

### Utilization of Waste Substances.

While considerable attention is being given to gun-cotton and nitroleum, a somewhat similar substance is gradually making its way as an article of ordinary domestic use, entirely free from danger, and possessing such advantages as are likely to secure its general adoption. In the manufacture of Parkesine, fibrous vegetable matter of any and every kind—cotton and flax waste, and old rags, being, from their cheapness, the favorite materials—may be employed. These are first dissolved by acids, and they then yield what chemists call pyroxyline. Pyroxyline, however, as its name implies is highly inflammable, and indeed explosive, like gun cotton, and this dangerous qualification has to be neutralized. Mr. Parkes effects this by the introduction of either of various chemical ingredients, as iodine of cadmium, tungstate of soda, chloride of zinc, gelatine, several carbonates, sulphates, and phosphates. Collodion (as used by photographers), when evaporated so as to leave a solid residue, has been employed in the production of Parkesine, but it was found by far too expensive. The substances which have given the best results with the pyroxyline are nitro-benzole, aniline, and glacial acetic acid. By the use of various proportions of these substances, all consistencies of Parkesine, from the solid to the fluid form, may be obtained. The applications of Parkesine are, of course as numerous as its forms are various. In the fluid form it is available for waterproofing fabrics, and in this way it is very serviceable. In a plastic state Parkesine is useful in making tubes, etc., and for insulating telegraph wires. Where hardness and toughness are required, these desiderata are arrived at by the admixture of oils prepared with chloride of sulphur, the latter solidifies and makes them (the oils) non-adhesive. Again, by the use of resins, gums, stearin, tar, etc., modified preparations of the invention may be made to suit special applications. Parkesine, indeed, is a most accommodating material, and may be made as hard and brittle as glass, or as fluid and yielding as cream and of every intermediate consistency. It may have elasticity imparted to it to almost any extent or degree, and in this state it is likely to become a dangerous rival to india-rubber and gutta-percha, inasmuch as it will become, if it be not now, far cheaper than those useful articles of commerce, and answer almost all their uses equally well. Vulcanized India-rubber will find a sturdy competitor in Parkesine, for it may be manufactured with less of brittleness, quite as much hardness, and at a lower cost than that tediously manipulated substance. There is no refuse in the manufacture, the chips and cuttings being capable of remanufacture with the greatest facility. Parkesine will take any color, and may be given any degree of hardness; it may be made to imitate tortoiseshell, marble, malachite, or amber, and can be cut with a saw, turned in the lathe, planed, carved, engraved, stamped between dies, rolled into thick or thin sheets, worked into screws, shaped into moldings or cornices, etc. It is susceptible of a high polish, agreeable to the touch, and not disagreeable in smell. At a temperature of 340 deg. Fah., it is consumed, without flame, being decomposed and passing off as dense smoke, leaving but a dark colored ashy residue behind. It is now

being manufactured for a variety of purposes, and is daily becoming more extensively known.—*Mining Journal*.

### Colonel Berdan's New Rifle.

The American *Artisan* says, "Colonel Berdan has brought out another improvement in his already widely celebrated rifle, which seems destined to eclipse all that has yet been done in the way of converting the muzzle-loading musket into a breech-loader, as the improvement seems especially adapted for this purpose. Instead of the breech-piece formed in two parts, as in his former patent, it is made of one solid plug or piece of steel and closes in the same manner. Instead of the two joints of the former arrangement, there is in this but one joint. The breech is fastened in its place by sliding it upon a flanged piece of steel that is fastened longitudinally upon the top of the barrel. By pressing upon a small spring, the breech is easily removed for the purpose of cleaning, carrying in the pocket in case of rain, or it can be removed and thrown away if the soldier is liable to be captured, so that the enemy cannot take advantage of the rifles he may become possessed of.

The cartridges used are the "central fire," and made after a patent of Col. Berdan's. In many respects they are an improvement on the copper-flanged cartridge; when once fired they can be preserved for future use. It resembles the ordinary copper cartridge, except at the centre of the base there is an indentation, within which there is a raised cup on which a shallow percussion cap is placed. It is exploded by a blow from the hammer on a pin that passes through the solid steel breech-piece.

We witnessed a test of the qualities of this new gun a few days ago; and it exceeded all that we expected of it. For rapidity of fire it is unsurpassed. After being fired thirty or forty rounds, we examined the breech, and could perceive no trace of fouling or difficulty in manipulating the parts. As a proof of the security of the closing of the breech, it was fired by not closing it to its place within nearly half an inch; and we could perceive no difference in the firing. The hammer, in its descent, always forced it into place.

### Gummy Oil on Leather.

In the earlier days, the oil used in the finishing of leather was neats-foot only; then we heard nothing of gummy leather; but as time rolled on, and neats-foot oil grew dearer, leather-dressers sought out some cheaper substitute, and the article nearest neats-foot oil was supposed to be the oil expressed from fish. The hide of the cow or the calf has a strong affinity for neats-foot oil, of course; even the hide of the horse absorbs this oil, and holds it. This oil does not gum, and will not, when once absorbed by the leather, exude to the surface. Not so with fish oil, however. This is something of quite another character. The oil of the fish differs as much, chemically, from the oil of the hoof of the ox or the cow as it does from that obtained from the vegetable world, which contains a still larger amount of gummy property. Fish oils are heating or burning in their character, and will ruin any leather they are applied to; the stock hardens, and finally cracks,