

PREFACE	ix
PRETEXT	xiii
PART ONE EXPERIMENTS	
1	Sensory processes 3
2	Human perception 50
3	Recovery from early blindness: a case study 65
4	Blinking during visual tracking 130
5	Variations in blink rate during non-visual tasks 144
6	Colour anomaly, the Rayleigh equation and selective adaptation 151
7	A statistical information theory of visual thresholds 154
8	Increase in 'neurological noise' as a factor in sensory impairment associated with ageing 167
9	A theory of nerve deafness 216
10	A note on summation time of the eye indicated by signal/noise discrimination 222
11	Is the Weber fraction a function of physical or perceived input? 228
12	Arm weight, adaptation and weight discrimination 236
13	Weight, illusions and weight discrimination – a revised hypothesis 240
14	Eye-movements and the stability of the visual world 253
15	A blue filter technique for detecting eye-movements during the autokinetic effect 260
16	The origin of the autokinetic effect 263
17	The after-effect of seen motion: the role of retinal stimulation and of eye-movements 276
18	Influence of stroboscopic illumination on the after-effect of seen movement 280
19	The effect of touch on a visually ambiguous three-dimensional figure 282
20	An auditory analogue of the visual reversible figure 290
21	Stereoscopic shadow-images 292

22	Changes in the size and shape of visual after-images observed in complete darkness during changes of position in space	295
23	Measuring visual constancy for stationary or moving objects	299
24	Visual constancy during movement: Effects of <i>S</i> 's forward and backward movement on size constancy	303
25	Visual constancy during movement: Size constancy, using one or both eyes or proprioceptive information	311
26	Visual perception in simulated space conditions	316
27	Seeing in depth	333
28	Distortion of visual space as inappropriate constancy scaling	342
29	Comments on the inappropriate constancy scaling theory of distortion illusions and its implications	350
30	Perceptual illusions and brain models	357
31	Illusion and depth measurements in right-angular and parallel line figures	380
32	The curious eye of <i>Copilia</i>	390

PART TWO INSTRUMENTS

33	A multi-channel printing chronograph	397
34	A printing chronograph for recording data	406
35	Master patent specification for printing chronograph	409
36	Patent specification for 'Little Brother'	435
37	A device for giving a histogram of time-intervals	446
38	An optical micro-stimulator for the human retina	450
39	A single-flash rotary disk optical shutter	454
40	The solid image microscope	458
41	The solid image microscope: a more technical description	470
42	Patent specification for a heterochromatic photometer	475
43	Patent specification for apparatus for visual researches	482
44	Patent specification for 3-D drawing machine	492
45	A technique for minimizing the effects of atmospheric disturbance on photographic telescopes	501

PART THREE PHILOSOPHY

46	A speculative account of brain function in terms of probability and induction	521
47	On physical model explanations in psychology	537
48	The two psychologies	543

49	The brain as an engineering problem	547
50	Models and localization of function in the central nervous system	566
51	Köhler's perception	584
52	On how so little information controls so much behaviour	589
53	The evolution of eyes and brains – a hen-and-egg problem	602
54	The speaking eye	614
55	The grammar of vision	622
56	Social implications of intelligent machines	630
	Bibliography	643
	Name Index	659
	General Index	664