

32. Account for the equality of temperature maintained during the fusion and solidification of bodies.

33. Expansion of water during the process of solidification ;—cause of the floating of ice in water.

VII.

34. Ebullition and vaporization ;—causes which increase vaporization.

35. Phenomena of vaporization ;—cold produced by vaporization.

36. Freezing mixtures ; their use ; preparation and parts composing some of these mixtures.

37. Elastic force of vapor ; influence of temperature on this force.

VIII.

38. Principle of the steam engine, and description of boilers for generating steam.

39. Principal parts of the steam engine and their functions.

40. Single and double acting steam engines ;—condensing engine ;—high and low pressure principles ;—expansion engine.

41. Peculiar noise heard before ebullition takes place ;—nature of ebullition ;—*tension* of vapor.

42. Influence of pressure on ebullition ;—influence of matter held in solution ;—distillation of liquids.

43. Principal sources of heat ;—means generally employed to produce artificial heat.

44. Necessary conditions to obtain a good draught in constructing the flue of a chimney.

45. Different modes of heating buildings, and their relative advantages.

IX.

46. Light ;—shade ;—penumbra.

47. Reflection of light and the laws which govern it.

48. Refraction ;—its laws ;—phenomena caused by refraction.

49. Cause of the *mirage*.

X.

50. Lenses ;—different kinds of lenses ;—properties of the lenses more commonly used.

51. White light ;—names of colors of the spectrum and the order in which they occur.

52. Cause of color in bodies.