

last two decades, the writer goes on to tell us, has been in safety explosives for gaseous collieries, and this has been largely due to the use of ammonium nitrate. This is absolutely safe in all quantities, and although it cannot be used alone, a minimum quantity of added combustible avoids times of great length and duration. The account goes on:

"Explosives containing potassium chlorate were for long excluded from the list of safety explosives on account of their extreme liability to explode under impact or friction. The recent advent of electrolytic methods for the manufacture of potassium chlorate has brought the price of this chemical down to a point where it can be used commercially in the manufacture of suitable explosives and a great deal of research has been applied to the investigation of methods of eliminating its dangerous qualities. Success has been attained by the addition to the explosive of some oil . . .

"The first real safety explosive was a nitroglycerin explosive, carbonite. Curiously enough, it has not been surpassed for safety, though it has not been on the market for twenty years. The composition is saltpeter, cellulose, nitroglycerin, and sulfured oil. The investigation of nitroglycerin safety explosives has shown that the addition of cellulose to nitroglycerin compositions, as rye flour to carbonite or wood pulp to other explosives, renders them highly inert in fire damp mix-

"In every European country the use of gunpowder is prohibited in fiery mines. One black powder-like mixture, ballinite, however, has passed even the most stringent tests in England and has been admitted to the list of permitted explosives."

A GREAT CORNISH INVENTOR.

Time has dealt hardly with the name of the great Cornish inventor Richard Trevithick, in whose memory (and that of Sir Humphry Davy) the Prince of Wales has just given a donation to the new museum of the Royal Institution of Cornwall. Most people who know all about Watt and Stephenson do not know also that neither of these two men, but Richard Trevithick was the real inventor of the steam locomotive. It was his lot to strike out mechanical ideas which were elaborated and made practical by his successors. His long life—it was a life crammed with adventure and achievement—ended in 1833. Stories are told in Cornwall of his inventive genius as a boy and his great strength as a young man. He was a wonderful West-country wrestler, and at South Kensington they show a smith's tool weighing ten hundredweight which he wielded as a youth of eighteen.

Trevithick has made model steam engines which would run on the table as early as 1796, and in 1801 he perfected a steam carriage which carried the first load of passengers ever moved by steam. This was the 'pulling devil', as it was known in Cornwall. In 1803 Trevithick built a second steam carriage, which was shown in London and made trial trips in the suburbs, but after a mishap the engine ended its days driving a mill. A little later he brought out the first steam locomotive which ever ran on a railway. This pioneer engine, in February, 1804, carried ten tons of iron and seventy men $9\frac{1}{2}$ miles at the rate of about five miles an hour. This engine is the base of Trevithick's claim to be the real inventor of the locomotive. These

things are a few from a great list of the deeds of this imprudent, brilliant Cornishman. One of his memorials is the Trevithick Engineering Scholarship at Owens College, founded twenty years ago.

THE SCOTS INVASION.

Sometime ago the Saturday Review published a rather amusing article entitled 'Novissima Scotia,' in which the writer discusses the invasion of England by the Scot. He says:—"No nation has carried the principle of peaceful penetration to a higher pitch than Scotland. In nearly every profession in England it is a Scotchman who now rules the roost. The Irish are always complaining of the English garrison in Ireland and its denationalising effect, but the ascendancy in Ireland as the moral and intellectual domination of Scotland over England to day. The political hegemony, for instance, is virtually complete. It may be said to have started when Mr. Gladstone went over bag and baggage to Midlothian. Since then we have had an almost unbroken sequence of Scotch Premiers, beginning with Lord Rosebery and including Mr. Balfour and Sir Henry Campbell Bannerman. But the Government of to day has broken all records. It is no hyperbole to say that not Downing Street but Scotland Yard would be for it a far more appropriate address. Its Scotch members, past and present, include Mr. Haldane, Mr. Sinclair, Lord Elgin, Lord Tweedmouth, and Mr. Bryce. Even the sorry handful of Englishmen in the Cabinet mostly sit for Scottish constituencies, and, like the unhappy license holders, they are therefore more or less tied down to represent the whisky and oatmeal ideals of the country of their adoption."

HOW FRENCH WORKMEN LIVE.

Worse off than the British.

Correspondence to the volume comparing the life of the British working classes with those of Germany, the Board of Trade has issued a volume on the conditions of industrial life in France. Comparison shows that an average British workman's family would find the cost of living—rent food and fuel—considerably greater than in England (though not so great as in Germany), while wages are much lower and hours of work longer. In about half the principal towns of France the workpeople live in tenements mainly; in about one-third in separate cottages; elsewhere both in kinds of dwellings occur. In England—outside London, Tyneside, and Plymouth—the separate cottage is universal. While in England a family has generally four or five rooms, in Germany the usual number is three (or two), in France two (or three). Rents for the same accommodation are about 20 per cent. less in France than in England or Germany. A smaller proportion of income is spent on food in France than in England, while Germany comes between the two. Both French and German workpeople spend more on bread and sugar, meat and fish, vegetables and fruit than the English, who spend more on tea and coffee and much more on sugar. The French get much more variety in the way of meat, and 11 2 per cent. of their meat is horseflesh, which they eat for preference, believing also