

Exactly as restitution, when practicable, is a condition precedent to the validity of absolution from the guilt of theft, so reparation of the damage done to our neighbor's character must precede our being loosed from the sin of evil speaking.

The knowledge that effective reparation is a most difficult matter should prove a strong deterrent to restrain us from incurring the obligation of making it at all. We have everything to gain—peace of conscience, the esteem of our fellows, and the blessing of God—by strictly adhering to the rule graphically laid down for us in Ecclesiastics: 'Hast thou heard a word against thy neighbor? Let it die within thee, trusting that it will not burst thee.'

The Strength of Trade Unions.

THE total number of registered trade unions, according to the latest Government report, is 745; of these 603 are in England and Wales, 100 in Ireland, and 42 in Scotland. The aggregate number of members is 1,572,861; of these 1,497,527 are in England and Wales, 63,422 in Scotland, and 11,912 in Ireland. The aggregate funds in all the registered unions amount to £4,137,660. Of that amount £3,937,435 belongs to the unions in England and Wales, £163,024 in Scotland, and £17,201 in Ireland. As regards the area in which trade unions mostly flourish, London stands first, with 162 unions, 438,794 members, and £1,187,642 in funds; Lancashire second, with 152 unions, 339,817 members, £1,017,046 accumulated funds; Durham and Northumberland have 46 unions, with 212,028 members, and £744,039 in funds; Yorkshire has 62 unions, with 117,514 members, and £380,745 in funds; Derbyshire has 10 unions, with 28,379 members, and £107,692 in funds. The reason why Lancashire comes out with so small a proportion of unions and members is, that so many of the unions in the textile trades are not registered under the Friendly Societies Act. Otherwise Lancashire would have beaten London. Though numerous unions are still unregistered, three-fourths of the aggregate of trade unionists are to be found in those that are registered.

Puzzles of Modern Science.

THERE is no softer substance in the world (says an exchange) than cotton-wool, and we use it for wrapping up all our most treasured and breakable possessions. Treat this warm and fluffy wool with nitric acid, and it is speedily turned into gun-cotton, one of the most terrific explosives known to science. A pound of ordinary gunpowder, when fired, takes the hundredth part of a second to explode. Gun-cotton goes off in one five-thousandth part of a second. Gun-cotton was first discovered 60 years ago, and every country was so delighted with an explosive of such power that quantities of it were made and stored. But explosions became distressingly frequent. There was one at Stowmarket, which killed 21 people, dreadfully wounding another 60 and mangled two others as if it had been bombarded. This led to the discovery that gun-cotton could be mixed with water—that is to say, thoroughly damped, and so be stored in safety, while still retaining all its explosive properties. Torpedoes are to-day charged with moistened gun-cotton at heavy pressure. Nitrogen is a dull, heavy sort of gas. It puts out fire instantaneously, and kills any living thing plunged into it. Yet seventy-eight parts in one hundred of the air we breathe are composed of this gas. It is the twenty per cent. of oxygen which is combined with the nitrogen that transforms it into life-giving, pure, and elastic air. Water, on the other hand, puts out fire, and will not sustain warm blooded life; yet water contains, comparatively speaking, more oxygen than air does. What makes this combination still more peculiar is that hydrogen gas, which is combined with oxygen to form water, is in its free nearly so deadly a gas as nitrogen. It is the lightest of all the gases, and will burn freely in the air. Two deadly poisons appear every day upon every table in the civilized world. One is a bluish-white metal, which is so especially inflammable that, if swallowed, it would set one on fire inside. The other is a yellowish gas, which will suffocate instantly any living thing that breathes it. The metal is arsenic, the gas chlorine. Yet, in chemical combination, these two form common salt. Charcoal is the purest form in which we generally see the element carbon. Who would for a moment imagine that more than half of the delicate white of an egg is composed of this black charcoal? Yet 52 parts in every 100 of egg albumen are carbon, and 64 parts in each 100 of the bread we eat. There is, in fact, carbon in every living thing, whether you take your own flesh and blood, the pip of an apple, or the skeleton of a mouse. The pencil you write with and the diamond in your scarf-pin are composed of the same element. The keen steel of a razor blade depends on carbon for its hardness. Less than one part of carbon is there to the ninety-nine parts of iron; yet without it, the blade which will cut a hair would be no better than a barrel hoop. On the other hand, if more than that tiny proportion of carbon were mixed with the iron, it would be steel no longer, but mere brittle cast or pig iron. Gold, when absolutely pure, is so soft that it can be dented with the finger-nail. Add one pound of copper to twenty of gold, and the resulting mixture is almost as hard as copper itself. Numbers of metallic alloys seem almost miracles, so different are they from the materials which have gone to compose them. Brass is extremely unlike either the copper or zinc which make it; but the most curious thing about brass is that a very little lead added to it will cause it in appearance to precisely resemble gold. Why dull, grey lead should have this effect is one of the many mysteries of metallurgy. A little nickel added to steel will make a mixture harder than either of its constituents. Phosphorus, the softest of all the metals, and one of the lightest, gives enormous strength and density to bronze, making it more suitable than even steel for certain purposes; and this list might be indefinitely extended.

Musical Copyright.

We speak lightly of 'an old song,' but an old song has more than once been worth a gold mine. Sir Arthur Sullivan is said to have received £10,000 in royalties for 'The lost chord,' and 'My pretty Jane' is stated to have been worth to the publisher £2000 a line. 'Some day' is set down among the £10,000 songs, and 'In old Madrid,' it is said, has already yielded a revenue of half as much again. The copyright of a song (says *St. James' Gazette*) is often a sure road to ease and competence, if not to fortune. That of 'For all eternity' was sold in London a few years ago for £2240. 'Maritana' was sold for £2232 at a London auction, and the same composer's 'Lurline' fetched at the same auction the sum of £2500. 'Sweet and Low' was knocked down for £214, 'Good-bye, Sweetheart,' for £462, Blumenthal's 'Requital' for £310, and Balfe's 'The sailor sighs' for £324. The always popular 'Tell her I love her so,' was sold for £465.

The music to 'The Arab's farewell to his steed' is worth in the market from six to seven hundred pounds. Verdi's 'Il Trovatore' fetched £503, 'Oberon' £428, and 'The rose of Castile' nearly £1000. A piano piece for schools, six pages long, was sold a few years since in London for £1820—more than £300 a page, and the bidding for a well-known violin guide rose to £1752. The highest price ever given for a piece of dance music is a thousand pounds, but four figures for the copyrights of songs and operas are not at all rare. The lot of the composer, like that of too many authors, is not invariably easy. A well-known composer of our own time has three times passed through the bankruptcy court, and his case is typical of many. Handel fought courageously against his misfortunes as an insolvent debtor, and under the great pressure of his misfortunes produced 'Saul,' 'Israel,' and others of his finest works. 'He braved everything,' says one of his biographers, 'and, by his unaided self, accomplished the work of 12 men.' Meyerbeer worked 15 hours a day at his operas, and the author of 'The deliverance of Israel,' a miller's son, composed his greatest work while working in a candle shop.

The First Prison Reformer.

A LITTLE more than 100 years ago prisoners were either kept in chains, to the destruction of their moral and physical being, or else were employed in what is known as penal labor. Penal labor had no purpose except as it resulted in a supposed discipline of the prisoner. He was kept at work turning a crank, or in a treadmill, or throwing shot bags, or doing something else that had no utility whatever as an incentive. It was not productive labor in any sense. It was grueling, tedious, demoralising. It may have had some advantage over idleness in the way of physical exercise, but the mental and moral consequences were such as to quite overcome the physical benefits. Philanthropists, philosophers, penologists began to see that mere moral labor was not much better than idleness, and some of these men long ago foreshadowed many of the elements of modern methods.

One of the earliest of these was Mabillon, Abbe of St. Germaine in Paris, a Benedictine monk, who made himself famous in his time, and who, during the reign of Louis XIV., had a reputation for great learning. He foreboded in some of his dissertations many of the distinctive features of prison discipline and of prison labor as we now know them. Reformation in prison discipline occupied his mind to such an extent that he outlined a plan for the government of prisons. He was of the opinion that penitents ought to be secluded in cells, living after the manner of the Carthusian monks but be employed in various kinds of labor. He would join to each cell a small garden, giving an opportunity to the penitents to take air and cultivate the ground. Mabillon was born in 1632 and died in 1707.

Gave Himself Away.

WRITING in *Truth*, of North Carolina, Mr H. L. Richards, a distinguished convert of 50 years' standing from the Episcopal ministry relates the following:—

I was officiating one Sunday in Trinity Church, the rector being temporarily absent. At that time I was quite high church and accustomed to ring the changes on the claim that we were true Catholics—not Roman, you know. On retiring after service, I had reached the vestibule when I was met there by three Irishmen who had apparently just arrived from a journey.

They approached me respectfully, tipping their hats, when one asked, 'Your reverence, is this the Catholic Church?' Instinctively and without time for reflection I replied: 'No, my good man, this is not the Catholic Church. You see that tower over there above the houses—that is the Catholic Church.' Imagine my mortification when I had time to realise how completely and unconsciously I had given myself away. It was only another practical illustration of the truth of the saying of St. Augustine, that a stranger going into any town and inquiring for the Catholic Church would never be pointed to a schismatical conventicle, but to the place of worship of the real, old Catholic Church universally recognised as such.