. It for form and detail can easily evolve effective designs would seem clear and evident that there is every by the aid of the thousand and one objects wrought in chance for automatic control and blocking in a road the style of the Venetian blacksmiths now to be seen in nearly all parts of New York. Amateurs make lamp Years ago, when some of the original electric roads stands, candle sticks, lanterns, vase holders, grills for had proved disappointing to their projectors, the fail-idoors and windows, brackets, picture frames, mirror frames, wall hooks, screens and half a dozen other aspect of things has chauged greatly in the last five things of like character. The grill work gives the vears. Electric reads are more expensively equipped, largest scope for the amateur's skill and invention, though a screen may be made highly effective. Rigid frames are sold as the bases of grill work, screens and other large pieces. The amateur either blackens his bright iron with lampblack or buys a prepared paint bad enough, and have certainly led to modifications for the purpose. The object is to obtain a lusterless surface. Sometimes the iron is left bright, when it is liable to rust. Neat housewives, however, find that the black iron shows dust in a shocking manner. No solder is used in the work, and the small iron binders

> Brass, copper, and aluminum are used by amateurs in the same way as iren, either alone or in composition. Sometimes a general design of black iron is relieved by a line of brass or copper here and there, and occasionally a design mainly of brass or copper is heightened by the presence of black iron. Aluminum, which is a disappointing metal, is liable to have a crude effect unless handled with rare taste.

> The Venetian iron work craze has the merit of being inexpensive and of enabling a really tasteful and skilled amateur to give highly individual and effect-

> > -----. . . . . . . . . . .

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