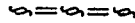


( vii )

## CONTENTS.



	PAGE.
<i>Experiments on Dr. Barker's mill, - - -</i>	I
<i>Experiments on the velocity of air out of bellows by any known or unknown pressure, - -</i>	9
<i>A description of Westgarth's hydraulic machine,</i>	20
<i>Some properties of the lever demonstrated, -</i>	25
<i>Observations on the power of Cooper's mill, -</i>	29
<i>On the power of a mill, formerly at Nuneaton,</i>	34
<i>On the horizontal water-wheel, - - - -</i>	38
<i>Description of the centrifugal machine; or Erf- kine's centrifugal pump, with the method of computing its power, - - - - -</i>	41
<i>On the properties of the crank, &amp;c., - - -</i>	46
<i>Observations on lathes, - - - - -</i>	54
<i>Observations on wheel carriages, - - - -</i>	57
<i>Demonstration of a parallel motion for engine beams, &amp;c., - - - - -</i>	62
<i>Theorems relating to the common pump, - -</i>	68
<i>Rules and observations on the strength of beams, - - - - -</i>	73
<i>Experiments on the strength of oak and deal, -</i>	75
<i>To find the weight which will break a beam of any given dimensions, - - - - -</i>	77
	<i>Of</i>

<i>Of the strength and dimensions of steam engine beams, - : - - - - -</i>	77-78
<i>To make a beam of a given strength, and the breadth and depth in a given ratio, - -</i>	80
<i>To find the expression for the strength of a beam to work a cylinder of any diameter, -</i>	82-84
<i>To find the dimensions of the strongest beam that can be cut out of a given piece of round timber,</i>	86
<i>Experiments on the strength of cast iron, -</i>	89-93
<i>To form parabolic beams, - - - - -</i>	97-98
<i>On the strength of cast iron axles, - - - -</i>	104
<i>The strength of poles for triangles, - - - -</i>	108
<i>Observations on cranes, - . - - - - -</i>	114
<i>To find the centre of gravity, &amp;c., - - -</i>	119
<i>Description of a gauge for steam engines, - -</i>	124