was hardened, in water which flowed in a jet on to the inside Col. Cubillo, and the outside. The temperature for this second tempering was 780°C . for the projectile, and 22°C . for the water. The caps were hardened in water, the top part only being heated to a bright red heat; then they were immersed in water. The precaution recommended by the Author in regard to heating and cooling the projectile—especially its point—were useful and worthy of consideration by all concerned with the manufacture of armour-piercing projectiles.

NICKEL-CHROME-STEEL ARMOUR-PIERCING PROJECTILE FOR 15-CENTIMETRE QUICK-FIRING GUN.

Messrs. SCHNEIDER & Co., of Le Creusot, pointed out that the numerical coefficients given by Mr. Delmas related to the formula of the Gâvre Commission, not to the formula of Colonel Jacob de Marre. Consequently, those coefficients were not comparable with K_2 in Table I. of the Paper. Further, they related to trials of plates chosen at random from completed lots, and represented the results of firing under average conditions: the results obtained with such plates could not be compared with those obtained from plates specially made for trial.

Messrs.
Schneider.

The AUTHOR, in reply, remarked that Professor Arnold's lucid remarks on the changes which took place in steel during the processes of hardening and tempering were of practical importance. It was interesting to find that Colonel Cubillo's methods of manufacture agreed closely with those described in the Paper. If, as Messrs. Schneider & Co. stated, the numerical coefficients given by Mr. Delmas related to the formula of the Gâvre Commission, and not to the formula of Colonel Jacob de Marre, then they were comparable with K , instead of K_2 , in Table I.

The Author.

17 February, 1903.

JOHN CLARKE HAWKSHAW, M.A., President,
in the Chair.

The PRESIDENT said he regretted to have to announce the death of Field-Marshal Sir Lintorn Simmons, Honorary Member. There was no need to recall to the members his distinguished career as a soldier in the Crimea and elsewhere, and in the many responsible positions which he had afterwards filled so ably. By his connection with the Railway Department of the Board of Trade in early

life he had been brought into contact with many of the older engineers, and many of them had enjoyed his friendship throughout life. At their meeting that evening the Council of the Institution had passed the following resolution:—"That the Council deeply regret the death of Field-Marshal Sir John Lintorn Arabin Simmons, R.E., G.C.B., Honorary Member, and desire to convey to his family an expression of sympathy in their bereavement."

The discussion on the Paper on "The Manufacture and Efficiency of Armour-Piercing Projectiles," by Mr. David Carnegie, occupied the evening.