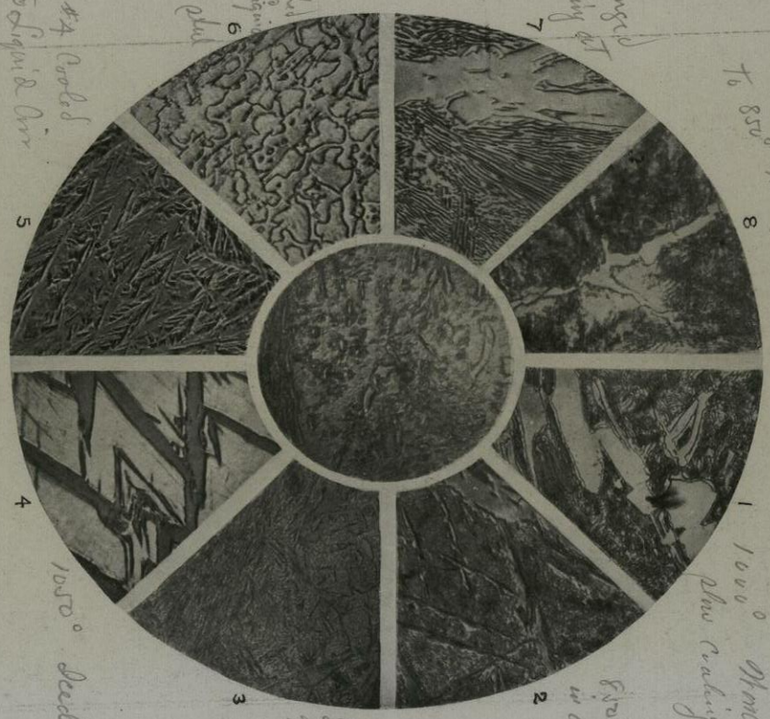
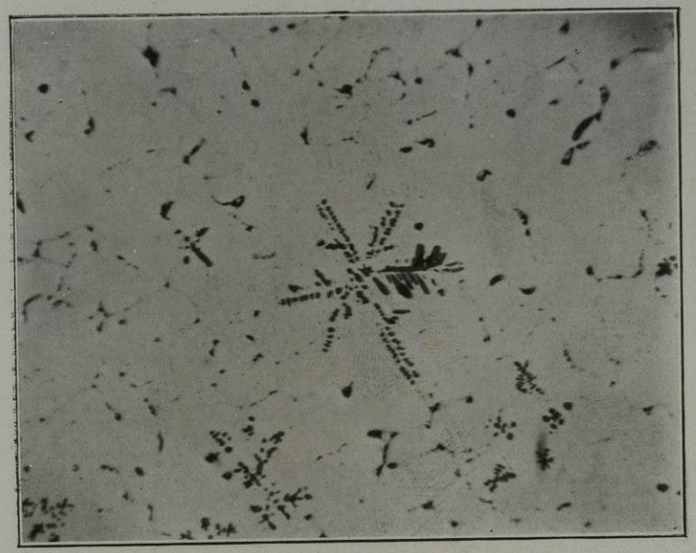
**A**—Grey Iron containing 2 per cent silicon and 1 per cent phosphorus, heat tinted, showing graphite (black), solid solution of silicon in iron (yellow), and phosphide of iron (blue).

**B**—Slowly cooled phosphor bronze, heat tinted, showing copper (red), non-homogeneous solution of tin in copper (shading from white to blue-grey) and phosphide of copper (yellow).



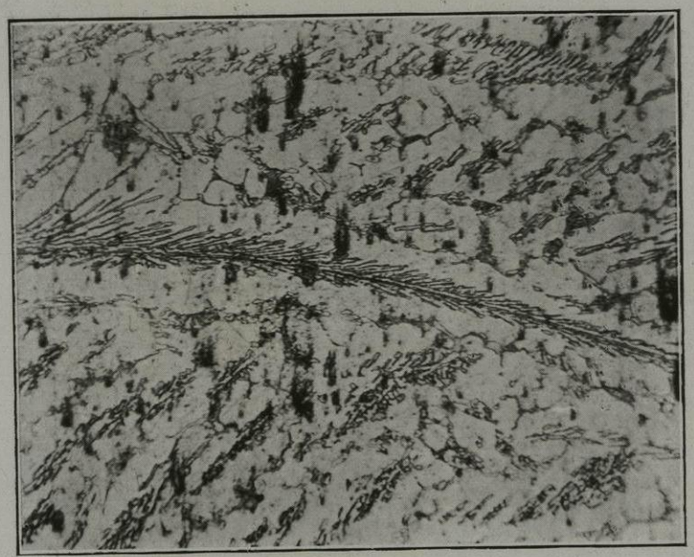

Influence of Heat Treatment on Steel containing 1·5 per cent. of Carbon.

No. 1.



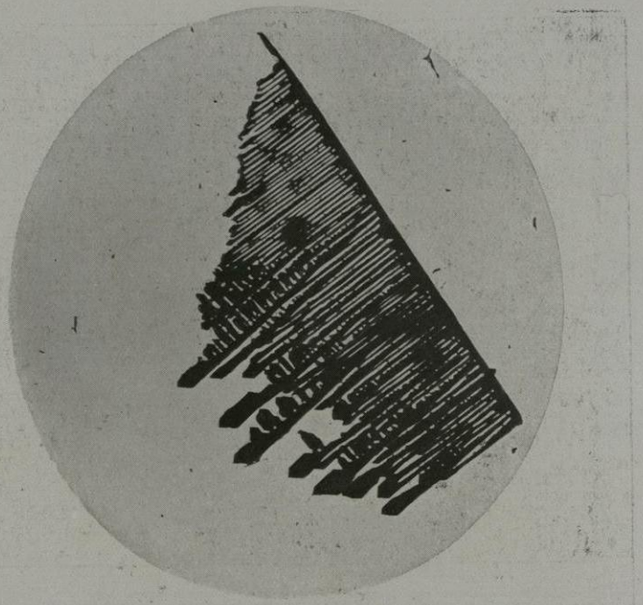
Crystallite Structure. ×1000.

No. 2.



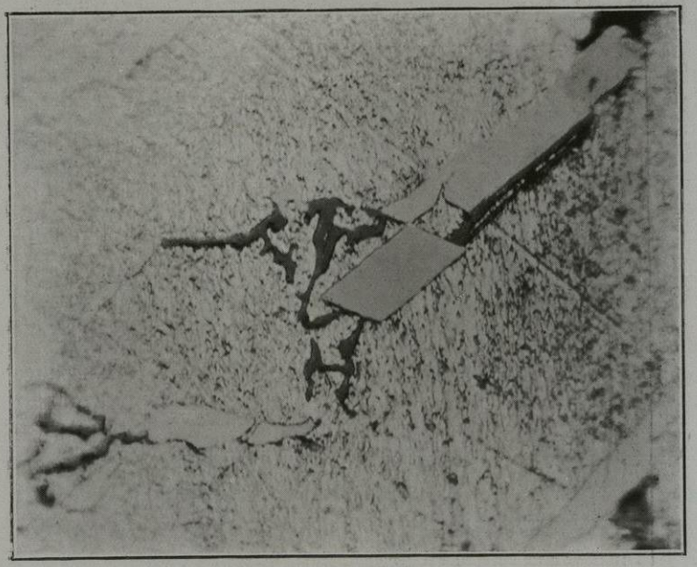
Crystallite Structure. ×100.

No. 3.



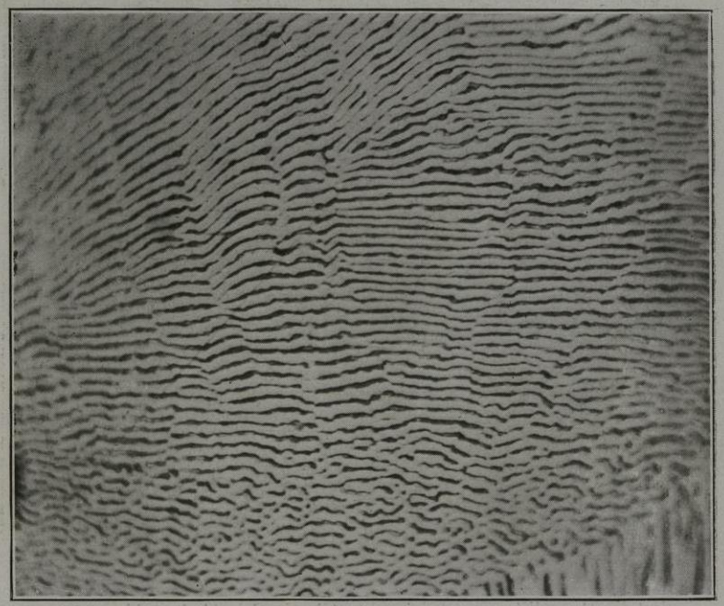
Metallic Crystallite separated from an Alloy by Solution in Acid. ×10.

No. 4.



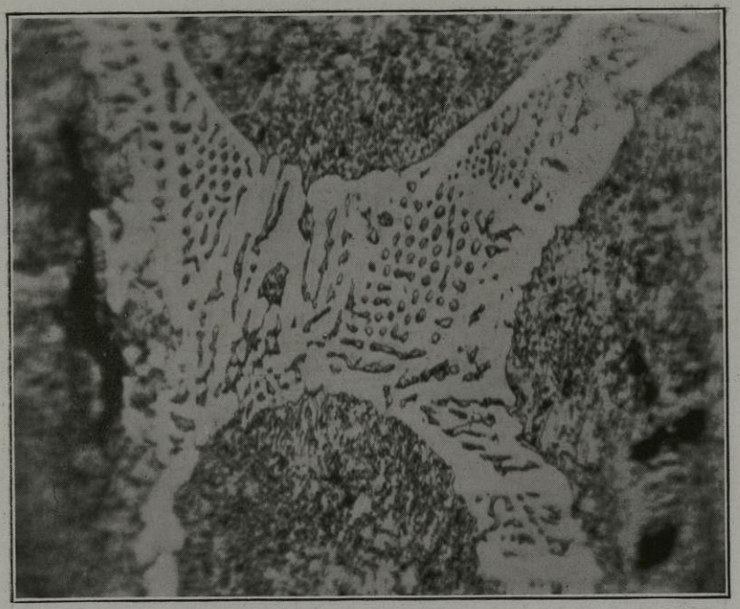
Aluminium-cobalt Alloy containing 10 per cent. Cobalt, showing Idiomorphic Crystal of the Compound $Al_6Co$. ×1000.

No. 5.

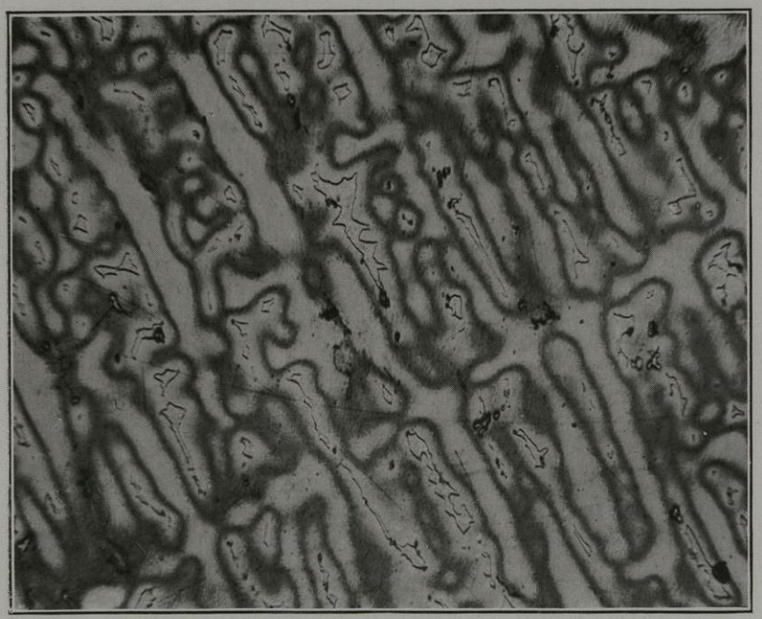


Laminated Eutectic Structure. ×1000.
No. 6.

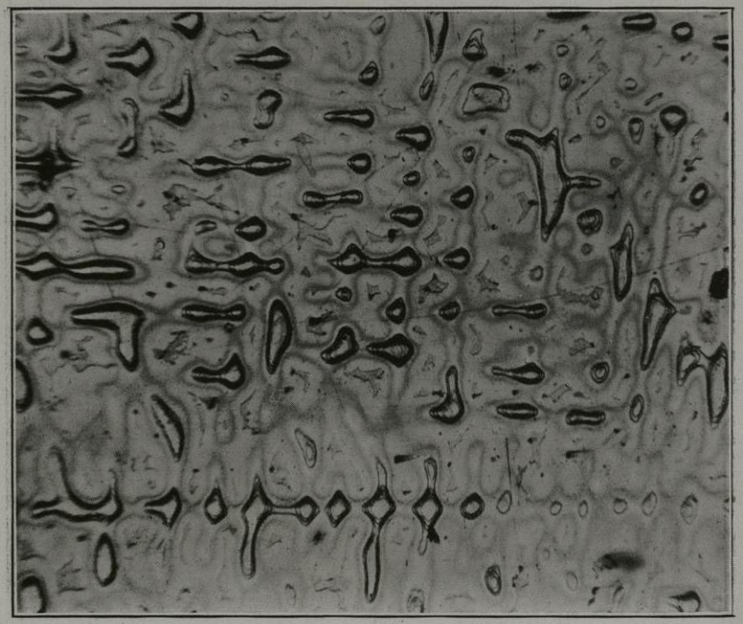
Fringe of Phospho-carbide Eutectic in Grey Iron. ×1000.
No. 7.



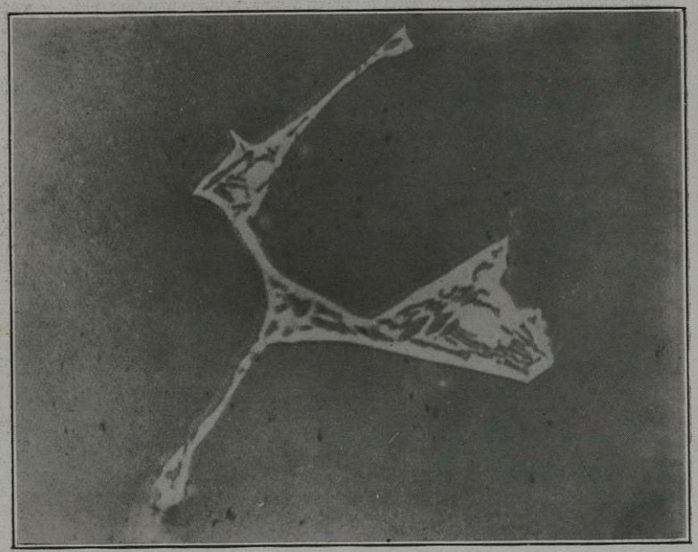
Phosphide Eutectic in Grey Iron. ×1000.
No. 8.



Gun-metal containing 12 per cent. of Tin, slowly cooled. ×100.
No. 9.

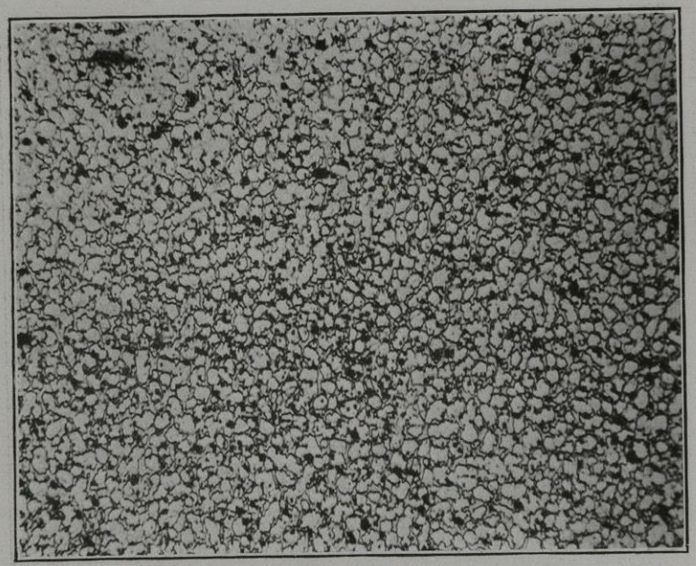


Gun-metal containing 12 per cent. of Tin, quickly cooled. ×100.
No. 10.

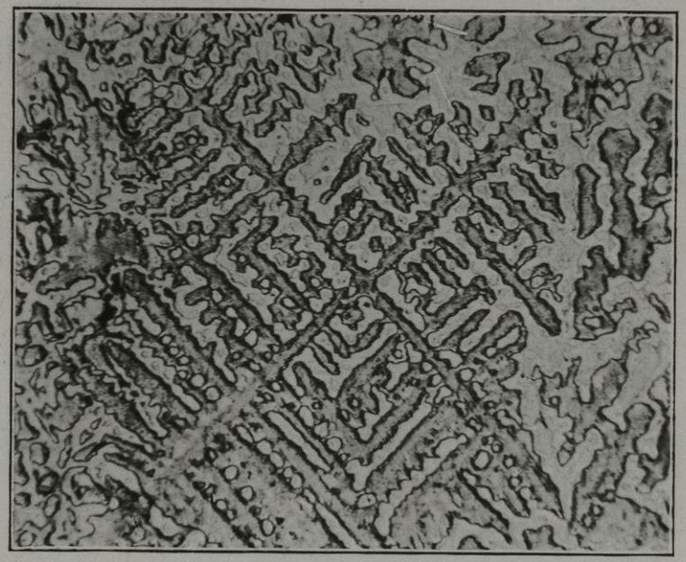


$SnCu_4$ Constituent in Gun-metal containing 12 per cent. of Tin.
Heat tinted. ×1000.
No. 11.

Rolled Brass containing 30 per cent. of Zinc. ×100.
No. 12.

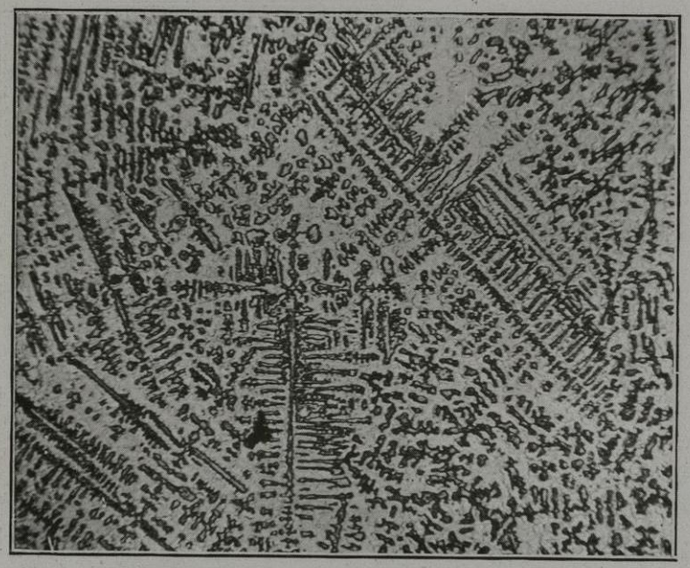


Muntz Metal, rolled ×100.
No. 13.



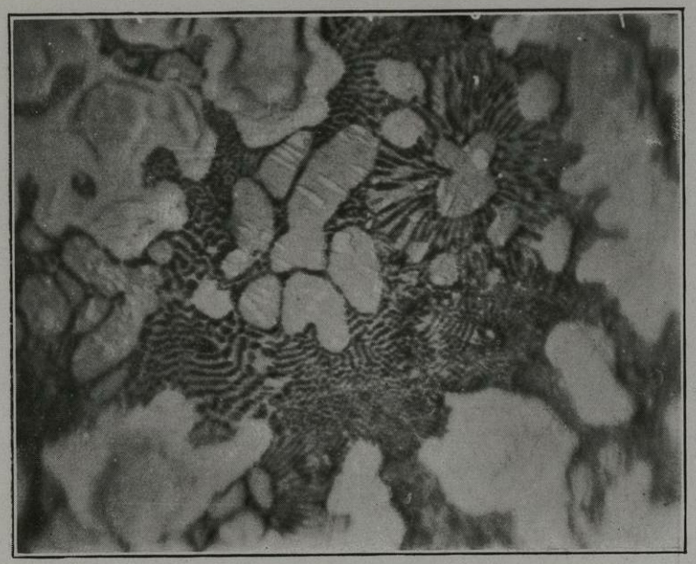
Cast Phosphor-bronze containing 10 per cent. of Tin and 0·7 per cent. of Phosphorus. ×100.

No. 14.



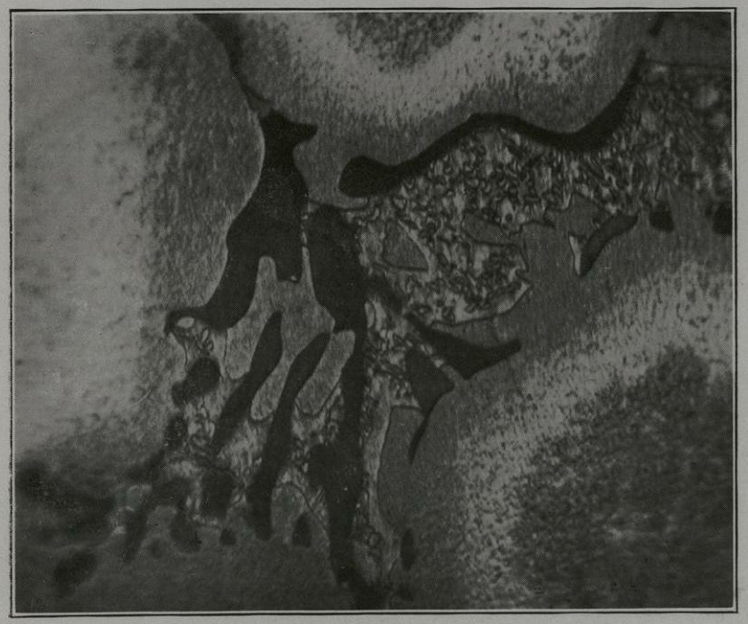
Cast Phosphor-bronze containing 10 per cent. of Tin and 1·5 per cent. of Phosphorus. ×100.

No. 15.



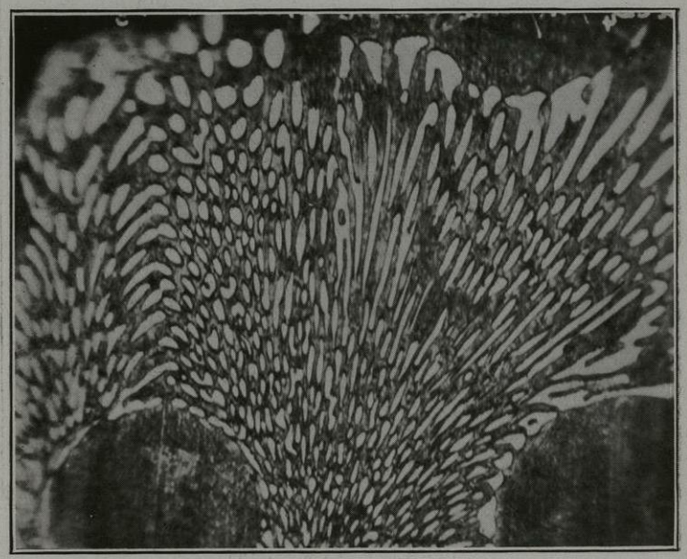
Cast Phosphor-bronze containing 1·5 per cent. of Phosphorus and 10 per cent. of Tin. ×1000.

No. 16.



Cast Phosphor-bronze containing 1·5 per cent. Phosphorus. Heat-tinted. The dark constituent is the phosphide. ×1000.

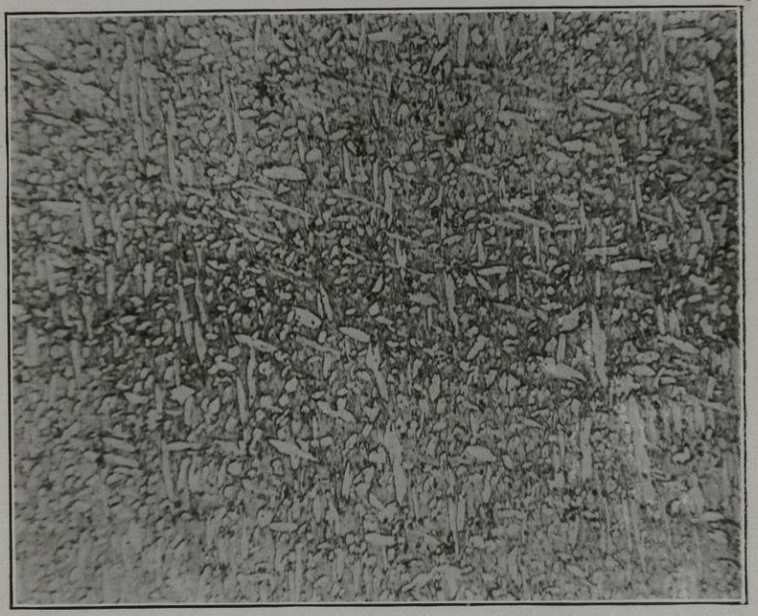
No. 17.



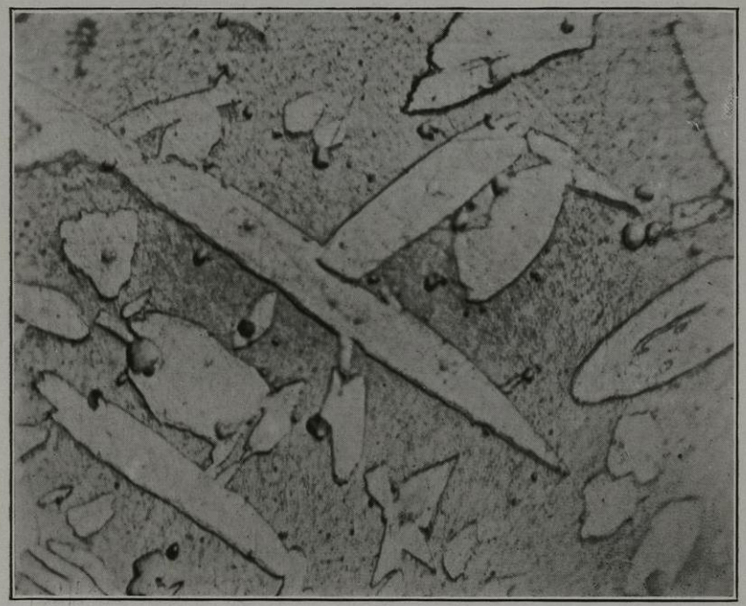
Eutectic of the two Compounds $SnCu_4$ and $Cu_3P$. ×1000.
No. 18.

Phosphor-bronze containing Lead, unetched. ×100.
No. 19.

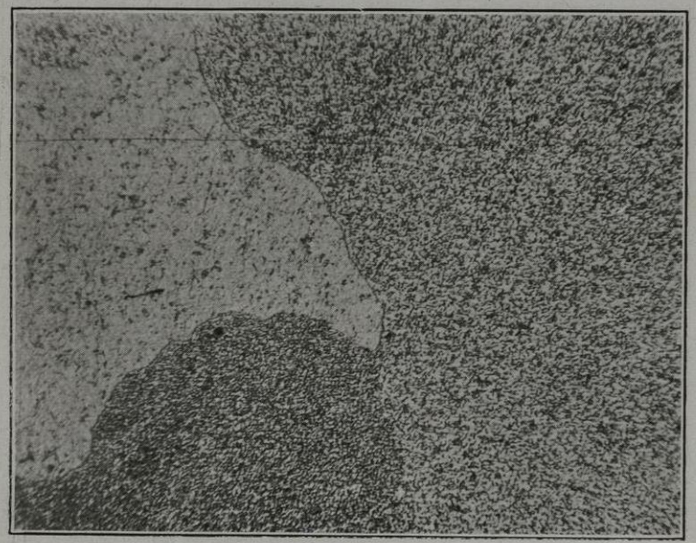
Manganese-bronze Firebox Stay containing 4 per cent. of Manganese. ×1000.
No. 20.



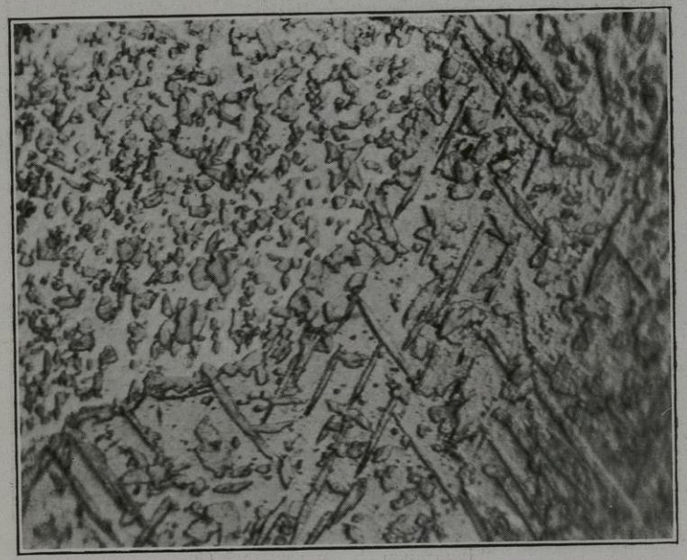
Manganese-bronze, rolled. ×100.
No. 21.



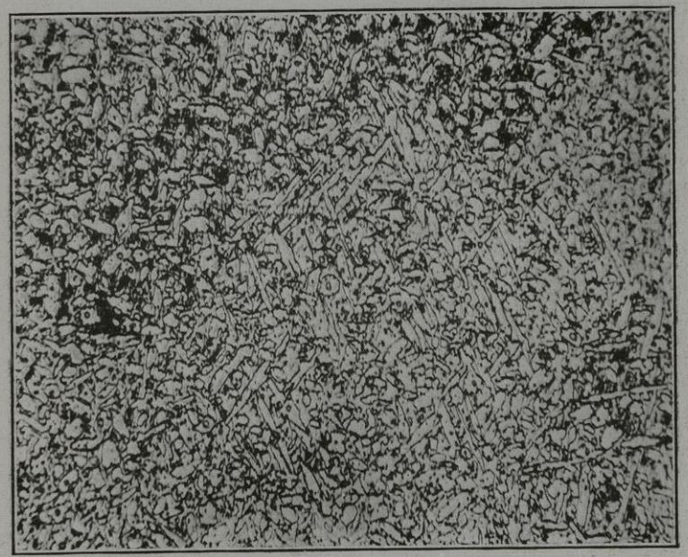
Manganese-bronze, rolled. ×1000.
No. 22.



"Immadium I." Bronze. ×100.
No. 23.

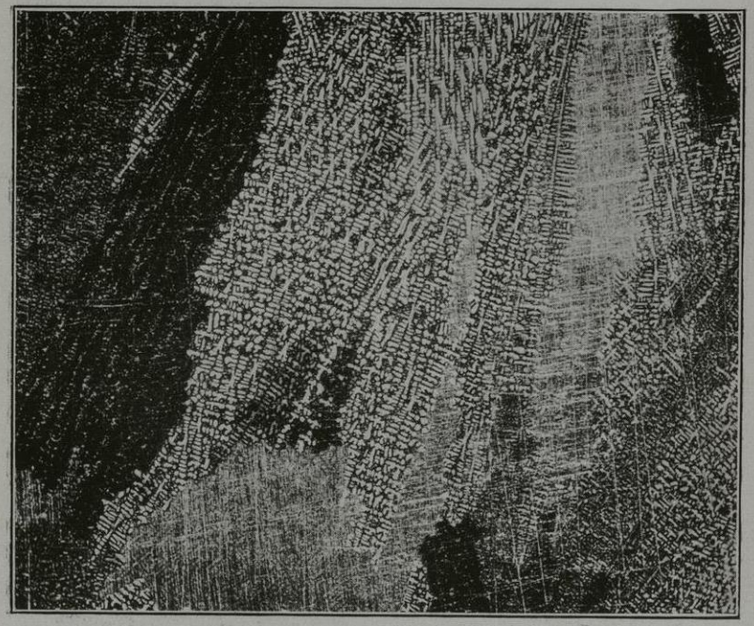


"Immadium I." Bronze. ×1000.
No. 24.

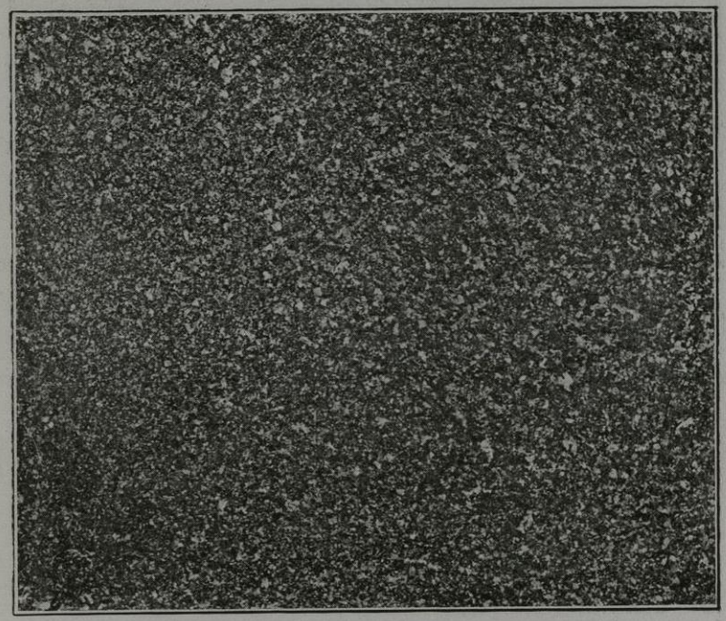


"Immadium II." Bronze. ×100.
No. 25.

"Immadium II." Bronze. ×1000.
No. 26.



Aluminium-bronze containing 7·5 per cent. of Aluminium. Cast. ×10.
No. 27.



Rolled Aluminium-bronze containing 7·5 per cent. of Aluminium. ×10.
No. 28.

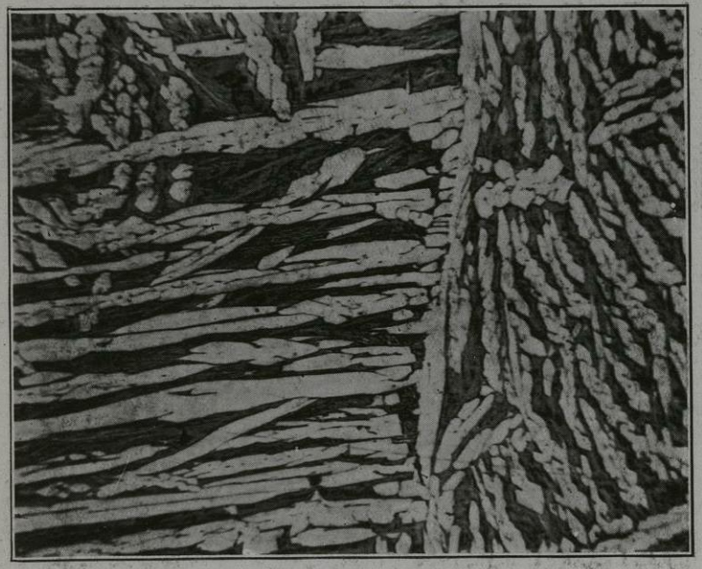
Aluminium-bronze containing 7·5 per cent. of Aluminium. Same as No. 28 after Annealing. ×10.
No. 29.

Aluminium-bronze containing 7·5 per cent. of Aluminium. Same as No. 29 after further Annealing. ×10.

No. 30.

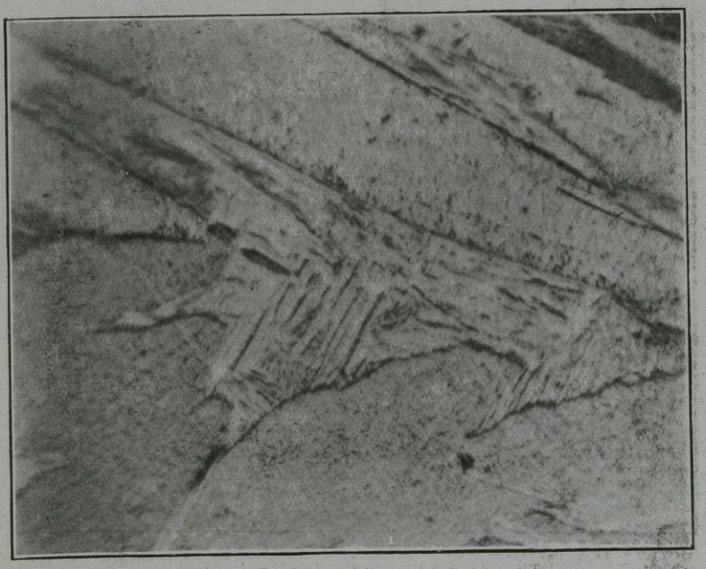
Aluminium-bronze containing 7·5 per cent. of Aluminium. Same as No. 30, but raised to a temperature near its melting-point. ×10.

No. 31.



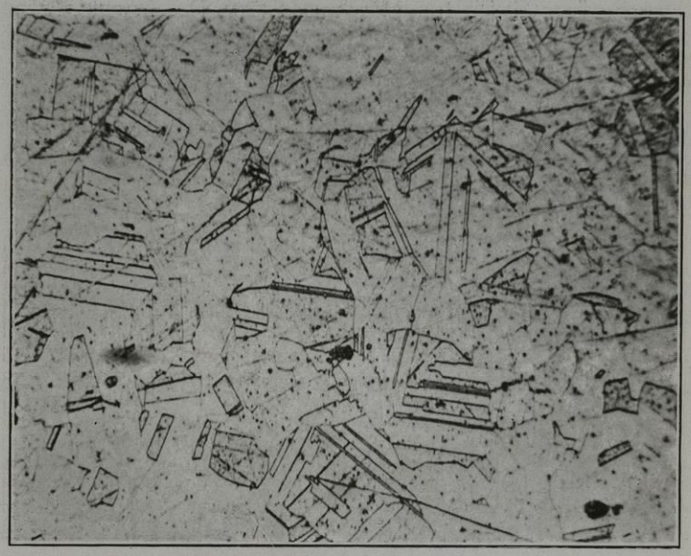
Aluminium-bronze containing 10 per cent. of Aluminium. ×100.

No. 32.

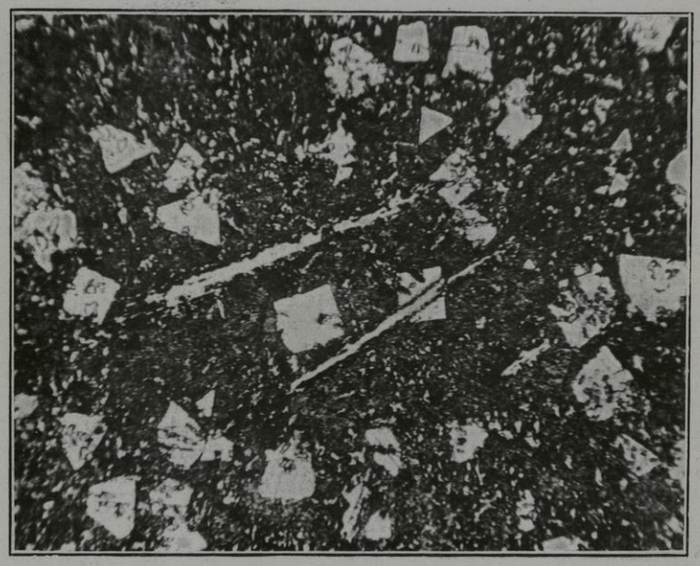


Aluminium-bronze containing 10 per cent. of Aluminium, showing the β Constituent. ×1000.

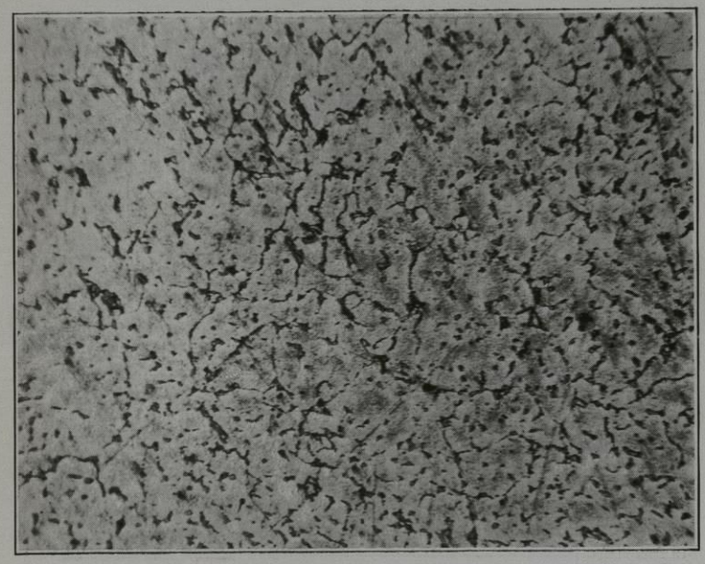
No. 33.



Rolled German Silver. ×100.
No. 34.



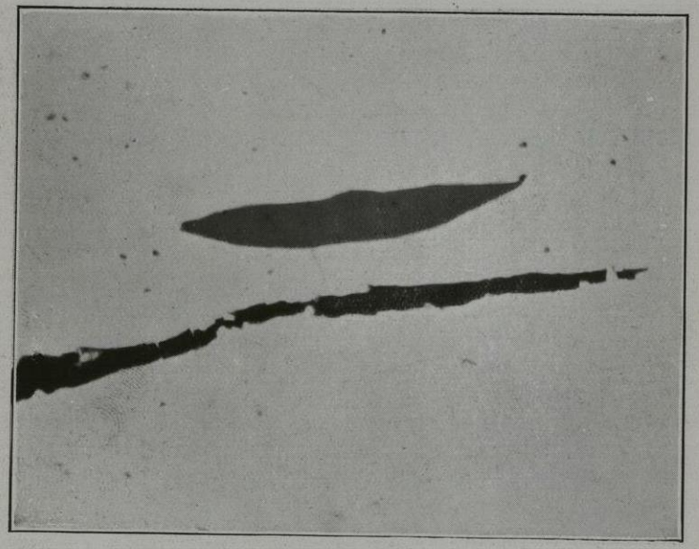
Tin-copper-antimony Bearing Metal. ×50.
No. 35.



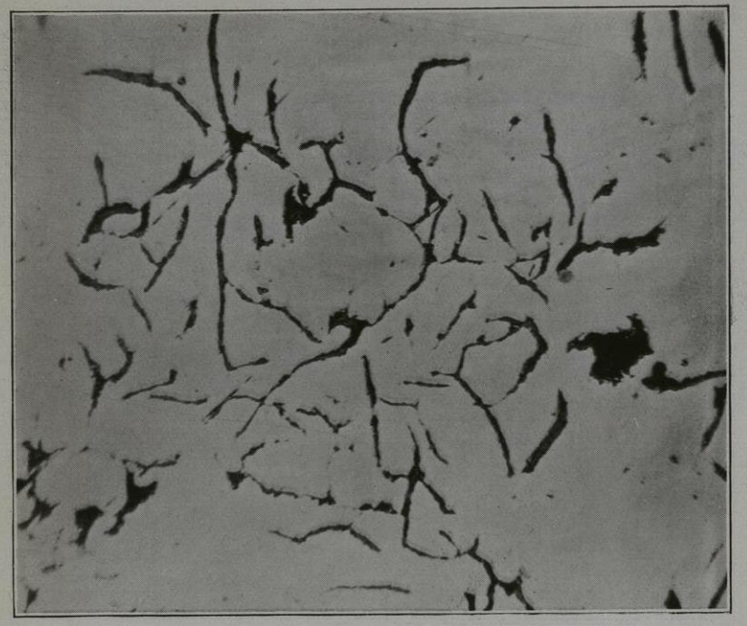
"Magnalium X," Cast. ×100.
No. 36.

"Magnalium X," Cast. ×1000.
No. 37.

Manganese Sulphide and Silicate occurring together in Steel. ×1000.
No. 38.

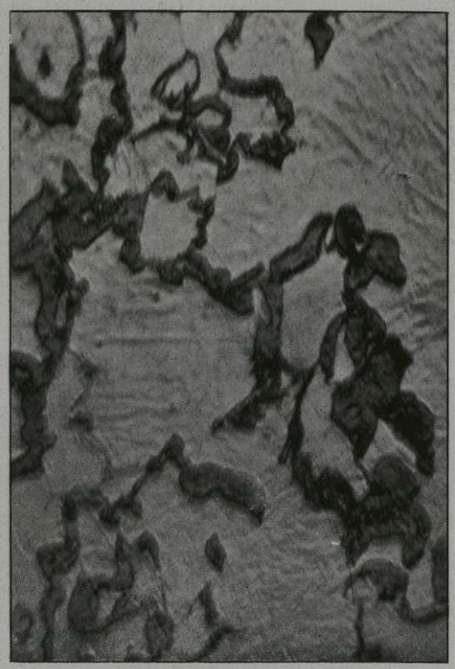


Mild Steel, Unetched, showing Sulphide of Manganese (the lighter constituent) and Silicate of Iron. ×1000.
No. 39.



Graphite in Grey Iron. ×100.
No. 40.

Steel containing Slag polished in Relief. ×100.
No. 41.



Steel containing 0·45 per cent. of Carbon quenched from 730°. The dark constituent is Troostite.

No. 42.