INDEX

(Italic figures indicate main references in the text.)

accessory tissue, see adrenal accessory tissue
acetal phosphatides, see plasmal reaction
acetate in steroidogenesis, 43, 44, 53
acetocetate in steroidogenesis, 43
acid haematin reaction, 26
acidosis, after adrenalectomy, 77
ACTH, see adrenotrophin
adaptation, diseases of, 120–2
Addison's disease, 1, 2, 73, 85, 88, 94, 95, 101, 106, 115, 116–17, 121
adenohypophysectomy, 23; and see hypophysectomy
adenohypophysis, 23, 55, 56, 57, 103, 105; and see pituitary, anterior lobe adenoma, 93, 118
adenosine triphosphate in steroidogenesis, 46
adrenal accessory tissue, 22, 58, 59, 95; in adrenal insufficiency, 22
adrenal-gonad relationships
Amphibia, 150, 156
birds, 201–5
clasmbroaches, 126–8
embryology, 222, 225
Eutheria, 99–115, 118–20
marsupials, 214–16
reptiles, 172–4
adrenal portal system in reptiles, 170, 171
adrenal steroid hormones, see steroid hormones
adrenal tumours, 101, 118
adrenal weight factor (AWF), 50; and see adrenotrophin
adrenalectomy
Amphibia, 156, 157; carbohydrate metabolism, 158; mineral metabolism, 159, 160, 161; skin permeability, 164, 165; sodium loss, 166
birds, 200, 201, 202; ovotestis, 903; survival, 199, 200; unilateral, 198
clasmbroaches, see interrenallectomy
Eutheria, 58, 59, 63; blood constituents, 72–6; blood pressure, 74; blood haematocrit, 74; blood pH, 76; blood viscosity, 74; body temperature, 75; carbohydrate metabolism, 61, 62, 63, 66, 67, 77; fat metabolism, 70; gut, glucose absorption, 77; mammary tissue, 98; muscle, asthenia, 76; muscle constituents, 76; muscle work, 71; pregnancy, 108; protein metabolism, 69; relationship with gonads, 106, 107; renal ammonia, 74; respiratory quotient, 73; survival after, 59, depending on age, 59, depending on sex, 59; water and salt-electrolyte metabolism, 73, 85, 86, 234
marsupials, 216, 217
reptiles, bilateral, 181, 182; unilateral, 179
adrenaline
adrenotrophin secretion, 54, 55, 56
birds, 198
carbohydrate metabolism, 62, 65
distribution in vertebrate chromaffin tissue, 243, 244
cosinophil count, 95
isolation, 2
production by chromaffin tissue, 14
reptiles, 175
synthesis, 2
adrenocortical hormones, see steroid hormones
adrenocortical secretion, see steroid hormones
control of, 47–57
in pregnancy, 107–8
adrenocortical steroids, see steroid hormones
adrenocorticotrophin, see adrenotrophin
adrenogenital syndrome
Amphibia, 156
Eutheria, 102, 118–20
adrenosterone, 101, 235
adrenotrophin
Amphibia, 153, 158; muscle con-
Index

adrenotrophin (cont.)
  stiutuents, 160; sodium transport, 164; water balance, 164
birds, 198
eelasmobranchs, 128
Eutheria, 230, 235, 237, 240, 242, 243; Addison’s disease, 117; adrenal-gonad relationships, 100, 102, 103, text-fig. 14, 104, 106, 107; adrenogenital syndrome, 119, 120; ascorbic acid, 49–50; assay, 49; carbohydrate metabolism, 62, 64, 65; control of adrenocortical secretion by, 47–54; control of secretion of, 54–7; Cushing’s syndrome, 118; fat metabolism, 70; foetal cortex, 113; mineral metabolism, 84, 89; peripheral tissue, 91–4, 98; preparations of, 47, 48, 49, 50; response to stress, 120; steroids in adrenal venous blood, 40; urea nitrogen, 68; Waterhouse-Friderichsen syndrome, 116; X zone, 110, 112
reptiles, 179, 181, 183; blood glucose, 182; mineral metabolism, 180
teleosts, 136, 137; corpuscles of Stannius, 140
alarm reaction, 121
aldosterone
  biosynthesis, 44, 45, 46
  carbohydrate metabolism, 36, 38, 89
  chemistry and properties, 39, 31, 34, 35, 36, 37–8, 39, 40, 42
  control of secretion of, 52, 53, 54, 89, 235
  mineral metabolism, 36, 87, 88, 89
relation to adrenal zones, 230, 235
alkaline phosphatase, Eutheria, 26, 27
allometric equation, 6
alloxan diabetes, 66
amorphous fraction, 36, 39, 86, 87
anadromous teleosts, 138
androgeic zone, see X zone
androgeins
  adrenal, 100, 101, text-fig. 14, 156, 235; in adrenogenital syndrome, 119
  birds, 204, 205
  ovary, 110, 111
  and X zone, 109, 110
Δ4-androstene-3, 17-dione, 45, 120
Δ4-androstene-11β-ol-3,17-dione, 45, 120
anecephaly, 114
anorexia
  Eutheria, 58, 116
  reptiles, 181, 182
  anterior pituitary, see pituitary, anterior lobe
  antidiuretic hormone, see pituitary, posterior lobe
  arterial supply, adrenal, see blood supply
ascorbic acid, adrenal
  birds, 198
  Eutheria, 21
  reptiles, 176
  Sayer’s test, 49
teleosts, 134, 136
X zone, 109, 111, 112
ascorbic acid factor (AAF), 49, 50; and see adrenotrophin
asthenia
  Amphibia, 157, 158
  Eutheria, after adrenalectomy, 58, 71, 76; Simmond’s disease, 117
basal metabolic rate
  Addison’s disease, 116
  Simmond’s disease, 117
benzoestrol, in Amphibia, 156
birefringence, 20, 21, 26
  Amphibia, 149
birds, 192
digitonin method, 20
elasmobranchs, 126
Eutheria, 66, 28
  reptiles, 176, 178
teleosts, 134
blastaema, nephrogenic, 221, 222
blood
  cell, see cells
  constituents after adrenalectomy, 74
  erythrocyte number, 74
  flow, 58
  haematocrit, 74
  haemoglobin, 74
  non-protein nitrogen, 116
  pressure, 58, 79; after adrenalectomy, 74; Cushing’s syndrome, 118
  sugar, 61, 62, 63, 64
  supply, adrenal, Amphibia, 146, 147; birds, 187, 194, 195; elasmobranchs, 125; Eutheria, 4–6, 12–14; mar-
Index

blood (cont.)
  supials, 212; monotremes, 206, 207, 209, 210; reptiles, 169–72
  supply, hypophysis, see hypophysial portal system
  viscosity, 74
bone, 92
boundary zone, see X zone
boutons, nerve, in cortex, 22
bradycardia, after adrenalectomy, 75
brown degeneration, 20, 25; and see fatty degeneration
brown fat, see fat
cachexia, Simmond’s disease, 118
calcium
  bone, 92
  plasma, 76
capsulae
  atrabilarians, 1
  renales, 1
capsule
  outer connective tissue, see connective tissue capsule
  perimedullary, see medullary connective tissue capsule
captive frogs, 149
carbohydrate
  metabolism, 36–9, 60–7, 84, 89, 230, 235; Amphibia, 158, 159; Eutheria, 36, 37, 38, 39, 60–7, Cushing’s syndrome, 118; marsupials, 216; reptiles, 182; steroids in, 36–5; teelos, 138
  utilization, 65, 68, 71
2-carbon fragments, 53
in steroidogenesis, 43, 45
carbon-14 hydroxylation, see hydroxylation
carbon-18 oxidation, 44
carcinoma, Cushing’s syndrome, 118
cartilage, 92–3
castration, see adrenal-gonad relationships
catatremous teelos, 138
cell division, see mitotic division
cell migration theory, 231–4
cells
  α (marsupials), 214
  β (marsupials), 214, 215
  blood, 94–6
castration, 202
chlordi-secreting, 139, 245
cortical, see histology and zones
  δ (marsupials), 214, 215
dark (zona reticularis), 17, 18, 233
eosinophil, 89, 94, 95, 96
epithelial, 219
eythrocyte, 74, 90, 96
eythroid, 96
fibroblast, 91, 94, 96, 97, 232, 233
fuchsinophil, 193, 196
granulocyte, 143, 155
  group I (platypus), 207, 208, 209, 211
  group II (platypus), 207, 208, 209, 211
  group III (platypus), 208, 209, 211
inflammationary, 91
leucocyte, 94, 96, 97
light (zona reticularis), 17, 18, 233
lipine, 141
lymphocyte, 91, 94, 96, 116, 135, 137
macrophage, 96, 137
mast, 94, 96, 97
mesenchyme, 219
myeloid, 96
necrotic, 18, 25
neutrophilic, 94, 96
osteoblast, 93
siderophil, 18
spongioocyte, 15, 17
Stilling, 154, 155
sympathetic, 227, 228, 229
CG, see human chlornic gonadotrophin
chloride
  excretion of, 80
  loss after adrenalectomy, 73
  muscle, after adrenalectomy, 75
  plasma, Addison’s disease, 116
chloride-secreting cells, teelos, see cells chlorohydrocortisone, 38
in lactation, 99
cholesterene, 29
cholesterol
  Amphibia, 149
  birds, 192
  Dipnoi, 143
  elasmobranchs, 126
  Eutheria, 18, 19, 20; after ACTH, 28
  marsupials, 213
  monotremes, 209, 211
  radioactive, 43
  reptiles, 176, 178
  steroidogenesis, 29, 43, 44, 45, 46, 53
Index

cholesterol esters, 18, 19, 126
cholic acid, 29
chondrogenesis, 91
chondroitin sulphate, 97
chorionic gonadotrophin, see human
chorionic gonadotrophin
chromaffin tissue, 3, 14, 430, 237, 238, 243, and see adrenergic and noradrenergic
Amphibia, 149, 239
birds, 191, 192, 195, 239
cyclostomes, 144
development, 227
elasmobranchs, 123, 124, 239
marsupials, 212, 214, 242
monotremes, 210, 240
relation to cortical tissue, 10–11, 172, 174, 191, 192, 222, 223, 237, 238, 239, 240, 242
reptiles, 168, 172, 174–8, 239
teleosts, 131, 132, 133, 239
chromatography
paper, 39
ion exchange, 50
chronaxie, 157
cis orientation, steroids, 30
collagen, 12, 8, 96–8; and see connective tissue
birds, 194
diseases, 98
monotremes, 207, 209
reptiles, 176
colour, adrenal
Amphibia, 146, 147, 148
birds, 186, 187
cyclostomes, 143
elasmobranchs, 125
reptiles, 168, 169, 171
compound A (Kendall’s), see dehydrocorticosterone
compound B (Kendall’s), see corticosterone
compound E (Kendall’s), see cortisone
compound F (Kendall’s), see hydrocortisone
connective tissue
and adrenocortical hormones, 94, 96–8
Amphibia, 148
elasmobranchs, 125, 128
Euthenia, 11, 17, 235, 239
teleosts, 133, 134, 140
connective tissue capsule
birds, 193, 194, 239
Euthenia, 230, 232
marsupials, 215
monotremes, 207, 209
relation to adrenal form, 236, 237, 239, 240, 242
reptiles, 175, 176, 239
corpora heterogenea
Amphibia, 146
reptiles, 168
corpus luteum, 29, 46, 53
corpuscles of Stannius, 131, 139, 149
and ACTH, 140
and cortisone, 140
development of, 139, 223, 224, 225
cortex-medulla relationship, see chromaffin tissue
cortexone, see deoxycorticosterone
cortical anlagen, 219–29
cortical hormones, see steroid hormones
corticosteroids, see steroid hormones
corticosterone
Amphibia, 162
biosynthesis, 44, 45, 46
birds, 200
chemistry and properties, 31, 34, 36, 37, 38–9, 40, 41, 42
control of secretion of, 51–4
Eutheria, carbohydrate metabolism, 63, 64; peripheral tissue, 91; relation to adrenal zones, 230, 235; water and salt-electrolyte metabolism, 89
reptiles, 181
corticotrophin, see adenotrophin, preparations of
cortisol, see hydrocortisone
cortisone
Amphibia, 154, 162
biosynthesis, 43
birds, 201
chemistry and properties, 31, 33, 34, 36, 38, 39, 40, 41, 42
Eutheria, Addison’s disease, 117; adrenogenital syndrome, 120; carbohydrate metabolism, 63, 64, 66; connective tissue, 97; lactation, 99; ovary, 107; peripheral tissue, 91, 92; protein metabolism, 69; rheumatoid arthritis, 98; water and salt-electrolyte metabolism, 84–9, 91
Index

cortisone (cont.) reptiles, 181, 183; blood glucose, 182; water and salt-electrolyte metabolism, 180; teleosts, 136; corpuscles of Stannius, 140
cortone, see cortisone Cushing’s syndrome, 70, 93, 94, 102, 118 cyclopropenophenanthrene system, 29
dark cells (zona reticularis), see cells DCA, see deoxycorticosterone acetate deamination, 68 decalcification, 93 deciduoma, 108 dehydration, 75, 116, 119 dehydrocorticosterone Amphibia, 162 chemistry and properties, 31, 33, 34, 36, 39, 40, 41, 42 Eutheria, carbohydrate metabolism, 64 dehydroepiandrosterone, 45, 120 11-dehydro-17-hydroxy-corticosterone, see cortisone dehydrogenase, 91, 120 deoxycorticosterone Amphibia, 154, 160, 162, 164 biosynthesis, 45, 46, 54 birds, 200, 201 chemistry and properties, 31, 34, 35-7, 38, 41 elasmobranchs, 130 Eutheria, Addison’s disease, 117; adrenal-gonad relationships, 101; carbohydrate metabolism, 64; lactation, 99; mammary tissue, 99; mineral metabolism, 83, 87, 88, 89, 91; relation to cortical zones, 235 marsupials, 216 reptiles, 181 teleosts, 235 deoxycorticosterone acetate, see deoxycorticosterone deoxycorticosterone glycoside, 90; and see deoxycorticosterone glycoside deoxycortone, see deoxycorticosterone dermis, 93 deuterone, 70 diabetes, adrenal steroid, 64 diabetes insipidus, 80, 81, 82 diabetes mellitus, 62, 63 Cushing’s syndrome, 118 formation of glycogen, 67 mineral metabolism, 84 diabetogenic hormone, 62 diarrhoea, 58, 116 diethylstilboestrol, see stilboestrol digitonin reaction, 20 diprophosphoryridine nucleotide (DPN), 44 diuresis, after adrenalectomy, 75 DOC, see deoxycorticosterone embryology adrenal, Amphibia, 225, 226; birds, 226, 227; cyclostomes, 223; elasmo-branchs, 223, 224; mammals, 227, 228; man, 228, 229; reptiles, 226; teleosts, 224 corpuscle of Stannius, teleosts, 139, 223, 224, 225 enucleation, adrenal, 236 enzyme systems general, 53, 60, 79, 82, 89, 91, 120 hydroxylation, 44, 45, 46 eosinopenia, 95 eosinophil cells, see cells eosinophil test, 36, 49, 94, 95 epidermis, 93 epinephrine, see adrenaline equation allometric, 6 surface-area/weight relation, 6 equilenin, 156 ergosterol, 29 erythrocytes, see cells erythroid cells, see cells erythropoiesis, 96 esculator theory, see cell migration theory esterase, 89 ethynyl-oestradiol, 156 exhaustion, stage of, 121 fasciculata, see zona fasciculata fat, 18 brown, 4, 142 metabolism, 69-70 white, 4; and see lipid 307
Index

fatiguability of muscle, 71
fatty acids, 70
fatty degeneration, 20, 111, 112
fenocyclin, 156
fibroblasts, see cells
fluoro-hydrocortisone, 38
foetal adrenal, 108
foetal cortex, 14, 112–15, 119, 208, 229
follicle stimulating hormone, 103, text-
fig. 14, 104, 106, 107, 110
formaldehydeogenic substances, 35, 52
fructose-1,6-diphosphate, 76
FSH, see follicle stimulating hormone
fuchsinophilia, 193, 197, 204
fumarate in steroidogenesis, 44
galactose, 158
gamma-globulins, 94
general adaptation syndrome, 121
Giacomini, organ of, see interrenal, teleost, anterior
glandulæ renales, 1
glomerular filtration rate
Amphibia, 165, 166
Eutheria, 79, 85
reptiles, 184
glomerulosa, see zona glomerulosa
glucagon, see hyperglycaemic factor
glucoorticoids, 38, 46, 62, 63, 65, 96, 230, 235
glucokinase, see hexokinase reaction
gluconeogenesis, 65, 69, 138
glucose
Amphibia, 158
Eutheria, absorption from gut, 77;
blood, 61, 74; muscle work, 71;
peripheral utilization, 65, 67, 68,
72; tolerance test, 65; uptake, 66,
67
reptiles, 182
glucose-1-phosphate, 76
glucose-6-phosphate, 67, 76
glycerides, non-saturated, 126
glycerol, 18
glycine, 69
glycogen
Amphibia, 157, 158, 159
Eutheria, diaphragm, 67; liver, 58,
61, 62, 65, 77, 89; muscle, 58, 61,
63
teleosts, 138
glycogenolysis, 67
glycolysis, 67
glycosuria, 62, 63, 64
glycyrhetic acid, 101
Golgi apparatus
birds, 193, 197, 198, 201
Eutheria, 16, 17, 18, 25
reptiles, 177
gonadal hormones, see adrenal-gonad
relationships
gonadectomy, see adrenal-gonad rela-
tionships
gonadotrophins, 53, 55, 99–114, 215, 243
gonads, see adrenal-gonad relationships
granulation tissue, 97, 107
granules, neurosecretory, 57
granulocytes, see cells
granulocytopenia, 142
growth
after adrenalectomy, 58
relation to cortical hormones, 91, 92
growth hormone, 50, 62, 66, 70, 83, 91, 99
haematocrit, 74, 96
haemocoagulation, 58, 75, 79, 116
haemoglobin, 74, 96, 97
haemorrhage, cortical
after ACTH, 28
in adrenocortical insufficiency, 115,
116
hair
effect of cortical hormones on, 91,
99–4
growth after adrenalectomy, 93
halogen substitution in steroids, 38
Halsted's law, 27
HCG, see human chorionic gonado-
trophin
head kidney, 131, 132, 133, 134, 135
heart, potassium in Amphibia, 161
hepatectomy, 68
hexokinase reaction, 66, 67
hexokinase system, 71
histochemistry, eutherian adrenal,
18–21; and see histology
histology, adrenal
Amphibia, 148–54, 154
birds, 192–5, 196, 197
cyclostomes, 145–5
Dipnoi, 141–9
Index

histology, adrenal (cont.)
clasmbolarhns, 125-8
Eutheria, 11-28
marsupials, 212-14
monotremes, 207, 209, 210
reptiles, 174-9
teleosts, 131-7
homeostasis, 59
homographs, survival of, 107
human chorionic gonadotrophin, 107, 113, 114, 229
hyaluronic acid, 97
hyaluronidase, 97
hydrocarbon radicle, 29
hydrocortisone
Amphibia, 159, 162
chemistry and properties, 31, 34, 36, 38, 40, 41, 42
control of secretion of, 51-4
Eutheria, carbohydrate metabolism, 63, 64, 66; fat metabolism, 70;
mineral metabolism, 85, 87, 88, 89; protein metabolism, 69; re-
lation to adrenal zones, 290, 295; rheumatoid arthritis, 98
synthesis, 44, 45
11-β-hydroxy-Δ4-androstene-3, 17-
dione, 120
17-hydroxy cortisol, see hydrocortisone
17-hydroxy-11-dehydrocorticosterone, see cortisone
17-hydroxy-11-deoxy corticosterone, 31, 34, 36, 39, 43
11-hydroxyisoandrosterone, 101
3β-hydroxyl groups, 20
118 hydroxylase, 120
hydroxylation, 53
11-hydroxylation, 44, 45, 46
17-hydroxylation, 44, 45, 46
21-hydroxylation, 44, 45, 46
11β-hydroxyprogesterone, 45
hyperglycaemia
Amphibia, 158
Eutheria, 62, 65
reptiles, 182
hyperglycaemic factor, 62
hyperplasia, cortical
Amphibia, 153
Eutheria, see ACTH, 27; adenogenital syndrome, 119; congenital, 119;
Cushing's syndrome, 118
hypertension
Cushing's syndrome, 118
disease of adaptation, 121
hypertrophy, cortical, 27, 137, 153,
179, 198, 204, 205, 214, 215
hypoglycaemia
Amphibia, 157
Eutheria, 61, 62, 63, 65, 71, 72; Ad-
dison's disease, 116; Simmond's disease, 117
reptiles, 182
hypophysectomy
Amphibia, 151, 152; carbohydrate metabolism, 158; muscle consti-
tuents, 160, 162, 165; plasma con-
stituents, 165; survival after, 152;
water balance response, 164
birds, 196, 197, 198, 200, 201
clasmbolarhns, 128, 131
Eutheria, 22-7, 47, 49, 51, 53, 54;
adrenal-gonad relationships, 102,
103; carbohydrate metabolism, 63,
65, 66; histology, 23, 24, 25; medulla, 23; peripheral tissue, 81;
relation to cortical structure, 234,
237, 240
reptiles, 178, 179, 184; mineral meta-
bolism, 180
teleosts, 134, 136
hypophysial portal system, 56, 57
hypotension
Addison's disease, 116
adrenalectomy, 75, 79
hypothalamus, 54-7
inflammatory cells, see cells
infundibular stalk, 56
insulin, 61, 62, 64-7, 70, 84
in lactation, 99
sensitivity, 118
interlocking zone, see X zone
intermediary zone, see zona intermedia
interrenal
clasmbolarhns, 123-31
teleosts, anterior, 131-41; posterior, see corpuscles of Stannius
reptiles, 168
interrenalectomy, elasmbolarhns, 128,
129, 130
ion-exchange chromatography, 50
ion-exchange resins, in preparation of
ACTH, 47

309
Index

islets of Langerhans, 3, 61, 62
isoprene, 45

Kendall’s compound A, see dehydro-
corticosterone
Kendall’s compound B, see cortico-
sterone
radioactive, 43
Kendall’s compound E, see cortisone
Kendall’s compound F, see hydro-
cortisone
radioactive, 43
3-ketosteroids, 40
α-ketols, 40, 41, 44
Δ4-3-ketone group, 35, 46
ketonuria, 62, 63

kidney
Amphibia, 163, 165
development, 219, 221, 222
Eutheria, 77–80, 82, 83
reptiles, 184
teleosts, 221, 222

lactation
Eutheria, 99
marsupials, 214, 215
lactogenic hormone, 99
Langerhans, islets of, see islets of
Langerhans
lecithin, 126
leucocytes, see cells
LH, see luteinizing hormone
Liebermann-Burchard reaction, see
Schultz reaction
light cells, see cells
lipase, 89
lipid, cortical, 18, 20
Amphibia, 149, 150, 152, 153, 154
birds, 192, 193, 194, 196, 197, 204
Dipnoi, 142
eelasmobranchs, 125, 126, 127, 128, 130
Eutheria, 16, 17, 18, 20, 21, 26, 28, 111
marsupials, 213, 214
monotremes, 209, 211
reptiles, 175, 177, 178, 179, 181
teleosts, 134

lipochromes, 20
birds, 187
eelasmobranchs, 125
lipogenesis, 70
liver glycogen, see glycogen

liver
isolated, 67
slices, 43
luteinizing hormone, 103, text-fig. 14,
104, 106, 110; and see gonado-
trophins
lymphatic glands, 1
lymphatic system, dog, 14
lymphatic tissue, 94–6
lymphocytes, see cells
lymphocytolysis, 94
lymphocytopenia, 94, 137
lymphocytosis, 94
lymphoid tissue
Amphibia, 149
Dipnoi, 141
macrogenitosomia praecox, 119
macrophages, see cells
magnesium
after adrenalectomy, 76
ions in steroidogenesis, 46
maintenance and repair test, 49
mammary tissue, 98–9
masculinization
adrenogenital syndrome, 118–20
Amphibia after oestrogens, 156
Cushing’s syndrome, 118
mast cells, see cells
median eminence, 56
medulla
Eutheria, 2, 9, 10–11, 14, 23, 62, text-
fig. 14, 112, 230, 231, 232, 233, 236
marsupials, 212; and see chromaffin
tissue
medullary connective tissue capsule
Eutheria, 14, 110, 111, 112
marsupials, 215
meningococcal infections, effect on
adrenal, 115
menstrual cycle, 106
mesoderm, formation of cortical tissue
from, 156, 219 et seq.
mesonephros
Amphibia, 146, 147, 165
relation to cortical development,
219–22
metamorphosis, Amphibia, 151, 226
metanephros, 221; and see kidney
methylation of noradrenaline, 243
mineral metabolism, 230, 244, 245
Amphibia, 157, 159, 163

310
Index

mineral metabolism (cont.)
birds, 197
elasmobranchs, 129, 130
Eutheria, 72–91; Addison’s disease, 116; adrenogenital syndrome, 119;
Cushing’s syndrome, 118; Simmond’s disease, 118
marsupials, 216, 217
reptiles, 180, 183, 184
telecots, 138, 139
mineralocorticoid, 37, 38, 230, 235
mitochondria
cortical cells, birds, 193, 194, 196, 197, 198, 201, 204; Eutheria, 16, 17, 23; reptiles 177
kidney, 82, 90
mitotic division, 91, 94
in adrenal, 198, 231–4, 237, 242, 243
monocytes, see cells
muscle
asthenia, Amphibia, 157; Eutheria, 58
chloride, Eutheria, 75
glycogen, Eutheria, 58, 61
potassium, Amphibia, 159, 160, 161, 162; Eutheria, 58, 73, 75, 82; reptiles, 180, 183; telecots, 138
sodium, Amphibia, 159, 160, 162, 163, 166; Eutheria, 58, 73, 75, 81; marsupials, 217; reptiles, 180, 183; telecots, 138
water, Amphibia, 159, 160, 161;
Eutheria, 58, 75, 76; marsupials, 217; reptiles, 180, 183
work, Amphibia, 158; Eutheria, 71–2
myeloid elements, see cells

nausea, 58, 116
neoplasm, cortical, 119
nephrectomy, 68
nephrogenic blastema, see blastema
nephrogenic tissue, 219, 221, 222, 224
nerve fibres
adenohypophysis, 55
adrenal, cortex, 22; medulla, 22
hypothalamus, 56
neurohormour, 56
neurohypophysectomy, 23
neurohypophysial extracts, 163
neurohypophysis, 57; removal, 80, 81
Amphibia, 164, 165; and see pituitary, posterior lobe
neutrophilic cells, see cells

nitrogen excretion, 63–5
non-protein nitrogen, blood
Addison’s disease, 116
adrenalecctomy, 74
Noradrenaline, 34, 56, 62
distribution in vertebrate chromaffin tissue, 243, 244
methylation, 243
production by chromaffin tissue, 14
reptiles, 175, 178
norepinephrine, see noradrenaline
obesity, Cushing’s syndrome, 118
oedema
Amphibia, 157, 159
Eutheria, 97
oestradiol, birds, 204
oestrogens
adrenal origin, 106
Amphibia, 156
birds, 204, 205
Eutheria, 93, 100–5, 110, 113
oestrones, 29, 30, 156, 204
oestrous cycle, 7, 11, 106, 107
opisthotonus, 128
organ of Giacomini, see interrenal, teleost, anterior
osmic acid, 18
osmophilia
Amphibia, 149, 152
birds, 192
elasmobranchs, 126
Eutheria, 18, 19, 21
reptiles, 175, 177
osmoreceptors
Amphibia, 167
Eutheria, 80
osmoregulation, 244, 245
telecots, 138; and see mineral metabolism
osteoblasts, see cells
osteogenesis, 91
osteoporosis, 92, 93
Cushing’s syndrome, 118
ovariectomy, 106; and see adrenal-gonad relationships
ovary, text-fig. 14, 106, 107, 113
oxyccellulose adsorption, preparation of ACTH, 47
packed cell volume, see haematocrit
pancreas, 3
in fat metabolism 70
Index

pancreatectomy, 63, 70

effect on fat metabolism, 70

panhypopituitarism, 117

paralysis, reptiles, after adrenalectomy, 181

parathyroid, 3

parathyroid hormone, 92

paraventricular nucleus, 57

pars distalis, see pituitary, anterior lobe

parturition, in Addison’s disease, 108

perfusion of isolated adrenal, 40, 43, 44

perimedullary capsule, see medullary connective tissue capsule

peripheral tissue, relation to adrenal cortex, 91–9

peripheral zone, adrenal, reptiles, see zone

permanent cortex, man, 112, 113, 114, 228, 229

permissive action, 60

petechiae, 115

pH, plasma, 76

pheochromone, 168; and see chromaffin tissue

phenanthrene, 29

phenylhydrazine reaction, 19, 126, 142, 192

phlorizidin diabetes, 63

phosphagen, muscle, 157

phosphate, 74, 76, 92

phosphoestrogen, 76

phospholipid

Dipnoi, 142

Eutheria, 26

phosphorylase activity, 67

pigmentation, 115, 116

pineal, 3

pitocin, 184

pitresin, 164, 184

pituitary, 113

anterior lobe, 3, 22, 45, 48, 51, 54, 62, 66, 103, 106; fat metabolism, 70; hormones, 51; innervation, 55, 56; necrosis, 117; relation with adrenal, 55, 137, 198, 234, 242

intermediate lobe, 3

pars tuberalis, 23

posterior lobe, 3, 57; relation with adrenal, 79–83, 85, 139, 160, 163–7, 184, 217, 245

pituitary-adrenal relationships, see pituitary

pituitrin, 165

placenta, 46, 110, 113, 114

plasma chloride, Addison’s disease, 116

pH, adrenocortical, 76

potassium, Amphibia, 161, 163, 166; elasmobranchs, 129, 130; Eutheria, 72, 73, 74, 75, 82, 108, 116; marsupials, 216, 217; reptiles, 180, 183; teleosts, 138

sodium, Amphibia, 161; elasmobranchs, 129, 130, 131; Eutheria, 72, 73, 74, 81, 108, 116; marsupials, 216, 217; reptiles, 180, 183; teleosts, 138

volume, adrenocortical, 74

plasmin reaction, 19, 26, 126

PMS, see pregnant mare serum polypeptides, 47

post-spawning frogs, 149, 150, 159

potassium excretion, Amphibia, 166; Eutheria, 83

loading, 85

muscle, Amphibia, 159, 160, 162; Eutheria, 73, 75, 76, 82; reptiles, 183

plasma, Amphibia, 161, 163; elasmobranchs, 129, 130; Eutheria, 72, 73, 74, 82, 108, 116, 118; marsupials, 216, 217; reptiles, 183; teleosts, 138

precursors of adrenocortical hormones, 19, 21, 43–66

preganglionic nerve fibres, 22

pregnancy, 7, 107, 110, 111, 114

Addison’s disease, 108

adrenocortical, 108

marsupials, relation to adrenal, 214, 215

pregnant mare serum, 107

pregnenolone, 45, 46, 53, 54, 119, 120

progesterone, 29, 45, 46, 54, 56, 100, 107, 108, 113, 120

prolactin, 99, 102; and see lactogenic hormone

pronephros, 221, 224

cyclostomes, 143, 144

teleosts, 131

prostate, 101, 102

protein hormone, ACTH, 47

312
### Index

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>protein metabolism, 62, 67–8, 84</td>
<td></td>
</tr>
<tr>
<td>pseudo-hermaphroditism, 119</td>
<td></td>
</tr>
<tr>
<td>pseudopregnancy, 107</td>
<td></td>
</tr>
<tr>
<td>adrenalectomy, 108</td>
<td></td>
</tr>
<tr>
<td>purpura, Cushing’s syndrome, 118</td>
<td></td>
</tr>
<tr>
<td>quasi-hibernation, snakes, 172</td>
<td></td>
</tr>
<tr>
<td>redox potential, 90</td>
<td></td>
</tr>
<tr>
<td>Reischtein’s substance, see 17-hydroxy-11-deoxy corticoesterone</td>
<td></td>
</tr>
<tr>
<td>renal plasma flow, 79</td>
<td></td>
</tr>
<tr>
<td>renes succenturiati</td>
<td></td>
</tr>
<tr>
<td>Eutheria, 1</td>
<td></td>
</tr>
<tr>
<td>reptiles, 165</td>
<td></td>
</tr>
<tr>
<td>resistance, stage of, 121</td>
<td></td>
</tr>
<tr>
<td>respiratory quotient, 75</td>
<td></td>
</tr>
<tr>
<td>rests, see adrenal accessory tissue</td>
<td></td>
</tr>
<tr>
<td>reticular fibres</td>
<td></td>
</tr>
<tr>
<td>birds, 194</td>
<td></td>
</tr>
<tr>
<td>reptiles, 176</td>
<td></td>
</tr>
<tr>
<td>reticularis, see zona reticularis</td>
<td></td>
</tr>
<tr>
<td>reticulo-endothelial system, 155</td>
<td></td>
</tr>
<tr>
<td>rheumatic fever</td>
<td></td>
</tr>
<tr>
<td>collagen in, 97</td>
<td></td>
</tr>
<tr>
<td>disease of adaptation, 121, 122</td>
<td></td>
</tr>
<tr>
<td>rheumatoid arthritis</td>
<td></td>
</tr>
<tr>
<td>collagen in, 97</td>
<td></td>
</tr>
<tr>
<td>in pregnancy, 107</td>
<td></td>
</tr>
<tr>
<td>saline</td>
<td></td>
</tr>
<tr>
<td>loading, Amphibia, 166; Eutheria, 85, 86</td>
<td></td>
</tr>
<tr>
<td>and survival after adrenalectomy, Amphibia, birds, 200; Eutheria, 76, 77</td>
<td></td>
</tr>
<tr>
<td>salt-electrolyte metabolism, 72–91; and see mineral metabolism</td>
<td></td>
</tr>
<tr>
<td>Sayer’s test, 49</td>
<td></td>
</tr>
<tr>
<td>Schiff reaction, 21</td>
<td></td>
</tr>
<tr>
<td>Schultz reaction, 19, 21, 26</td>
<td></td>
</tr>
<tr>
<td>scleroderma, collagen in, 97</td>
<td></td>
</tr>
<tr>
<td>sebaceous glands, 93</td>
<td></td>
</tr>
<tr>
<td>secondary sexual characters, 101</td>
<td></td>
</tr>
<tr>
<td>secondary X zone, 111</td>
<td></td>
</tr>
<tr>
<td>secretin, 3</td>
<td></td>
</tr>
<tr>
<td>secretion</td>
<td></td>
</tr>
<tr>
<td>adrenocortical, control of, 47–57</td>
<td></td>
</tr>
<tr>
<td>internal, concept of, 1</td>
<td></td>
</tr>
<tr>
<td>seminiferous, 102</td>
<td></td>
</tr>
<tr>
<td>sex hormones, 29, 100, 101, 113 of adrenal origin, 101, 235</td>
<td></td>
</tr>
<tr>
<td>sexual zone, see X zone</td>
<td></td>
</tr>
<tr>
<td>siderophils, see cells</td>
<td></td>
</tr>
<tr>
<td>silver nitrate-reducing substances in adrenal cortex, 21</td>
<td></td>
</tr>
<tr>
<td>Simmond’s disease, 117–18</td>
<td></td>
</tr>
<tr>
<td>size, adrenal</td>
<td></td>
</tr>
<tr>
<td>Amphibia, 148, 156</td>
<td></td>
</tr>
<tr>
<td>birds, 186, 198</td>
<td></td>
</tr>
<tr>
<td>elasmobranchs, 125</td>
<td></td>
</tr>
<tr>
<td>Eutheria, 11, 27, 109, 117, 120, 121; relation to gonads, 102, 103, text-fig. 14, 104, 105, 111, 119</td>
<td></td>
</tr>
<tr>
<td>monotremes, 206</td>
<td></td>
</tr>
<tr>
<td>reptiles, 172, 174; after DCA and cortisone, 181; after hypophys- ectomy, 176, 179</td>
<td></td>
</tr>
<tr>
<td>teleosts, 135</td>
<td></td>
</tr>
<tr>
<td>skin</td>
<td></td>
</tr>
<tr>
<td>Amphibia, 163, 164, 165, 166</td>
<td></td>
</tr>
<tr>
<td>Eutheria, effect of cortical hormones, 91, 93–4</td>
<td></td>
</tr>
<tr>
<td>sodium</td>
<td></td>
</tr>
<tr>
<td>active reabsorption in kidney, 78</td>
<td></td>
</tr>
<tr>
<td>active transport in Amphibia, 184, 166</td>
<td></td>
</tr>
<tr>
<td>excretion, 79, 80, 83, 87</td>
<td></td>
</tr>
<tr>
<td>muscle, Amphibia, 159, 160, 162, 163; Eutheria, 73, 75, 81; reptiles, 183</td>
<td></td>
</tr>
<tr>
<td>permeability of Amphibian skin to, 164</td>
<td></td>
</tr>
<tr>
<td>plasma, Amphibia, 161; elasmobranchs, 129, 190; Eutheria, 72, 73, 81, 108, 116, 118; marsupials, 216, 217; reptiles, 183; teleosts, 193</td>
<td></td>
</tr>
<tr>
<td>sodium chloride, therapy in Addison’s disease, 117; and see saline</td>
<td></td>
</tr>
<tr>
<td>sodium-retaining factor, 86</td>
<td></td>
</tr>
<tr>
<td>somatotrophin, 50, see growth hormone</td>
<td></td>
</tr>
<tr>
<td>spawning frogs, 149, 150</td>
<td></td>
</tr>
<tr>
<td>spaying</td>
<td></td>
</tr>
<tr>
<td>cortex after, 102, 105</td>
<td></td>
</tr>
<tr>
<td>pituitary after, 103; and see adrenal-gonad relationships</td>
<td></td>
</tr>
<tr>
<td>spectroscopy, infra-red, 39</td>
<td></td>
</tr>
<tr>
<td>spleen</td>
<td></td>
</tr>
<tr>
<td>spongiocytes, see cells</td>
<td></td>
</tr>
<tr>
<td>spongy zone, see zona fasciculata</td>
<td></td>
</tr>
<tr>
<td>squalene, 45</td>
<td></td>
</tr>
<tr>
<td>stage of exhaustion, 121</td>
<td></td>
</tr>
<tr>
<td>stage of resistance, 121</td>
<td></td>
</tr>
<tr>
<td>Stannius, corpuscles of, 191, 193, 190</td>
<td></td>
</tr>
</tbody>
</table>
Index

sterol, 29
sterol, 29
stilboestrol, 156, 204, 205
stilbing cells, see cells
stress, 130
in adrenalectomy, 58
stressor agents, 120
striat, Cushing’s syndrome, 118
strophanthidin (cardiac aglycone), 29
subcapsular arterial plexus, cat, 13
sudan colorants, 18
sudanophilic region, 26
sudanophilia, 21, 109, 126, 231
Amphibia, 149
birds, 192
eclamarobranchs, 126
Euthenia, 19, 26
index of functional activity, 18, 19
marsupials, 213
monotremes, 209, 211
reptiles, 176, 177
teleosts, 134
sudanophic zone, see zona intermedia
sulphate, blood, 74
summer cells (Stilling cells), see cells
summer frogs, 149, 150, 159, 153, 154, 158, 159, 161, 162, 211
supraoptic nucleus, 57
suprarenal, 123; and see chromaffin tissue
suprarenal capsules, 1
sympathometic nervous system, in development of chromaffin tissue, 223
sympathom-chromaffin tissue, 112
thymia, and Addison’s disease, 117
target organ, 24
testis, steroids, 46; and see adrenal-gonad relationships
testosterone, 99, 102–6
birds, 201, 204, 205
thrombosis, 115
thymia, 1, 3, 4, 94
teleosts, 137
thymus weight, assay method, 49
thyroid, 1, 3
hormone, Amphibia, 164; Euthenia, 62, 99
thyrotropin, Amphibia, 151
toad poison, 29
total acid, blood, 74
total base, blood, 74
trans orientation of steroids, 30
Index

transformation fields, 235
transient cortex
man, see foetal cortex
mouse, see X zone
transitional zone, see zona intermedia
trauma, 115
as a stressor agent, 120
operative, 59
tuberculosis, destruction of adrenal by, 117
tubular secretion, kidney, reptiles, 184
ultrafiltration in preparation of ACTH, 47
urea
elasmobranchs, 190, 245
Eutheria, blood, 74, 76; rate of formation, 68
uric acid, Eutheria, blood, 74
reptiles, 184
urine
ketone bodies, 62
nitrogen, 63, 64, 65
non-protein nitrogen, 65
sugar, 62
urine flow
Amphibia, 165
marsupials, 216
uterus, 106
vaginal smears, 106
vasopressin, 79
vascularity, cortical, after ACTH, 28
vascularization, adrenal, see blood supply
venous drainage, 14; and see blood supply
virilization, see masculinization
vitamin C, see ascorbic acid
vomiting, in adrenal insufficiency, 58
water
' intoxication', 85
loading, 85
muscle, Amphibia, 159, 160, 161
Eutheria, 76, 82; reptiles, 183, 184
'obligatory' reabsorption, kidney, 78
water balance principle, 163, 167
water and salt-electrolyte metabolism, see mineral metabolism
Waterhouse-Friderichsen syndrome, 28, 115-16, 121
weights, adrenal
Amphibia, 146, 147
birds, 188, 189, 190, 196, 203, 204; after ACTH, 196, 198; after castration, 203, 204; after hypophysectomy, 196, 197, 198; after oestrogens, 205
elasmobranchs, 126
Eutheria, 6-10; after gonadectomy, 102; after hypophysectomy, 23, 24; after oestrogens, 104, 105; dog, 10; golden hamster, 10; guinea pig, 7, 8, 9, 10; human, 7, 9, 10; mouse, 7, 10; rat, 6, 7, 8, text-fig. 14
marsupials, 212
reptiles, 172, 173; after ACTH, 180; after cortisone, 180, 181; after hypophysectomy, 178, 179, 180
teleosts, 135, 136; after hypophysectomy, 136
weight, body
adrenal weight relation, 6, 7, 8, 9, 10 after oestrogen, 104
Amphibia, 160
birds, 188, 189, 190, 203, 204
fat-free, 6, 7
reptile, 172, 173, 180
Simmond's disease, 118
surface area relation, 6
Windhaus digitonin reaction, 20
winter frogs, 149, 150, 152, 153, 157, 158, 159, 162
wound healing, 91, 97

X zone
Eutheria, 14
man, see foetal cortex
marsupial, 215, 216
mouse, 109-12, 114, 115
secondary, 111
zona arcuata, see zona glomerulosa
zona consumptiva, 231
zona fasciculata, 111, 230-7, 240, 242, 243
birds, 195, 196
Eutheria, adenogenital syndrome, 119; after ACTH, 27, 28; after gonadectomy, 102, 103, text-fig.
Index

zona fasciculata (cont.)
14, 104; after hypophysectomy, 24, 25, 26, 27; after testosterone, 104; alkaline phosphatase, 26; histology, 12, 13, 14, 15, 16–17; lipid, 20, 112
marsupials, 212, 213, 214
zona glomerulosa, 230–7, 240, 242, 243
birds, 195, 196, 198
Eutheria, adrenogenital syndrome, 119; after ACTH, 28; after hypophysectomy, 24, 25, 26; histology, 12, 13, 14, 15, 16; lipid, 20, 28
marsupials, 212, 213, 214
zona intermedia, 14, 15, 20, 21, 24, 25, 26, 243
zona reticularis, 109, 111, 230–7, 240, 242, 243
birds, 195, 196
Eutheria, adrenogenital syndrome, 119; after ACTH, 27, 28; after hypophysectomy, 24; alkaline phosphatase, 27; histology, 12, 14, 15, 17–18; lipid, 20; necrosis, 18
marsupials, 212, 213, 214
zona spongiosa, see zona fasciculata
zonal theory, 234, 235
zonation, adrenal
Amphibia, 148
bird, 194, 195
Eutheria, 14–18, 230, 231
marsupial, 212, 213, 214
zone of compression, see zona intermedia
zone, formative, monotremes, 211
zone, peripheral, reptiles, 177, 178
zones, Eutherian adrenal, 14
cortical volumes, 15
emergence of, 237–43
Zwischenzone, 219