

GUM AND ITS USES

One of the strangest of the discoveries of the war is the use of gum-arabic for shell-shock cases. At first sight the two things seem to be wholly unrelated. How can gum be used to cure a man suffering from nervous disorders consequent upon shell-shock? The answer to this question is encouraging, while at the same time it discloses our great ignorance of the human machine and its action. Every disturbance of the normal rhythm of life is accompanied by some chemical and physical change within the organism. We notice that a nervous shock may cause the victim to lose weight and gradually waste away. It has long been known that a number of diseases produce some change in the circulating fluid in the body. Saline injections have been used in numerous cases, and their effect is not only mildly stimulating, but slightly restores the fluid "balance." But saline solutions tend to escape into the tissues in much the same way as the blood serum escapes in "shock" cases to form the condition which must be cured. Professor Bayliss, the physiologist, came to the conclusion that a more viscous fluid should be injected, so that it would really add to the circulating fluid in the body. Gum-arabic, one of the gums completely soluble in water, was selected after considerable experiment, and when added to the saline solution it has produced remarkable results. The gum being easily accessible and portable in solution, another curative agent has been added to the repertory of medical men.

Gums are carbo-hydrates which are exuded from various plants. Gum-arabic is found in Turkey, and is produced by the leguminous plant gum mosque which flourishes in Mexico and Texas. It is yellow in color, brittle, and so soluble in water that it has a wide range of uses. It is used medicinally as a softener and soother for the tissues, and plays a considerable part in confectionery. Commoner varieties are used for pastes and gums, and its tendency to crack is modified by the addition of glycerine or sugar. The finish of silks and crapes is often due to gum-arabic; and calico and cloth manufacture also find uses for it. Gum dragon or gum tragacanth is produced by a plant which grows in the Smyrna district of Asia Minor. The lower part of the plant is cut during the hot weather, and a white flaky substance exudes. It is chiefly produced during the night, and the flakes show characteristic ripple marks. This gum is only slightly soluble in water, and the residue can only be dissolved by continued boiling. Its uses are similar to those of gum-arabic, and it is valuable as a thickener of mordants and colors for calico printing.

Other substances which are frequently called and frequently look like gums are the gum-resins and resins. The gum-resins contain some true gum, soluble in water, and some true resin, insoluble in water but soluble in alcohol. They also contain essential oils. Such "gums" have a characteristic smell, whereas the true gums and the true resins are inodorous. Some essential oils are produced by the gum-resins—*ammoniacum*, *myrrh*, *asafoetida*, and *gamboge*; and they have a wide range of uses in medicine. The resins are also secretions from plants out of which they are exuded in pear-shaped drops, which harden into glassy solid masses in the air. Like the true gums they can be produced in greater quantities by making cuttings in the bark of the plants, and most plants will yield resin when treated with alcohol. Some of the most valuable resins are soft, and are called *deo-resins*: but if they contain benzoic acid or cinnamic acid they are called *balsams*. Examples of *deo-resins* are turpentine, frankincense, and copaiiba. Of the hard resins, some are fossil resins, the most famous being *amber*. A semi-fossil resin is the well-known *kauri gum* of New Zealand, which finds employment for a great body of labor. The use of this resin for varnish and cement makes it most valuable. *Kauri gum* is exuded to-day from the *kauri tree*, in the forks of which it may be found. But it is obtained more easily and

in much greater quantities by digging in the ground. The annual export is worth over £400,000 to New Zealand, and gum getting has become a considerable industry. With that thoughtlessness which characterises our attitude to everything that seems prolific the gum was first picked from the surface, sold by the picker, and shipped to England or America. To-day the gum areas, where once flourished forests of great *kauri*, are under the control of Government, and the fields are most systematically searched. There are several layers of the gum, and it is found deeper than 20 feet. Spears ten feet long, or longer, were formerly used and are frequently used now in searching for gum. The spear is thrust into the ground, and when *kauri* stumps are found the gum is brought up by means of hooks. But the systematic search includes a careful digging over great areas and the sifting of the soil cast up. Sometimes the lump of resin is as large as a turnip; sometimes it may be no larger than an egg. At times, especially in swamp areas, it is very dark, and almost black. At other times it may be almost transparent. It is this variety which is the most valuable; and it realises a considerable price.

Atom, in *Everyman*.

"HOW SLEEP THE BRAVE!"

Plain white crosses, row on row,
Across the silent hill they go;
Here lie the friends, and there the foe,
Near to the gentle river;
Their graves are red when poppies grow
In summer, and white with winter's snow,
But they lie in close-ranked lines below,
And they lie in peace for ever.

With the dewy morn come the bugle-notes
Poured from a hundred golden throats,
And over their graves the reveille floats
Of the larks, but 'tis thrilled in vain;
For sleep is sweet when a hero dies,
And sleep eternal has touched their eyes,
A dreamless sleep, they shall never rise
To the bugle's call again.

When the sun sinks low in the ruddy west,
The farewell strains from the thrush's nest
Shall lull the sleeping heroes' rest
In a hymn to the dying day;
There they lie, brave, dauntless, true,
Palled by the heavens' gold and blue,
And the rain shall beat a soft tattoo
Where the warriors sleep in clay.

Plain white crosses, row on row,
Across the silent hill they go;
Here lie the friends, and there the foe,
Near to the peaceful river;
Their graves are red when poppies grow
In summer, and white with winter's snow,
But they lie in close-ranked files below,
And they lie at peace for ever.

SIDNEY J. SMITH, S.J., in *America*.

"I suppose," said Emerson to Father Hecker, the founder of the Paulist Order, somewhat contemptuously, when he learned that the latter was going to become a Catholic—"I suppose it was the art and architecture, and so forth, and so on, in the Catholic Church which led you to her?"

"No," answered Father Hecker, "but it was what caused all that."

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