and then enjoying a glass of really fine, pure wine, —and rare as this is, I do not think any other is worth consuming—just as one may occasionally enjoy a particularly choice dish; neither the one nor the other, perhaps, being sufficiently innocuous or digestible for frequent, much less for habitual, use. Then I frankly admit that there are some persons—in the aggregate not a few—who may take small quantities of genuine light wine or beer with very little, if any, appreciable injury. For these persons such drinks may be put in the category of luxuries permissible within certain limits and conditions, and of such luxuries let tobacco-smoking be another example. No one probably is any better for tobacco, and some people are undoubtedly injured by it, while others find it absolutely poisonous. Some few indulge the moderate use of tobacco all their lives without any evil effects, at all events, that are perceptible to themselves or others. Relative to these matters, every man ought to deal carefully and faithfully with himself, watching rigorously the effects of the smallest license on his mental and bodily states, and boldly denying himself the use of a luxurious habit if he finds undoubted signs of harm arising therefrom."

The English magazines for April are naturally very full of papers on the absorbing Irish question. One of the best is in the *Nineteenth Century*, by Mr. Lecky, the eminent author of that capital book, "The History of Rationalism in Europe," and of the "History of European Morals." The chapters on Ireland in his "England in the Eighteenth Century" are very valuable. He is himself an Irishman.

W. P. A.

**TECHNICAL.**

The raising of the approach girders on the south side of the Forth Bridge has had to be postponed a day or two, owing to the bursting of one of the hydraulic jacks. There are seven spans ready to be lifted; and as each span weighs 210 to 220 tons, there is a total weight of close upon 1,600 tons to be operated upon by the hydraulic machinery, taking into account, of course, the other material. The total length of the girders to be raised is about 1,200 feet. They rest upon seven piers, which will be built up under them till they have been raised to per-

manent height, of about 150 feet above high-water mark. This will be accomplished by stages of 3 feet 6 inches at a time. The girders will be raised in the first place to that height above the mason-work by the hydraulic jacks, and propped up by blocks of wood. Two courses of mason-work will then be built up under them; and when the mason work sets, the same operation will be repeated. Judging from the rate of progress at the north side of the works, where the approach girders have been raised 20 feet, each stage will occupy eight days, and it is expected that during the summer, the work will progress at the rate of 14 feet per month.—*Engineering.*

A device has been invented by which electricity is made to record the weights indicated upon scales or steelyards, the application being specially designed for the weighing of freight-cars while in motion. It is said that with this device properly applied to the scales, an accurate account can be kept of the weight of every car passing over them, even at full speed.—*R. R. Gazette.*

An engine of singular design has just been completed at the Grant Locomotive Works, Paterson, N. J. Mr. Raub, the patentee, has, it is stated, spent nearly forty years in elaborating the details of the engine. The main idea has been to place the cylinders, fire-box, dome, and all important working parts as near as possible to the center of the engine. The cylinders are vertical and drive a central dummy axle, carrying wrist-pins, from which power is transmitted to two pairs of drivers in front and two pairs behind. The engine carries water and fuel in side tanks, and is intended to run in either direction. Two fire-boxes and boilers are used, and the firing is done from the sides, as in the four-cylinder Fairlie engine. The chimney passes through the dome, and is situated in the center of the engine. Smoke-boxes are situated at each end of the engine, and the products of combustion pass from the smoke-box, by return flues, to a central chamber, and thence into the stack.—*R. R. Gazette.*