Table No. 2.—Divisions of Hydraulic Head for ascertaining Effective Horse-power per Sluice-head of Water.

(Calculated from $\frac{8{\cdot}8}{\text{percentage}}$ = head required per horse-power.)

Efficiency of Motor.	Division.	Efficiency of Motor.	Division.	Efficiency of Motor.	Division.
100 per cent.	8·800	76 per cent.	11·578	52 per cent.	16·923
99 "	8·888	75 "	11·733	51 "	17·254
98 "	8·979	74 "	11·891	50 "	17·600
97 "	8·072	73 "	12·054	49 "	17·959
96 "	9·166	72 "	12·222	48 "	18·333
95 "	9·263	71 "	12·394	47 "	18·723
94 "	9·361	70 "	12·571	46 "	19·130
93 "	9·462	69 "	12·753	45 "	19·555
92 "	9·565	68 "	12·941	44 "	20·000
91 "	9·670	67 "	13·134	43 "	20·465
90 "	9·777	66 "	13·333	42 "	20·952
89 "	9·887	65 "	13·538	41 "	21·463
88 "	10·000	64 "	13·750	40 "	22·000
87 "	10·115	63 "	13·968	39 "	22·564
86 "	10·232	62 "	14·193	38 "	23·157
85 "	10·352	61 "	14·426	37 "	23·783
84 "	10·476	60 "	14·666	36 "	24·444
83 "	10·602	59 "	15·915	35 "	25·142
82 "	10·731	58 "	15·172	34 "	25·882
81 "	10·864	57 "	15·438	33 "	26·666
80 "	11·000	56 "	15·714	32 "	27·500
79 "	11·139	55 "	16·000	31 "	28·387
78 "	11·282	54 "	16·296	30 "	29·333
77 "	11·482	53 "	16·603		

Examples.

1. What actual horse-power will be realised by a Pelton wheel having an efficiency of 90 per cent., with one sluice-head of water and 400 ft. total head, less 20 ft. loss of head from friction, &c., in pipes conveying the water to wheel?

$$400 - 20 = 380 \text{ ft. hydraulic head,}$$

and this, divided by the number opposite 90 per cent. in Table 2 (9·777) equals the horse-power—

$$\frac{380}{9{\cdot}777} = 38{\cdot}86\text{-horse power.}$$

2. What actual horse-power will be realised by an undershot wheel having an efficiency of 35 per cent. in the forty sluice-heads of water and 3 ft. hydraulic head?

$$\frac{40 \times 3}{25{\cdot}142} = 4{\cdot}77\text{-horse power.}$$

3. What actual horse-power will be realised by a low-breast wheel having an efficiency of 55 per cent., with 33⅓ sluice-heads of water and 10 ft. hydraulic head?

$$\frac{33\frac{1}{3} \times 10}{16} = 20{\cdot}8\text{-horse power.}$$

4. What actual horse-power will be realised by a high-breast wheel having an efficiency of 60 per cent., with 33⅓ sluice-heads of water and 15 ft. hydraulic head?

$$\frac{33\frac{1}{3} \times 15}{14{\cdot}666} = 34{\cdot}09\text{-horse power.}$$

5. What actual horse-power will be realised by an overshot wheel having an efficiency of 65 per cent., with 33⅓ sluice-heads of water and 20 ft. hydraulic head?

$$\frac{33\frac{1}{3} \times 20}{13{\cdot}538} = 49{\cdot}24\text{-horse power.}$$

6. What actual horse-power will be realised by a turbine wheel having an efficiency of 70 per cent., with one sluice-head of water and 300 ft. total head, when the loss by friction, &c., in the pipes conveying the water to the wheel is 15 ft. of head?

$$300 - 15 = 285 \text{ ft. hydraulic head.}$$

$$\frac{285}{12{\cdot}571} = 22{\cdot}67\text{-horse power.}$$

7. What actual horse-power will be realised by a Pelton wheel having an efficiency of 85 per cent., with one sluice-head of water and 400 ft. total head, the loss by friction, &c., being 20 ft. of head?

$$400 - 20 = 380 \text{ ft. hydraulic head.}$$

$$\frac{380}{10{\cdot}352} = 36{\cdot}7\text{-horse power.}$$