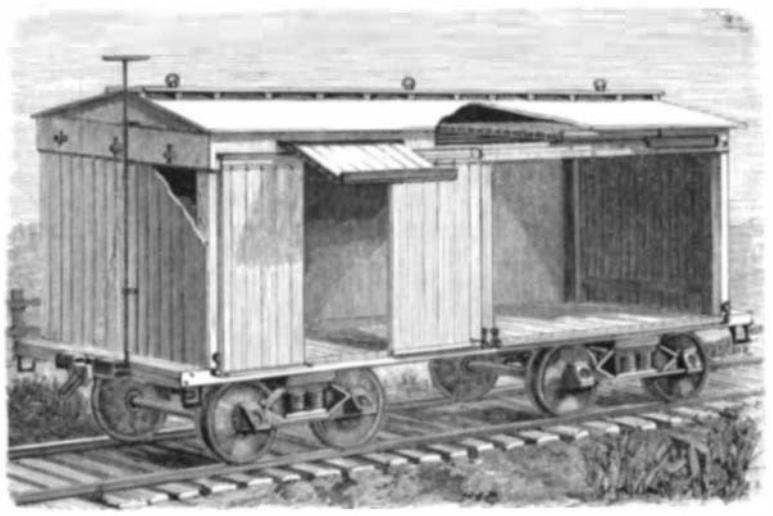
AN IMPROVED RAILROAD CAR.

A car designed to be readily changed from a box car to an open or platform car, or *vice versa*, and which may be readily opened at any part to facilitate loading or unloading, is shown in the accompanying illustration, and has been patented by Mr. De Witt B. Williams, of La Mesa, Cal. On the four corners of the platform are posts connected at their upper ends by a rectangular band, preferably of metal, on which is supported the roof, the latter being formed with a flange to engage the inner side of the band. On the top of the roof are eyes or hooks to be engaged by the chains of a derrick or other hoisting apparatus, to remove the roof or place it in position on the band. The ends of the car are preferably of solid boarding, but the sides consist of a series of overlapping doors, the upper end of each of which has an L-shaped flange engaging a slot in the band, permitting the door to hang vertically or allowing it to be moved inward in a horizontal position near the top of the car. The door is swung outwardly, as shown, to permit of its being moved into horizontal position, where it is supported upon removable longitudinal rods held in sockets in the ends of the car. The lower end of each door has an outwardly turned flange, and is engaged by a longitudinal locking bar connected at one end by a link with the corner post, while its other end is secured to a middle post by a padlock.



WILLIAMS' IMPROVED FREIGHT CAR.

Charlotte de Russe.

This delicacy is made in two ways: 1. Put rich sponge cake on the bottom and sides of a glass bowl and fill in with cream. Take a decorating bag, fill with the cream and ornament. May be finished by arranging a few French cherries on the top. 2. Line the pasteboard cups, that are made for the purpose, with lady fingers. Put the cream into a lady finger bag, fill the cups up, bringing the cream to a point, place a piece of French cherry on top. This adds to appearance. Recipe for cream: 1 quart rich cream, two days old, 1 pound powdered sugar, 1 teaspoonful vanilla. Whip the cream in a pan or kettle with a wire wisp until it is quite thick, then add sugar and flavor. Some use gelatine, but this is not necessary when the cream is good.—*The Helper.*

A LARGE LAKE FREIGHT BOAT.

The fine four-masted schooner shown in the illustration was built by Messrs. F. W. Wheeler & Co., of West Bay City, Mich. She is one of the largest and finest vessels yet built of her class, and, none of her room being taken up by boilers and engines, or required for the stowage of coal, her freight-carrying capacity is very great. The competition of even the best built and most economically operated steamers with such vessels as the Fitzpatrick must always be a difficult matter; but the handlers of the great freight business offering on our Western lakes are only able to do the work at the present low rates on account of such competition and the very close economies thus necessitated.

Alloys Made by Compression.

In a recent meeting of the Amsterdam Royal Academy of Science, Mr. Behrens dealt with specimens of brass made by compression of the constituents, at ordinary temperature, by Prof. W. Spring, Liege, Belgium. One of the specimens was of a reddish color, and had been produced by compressing a mixture of copper and one of zinc, another, pale yellow, by compressing seven parts of copper and three parts of zinc. Both specimens had been filled up twice and again consolidated by pressure. The reddish metal was a little softer than common cast brass; it could be somewhat flattened under the hammer. The yellow metal was harder than common brass and brittle. Both varieties contain a great quantity of yellow alloy, which seems to be in an amorphous state, showing a uniform, finely granular appearance, without any vestige of the beautiful crystallites so characteristic of copper-zinc alloys obtained by fusion. Further, there were a good many angular fragments of red copper, some of them cracked and doubled up, with yellow threads between the red lumps and strands, and finally some zinc, angular fragments and threads, trending outward, and uniting near the curved surface of the cylindrical specimens. The metal is nearly but not wholly compact. There is much that gives evidence of a flow in the yellow alloy and in the zinc, but nothing pointing to a truly liquid state of the alloy or one of its components. Regelation seems to be put aside, while there does not remain any doubt that zinc and copper have been intimately mixed and actually united by repeated fillings and compression. Scientists say that a more complete union of metallic powers by compression will lead to alloys of most remarkable properties, and may give some alloys that cannot be produced by fusion.

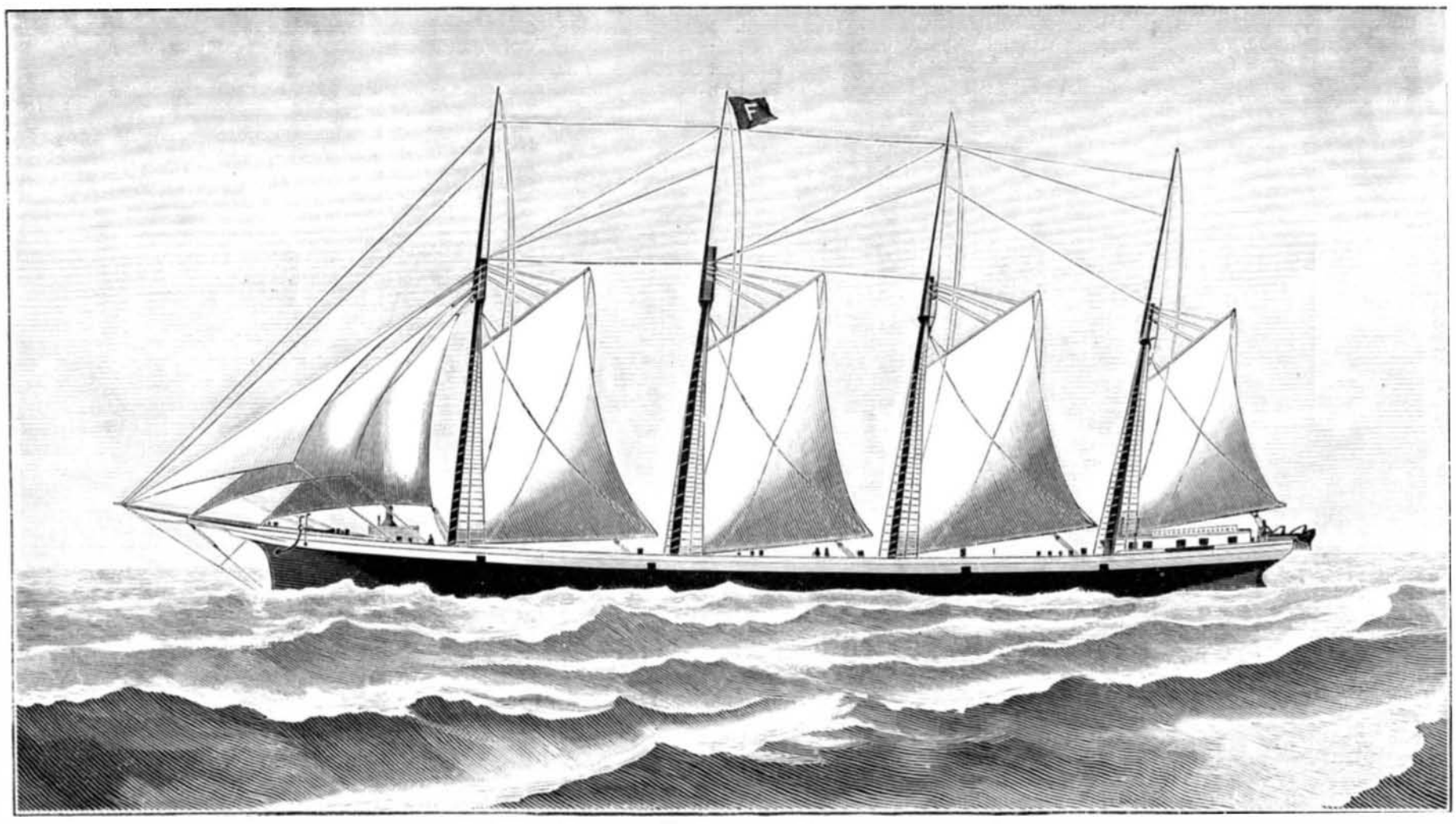
Parasitism in Bees of the Genus Stelis.

That the Apid genus Stelis develops in the cells of the allied genus Osmia has been known for some time, but the exact nature of the parasitism, and more especially when and how the Osmia larva is destroyed by the Stelis larva, have hitherto not been explained. In a recent number of the *Zoologischer Anzeiger* (vol. xv., No. 383, Feb. 1, 1892, pp. 41–43), Mr. C. Verhoeff, of Bonn, Germany, summarizes the results of a series of careful observations which throw a flood of light on the subject. The species observed are *Osmia leucomelæna*, K. and *Stelis minuta*, Nyl.

The species of Osmia construct cells in the interior of hollowed twigs, in the manner of Megachila and similar bees. At the bottom of the cell the female Osmia first puts a layer of pollen, which is to serve as food for the nearly full grown larva. Above this pollen the bee commences to store the cell with prepared bee bread. At this moment the female Stelis watches her opportunity to lay an egg in the Osmia cell, the egg thus being always near the bottom (posterior end) of the food mass. Unaware of the presence of the parasite egg, the Osmia female continues her work, and, after nearly filling the cell, deposits her own egg on the top (anterior end) of the food mass. The cell is then closed with a layer of macerated particles of plants and a second cell prepared above the first. The Stelis larva hatches but little earlier than that of the Osmia, and both larvæ feed on the food mass, the parasite larva at the bottom, the host larva at the top. The latter remains stationary at the top and grows very slowly; the parasite larva grows more rapidly, and gradually works its way upward through the food mass, thus gradually approaching the Osmia larva. The crisis finally comes; the Stelis larva encounters the Osmia larva—a short but deadly combat ensues—the Osmia larva is easily overpowered and killed by the much larger and stronger parasite and its body is devoured by the latter within one or two days.

It is thus evident that Stelis furnishes another illustration of that partial parasitism which I have shown to be the rule with the Meloidæ, but differs in that the parent introduces her egg into the host cell instead of placing it where the triangulin may itself seek and secure its food, or where it may cling to and be carried by the host female into her cell.—*C. V. Riley.*

A SHOEMAKER in Berlin, Germany, has invented an artificial sole of stone for use in shoes. It is elastic and easy on the feet, and is calculated to last for years.



THE FOUR-MASTED SCHOONER JOHN C. FITZPATRICK.