Stresses on the diagonals.
Braces—Counter braces.
Definition of the Howe truss.
Separation into systems.
Determination in detail of the stresses on every member of the Howe truss.
Designing of a Howe truss.
Testing of a Howe truss.
Position of the rolling load to produce maximum stress on the main braces.
Position of the rolling load to produce maximum stress on the counters.
Position of the rolling load to produce maximum stress on the chords.
Definition, designing, testing and calculation of the Pratt truss in iron (the Whipple.)
The Phœnixville truss and the Keystone truss.
Separation into systems.
Calculation of stresses on all members of the Phœnixville truss.
Towne's lattice truss and its defects.
Definition, designing and calculating and testing of the Warren girder.
The Fink truss.
The Bollman truss.
Practical specification for bridges of wood and iron.
Drafting various type forms of bridge trusses.
The tubular girder.
Other forms of bridge trusses.
Snow and wind pressure on bridge and roofs. Calculations of the Tay bridge.
Stresses on cranes.

## *SECTION II.*

*Design and execution of structures.*

### SUB-SECTION (A)—PRINCIPLES OF ENGINEERING FIELD WORK AND OF ENGINEERING OFFICE WORK, APPLIED TO SURVEYS AND TO CONSTRUCTION OF RAILWAYS AND COMMON ROADS.

### RAILWAY EXPLORATIONS.

Matters influencing the choice of Route.
Organization of Staff—Ranks, duties.
Control and Payments.
Penetrating Country—Moving supplies.