

Science Siftings

By 'VOLT.'

Ether-Telephone Problems.

In attempting to estimate the probable meaning of the current epidemic of 'practical' wireless telephones, it is perhaps well to bear in mind the fact that 'final solutions' of this very attractive problem have been appearing in the news with great regularity for the past six or seven years. As far back as 1906 a commercial system of telephoning without wires was widely heralded in the press, and since then dozens of others have enjoyed brief news honor on the front page. Not long ago a commercial wireless telephone was installed on some American naval vessels. At first sight this seemed like a good certificate of practicality. But it was not long before the announcement appeared that the apparatus had been discarded. The conclusion that it wasn't considered worth even an effort to tinker it into form may not be justified, but is certainly suggested by the circumstances.

What Cement Does.

The term cement includes all those substances employed for the purpose of causing the adhesion of two or more bodies, whether originally separate or divided by an accidental fracture. As the substances that are required to be cemented together are exceedingly various, and differ much in their properties as to texture, etc., and as the conditions under which they are placed; with regard to heat and moisture, are also exceedingly variable, a number of cements, possessed of very different properties, are required; for a cement that answers admirably under one set of circumstances may be perfectly useless in others.

The different parts of a solid are held together by an attraction between their several particles, which is termed the attraction of cohesion, or cohesive attraction. The amount of this varies with the substances; thus, the cohesion of the particles of iron to one another is enormously great, whilst that between those of chalk is small. The attraction acts only when the particles are in the closest possible contact; even air must not be between them.

If, after breaking any substance, we could bring the particles into as close a contact as before and remove the air, they would reunite, and be as strongly connected as ever. But, in general, this is impossible; small particles of grit and dust get between them; the film of interposed air cannot be removed; and thus, however firmly we press the edges of a broken cup together, it remains cracked china still. Perfectly flat, clean surfaces, like those of freshly-ground plate glass, may sometimes be made to cohere so that the two pieces become one, and cannot be separated without breaking. The attraction of cohesion takes place between the parts of the same substance, and must not be confounded with that of adhesion, which is the attraction of different substances to one another; for example, the particles of a piece of wood are united by cohesive attraction, whilst the union of glue and wood to each other depends on adhesive attraction.

It is important that this distinction be borne in mind, for, in almost all cases, the cohesion between the particles of the cement is very much less than the adhesion of the cement to other bodies; and if torn apart, the connected joint gives way, not by the loosening of the adhesive, but by the layer of cement splitting down the centre. Hence the important rule, that the less cement in a joint the stronger it is.

Domestic manipulators usually reverse this, by letting as much cement as possible remain in the joint, which is, therefore, necessarily a weak one. A thick, nearly solid cement, which cannot be pressed out of the joint, is always inferior to a thinner one, of which merely a connecting film remains between the united surfaces.

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Intercolonial

The Hon. P. McMahon Glynn (Minister for External Affairs) has been appointed a King's Counsel.

On July 2, at the Redemptorist Monastery, North Perth, the Very Rev. Eugene O'Neill, C.S.S.R., celebrated the golden jubilee of his profession, which took place at Wittem, in Holland, on the Feast of the Visitation fifty years ago.

Rev. J. J. O'Reilly, who for the past eleven years had been stationed in St. Mary's parish, Newcastle, was recently appointed to the charge of the Taree parish. Prior to his departure for his new sphere of duties he was the recipient of presentations at Newcastle, Stockton, and Carrington.

The following cable message was sent on July 9 to the leader of the Nationalist Party (Mr. Redmond) by Dr. O'Donnell, of the United Irish League, Melbourne:—'Congratulations from Victoria on passing second obstacle on the way to freedom. One more river to cross. Mailing to-day £400 to smooth the way.'

The Victorian Council of the Catholic Federation has decided to ask the co-operation of the Federation throughout Australia and New Zealand in inviting Father Bernard Vaughan, S.J., to visit this part of the world next year for the purpose of addressing meetings on the principles of Catholic Federation, with special reference to the question of education.

The acting-Rector of St. Ignatius' College, Riverview (Rev. Father J. Corcoran, S.J.) has received word that the Very Rev. Father Thomas Garlan, S.J., has been appointed Rector in place of the late Father Keating. Father Garlan, who had been on the staff at Riverview for almost 25 years, of which 10 were spent as Rector, was transferred to Melbourne about 18 months ago.

Much interest was evinced in the Australian National Anthem competition (says the Melbourne correspondent of the *S.M. Herald*). A money prize was offered for the set of verses most suitable to be set to music and sung as a National Anthem. There were over 250 competitors for the prize—well known writers from the various States. The winner was Mr. Roderic Quinn, of Waverley, N.S.W.

There was a very large and representative gathering at the Christian Brothers' College, North Melbourne, on Sunday, July 13, when the new wing was blessed and opened by his Grace the Archbishop of Melbourne. His Grace was welcomed by the Principal of the college (Rev. Brother Geoghegan) and the staff and members of the other communities of the Christian Brothers of the city and suburbs. Rev. Brother Geoghegan, in his address, said:—The land on which the college now stands cost £1700. The first building contract was £3050. The college roll during the first year was 70. In two years it had risen to 150. This rapid increase called for further accommodation, and in 1905 the first wing was completed, at a cost of £1100. The lower storey was included in the first contract. At the end of 1912 the attendance had risen to 217—now it is 270. This new wing includes, besides spacious class-rooms, a well-designed and well-equipped science-room. The cost of the new wing is £4960. The total cost of the college as it stands to-day, including furnishings, is £12,260. This sum covers the cost of the portion used as a residence by the Brothers, together with the various class-rooms and science-rooms. Very Rev. Dean Carey contributed £2000 towards the first contract, and Very Rev. Father O'Connell, of Carlton, £1000, so that the balance, £9260, with interest on it, has to be met by the Brothers.

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