

INDEX

(Attention is drawn to the special indexing of new growths which have been grouped together under the two headings of 'Cancer' and 'Tumours'.)

- Absorption of hormones, delayed, by copper salts, 74 ff.
- in inflamed tissues, 74 ff.
- Accessory female reproductive organs, effect of adrenal cortical hormones on, 450 ff.
- effect of androgens on, 184–90, 212–15, 224–31
- effect of oestrogens on, 289 ff., 302–25
- effect of progestin on, 413–30
- Accessory male reproductive organs, castration atrophy of, prevented by androgens, 215 ff.
- effect of adrenal cortical hormones on, 452 ff.
- effect of adrenocorticotrophin on, 164
- effect of androgens on, 156 ff., 184–90, 196, 215–31
- effect of oestrogens on, 289–94, 295–301
- effect of progesterone on, 407 ff.
- hypertrophy of, caused by androgens, 196, 216 ff.
- Accessory reproductive organs, castration atrophy of, effect of oestrogens on, 295
- co-operative effect of androgens and oestrogens on, 214, 217 ff., 295
- development of, 176 ff.
- differing effects of androgens on, 156, 217 ff.
- effect of androgens on development of, 184 ff.
- effect of gonadotrophins on, 11 ff., 18, 70 ff., 203 ff.
- effect of oestrogens on, 289–325
- of castrated male, effect of androgens on, 215 ff.
- of castrated male, effect of oestrogens on, 295
- permanent effect of androgen on, 189
- Acid phosphatase of prostate, androgens in production of, 218
- Acne, caused by androgens, 239
- excretion of androgens and oestrogens in, 240
- Activators of androgens, 131
- Adenoma and cancer of uterus, 313 ff.
- Administration of gonadal hormones, methods of, 123–34. *See also* Dosage; Hormones, gonadal, variations of responses to
- Adrenals, and gonads, comparison of functions of, 444
- androgenic capacity of, 163 ff.
- as source of androgens, 163, 452 ff.
- atrophy of, after hypophysectomy, 1, 442 ff.
- 'brown degeneration' of, 386
- changes in, after gonadectomy, 447 ff.
- during breeding season, 446
- during lactation, 447
- during oestral cycle, 446 ff.
- during pregnancy, 447
- control of, by pituitary, 442
- demarcation zone, *see* Adrenal demarcation zone
- diminution of, caused by androgens, 233
- effect of androgens on, 232 ff.
- effect of castration on, 232
- effect of cryptorchidism on, 232
- effect of oestrogen on, 384 ff.
- effect of progesterone on, 438 ff.
- female and male, compared, 232 ff., 444 ff.
- hypertrophy of, in boys and women, 163, 240
- neoplasia of, 453 ff.
- of castrated, cryptorchid and normal rat, 232
- of spayed rat, effect of androgen on, 233
- production of gonadal hormones by, 163, 257, 391, 441 ff.
- sexual function of, 163 ff., 440 ff.
- weights of cortex and medulla of, 446
- Adrenal cortex, and corpora lutea, relationship between, 435 ff.
- and pituitary, relationship between, 441 ff.
- androgenic effect of, 452 ff.
- at various ages, fuchsinophile granules in, 453 ff.
- atrophy of, after hypophysectomy, 442 ff.
- caused by hormones, 438
- cancer of, *see* Cancer
- cytology of, 386, 440
- after hypophysectomy, 442 ff.
- during oestral cycle, 446
- deficiency of, effect of, 163
- effect of deoxycorticosterone on, 437
- degeneration of, and mammary cancer in mice, 364, 386
- cytological changes in, 386
- effect of pituitary disorders on, 442
- effect of pituitary extracts or implants on, 441 ff.
- enlargement of, caused by castration, 232, 447 ff.
- during pregnancy, 447
- in virilism, 163
- histological effects of hypophysectomy on, 442 ff.
- hormones of, and gonadal hormones, similar effects of, 112, 143, 443
- control of, by pituitary, 441 ff.
- effect on excretion of water and electrolytes, 112, 143, 444
- effect on gonads, 449 ff.
- effect on pituitary, 443
- excessive production of gonadal types of, 453

- Adrenal cortex, hormones of, inactivated by liver, 456
 — hyperplasia of, caused by pituitary extract, 441
 — hypertrophy of, after castration, 447 ff.
 — production of gonadal hormones in, 444
 — sex hormones of, 143 ff., 163 ff., 257, 391 ff., 440–56. *See also* Appendix
 — sites of hormone formation in, 440
 Adrenal demarcation zone, 233, 440
 — in castrated rats, effect of androgen on, 233
 Adrenal disease, hormonal disturbances in, 454 ff.
 Adrenal feminism, 453 ff. *See also* Masculine characters; Virilism
 Adrenal hyperplasia, *see under* Tumours
 Adrenal medulla, cytology of, 234, 445 ff.
 — effect of androgens on, 234, 445
 Adrenal tissue implants, masculine characters caused by, 163
 Adrenal tumour, *see* Tumours, adrenal
 Adrenal virilism, 453 ff. *See also* Masculine characters; Masculinization
 Adrenal x zone, 233 ff., 440 ff.
 — cytology of, 234, 385, 444 ff.
 — during pregnancy, 438 ff., 445
 — effect of androgens on, 233, 445
 — effect of gonadal hormones on, 385 ff., 445
 — in castrates, 445
 — in mice, 444 ff.
 Adrenalectomy, and atrophy of gonads, 447 ff.
 — during pregnancy, survival after, 435
 — effect on castrated rats, 164
 — effect on ovary, counteracted by adreno-cortical extract, 448 ff.
 — effect on pituitary, 69, 94, 443 ff., 448 ff.
 — effect on production of gonadotrophin, 443 ff., 448 ff.
 — effect on production of pituitary FRH, 443 ff., 448 ff.
 — effect on testis, 449
 — survival after, effect of corpora lutea on, 436
 — — effect of hormone esters on, 450
 — — effect of oestrogen on, 388
 — — effect of pituitary implants on, 435 ff.
 — — effect of progesterone on, 236, 435 ff.
 Adrenaline, formation of, effect of androgen on, 234
 — in adrenal medulla, 234
 Adrenocorticotrophin, effect on accessory reproductive organs, 164 ff., 441
 — effect on adrenal cortex, 438, 441 ff.
 — effect on adrenals, 441 ff. *See also* Glossary
 — effect on androgen production, 441
 — origin of, in pituitary, 164, 441
 — production of, by pituitary, influenced by adrenal cortical hormone, 443
 — source of, in commerce, *see* Appendix
 Androsterone and androsterone, comparison of, 163
 Aetiocholane-3(α)-ol-17-one, from testosterone, 165, 167, 172
 — in normal adult's and eunuch's urine, 172, 175
 — structural formula, 103
 Aetioallocholanol-3(β)-17-one, from testosterone, 167
Amblystoma maculatum, sex reversal in, 183, 271 ff.
 — *punctatum*, sex reversal in parabiosis of, 181, 271 ff.
 — — effect of androgen on, 182 ff.
 — *tigrinum*, sex reversal in, 181, 271 ff.
 Ampullary glands, effect of oestrogen on, 300
 Anaesthesia induced by gonadal hormones, 147
 Androgenic action by extraneous hormone, 165
 Androgenic potency, of ovarian grafts, 161
 — order of, and methods of test, 199, 201
 — statements of, 157
 Androgens, abnormal excretion of, 103 ff., 160, 172 ff.
 — action of, gradients of responsiveness to, 136 ff., 155 ff.
 — — gradients of responsiveness to, effect of quantity, 155
 — — gradients of responsiveness to, individual differences, 157
 — — gradients of responsiveness to, localized within an organ, 155
 — — gradients of responsiveness to, seasonal factors, 157
 — — gradients of responsiveness to, species difference, 156
 — action on reproductive organs after their complete differentiation, 191–206
 — action on reproductive organs before their complete differentiation, 176–90
 Androgens and oestrogens, dosage effects of, 218
 — excretion of, in men and women, 264 ff.
 — similar effects of, 108 ff., 111
 Androgens and progesterone, similar effects of, 109, 111
 Androgens, biological tests of, 155
 — bisexual source of, 107
 — bitterling test of, 143, 155, 165
 — comparison of, in stimulation of mammary ducts, 230
 — comparison of testicular and urinary, 156 ff., 165 ff., 217
 — conversion of, into oestrogen *in vivo*, 103, 167 ff., 257, 264
 — definition of, 152
 — different ways of action of, 176
 — distribution of, in the body, 157 ff.
 — distribution of responses to, 156
 — effect on accessory reproductive organs, 156, 184–90, 207–31
 — effect on breeding animals, 145 ff.
 — effect on capons and hens, 107, 153 ff.
 — effect on capon's comb, 154, 224
 — effect on castrated males, 107, 146, 243
 — effect on cytology of pituitary, 89 ff.
 — effect on embryo chicks, 185, 188, 272
 — effect on embryonic ovary, 176 ff., 191 ff., 272
 — effect on excretion of oestrogen, 103, 167, 264
 — effect on female characteristics, 146, 176
 — effect on female embryo, 226

INDEX

489

- Androgens, effect on fowls' eggs**, 109, 113
 — effect on gonads, 176 ff., 191–206, 272
 — effect on gonads before and after hypophysectomy, 198 ff.
 — effect on gonads of embryo chicks, 185, 272
 — effect on growth of embryonic male accessory reproductive organs, 148 ff.
 — effect on immature males, 146 ff.
 — effect on immature ovary, 176 ff., 191 ff.
 — effect on incompletely differentiated ovary, 178 ff.
 — effect on lactation, 231
 — effect on ovaries after their differentiation, 183
 — effect on ovary, 113, 178 ff., 186 ff., 191 ff.
 — effect on ovary of prolonged treatment with, 193 ff.
 — effect on pituitary, 55 ff., 89 ff., 196, 198, 217
 — effect on pituitary FRH and LH, 176
 — effect on pregnant mice, 189
 — effect on primitive gonadal cells, 148
 — effect on sex of larvae, 183
 — effect on spermatogenesis in hypophysectomized animals, 198 ff.
 — effect on supply of pituitary gonadotrophin, 176, 196
 — effect on testis, 183 ff., 217
 — effect on vagina of freemartin, 189
 — effect on vagina of immature rat, 190
 — effect on various tissues and organs, 155 ff., 232–50
 — effect on vestigial female prostate, 217
 — estimation of activity of, 117
 — excretion of, 165–75
 — — after oophorectomy in women, 163
 — — after spaying, 172
 — — and individual variations, 169 ff.
 — — by castrates, 173 ff.
 — — during menstrual cycle, 171
 — — during pregnancy, 165, 439
 — — effect of oestrogen on, 168
 — — in Addison's disease, 174
 — — in adrenal tumours, 103, 163, 173, 453 ff.
 — — in altered form, 165 ff., 172
 — — in blondes and brunettes, 172
 — — in castrated rats, 173
 — — in cryptorchids, 173 ff.
 — — in eunuchoids, 173 ff.
 — — in eunuchs, 160, 172 ff.
 — — influence of age on, 169 ff.
 — — in gynaecomastia, 174
 — — in milk during lactation, 168
 — — in normal adults, 160, 167–75, 264
 — — in tumour of interstitial tissue of testis, 160
 — — in women, 160–72
 — feminizing action on genetic males, 113
 — follicle-stimulating effect of, 191 ff.
 — from adrenals under influence of adrenocorticotrophin, 164, 441
 — from bull's testis, 165, 392
 — functions, metabolism and sources of, 101, 152–75
 — gestational, and adrenal α zone, 438 ff.
 — gonadotrophic action on ovary, 191 ff.
 — gonadotrophic action on testis, 198 ff.
 — gonadotrophic effect of, in pituitary deficiency, 201
 — human placenta as source of, 165
 — inactivation of, 165 ff.
 — — in liver or kidney, 166 ff., 175
 — induction of ovulation by, 110
 — influence of, on behaviour, 147, 173
 — in intra-uterine life, 168
 — in maintenance of accessory reproductive organs, after hypophysectomy, 200 ff.
 — in maintenance of spermatogenesis after hypophysectomy, 199 ff.
 — international unit of, 99, 155. *See also* Androgens, units of measurement of; Glossary
 — in testes of foetal bulls, 168
 — in women's urine, source of, 172
 — 17-ketosteroids, in urine of adults, 171, 174 ff.
 — location of, in testis, 157 ff.
 — masculinizing effect on females, 109, 113, 146
 — oestrogens and progestin, similar action of, 109, 111
 — of differing potency, 165 ff.
 — of non-gonadal origin, 163 ff.
 — permanent and transient effects on reproductive organs, 176, 191 ff.
 — physiological effects of, 152 ff.
 — prenatal effect on organs, 176 ff.
 — prenatal treatment with, effect on offspring, 186 ff.
 — preparations of, effects on prostate, 217
 — production of, by female and male gonads, 107, 157 ff.
 — — controlled by pituitary, 172
 — — effect of pituitary gonadotrophin on, 12, 159
 — — effect of sterilization by X-rays on, 159
 — — in adrenals, 163
 — — increased by cooler temperature, 84
 — — in female, 105 ff.
 — — influence of pituitary on, 172
 — — in interstitial glandular cells of testis, 158 ff.
 — — in male embryo, 177
 — — in ovarian graft in castrated male, 106
 — — in ovary, 105 ff., 160 ff.
 — — in ovary grafted in male, 106, 161
 — — in partly spayed females, 106
 — — in testis, 157 ff.
 — — *in vitro*, from oestrogen, 103
 — progestational action of, 109 ff., 319
 — pure preparations of, 154
 — reduced potency of excreted, 165 ff.
 — reversible effects of, on reproductive organs, 191
 — review of, 152–75
 — rich sources of, 134, 165
 — separation of, from bull's testis, 154
 — sites of inactivation of, 166
 — sources of, in commerce, *see* Appendix
 — — in women, 172 ff.

- Androgens, sources of, within the body, 157 ff.
 — storage of, in the body, 165
 — structural formula of, 102 ff.
 — syntheses of, 154
 — testicular and urinary, different properties of, 156, 217
 — transformation of, *in vivo*, before excretion, 165 ff.
 — transmission of, to infant, during lactation, 168
 — treatment with, as cause of virilism, 208
 — treatment with, during pregnancy, effect on offspring, 189
 — typical actions of, on the reproductive organs, 176. *See also* Testicular extracts; Testosterone
 — units of measurement of, 99, 155, 157, 174 n. *See also* Glossary
 $\Delta^{3,5}$ -Androstadiene-17-one, derived from adrenal carcinoma, 163
 Androstenedione, comparison of, with androsterone, 156
 Δ^1 -Androstenedione, structural formula, 100
 Δ^4 -Androstenedione, structural formula, 100
 Δ^6 -Androstene-3:17-diol, structural formula, 100
*iso*Androsterone, 163
 Androsterone, comparison of, with testosterone, 156 ff., 217
 — effect on embryonic gonads, 182
 — effect on pituitary of castrated rats, 56
 — from testosterone *in vivo*, 167
 — in development of vestigial glands, 188
 — in eunuch's urine, 172, 175
 — in normal adult urine, 172, 175
 — in production of intersexes, 182
 — in urine of spayed women, 172
 — isolated from urine, 154
 — structural formula and source, 102
 — synthesis from cholesterol, 154
Anolis carolinensis, effect of androgen on, 113
 Antagonism of hormones, androgen *versus* oestrogen, 111, 119 ff.
 — androgen *versus* progesterin, 123, 150
 — disproportionate dosage in, 119
 — effect of proportions in, 122
 — gonadotrophin *versus* testosterone, 121
 — oestrogen *versus* progesterin, 122, 148, 414 ff., 421, 427 ff., 433
 — oestrogen *versus* testosterone, 210
 — to pituitary supply of gonadotrophin, 51–9, 119 ff.
 Antagonism or co-operation as effect of dosage, 433
 Antagonisms of gonadal hormones, 115, 118 ff., 132, 426 ff. *See also* Antigonadotrophic reactions
 Antibodies, against foreign proteins, 76 ff.
 Antibody, formation of, effect of oestrogen on, 383 ff.
 — to human gonadotrophin, 78
 Antigonadotrophic action, *see* Antigonadotrophic reactions
 Antigonadotrophic properties in animals induced by homogenic material, 82 ff.
 Antigonadotrophic reactions, 51 ff., 76 ff., 136
 — and foreign proteins, 78 ff. *See also* Antigonadotrophic sera
 — criticism of, 78
 Antigonadotrophic sera, 77 ff.
 — polyvalent, 77
 — production of, by gonadotrophic extracts, 80
 Antigonadotrophic serum, globulin fraction of, 77
 Antigonadotrophin, absence of, in parabiosis, 83
 Antigonadotrophins, 78 ff. *See also* Antigonadotrophic reactions; Gonadotrophins, antibodies of
 — and protein antibodies, 76 ff.
 Antihormones, 79. *See also* Antigonadotrophins and protein antibodies
 Antisexual factor in young animals, 72
 Antlers, growth of, influenced by gonadal hormones, 139
 Areola, pigmentation of, in adrenal tumours of men, 456
 Arrhenoma and ovarian androgen, 162 ff.
 Aschheim-Zondek pregnancy test, 5, 7 ff.
 — abnormal results with, 323
 Augmentation, of gonadal hormones, 118, 136
 — of gonadotrophic action, 11, 15 ff., 130, 283. *See also* Synergism
 — of LH by FRH, 11, 63, 74
 — of placental by pituitary gonadotrophin, 11, 63 ff., 74
 — of response to FRH, by albumin, 16
 — — by LH, 16, 74
 — — by reagents, 16
 — test for LH, 16
 Axolotl, larval, gonadal formation in, 177 ff.
 Balanitis, caused by oestrogen treatment, 291
 Basophile cells in pituitary, 85–95
 Behaviour, feminine, effect of sex-hormones on, 144 ff.
 — masculine, effect of sex hormones on, 144 ff., 158
 — parental, influence of hormones on, 144 ff.
 3:4-Benzpyrene, as cause of pituitary tumour, 279
 Bile ducts, effect of oestrogens on, 377
 Bird song, effect of androgens on, 145 ff.
 Bird unit, *see* Glossary
 'Bisexual', term criticized, 102, 113 ff.
 Bisexual hormonal activity, 102, 113 ff.
 Bitterling test, 143, 155, 165
 Bladder, distension of, caused by oestrogen, 325
 Blood, effects of oestrogen on, 379 ff.
 Blood, arterial, lack of, in skin of eunuchs, remedied by androgen, 249
 Blood cells, red, *see* Erythrocytes
 Blood pressure, effect of oestrogen on, 381
 — unaffected by testosterone, 249
 Blood sugar, decrease of, caused by testosterone, 237
 — increase of, caused by oestrogens, 377 ff.
 Bodyweight, 244 ff.
 — effect of androgen on, 246 ff.

INDEX

491

- Bodyweight, effect of gonadectomy on, 244 ff.
 — effect of interchange of gonads on, 368
 — of castrated animals, effect of androgen on, 245
 — of eunuchs and eunuchoids, 246
 Boiling, inactivation of hormones by, 2
 Bones, growth of, 241 ff. *See also* Calcification; Skeleton
 — — effect of castration on, 243
 — — effect of hypogonadism on, counteracted by androgen, 244
 — — effect of oestrogens on, 120, 149, 242 ff., 370 ff.
 — — effect of oestrogen on, counteracted by androgen, 120
 — — in castrated male, effect of androgen on, 243
 — — in gonadectomized animals bearing gonadal grafts of opposite sex, 243
 Bones, size of, 242, 370 ff.
Bothrops jararaca, corpora lutea in, 398
 Breeding, seasonal, and androgen from interstitial tissue of testis, 158
 — — and effect of androsterone on resting males, 201
 — — and gonadotrophin in off-season, 11, 30
 — — and gonad-pituitary relationship, 85 ff.
 — — and pituitary gonadotrophin, 30, 72 ff., 85 ff.
 — — and pregnancy-urine gonadotrophin, 27
 — — and production of new gland in testis of *Triton cristatus*, 158
 — — and puberty, 30
 — — and response to gonadal hormones, 97
 — — and size of gonads, 30
 — — changes in adrenals in, 446
 — — effect of androgens on, 146, 162
 — — effect of gonadotrophin on, 27, 30
 — — effect of prolactin in resting stage of, 202
 — — external characteristics of, 152, 241
 — — gonad development in, 27, 41
 — — of ground squirrel, 72 ff., 85 ff.
 — — pigmentation in, 162
 — — artificially produced by androgens, 162
 — — pituitary activity in, 30, 73, 85 ff.
 — — plùmage related to testicular androgen in, 241
 — — variations in, 41, 85
 — *See also* Pituitary, cytology of, in breeding season
 Calcification of bones, effect of oestrogen on, 120, 149, 242, 370 ff. *See also* Bones, growth of
Calliphora, corpus allatum of, 21
 CANCER: *see also* Tumours
 Adenocarcinoma of uterus, caused by oestrogen, 313 ff.
 Adrenal carcinoma, excretion of $\Delta^3,5$ -androstadiene-17-one in, 163
 — excretion of oestrogen in, 103, 163, 257, 455
 — excretion of pregnanediol in, 111, 392
 Adrenal tumour, excretion of androgen in, 103, 163
 Cancer, and cystic mastopathy, 334
 — and pituitary-gonadal imbalance, 47
 — as sequel of partial spaying, 47
 — caused by androgen, 250
 — caused by gonadal hormones, 147 ff., 151, 250, 367
 — caused by oestrogen, 137, 151, 250, 313 ff., 348–67, 373, 383
 — caused by partial gonadectomy, 47
 — human mammary, heredity of, 367
 — — incidence of, 365
 — — — and age at menopause, 362
 — — multifocal origin of, 333
 — — nongenetic inheritance of, 354
 — — preventive measures against, 367
 — in women, excretion of oestrogens in, 363 ff.
 — lymphosarcoma, caused by oestrogen, 383
 — mammary, caused by artificial oestrogens, 98
 — — factors in the causation of, 348–67
 — — induced by oestrogens, 137, 348–52
 — — in female and male mice, induced by oestrogen, 137
 — — in male mice, caused by ovarian implants, 349
 — — in mice, and adrenal cortex degeneration, 364
 — — — and excretion of oestrogen, 364
 — — — and inheritance of susceptibility, 354
 — — — and mammary development, 364
 — — — and oestrogenic phenomena in spayed mice, 363
 — — — and oestrous cycle, 361 ff.
 — — — and susceptibility to carcinogenic agents, 364
 — — — and vaginal response to oestrogen, 363
 — — — caused by oestrogens, 348–52, 360 ff., 367
 — — — characteristics of mice strains resistant to, 361 ff.
 — — — co-operation of nongenetic hereditary factor and oestrogen in, 358
 — — — doubtful effect of lactation on, 366
 — — — effect of amino-acids in food on, 366
 — — — effect of dosage of oestrogen on, 351
 — — — effect of duration of oestrogen treatment on, 351
 — — — effect of foster mothers on incidence of, 355 ff.
 — — — effect of gonadectomy in, 349
 — — — effect of ovary in, 348
 — — — effect of pituitary in, 351 ff.
 — — — effect of pure oestrogens in, 350
 — — — effect of sex in, 350
 — — — effect of testosterone propionate in, 150, 367
 — — — effect of transference of ova in, 355
 — — — genetic and nongenetic hereditary factors of, 352–61

Cancer (*cont.*)

- mammary, in mice, genic factor in susceptibility to, 360
- — — genic hereditary factor of, 360 ff.
- — — 'high-cancer' and 'low-cancer' strains in, 352 ff.
- — — incidence of, 348 ff.
- — — comparison of inbred strains in, 133 ff., 352 ff.
- — — in breeders and non-breeders, 365
- — — in different strains, 352 ff.
- — — in relation to diet, 366
- — — in relation to littering, 366
- — — in undernourishment, 139, 366
- — — influence of parentage on effect of oestrogen in, 358 ff.
- — — in relation to oestrous cycle, 361 ff.
- — — nongenetic hereditary factor of, 352 ff.
- — — nongenetic hereditary factor of, varying resistance to, 355 ff.
- — — non-relation to uterine cancer, 360
- — — occurrence of spontaneous, 279, 349
- — — prevention of, by testosterone, 150, 367
- — — summary account of, 361
- — — susceptibility to, transferred through fathers, 353
- — — transferred through mothers, 353
- — — transferred through suckling, 355, 357
- — — transferred through tissue grafts, 356
- — — in relation to lactation and reproduction, 365 ff.
- — spontaneous incidence in inbred strains of mice, 330
- of bones, breast, connective tissue, testis, uterus and white cells of blood, 151
- ovarian, following ovariectomy, 47
- testicular, abnormal incidence of human, in retained testes, 287
- uterine, and oestrogen production in rabbits, 314 ff.
- caused by oestrogen, 313 ff.
- in rabbits, spontaneous occurrence of, 314
- — osteogenic, hereditary liability to, in CBA mice, 133 ff.
- sarcoma, caused by oestrogen, 151, 376, 383
- *See also* Tissue growth; Tumours
- Carcinogenic agents, effect on high-cancer and low-cancer strains of mice, 364
- Carcinogenic oestrogens, 98, 313 ff.
- Carcinoma, uterine, caused by oestrogen, 313 ff.
- Chorionepithelioma, and Aschheim-Zondek test, 7 ff.
- effect on pituitary production of gonadotrophin, 7 ff.

- gonadotrophin in, 8 ff.
- testicular, diagnosis of, by Aschheim-Zondek test, 8
- — effect on histology of pituitary, 88
- Chorionepithelioma and teratoma of testis, distinguishing test for, 8 ff.
- Gonadectomy, partial, cancer as sequel of, 47 ff.
- Lymphosarcoma, occurrence of, after oestrogen treatment, 383
- Mice, inbred strains of, and mammary cancer, 133 ff., 352 ff.
- mammary cancer of, high-cancer and low-cancer incidence in, 352 ff.
- Sarcoma, of bone, caused by oestrogen, 268, 373
- subcutaneous, caused by androgen, 151, 250
- — caused by oestrogen, 151, 250, 376
- Seminoma, increase of urinary gonadotrophin in, 8 ff.
- Capon's comb, effect of androgen and oestrogen on, 121 ff.
- effect of gonadal hormones on, 126
- location of hormonal reactions in, 140
- *See also* Comb of fowls
- Capon's comb test, of androgens, 126, 140 ff.
- seasonal variation in results of, 157
- Capreolus capreolus*, nidation of ova in, 419
- Carboxypeptidase, inert against gonadotrophins, 3
- Carcinogenic agents, effect on high-cancer and low-cancer strains of mice, 364
- Carcinoma, *see under* Cancer
- Carotene, inhibition of oestrogen by, 139
- Castration and gonadotrophin production, 56
- 'Castration cells' in pituitary, 85, 93 ff. *See also* 'Signet ring' cells
- 'Castration changes', effect of testis substance on, 62
- in male pituitary, effect of oestrogen on, 63, 88
- prevented by androgens, 63
- Castration, effect on accessory reproductive organ., counteracted by androgens, 216
- effect on adrenals, 447 ff.
- counteracted by androgens, 448
- effect on anterior lobe of pituitary, 85
- effect on birds, 107
- effect on bodyweight, 244, 249 ff.
- effect on fat deposit, 249
- effect on growth of bones, 241 ff.
- effect on men, 152, 299
- effect on pituitary, counteracted by androgen, 63
- effect on pituitary cytology, 93 ff.
- increases pituitary FRH, 13 ff.
- partial, effect on remaining testis, 48, 49
- pituitary gonadotrophin increased by, 57
- *See also under* Gonadectomy; Spaying
- Cholesterol, structural formula, 101
- Chondrotrophic hormone, 370
- Chorionepithelioma, *see under* Cancer; *see* Glossary

INDEX

493

- Chromophobe cells in pituitary gland, 85–95
 ‘Chronic cystic mastitis’, 334
 Chymotrypsin, inactivation of gonadotrophins by, 3
Citellus tridecimlineatus, effect of castration on, 222
 — effect of gonadotrophin on, 27, 30
 — *See also* Ground squirrel
 Citric acid, excretion of, increased by oestrogen, 381
 Clitoris, abnormal growth of, caused by androgens, 176, 225 ff.
 — effect of androgen on, 224 ff.
 — effect of progesterone on, 408
 — spontaneous hypertrophy and hypospadias of, 228
 Coagulating glands, effect of oestrogen on, 296
 — function of, 215 ff., 296
 — maintenance of, by testis, 188
 Colchicine test of androgenic and oestrogenic activity, 89, 238
 Colloids, electronegative, separation of, from blood stream, 258
 Colostrum, sex hormones in, 10, 267
 Comb of fowls, *see also* Capon’s comb
 — in test of androgens, 155
 — response to androgens and oestrogens, 162
 — response to pituitary gonadotrophin, 162
 ‘Compensatory atrophy’, 443
 Compensatory hypertrophy, after partial gonadectomy, 26, 47
 — of ovary, 22, 47
 ‘Constance folliculaire’, 25
 Co-operation, of androgen with oestrogen, 110, 115 ff., 150, 209, 218
 — of androgens, corticosterone and oestrogen, 415
 — of gonadal hormones, 119, 150
 — of hormones, anomalous, 118
 — — effect of dosage on, 117
 — of oestrogen with progestin, 117, 150, 426 ff.
 — of testosterone with oestrogen or progesterone, 117
 Copper salts, augmentative effect of, 75
 Copulation, fertile, during pregnancy, 43, 419
 Copulatory reflex, effect of hormones on, 439, 451
 Corpora lutea, absence of, in oviparous animals, 398
 — and adrenal cortices, actions common to, 143, 435
 — and gestational changes, 415 ff.
 — atretic follicles regarded as, 396
 — caused by androgen, 209
 — classification of varieties of, 396
 — degeneration of, effect of oestrogen on, 282
 — development and maintenance of, 395–405
 — development of, in response to LH, 395 ff., 399 ff.
 — effect of androgens on, 192, 402
 — effect of gonadal hormones on, 401 ff.
 — effect of gonadotrophin in formation of, 395 ff.
 — effect of hypophysectomy on, 400 ff.
 — effect of hysterectomy on, 403 ff.
 — effect of lactation and suckling on, 402 ff.
 — effect of LH on, 395 ff., 399 ff.
 — effect of oestrogen on, 282, 401 ff., 432
 — — during oestral cycle, 282
 — effect of progesterone on, 402
 — effect of suckling on, 402
 — effect of thyroid on, 404
 — effect of X-radiation on, 405
 — effect on mammary alveoli, 430 ff.
 — formation of, induced ‘by lactation and suckling, 397
 — — induced by mating, 397
 — — induced by psychic stimuli, 398
 — — induced by sensory stimuli, 397
 — — induced by stimulation of cervix uteri, 397 ff.
 — hypertrophy of, caused by oestrogen, 282
 — maintenance of, effect of uterus on, 403
 — — by gonadal hormones, 192, 282, 401 ff.
 — — by oestrogen, after hypophysectomy, 283
 — — by pituitary LH, 399
 — — by placenta, 400 ff.
 — non-functional, induced by gonadotrophin in immature or hypophysectomized rats, 399 ff.
 — oestral, functional and non-functional, 396
 — oestrogen and progestin from, 432
 — oestrogen content of, 254 ff., 409
 — of lactation, 397
 — of pregnancy, 397
 — of pseudopregnancy, 396 ff.
 — origin and function of, 394 ff.
 — persistence of, after hysterectomy, 404
 — — in absence of FRH, 399 ff., 404
 — — in pregnancy, after hysterectomy, 403
 — relation of, to FRH and LH, 399 ff.
 — sensitivity to X-rays, 404
 — varieties of, 396 ff.
 Corpus allatum compared with anterior lobe of pituitary, 21
 Corticosterone, comparison of, with androgens and oestrogens, 143
 — origin of, in adrenals, 440 ff.
 — substitution of, by progesterone, 143
 Cowper’s glands, castration atrophy of, prevented by androgens, 112, 216, 220
 — cytology of, 300 ff.
 — effect of gonadal hormones on, 112
 — effect of oestrogen on, 112, 220, 268, 300 ff.
 Creatinine, urinary content of, 393
Cricetus auratus, co-operative effect of oestrogen and progestin on, 414
Crotalus terrificus, corpora lutea in, 398
 Cryptorchid animals, masculine characters of, 157 ff.
 Cryptorchidism, and response to gonadotrophin, 50
 — caused by oestrogen, 287
 — effect of temperature on testis in, 30, 84, 161
 — effect on pituitary, 13, 45 ff., 49 ff., 94
 — FRH output increased by, 14
 — *See also* Testes, non-descent of
 Cystic glandular hyperplasia of uterus, *see under* Tumours
 Cysts, *see under* Tumours

- Dasyus novemcinctus*, nidation of ova in, 418 ff.
Dasyurus viverrinus, corpora lutea in, 390
 — mammary development of, 431
 Deciduoma, *see* Placentoma; Tumours
trans-Dehydroandrosterone, effect on castrated rats, 57
 — derived from adrenal tumour, 163
 — excretion of, after oophorectomy in women, 163
 — formation of, in adrenal, 154
 — in eunuch's urine, 160, 175
 — in normal adult urine, 172, 175
 — in urine of spayed women, 172
 — structural formula, 103
 Demarcation zone, *see* Adrenal cortex demarcation zone
 Deoxycorticosterone, amplifies action of oestrogen on mammae, 434
 — and copulatory reflex, 451
 — and esters of, and progesterone, similar effects of, 438, 450 ff.
 — and progesterone, similarity of structure of, 99
 — effect on mucification of vagina, 451
 — effect on pituitary, 438 ff., 444
 — effect on uterus, 450 ff.
 — effect on vagina, 451
 — inactivation of, by the liver, 456
Didelphys virginiana, effect of androgen on young of, 187
 Diethylstilboestrol, and mammary cancer, 98
 — and sensitization of uterus, 427
 — effect on ovary, 53
 — oestrogenic capacity of, 53, 98
 — structural formula, 105
 — *See also* Stilboestrol
 9 : 10-Dihydroxy-9 : 10-di-*n*-propyl-9 : 10-di-hydro-1 : 2 : 5 : 6-dibenzanthracene, structural formula, 105
 Döderlin bacillus and vaginal acidity, 307
 Dosage, by intradermal injection, 128
 — by tablets subcutaneously, 130
 — divided, increased effect of, 123
 — effect of, by local or distant injection, 126 ff.
 — of gonadal hormones, 121 ff., 123–34
 — of oestrogen, effect of, on young and adult rats, 138
 — threshold, of oestrogens, 127
 — *See also* Hormones, gonadal, variations of responses to; Ovary
 Electrolytes, excretion of, by adrenalectomized dogs, effect of progesterone on, 437
 Electrolytes and water, excretion of, effect of adrenal cortical hormones on, 112, 143
 — — effect of androgens on, 112 ff., 143, 236
 — — effect of oestrogen on, 112 ff., 143, 386 ff.
 — — effect of progesterone on, 112 ff., 143, 437
 — — *See also* Water, accumulation. of, in tissues
 Electrophoresis, of chorionic gonadotrophin, 4
 Embryo chicks, effects of androgen on, 185
 — effects of oestrogen on, 272
 Endometrial changes caused by oestrogen, 208
 Endometrial hyperplasia, cystic, caused by oestradiol, 280
 — — caused by testosterone, 208
 — — in untreated mouse, 279
 Endometrial moles, as combined effect of oestrogen and progestin, 318
 — caused by oestrogen, 211
 Endometrioma, effect of androgen on, 208
 Endometriosis, stromatous, caused by oestrogen, 319
 Endometrium, effect of androgen on, 207 ff.
 — effect of oestrogen on, 312 ff.
 — effect of progesterone on, 411 ff., 415 ff.
 — progestational changes in, influenced by androgen, 208
 Enzymes, proteolytic, inactivation of gonadotrophin by, 2, 3
 Eosinophile cells in pituitary gland, 85–95
 Epididymis, effect of androsterone on, 219 ff.
 — effect of oestrogen on, 300
 — in female, induced by androgen, 186
 Epöphoron, effect of androgens on, 220
 Equilenin, structural formula and history, 104, 251
 Ergosterol, structural formula, 101
 Erythrocytes, formation of, influenced by androgens, 249
 — — influenced by hormones, 382
 Ethinyloestradiol, 125
 Ethinyltestosterone, as trivalent hormone, 112.
 See also Ethisterone B.P. and Pregneninolone
 — excretion of, 394
 — sources of, in commerce, *see* Appendix
 Ethisterone B.P., 459
 Eunuch in history, 152
Evotmys glareolus, seasonal variation in size of gonads of, 30
 External genitalia, action of androgens on, 222 ff.
 — effect of oestrogen on, 289 ff.
 Fallopian tubes, effect of testosterone on, 210
 — *See also* Oviducts
 Fat, abdominal, effect of androgen on, 237
 — distribution of, in the body, effect of hormones on, 250, 375
 Fat accumulation in tissues, effect of castration on, 237, 249 ff.
 — effect of cryptorchidism on, 249
 Fat deposition and thyroid activity, 250
 Fecundity, after half-spaying, 22 ff.
 — excessive, induced by pituitary gonadotrophin, 20 ff.
 — regulation of, by ovary-pituitary balance, 21 ff.
 — *See also* Fertility
 Feminine behaviour, influence of hormones on, 146
 Feminism, adrenal, 453, 456
 Feminization effect of androgen, 108 ff.
 Fertility, effect of gonadotrophin on, 17 ff.
 — effect of progesterone on, 417
 — of bee and 'royal jelly', 21
 — *See also* Fecundity
 Fibro-adenoma of mamma, caused by oestrogen, 350

INDEX

495

- Fibromyoma, *see under* Tumours
 Follicle-ripening (FRH) and luteinizing (LH) hormones, question of identity of, 12 ff., 399
 Follicles, ovarian, maturation of, and puberty, 17 ff.
 — ovarian, maturation of, induced by pituitary implants, 18
 — — maturation of, prevented by effect of oestrogen on supply of FRH, 282
 Follicular atresia, 18
 Folliculin, 251
 Formalin, effect on gonadotrophic extracts, 13
 Formulae, structural, of gonadal hormones, 98 ff., 389
 Freemartin, adult female, ovary of, 180
 — effect of androgen from male twin on, 179, 185, 188
 — hormonal output of, 179
 — human equivalent of, 180
 — seminal vesicles in, 188
 — wolffian ducts in, 188
 Freemartins, 179 ff., 185
 Freud's classification, of gonadal hormones, 214 ff.
 — of vaginal epithelia, 304
 FRH, absorption of, delayed by reagents, 16
 — assay of, 33
 — definition of, 2 n., 399
 — effect of, augmented by LH, 15 ff.
 — effect on gonads, after hypophysectomy, 203
 — effect on oestrogen production, 15
 — effect on ovary, 15 ff., 84
 — effect on ovary, influenced by LH, 15 ff., 55
 — effect on testis, 28, 84
 — excessive output of, after partial gonadectomy, 48
 — — after X-irradiation of testis, 50
 — formation of, induced by adrenal cortical hormones, 443
 — in pituitary extract, 2-31, 32-69, 76, 82 ff.
 — in pituitary tissue, 12 ff.
 — in testicular tumour, 9
 — in urine of children, 33
 — in urine of women and old men, 33 ff.
 — output of, in males sterilized by X-rays, 13, 14
 — output of pituitary, during sexual rest, 18
 — overproduction of, in cryptorchidism, partial gonadectomy and X-ray sterilization, 46 ff.
 — preparations of, 13, 16, 28 ff.
 — production of, affected by gonadal grafts, 61
 — — after gonadectomy, 46, 404
 — — after partial gonadectomy, 49
 — — by pituitaries of female and male, 61, 93
 — — effect of sterilization by X-rays on, 13 ff., 50 ff.
 — — inhibited by oestrogen, 51 ff., 382, 411
 — — inhibited by progesterone, 404, 428
 — — in pituitary, and related cytological changes, 93
 — — — effect of gonadectomy on, 13 ff., 46 ff.
 — — related to basophiles, 93
 — purified extract, 13
 — sources and preparation of, 13 ff.
 — *See also* FRH and LH
 FRH and LH, action on testis compared, 28, 203
 — antagonism of, in formation of corpora lutea, 399
 — combined effect of, on ovary, 15, 74
 — — on testis, 28 ff.
 — comparison of, 12 ff.
 — comparison of response to, in different species, 83
 — differing actions of enzymes on, 2 ff.
 — distinguishing test for, 17
 — effect depending on dosage, 16
 — effect of partial gonadectomy on output of, 46 ff.
 — effect on accessory male reproductive organs, 28 ff.
 — effect on pigeons' gonads, 15
 — excretion of, at various ages of females and males, 33 ff.
 — extracts containing, 28
 — from female and male pituitary respectively, 33, 88
 — immunal reactions of, 82
 — influence of, on oestrous cycle, 42 ff., 53 ff., 410 ff.
 — in pituitary, effect of formalin on proportions of, 13
 — opposite effect on ovulation of, 439
 — production of, effect of oestrogen on, 16, 53 ff., 282
 — question of identity, 12 ff.
 — separation of, in pituitary extracts, 16
 — sources of, 12 ff.
 Friedman test for pregnancy, 266. *See also* Glossary, pregnancy tests
 Fröhlich's syndrome and cytology of pituitary, 93
 Fuchsinophile staining of adrenal cortex in virilism, 453 ff.
 Galactin. *See* Galactogen
 Galactogen in lactation, 342 ff. *See also* Glossary
 Galactogen or prolactin in female and male pituitary, 342
Gasterosteus aculeatus, changes of, during mating season, 158
 — effect of temperature on, 40
Geomys bursarius, resorption of pubic bones in, 374
 Gestation, effect of corpora lutea on, 422
 — effect of gonadotrophins on, 423 ff.
 — effect of hormones on, 422 ff.
 — effect of oxytocin in, 423, 425
 — effect of pitressin in, 423
 — effect of pituitrin in, 424 ff.
 — effect of progesterone in, 422 ff.
 Glans clitoridis, masculinizing effect of androgens on, 226
 Glans penis and prepuce, relationship of, 225 ff.
 — separation of, induced by androgens, 226

- Glycogen content, of endometrium, effect of progesterone on, 420 ff.
 — of liver, effect of androgen on, 237
 — — effect of oestrogen on, 377
 — — effect of progesterone on, 438
 — — and muscles, effect of hormones on, 377 ff., 438
 — of vaginal mucous membrane, 307
 Gonadal differentiation, effect of androgens on, 182 ff.
 Gonadal-pituitary relationship, 49, 150
 Gonadal reactions to gonadotrophin at different ages, 71–3
 Gonadal sex, reversal of, in symbiosis, 179, 181
 Gonadectomy, 44 ff., 93 ff. *See also* Castration; Spaying
 Gonadectomy and parabiosis, 13, 52
 Gonadectomy, effect on function of pituitary, 44 ff.
 — effect counteracted by androgens, 89
 — effect counteracted by engrafted gonads, 62
 — effect counteracted by oestrogens, 88 ff.
 — effect on adrenals, 447
 — effect on cytology of pituitary, 93
 — effect on female and male birds, 107 ff.
 — effect on production of FRH and LH, 13 ff., 46 ff.
 — effect on weight of pituitary, 44 ff.
 — partial, 21 ff., 46 ff. *See also* Castration, partial; Spaying, partial
 — — and malignant tumours, 47 ff.
 — — ‘compensatory hypertrophy’ in, 47
 — — effect on fertility, 21 ff.
 — — effect on pituitary, 46 ff.
 — — effect on remaining ovary, 47 ff.
 Gonadotrophic antisera, 77 ff. *See also* Anti-gonadotrophic reactions
 — preparation from inactive material, 79
 — species-specificity of, 79 ff.
 Gonadotrophic extracts, absorption of, delayed by impurities, 74
 — assay of, 27, 33, 71
 — sources of, in commerce, *see* Appendix
 — sources and separate fractions, 4, 6 ff., 80
Gonadotrophin, chorionic, 5, 7 ff., 10. *See also* Gonadotrophin, placental; Gonadotrophin, pregnancy-urine; Hormone, pregnancy-urine; Prolan; Glossary
 — — antiserum, 78
 — — comparison of, with pregnant mare’s, 5
 — — composition of, 17
 — — disappearance of, from blood stream, 4 ff.
 — — distribution of, in the body, 9 ff.
 — — effect of proteolytic enzymes on, 3 ff.
 — — effect on ovary, 17
 — — effect on testis, 25 ff.
 — — electrophoretic properties of, 4
 — — excretion of, 4 ff., 9
 — — human, absence of acquired resistance to in man, 78 ff., 81
 — — — and pregnant mares’ serum, differing behaviour of, 5, 12
 — — — cryptorchidism treated with, 28, 81
 — — — hypogonadism treated with, 28, 81
 — — inactivation of, 1 ff.
 — — in cerebrospinal fluid, 10
 — — in chorionepithelioma, 7 ff., 10
 — — in delay of parturition, 422
 — — in testicular tumours, 8, 10
 — — in urine, diagnostic value of, 5, 7 ff.
 — — luteinizing effect of, 12 ff. *See also* FRH and LH; LH
 — — not inactivated by the liver, 4
 — — production of, in chorionepithelioma, 7 ff.
— pituitary, 1–69
 — — action on ovulation, 31
 — — and gonadal development in precocious puberty, 27 ff., 73
 — — and lipaemia, 379
 — — and prolactin, comparison of, 10 ff.
 — — antibody, 76 ff.
 — — antiserum, 82
 — — antiserum of, ineffective against chorionic gonadotrophin, 81
 — — delayed absorption of, 74
 — — divided doses of, with additions of zinc sulphate, 75. *See also* Dosage
 — — effect of administered, on pituitary function, 59
 — — effect of pH on, 2
 — — effect of proteolytic enzymes on, 2 ff.
 — — effect on germinal cells at different ages, 71 ff.
 — — effect on interstitial glandular cells of immature gonads, 70 ff.
 — — effect on ovary, 10 ff., 17 ff., 71 ff., 121, 162
 — — effect on ovary of continued excess of, 18, 20
 — — effect on ovary of, nature of reaction in, 24 ff.
 — — — restrained by androgen, 121 ff.
 — — effect on testis, 25 ff., 70 ff.
 — — equine, antigenic action of, 81, 83
 — — excretion of, 4 ff.
 — — factors influencing reaction of gonads to, 70–84, 150
 — — follicle-ripening (FRH) effect of, 12 ff. *See also* FRH; FRH and LH
 — — formation of, in transplanted pituitaries, 39
 — — from anterior lobe, preparation and properties of, 1–29, 74
 — — inactivation of, by bacteria, 4
 — — — by boiling, 2
 — — — by enzymes, 2 ff.
 — — — by reagents, 2
 — — — within the body, 4 ff.
 — — in cross-species resistance, 81 ff.
 — — indirect action of, on gonads, 31
 — — in divisional dosage, 75
 — — in gestation of pregnant mare, 6
 — — in regulation of gonadal functions, 17 ff., 25 ff., 60, 150
 — — in urine of normal men, 4
 — — mare’s and stallion’s, effects of, 63

INDEX

497

- Gonadotrophin, pituitary**, neutralized by oestrogen, 55
- non-production of, during pregnancy, 10
 - ovarian irresponsiveness to, after menopause, 73
 - precocious puberty caused by, 70 ff.
 - production of, after gonadectomy, 45, 216
 - after menopause, 33
 - agencies affecting, 32–69
 - at different ages, 32 ff.
 - controlled by gonads, 44–51
 - in breeding season, 72
 - in castrated animals, 44 ff.
 - inhibited by androgen, 55 ff., 217
 - inhibited by gonadal hormones, 16, 41 ff., 51–9, 88, 113 ff., 119, 406
 - inhibited by gonads, 60, 72 ff.
 - inhibited by oestrogen, 51 ff.
 - inhibited by progesterin, 57 ff.
 - prevented by adrenalectomy, 448 ff.
 - stimulated by light, 36
 - rapid production of, 396
 - response to, by transplanted ovaries, 270
 - sex differences in origin of, 63
 - stability of, 11
 - treatment of hypogonadism with, 28
 - variable composition of, 29, 74
 - *See also* Appendix; Glossary, International unit of gonadotrophin
 - **pituitary and placental**, acquired resistance to, 76 ff.
 - antibodies of, and foreign protein immunity, 76 ff.
 - combined injection of, 11, 74
 - comparison of, 7, 10 ff.
 - effect on gonads, 10 ff., 74 ff.
 - identity questioned, 7, 10 ff.
 - specific resistances to, 81
 - synergism of, 74
 - **placental**, absence of, in foetal organs, 9
 - and augmentation effect of pituitary extract on ovary, 11, 64, 74
 - and pregnancy-urine, identity of, 11
 - antigenic properties of, 76 ff.
 - composition of, 29
 - disappearance of, from blood stream, 4 ff.
 - effect on gonads of administered, 59 ff.
 - effect on ovary, 10 ff.
 - effect on pituitary, 59 ff.
 - effect on production of androgen, 60 ff.
 - effect on production of oestrogen, 60 ff.
 - effect on testis, 26 ff.
 - excretion of, 6 ff.
 - formation *in vitro*, 7
 - inactivation of, in foetus, 9
 - in colostrum, 10
 - in pregnancy urine, 6 ff.
 - irresponsiveness of bird's testes to, 11
 - masculinization effect of, 110
 - preparation and properties of, 2 ff., 10 ff., 16–29
 - production of, after gonadectomy, 45, 216
 - *see also* Gonadotrophin, chorionic; Gonadotrophin, pregnancy-urine; Gonadotrophin, pituitary; Hormone, pregnancy-urine; Prolan; *see also* Appendix; Glossary
 - Gonadotrophin, pregnancy-urine**, absent from pregnant mares' urine, 5
 - antigonadotrophic reaction of, 81
 - comparison of, with pregnant women's, 6
 - effect of pH on, 2
 - effect on bird's gonads, 70
 - effect on hermaphrodite gonads, 179
 - excretion of, 5 ff.
 - inactivation of, by boiling, 2
 - by enzymes, 2 ff.
 - by ultra-violet light, 2
 - presence of, in body fluids and organs, during pregnancy, 9 ff.
 - production of, 6
 - proteolysis of, by enzymes, 2 ff.
 - response of different species to, 83
 - storage of, in the body, 4
 - treatment of hypogonadism with, 28
 - *See also* FRH; FRH and LH; LH
 - Gonadotrophin, vegetable**, in yeast, 9
 - in young oats, 9
 - Gonadotrophins**, antibodies of, and foreign protein immunity, 76–83. *See also* Antigonadotrophic reactions
 - bacterial decomposition of, 4
 - distribution of, within the body, 9 ff.
 - effect of administered, 59 ff.
 - female and male compared, 60 ff., 93
 - functions of, 1–31, 59 ff., 91 ff.
 - inactivation of, within the body, 4 ff.
 - by proteolytic enzymes, 2 ff.
 - location of, in pregnant women, 9 ff.
 - mares and stallions, 63
 - sources of, 6 ff.
 - species-difference in reaction to, 83
 - synergism of, 74
 - Gonads, atrophy of, after adrenalectomy, 163, 448
 - after hypophysectomy, 1, 25 ff., 144
 - differentiated, effect of gonadal hormones on, 179
 - embryonic, cytology of, 177 ff.
 - differentiated, transplantation of, 178
 - differentiation of, 176 ff.
 - undifferentiated, transplantation of, 178
 - enlargement of, in foetus, 73
 - female, growth of embryonic, 176 ff.
 - functional, in parabiosis of rats, 118
 - glandular interstitial cells of, effect of gonadotrophins on, 29 ff., 70 ff.
 - grafts of, in hosts of opposite sex, 114, 119
 - implanted in opposite sex, effect of, on host, 144
 - male, growth of embryonic, 148, 176 ff.
 - of female and male animals in parabiosis, 102
 - of opposite sex, co-existence of, in animals, 114, 118 ff.
 - primitive, bisexual, 177 ff.

BSH

32

- Gonads, response of, to adrenal cortical hormones, 449 ff.
 — to androgen, 142 ff., 191 ff.
 — to gonadotrophins, 70–84
 — to oestrogen, 271–88
 — to progestin, 406 ff.
 — substitution of, by implanted gonads of opposite sex, 118, 136 ff., 144 ff., 179
 — transplantation of, and production of bisexual characters, 144, 179
 — undifferentiated, effect of gonadal hormones on, 179, 183
 Granulosa cell tumour, oestrogen in, 254
 Granulosa cells, effect of oestrogen on, 282
 Granulosa tissue, as disputed source of oestrogen, 252 ff.
 Ground squirrel, 30, 41, 72, 85, 201, 446. *See also Citellus*
 Growth hormone, pituitary, 369 ff.
 Haemangioma of liver, caused by oestrogen, 377
 Hair, growth of, and hypertrophy or neoplasia of adrenals, 240
 — effect of androgens on, 208, 239 ff., 376
 — effect of oestrogen on, prevented by testosterone, 376
 — reciprocal action of oestrogen and androgen on, 240, 376
 Hamster, 446. *See also Cricetus auratus*
 Heart, muscle and weight of, effect of androgen on, 248 ff.
 Hens' eggs, effects of injected androgen, 70
 — effects of injected gonadotrophin, 70
 Hepatoma, *see under* Tumours
 Hermaphroditism, 178 ff.
 — human, 179
 — of squirrels, 179
 Hernia, bilateral, induced by oestrone in mice with one testis, 293
 — effect of artificial cryptorchidism and of oestrone on formation of, 292
 — effect of prolonged oestrogen treatment on, 294
 — influence of testes on, 292
 — inguinal, in mice, caused by oestrogen, 291 ff.
 — prevention of, by bilateral castration, 293
 — prevention of, by vitamin-E deficiency, 293
 — scrotal, 291–4. *See also* Hernia, inguinal
 Hibernation, and cytological changes of pituitary, 85 ff.
 — storage of androgen in, 165
 High-cancer and low-cancer strains of mice, 352
 Hirsutism, *see* Hair, growth of.
 Hormonal balance, adrenal-gonadal, 449 ff.
 — pituitary-adrenal cortex, 441 ff.
 — pituitary-corpora luteum, 57 ff., 438
 — pituitary-ovary, 17 ff., 51 ff.
 — pituitary-testis, 25 ff., 55 ff., 70 ff.
 Hormone, chondrotrophic, 370
 — follicle-ripening, 3 n., 12 ff., 399
 — from new tissue as defensive mechanism, 285
 — interstitial-cell stimulating, ICSH, 29
 — luteinizing, 2 n. *See also under* LH
 — ovulation-producing, of pregnancy urine, 1 ff.
 — pregnancy-urine, 1, 2 ff. *See also* Gonadotrophin, chorionic; Gonadotrophin, placental; Gonadotrophin, pregnancy-urine; Prolan
 — thyrotrophic, inactivation of, by boiling, 2
 'Hormone, female', 102, 252. *See also* Glossary
 'Hormone, growth', 370
 'Hormone, male', 102
 Hormone-antihormone buffer system, 80
 Hormones, adrenal cortical, *see* Adrenal cortex, hormones of
 — and progestin, similar effects of, 450 ff.
 — effect of esterification of, 131 ff., 459
 — experiments with, interpretation of results of, 452
 Hormones, gonadal, 51 ff., 88 ff., 96–151. *See also* Androgens; Oestrogens; Progestins
 — acquired resistance to, 138, 285
 — action of, variations of response to, 136 ff., 155
 — anatomical limits to action of, 99
 — and adrenal cortical hormones, common actions of, 112, 143 ff., 443
 — and structural transformation of tissues, 143
 — antagonisms of, *see* Antagonisms of gonadal hormones
 — 'bisexual' activity of, 102, 113
 — classification of, 103, 113 ff., 214 ff.
 — constitutions and biological effects of, 98 ff., 389
 — co-operation of, 115 ff., 150, 426 ff.
 — effect of proportions in, 115
 — in effect on uterus and vagina, 116
 — definition of, 100 ff.
 — difficulties in assay of, 132
 — early production of, in male embryos, 178
 — effect of divided dosage of, 123
 — effect of method of administration or responses to, 97
 — effect of storage *in vitro* on, 123
 — effect on behaviour, 144
 — effect on embryonic gonads, 272 ff.
 — effect on excretion of electrolytes, 112 ff.
 — effect on excretion of water, 112 ff.
 — effect on organs independent of sex of possessor, 106 ff.
 — effect on parental interest, 144
 — effect on skeletal development, 143
 — embryonic production of, 177 ff.
 — excretion of, after chemical change, 102 ff.
 — experimental difficulties with, 132, 147, 452
 — formation of, controlled by pituitary, 51 ff., 150
 — Freud's classification of, 214, 304
 — functions of, 100 ff.
 — gradients of responsiveness to, 140 ff.
 — inactivation of, in liver, 125 ff., 150, 154

INDEX

499

- Hormones, gonadal, inhibit gonadotrophic potency of pituitary, 113 ff.
 — inhibition of body-growth by, 147
 — in metabolism of calcium, 99
 — interconversion of types of, 102 ff., 167 ff., 257, 264
 — international units of potency of, 99.
See also Glossary
 — irreversible and reversible effects of, 142 ff.
 — organ-specific nature of, 100 ff., 106 ff.
 — overlapping effect of, androgen, oestrogen and progesterin, 154
 — production of, in gonadal grafts, 114
 — in normal women, 240
 — in women with acne, 240
 — promotion of tissue-growth by, 148 ff.
 — resistance to, acquired, 138 ff.
 — response of females and males to, 89
 — reversibility of effects of, 142 ff.
 — social problems in relation to, 147
 — sources of, 100 ff.
 — specific co-operation of, 118
 — specificity of action of, 149
 — speed of response to, 140
 — storage of, *in vivo*, 4, 102, 124
 — structural formulae of, 98 ff., 389
 — synthetic, 98 ff.
 — polyvalent, 112
 — synthetic products of like action to, 98 ff.
 — test of, by cutaneous application, 128
 — transformation of, before excretion, 102 ff.
 — types of, 96, 100 ff.
 — variations of responses to, 97 ff., 123 ff., 133 ff.
 — in acquired resistance, 138 ff.
 — in alternation of effects, 139
 — in continued dosage, 138. *See also* Dosage
 — in different sexes, 106 ff., 136, 144, 150
 — in different species, 97, 139
 — in growth of antlers, 139
 — in interference by gonadal activity, 136. *See also* Antagonism; Antigonadotrophic reactions
 — in local inunction, 126, 129
 — in organ-specific action, 136
 — in preliminary dosage, 139
 — in production of therapeutic hormone in new tissue, 138
 — in substitution of grafted gonads of opposite sex, 136, 144
 — with activators, 131
 — with addition of tissue extracts, 131
 — with administration of mixed hormones, 115 ff., 132
 — with age of preparation, 123
 — with age of recipient, 137 ff.
 — with cutaneous application, 126, 128
 — with cyclical influences, 134
 — with delayed absorption from inflamed tissues, 74, 130, 135
 — with delayed absorption from oil solvent, 130
 — with delayed absorption of hormone esters, 131 ff.
 — with different recipient tissues, 133
 — with different strains of mice, 133
 — with direct local application, 126, 128
 — with division of doses, 123 ff.
 — with dose quantity, 132
 — with duration of experiment, 132
 — with effect of heredity, 133
 — with effect of inflammation, 135
 — with effect of light, 135 ff.
 — with effect of metabolic rate, 135
 — with effect of priming dose, 133
 — with effect of temperature, 135 ff. *See also* Temperature effect; Temperature, external
 — with hyperaemia of reacting tissue, 135
 — with injection of undissolved hormone, 129, 130
 — with intraperitoneal injection, 126
 — with intravenous injection, 129
 — with oral administration, 4, 124 ff.
 — with seasonal influences, 134. *See also* Breeding, seasonal
 — with sex, 106 ff., 136 ff., 144, 150 ff.
 — with simultaneous or successive doses of two hormones, 115 ff., 132
 — with site of application, 124 ff.
 — with solvents, their nature and volume, 129 ff.
 — with subcutaneous injection, 125 ff.
 — with treatment, continuous or intermittent, 132
 — individual reactions to, affected by cyclical and seasonal influences, 97 ff., 134 ff.
 — responsiveness to, retained by transplanted tissues, 101, 114, 270
 — testicular, *see* Androgens; Hormones, gonadal
 Hunter, John, discovery of crop gland and pigeon's milk, 345
 — observations on dependence of accessory reproductive organs on testis, 188
 — observations on effect of castration, 188
 — observations on fecundity and half-spaying, 21
 — observations on freemartins, 179, 185
 — observations on gonadal activity, 96
 — observations on maintenance of accessory reproductive organs, 188
 — observations on oviducts of freemartin ass, 185
 — observations on periurethral glands, 227
 — observations on seasonal breeding, 30
 — observations on tissue grafts, 106
Hyaena crocuta, morphology of female genitals of, 189
 Hydrogen peroxide, inactivation of gonadotrophin by, 2
 Hydronephrosis caused by oestrogen, 325
 17- β -Hydroxyprogesterone, 163
 Hyperostosis frontalis interna, 373
 Hyperpituitarism and adrenal hypertrophy, 442
 Hyperplasia, *see under* Tumours

- Hypogonadism, 28
 — treatment of, with androgen, 201, 204, 224
 — — with gonadotrophin, 28
 'Hypoovarianism', effect of oestrogen in, 168
 Hypophysectomy, and atrophy of adrenals, 1, 442
 — and atrophy of gonads, 1, 25, 57, 198
 — and atrophy of interstitial glandular cells of testis, 198
 — and effect of androgens in maintaining spermatogenesis, 111
 — effect of, counteracted by pituitary extracts or implants, 1, 6, 11, 17, 24 ff.
 — effect on cytology of adrenal, 442 ff.
 — effect on descent of testes, 203
 — effect on ovary, 17
 — effect on reproductive functions, 1, 114
 — effect on testis, 1, 25, 57, 198 ff.
 — incomplete, 335, 434
 — operation criticized, 335, 434
 — testicular atrophy in, counteracted by androgen, 216
 — *See also* Pituitary, deficiency of
 Hypopituitarism, and cytological changes of pituitary, 85 ff.
 — effect on adrenals, 442 ff.
 Hypospadias, caused by gonadal hormones, 112, 143, 227 ff., 289 ff., 406
 — definition of, 227, 289
 — of female urethra, caused by androgens, 227
 — of young, caused by oestrogen during lactation, 289
 — spontaneous, 228, 289
 — testis graft as cause of, 228
 Hysterectomy, effect on corpora lutea, 403 ff.
- ICSH, interstitial-cell-stimulating hormone, 29
 Immunity against foreign protein, 78
 Immunological reaction induced by homogenic material, 82 ff.
 Inactivation of adrenal hormone in liver, 456
 — of androgen in liver, 165 ff., 175
 — of gonadotrophin *in vivo*, 4 ff.
 — of hormones, 1 ff., 102, 125
 — of oestrogens in liver, 259 ff.
 Indirect effect, of androgens, 184, 217
 — of gonadotrophin, 31
 — of progesterone on oestrogen production, 428
 — of testosterone, 196
 Inflammation and delayed absorption, 74, 130, 135
 Inguinal hernia, *see* Hernia
 International units of hormone activity, *see* Glossary
 'Intersex', 'intersexual' conditions, intersexuality, 114, 181 ff.
 Intersexualism in female and male embryos, caused by androgen, 113
 Interstitial-cell-stimulating pituitary preparation, 11, 26
 Interstitial glandular cells, of embryonic testis, 177
 — of gonads, early response of, to gonadotrophin, 70
 — of testis, degeneration of, after hypophysectomy, 198
 — — in production of androgen, 158 ff., 177 ff.
 — *See also* Gonadotrophin, pituitary, effect on —; Ovary; Testes
 Interstitial tissue of testis, tumour of, androgen production in, 160. *See also* Androgens, sources of
 — — oestrogen as cause of, 284
- Junco hyemalis*, in seasonal breeding, 34
- 17-Ketosteroids, excretion of, in abnormal conditions, 160–75
 — — in normal adults, 160–75
 Kidney, effect of androgen and oestrogen on, 235 ff.
 — of female and male mice, histology of, 235
 — under influence of androgen, cytology of, 235
 Kohr's test for oestriol, 266
- Labia majora and minora, hypertrophy of, caused by oestrogen, 290
 Lactation, 87, 267, 337 ff., 434 ff.
 — after adrenalectomy, 451 ff.
 — after removal of corpora lutea, 435
 — and lactogenic preparations, 339 ff.
 — antagonism of oestrogen and galactogen in, 341
 — arrest of oestrous cycle in, 344
 — cessation of, after adrenalectomy, 451
 — continued in absence of corpora lutea or ovaries, 403
 — effect of adrenal and thyroid hormones on, 343
 — effect of adrenocorticotrophin on, 451
 — effect of androgen on, 231
 — effect of oestrogen on, 340 ff., 435
 — effect of pituitary extract following oestrogen on, 341 ff.
 — effect of pituitary on, 338 ff., 341 ff.
 — effect of progesterone on, 434 ff.
 — effect of psychical and sensory impulses on, 343
 — effect of retention of milk on, 343
 — effect of suckling on, 343
 — effect on cytology of pituitary, 87 ff.
 — effect on ovary, 344
 — hormones affecting corpora lutea in, 402 ff.
 — induction of, by oestrogen in small doses, 341
 — inhibition of, by androgens, 231
 — — by gonads and placenta, 339
 — — by hypophysectomy, 339
 — — by oestrogens in large doses, 231, 340 ff., 435
 — — by stilboestrol, 340
 — in males, after successive treatment with oestrone and pituitary extract, 341
 — in men, caused by pituitary hormones, 342
 — in pigeon's crop-gland, 345 ff.
 — in relation to mammary cancer, 365 ff.
 — maintenance of, in limited production of FRH and oestrogen, 343
 — of cow, effect of thyrotrophin on, 346

INDEX

501

- Lactogen, 338, 342. *See also* Galactin; Galactogen
- Leucaemia in mice induced by oestrogen treatment, 383
- Leucocytic invasion, and epithelial metaplasia, 308, 315
- of vagina, 305 ff.
- round mammary ducts in oestrogen treatment, 330
- Leucocytosis, during oestrus, 305, 308 ff.
- in relation to epithelial metaplasia, 308 ff., 315
- in uterus and vagina, causes of, 305 ff., 315
- Leydig cells, *see also* Interstitial glandular cells
- as source of androgen, 158 ff.
- defensive mechanism of, 285
- effect of oestrogen on, 284 ff.
- hyperplasia and neoplasia of, caused by oestrogen, 284 ff.
- LH, definition of, 2 n., 399
- effect of, augmented by FRH, 11, 63, 74
- effect on excretion of oestrogen, 428
- effect on gonads after hypophysectomy, 17, 203
- effect on male gonads, 28
- inactivation of, by enzymes, 2 ff.
- in chorionic gonadotrophin, 17
- in chorionic tissue, 12 ff.
- injections of, time effect of, in immature rats, 71
- in pituitary extract, 2-31, 32-69, 76, 82 ff.
- in placental gonadotrophin, 7, 92, 401
- in pregnancy urine, 18, 28, 414
- in urine of young women, 33
- of pregnancy urine, inactivation of, by boiling, 1 ff.
- pigmentation reaction to, 17
- pituitary, and formation of corpora lutea, 18, 399
- — and production of antiluteinizing serum, 82
- — production of, effect of gonadectomy on, 46
- — — increased by oestrogen, 53 ff., 282
- preparations of, 13, 16, 28 ff.
- production of, after adrenalectomy, 449
- from pituitary, in ovulation, 18, 31, 396 ff.
- — in response to oestrogen, 282
- *See also* FRH and LH; Luteinization; Ovulation
- Light, gonadal stimulus of, of different wavelengths, 36 ff.
- Light absorption by retina and gonadal response, 38
- Light stimulus of pituitary, effect on gonads, 34 ff., 36, 38
- Littering, effect on maternal behaviour, 145
- Liver, as site of inactivation of gonadal hormones, 259 ff.
- cytological changes in, caused by androgen, 236
- effect of androgen on, 236
- effect of gonadectomy on, 237
- effect of oestrogen on, 236, 377 ff.
- effect of progesterone on, 438
- Lucilia*, corpus allatum of, 21
- Luteal extracts, 432 ff. *See also* Corpora lutea; Progesterone effect of luteal extract
- effect on mamma, 432 ff.
- standardisation of, 424
- Luteal glands, *see* Corpora lutea
- Luteinization, and ovulation, 18 ff., 394 ff.
- and ripening of ova, 396
- coefficient of, in female and male pituitaries, 64
- induced by LH, 18
- of atretic follicles, 396
- Lymphosarcoma, 383
- Macacus*, effect of gonadotrophin on testes of, 26
- Macacus ecaudatus*, effect of oestrogen on, 386
- Macacus mulatta*, *M. nemestrina*, effect of oestrogen on skin of, 387
- effect of testosterone on, 210
- Macacus rhesus*, effect of oestrogen on mammary acini of, 431
- effect of oestrogen on skin of, 387
- effect of oestrogen on uterus of, 310
- effect of testosterone on descent of testes of, 205
- Male genital structures, preserved in female treated with androgen, 189
- Mammæ, and localized effects of oestrogen, 333
- response of, to sex hormones, 231, 328 ff.
- Mammary acini, development of, co-operation of oestrogen and progesterone in, 331 ff.
- — effect of dosage of oestrogen and progesterone on, 331, 432 ff.
- — induced by sex hormones, 230, 330 ff., 430 ff.
- effect of androgens on, 230
- effect of corpora lutea on, 430 ff.
- effect of luteal extracts on, 432
- effect of oestrogen on, 430 ff.
- effect of oestrogen and progesterone together on, 331, 432 ff.
- effect of progesterone on, 432 ff.
- in Bagg albinos and Black agoutis, effect of oestrogen on, 330
- Mammary cancer, *see under* Cancer
- Mammary development, effect of adrenal hormones on, 452
- effect of progesterone on, 430 ff.
- in hypophysectomized animals, effect of hormones on, 433 ff.
- role of the placenta in, 337 ff.
- Mammary ducts, effect of androgens on, 229 ff.
- effect of oestrogen on, 328 ff., 332
- hyperplasia of, caused by oestrogen, 332 ff.
- Mammary response, to androgen, influence of pituitary on, 231
- to oestrogen, influence of pituitary on, 334 ff.
- Mammary secretion other than milk, effect of androgens on, 230 ff.
- Mammary stroma, effect of gonadal hormones on, 326

- Mammatrophin, 335 ff., 434
 Mare's pregnancy gonadotrophin, inactivation of, in blood stream, 5 ff.
 — source of, 6
Marmota marmota, effect of gonadotrophin on, 27
Marmota monax, pituitary changes of, 86
 Masculine behaviour, effect of androgens on, 145
 Masculine characters, as effect of androgen from ovarian tumours, 162 ff.
 — influence of testicular interstitial tissue on, 158 ff.
 — *See also* Virilism, adrenal
 Masculinization, effect of adrenal tumour, 454 ff.
 — effect of androgens, 106, 152 ff., 453 ff.
 — effect of androgens on female chicks, 108 ff.
 — effect of gonadotrophin, 106
 — effect of partial spaying, 106
 — effect of X-ray sterilization of ovary, 105, 110
Melanopus differentialis, gland-controlled ovaries in, 21
Meles meles, delayed nidation of ova in, 419
 Menstrual bleeding, cause of, 321
 — prevention of, by androgens, 210
 — — by oestrogen or progestin, 319 ff.
 — — by testosterone, 195
 — related to corpus luteum, 411 ff.
 — related to progestin supply, 319 ff., 411 ff.
 Menstrual cycle, gonadotrophic output in, 42.
See also Oestrous cycle
 — maintained by 12.5 % of total ovary, 23
 Menstrual oedema, 437
 Menstruation, arrest of, by gonadal hormones, 195 ff., 210, 319 ff.
 Metaplasia, urethral epithelial, caused by oestrogen, 291
 Mice, mammary cancer in, *see under* Cancer
Microtus agrestis, effect of illumination on, 37
Microtus guentheri, cornification of vagina of, 304
 Milk, enrichment of, after small doses of oestrogen, 342
 Minnow's ovipositor in assay of progesterone, 439
 Mitogenetic gonadal hormones, 214 ff.
 Mucifying and non-mitogenetic gonadal hormones, 214
 Müllerian system, 184 ff.
 — and oestrogen deficiency, 185
 — effect of androgen on, 184 ff.
 — embryonic, effect of oestrogen on, 275
 Muscular development, effect of gonadal hormones on, 247 ff.
 Muscular hypertrophy, effect of androgen and of gonadectomy on, 247
 — gonadotrophin as cause of, 247
 — not caused by oestrogen or progestin, 247
 Muscular weakness relieved by androgen, 248
 'Myotonia atrophica', androgen treatment of, 248
 Nidation of ova, effect of corpora lutea on, 415 ff.
 — effect of oestrogen and progesterone on, 25, 417 ff., 427
 — prevented by ethinylloestradiol, 125
 — retardation of, 418 ff.
 Nipple, effect of androgen on, 229
 — — after hypophysectomy, 229
 — effect of oestrogen on, 326 ff., 376
 — — counteracted by progesterone, 327
 — effect of pregnenolone on, 430
 — of castrated rats, effect of androgens on, 229
 — of male guinea-pig, effect of hormones on, 328
 Nipples in male mice, and administration of oestrogen, 327
 Nutritional deficiency, effect on cytology of pituitary, 94
 — effect on gonadotrophic activity of pituitary, 64 ff.
 — *See also* Under-feeding; Vitamin-A deficiency [-B and -E]
Nycticorax nycticorax hoactti, androgen from ovary of, 162
Odocoileus virginianus borealis, growth of antlers, 380
 Oedema, caused by hormones, favoured by NaCl simultaneously given, 386, 438
 Oestradiol, 98, 104, 251
 — administration of, oestrogens excreted in, 263, 266
 — antagonotrophic action of, on pituitary, 53
 — as primary oestrogen, 263
 — benzoate, international unit of, *see* Glossary
 — conversion of, into oestriol and oestrone, 263
 — effect on pituitary, 90
 — in urine during labour, 263
 — oxidation of, 263
 — structural formula, 98, 101, 104
 'Oestral gland', 253
 Oestrin, uncertainty of definition of, 251. *See also* Oestrogens
 Oestrinase, 262
 Oestriol, 104, 251
 — formation of, facilitated by progesterone, 265
 — Kohr's colour test of, 266
 — structural formula, 104
 Oestrogenic action in liver disease, 261
 Oestrogenic effect of antirachitic agents, 372
 Oestrogen-like action of androgens, 108
 Oestrogen-treated mice, enlarged pituitary in, 276 ff.
 Oestrogen therapy, 268 ff., 340 ff.
 — reversible effects in, 268 ff.
 Oestrogens, activity of, maintained in heart-lung preparations, 259
 — — maintained in standing blood, 259
 — adrenal, 257
 — and androgens, co-operation of, in treatment of accessory reproductive organs, 115 ff.
 — — similar effects of, 109, 111 ff.
 — and degeneration of the adrenal cortex, 386
 — and formation of urinary calculi, 380

INDEX

503

- Oestrogens, and gonadotrophin, combined action of, on ovaries, 281
- and mammary cancer in mice, *see under* Cancer
 - and metaplasia of prostate, 298 ff.
 - and progestins, co-operation of, in mucification of vagina, 117 ff., 413 ff.
 - — in progestational changes, 117 ff., 426 ff.
 - antigonadotrophic action of, 51 ff.
 - areas of response to, 269 ff.
 - as cause of atrophy of gonads, 283 ff.
 - as cause of cancer, 137, 151, 250, 313 ff., 348–67, 373, 383
 - as cause of cutaneous oedema, 386 ff.
 - as cause of epithelial metaplasia, 269
 - as cause of fibromyomata of uterus, 211 ff.
 - as cause of lipaemia in blood, 379
 - as cause of metaplasia, counteracted by progesterone, 313
 - as cause of non-cancerous tumours, *see* Tumours
 - as cause of sarcoma, 151, 250, 376
 - assay of, 254
 - cellular character of response to, 269
 - conversion of, into androgen, 103
 - co-operation of, with progesterone in mammary development, 331 ff.
 - definition and terminology of, 251
 - detection of, in blood stream, 262
 - differing reactions of mice strains to, 278
 - distribution of, in the body, 258
 - dosage of, cyclical variation of response to, 43
 - effect, initial and later, on production of FRH and LH, 54
 - effect of divided doses of, 123 ff., 329
 - effect of dosage of, in treatment of uterus, 319
 - effect of persistent administration of, 52, 150
 - effect on accessory male reproductive organs, 217 ff.
 - effect on accessory reproductive organs, 52, 109, 217 ff., 289–347
 - effect on actions of androgen and progestin, 252
 - effect on adrenals, 384 ff.
 - effect on androgen production, 52
 - effect on anterior lobe of pituitary, 52 ff., 277–88
 - effect on blood calcium, 379
 - effect on blood cells, 382 ff.
 - effect on blood pressure, 381
 - effect on bodyweight, 368 ff.
 - effect on bone structure, 372 ff.
 - effect on bony pelvis, 374 ff.
 - effect on calcification of bones, 120, 149, 242, 370 ff.
 - effect on capillary blood vessels, 382
 - effect on connective tissues and skin, 368–76
 - effect on cytology of pituitary, 88 ff.
 - effect on embryonic gonads and Müllerian and Wolffian systems, 271–6
 - effect on epiphyses, 148 ff., 242, 370 ff.
 - effect on excretion of citric acid, 381
 - effect on excretion of electrolytes, 387
 - effect on female structures other than ovaries, 252
 - effect on Foà-Kurloff blood cells, 383
 - effect on formation of antibodies, 383 ff.
 - effect on gonadotrophic potency of blood serum, 55
 - effect on gonadotrophin within pituitary, 55
 - effect on gonads after differentiation, 277–88
 - effect on gonads of embryo chicks, 272 ff.
 - effect on gonads of larval amphibia, 272
 - effect on granulosa cells, 282
 - effect on growth, 148, 368 ff.
 - effect on interstitial glandular tissue of testis, 284 ff.
 - effect on lactation, 340
 - effect on male organs, 113, 271 ff., 283 ff., 289 ff., 295 ff.
 - effect on mammae, 107, 326–47
 - — and mammary cancer, 348–67
 - effect on mice of different strains, 431
 - effect on number of erythrocytes, 382
 - effect on ovarian follicles, 281 ff.
 - effect on ovogenesis, 281
 - effect on pancreatectomized dogs, 378
 - effect on penis and scrotum, 289
 - effect on periductal fibrous tissue in mamma, 330
 - effect on permeation of capillaries, 382
 - effect on pituitary, 41 ff., 51 ff., 88 ff., 277–88
 - — female and male, 51 ff.
 - — influenced by dosage, 51
 - — of gonadectomized rat, 52
 - effect on production of FRH and LH, 53 ff., 282
 - effect on production of pituitary hormones, 51 ff., 252, 280, 369 ff.
 - effect on size of ovary, 282
 - effect on spayed rats, 439
 - effect on survival after adrenalectomy, 388
 - effect on testis, 52, 283 ff.
 - effect on thymus, 388
 - effect on various tissues and organs, 377–88
 - effect on young and adult rats, 138
 - effect on α zone of adrenal, 385 ff.
 - esters of, inactivation of, 260 ff.
 - excess of, in hepatic cirrhosis, 261
 - excretion of, 255 ff., 263 ff.
 - — abnormal, 104 ff.
 - — as oestrone, 263, 266
 - — by liver, 266 ff.
 - — by mammae, 267
 - — by stallion, 105, 256, 300
 - — during menstrual cycle, 264 ff.
 - — during pregnancy and pseudopregnancy, 265 ff.
 - — effect of progestin on, 265
 - — in adrenal carcinoma, 257
 - — in adrenal tumours of men, 456
 - — in eunuchs and normal men, 175
 - — in varying states of gonads, 264 ff.
 - formation of, from androgens *in vivo*, 103, 167 ff., 257, 264
 - — from androstanediol, 230
 - — from androsterone, 167

- Oestrogens, formation of, from testosterone, 167 ff.
- in placenta, 255
 - gonadotrophic action of, 51, 281
 - gradients of responsiveness to, in accessory genital organs of male mice, 267
 - in sites of osseous tumours, 268
 - in skeleton, 268
 - in uterus and vagina of guinea-pig, 267
 - growth-checking action of, counteracted by pituitary implants, 369
 - on bones, 370 ff.
 - hernia-producing effects of, in different strains of mice, 292
 - inactivation of, by thyroid, 262
 - in liver, 259 ff.
 - — — effect of vitamin-B complex on, 261
 - — — location of, 261
 - — — prevented by cirrhosis, 175
 - — — restrained by progesterone, 262
 - inactive combined, excreted during pregnancy, 265
 - in blood and urine of babies, 258
 - in foetal circulation, 258
 - in food, 257
 - inhibition of androgenic action by, 121
 - in human corpus luteum, 254
 - in male urine and testis, 256 ff.
 - in small amounts, effect on male accessory reproductive organs, 295
 - insulin content of pancreas increased by, 379
 - international unit of, *see* Glossary
 - in tissue preparations, enhanced potency of, 261
 - intraperitoneal injection of, 261
 - irreversible effects of, 269
 - luteinizing effect of, on ovary, 54, 282
 - occurrence of, in animals and plants, 257
 - in mineral substances, 257
 - oedema produced by, 386
 - order of reversion of effects of, 269
 - ovarian, production of, at different ages, 255
 - source of, 254
 - production of, at puberty, 169 ff.
 - by interstitial tissue of ovary, 253
 - by ovarian implants, 252
 - during oestrous cycle, 43
 - in adrenals, 257
 - induced by pituitary implants, 253
 - in granulosa cells of ovarian follicles, 252
 - inhibited by progesterone, 413
 - in interstitial cells of ovary, 253 ff.
 - in males, 104 ff., 256 ff.
 - in ovary, effect of age on, 255
 - in ovary, pituitary control of, 24
 - in placenta, 255 ff.
 - in spayed mice, 349
 - in testis, 256
 - restrained by progesterone, 428
 - relative potency of, 121
 - reversible effect of, 268 ff.
 - reversible effect on ovary, 280
 - sex reversal caused by, in birds and amphibia, 271 ff.
 - sources, functions and metabolism of, 251–70
 - sources of, in commerce, *see* Appendix
 - storage of, in active form, not detected, 259
 - structural formula of, 104 ff.
 - threshold doses of, 127
 - tumour-producing effect of, counteracted by androgen, 317
 - — counteracted by progesterone, 317
 - typical actions of, on the reproductive organs, 252
 - urinary output of, *see* Oestrogens, excretion of
 - vaginal response to, in relation to cancer, 363
 - variations in responses to, 97
 - *See also* Oestradiol; Oestrin; Oestriol; Oestrone
- Oestrone, conditions of excretion of, 266
- effect of, enhanced by certain tissues, 261
 - effect on endometrial changes, 209
 - enzymatic oxidation and reduction of, 261 ff.
 - fixation of, in inflamed tissues, 258
 - history of, 251, 256
 - inactivation of, in animal and plant tissues, 261 ff.
 - in stallion's urine, 256
 - international unit of, *see* Glossary
 - isolation of, from follicular fluid, 252, 254
 - from placenta, 256
 - properties of, 252
 - structural formula of, 104
 - urinary, derived from androgens, 167 ff., 264
 - *See also* Oestrogen
- Oestrous bleeding and oestrogen supply, 411
- Oestrous cycle, and histology of pituitary, 86 ff.
- effect of FRH and LH in, 41 ff., 53 ff., 410 ff.
 - effect of progesterone on, 408 ff.
 - gonadotrophin output in, 41 ff.
 - induced by hormones, 41 ff., 408 ff.
 - inhibited by oestrogen, 319, 382
 - in mice and incidence of cancer, 361 ff.
 - mechanism of, 41 ff., 410 ff.
 - of rat, absence of lutein phase in, 86
- Oestrus, antagonism of oestrogen and testosterone in, 210
- influence on, of gonadotrophin, 195 ff.
 - inhibition of, by androgen, 195, 210
 - by corpora lutea, 57
 - by deoxycorticosterone, 451
 - in spayed dogs, induced by implanted oestral ovaries, 251
 - renewal of, induced by pituitary implants, 73
 - 'Oestrus inhibition', 304
- Oocytes, in fowls, and egg-laying, 23
- in partly resected ovary, 23 ff.
- Organizer of tissue growth, 73
- Os clitoridis induced by androgen, 226 ff.
- Ova, nidification of, effect of gonadal hormones on, 321
- number of, and age of individual, 20, 22

INDEX

505

- Ovarian cysts, *see under* Tumours
 Ovarian follicles as source of oestrogen, 252 ff.
 Ovarian graft in castrated male, effect of, on accessory reproductive organs, 161
 — effect of temperature on, 161
 — production of androgen by, 161
 Ovarian implants, effect on bone growth, 371 ff.
 Ovarian tumours, *see under* Tumours
 Ovariectomy, FRH output increased by, 13
 — *See also* Gonadectomy; Spaying
 Ovaries, effect of gonadotrophin on, in non-spayed and spayed hypophysectomized rats, 24, 55
 — insect, control of, by cerebral gland, 21
 Ovary, and testis, compatibility of, in transplantation, 179
 — — similar actions of, 107
 — atrophy of, after hypophysectomy, 1
 — — caused by androgens, 193
 — — caused by oestradiol, counteracted by testosterone, 202
 — — lack of FRH as cause of, 282
 — compensatory hypertrophy of, following partial spaying, 22
 — cytology of embryonic, 177
 — development of, 176 ff.
 — — increased by testosterone, 192 ff.
 — early irresponsiveness of, to gonadotrophin, 18, 70
 — effect of adrenalectomy on, 448
 — effect of androgen on undeveloped, 188
 — effect of androgen on, in varying doses, 193
 — effect of FRH and LH on, 15 ff., 21, 282, 399
 — effect of gonadotrophin on, restrained by testosterone, 121
 — effect of oestrogen on, 282
 — — counteracted by androgen, 192
 — effect of progestin on, 408 ff.
 — effect of testosterone and gonadotrophin on, 194
 — effect of X-rays on, 252 ff.
 — embryonic, differentiation of, 176 ff.
 — — effect of androgen and gonadotrophin on, 183
 — — effect of androgens on, 178 ff., 182 ff.
 — — effect of testicular grafts on, 178 ff.
 — — sex reversal of, by symbiosis, 181 ff.
 — — sexually indifferent stage of, 177, 181
 — — transformation of, into testis, 181, 184
 — enlargement of, effect of LH on corpora lutea as cause, 282
 — immature, action of gonadotrophin on, 18, 70 ff., 191
 — immature and mature, effect of oestrogen on, 280 ff.
 — interstitial cells of, 177, 448
 — — as source of oestrogen, 253
 — of hen, action of, on right vestigial gonad, 275
 — of rats, effect of gonadotrophin on, influenced by light, 38
 — single, compensatory hypertrophy of, 22 ff.
 Oviducts, effect of androgens on, 185, 215
 — effect of oestrogen on, in prenatal treatment, 274, 276
 — enlargement of, caused by oestrogen, 15
 — *See also* Fallopian tubes
 Ovogenesis, 19 ff., 281 ff.
 — effect of oestrogen on, 281 ff.
 — number of primordial ova at different ages, 20
 Ovulation, and action of progestin on FRH output, 408
 — and LH, 18, 31, 409 ff.
 — and luteinization, 18 ff.
 — and puberty, 30
 — arrested by androgens, 194 ff.
 — arrested by withholding LH, 194
 — effect of androgens and oestrogens on, 191 ff.
 — effect of cadmium and copper salts on, 19, 75
 — effect of picrotoxin on, 19
 — effect of progestin on, 57, 408 ff.
 — indirect effect of testosterone on, 196
 — induced by agent which increases output of gonadotrophin, 18, 31, 395 ff.
 — induced by LH, 18 ff., 410, 412
 — induced by pituitary extracts, 20
 — in relation to electrical potential of vagina, 307
 — in women, pituitary influence on, 19
 — psychological stimuli of, 39, 398
 — species-variation in, 31
 — stimuli affecting, 410
 Ovulation-producing hormone of pregnancy urine, 1, 10, 19
 — effect of heat on, 1
 Oxytocin, effect on uterus inhibited by gonadal hormones, 110, 324, 423
 Pancreas, insulin content of, affected by oestrogen, 379
 — lesions of, caused by androgen, 237
 Pancreatectomy, glycosuria of, prevented by oestrogen, 378
 Papain, inactivation of gonadotrophins by, 3
Papio porcarius, effect of progestin on, 437
 Parabiosis, effect on immunity to gonadotrophin, 80
 — in study of hormones, 13, 52
 — larval, predominancy of male partner in, 180 ff.
 — of female and male rats, 118
 — *See also* Symbiosis, artificial
 Paraphimosis and balanitis, caused by oestrogen treatment, 291
 Parathyroid, effect of androgen on, 238
 — effect of oestrogen on, 380
 Parathyroidectomy, effect on pituitary, 94
 Parturition, date of, factors influencing, 422 ff.
 — hormonal balance controlling, 323 ff.
 — inhibition of, by chorionic gonadotrophin, 422
Passer domesticus, differing responses of, to pituitary and placental gonadotrophin, 11
 — illumination of, effect on gonads, 35

- Penis, and prepuce, relationship between, 225 ff.
 — castration-atrophy of, effect of androgens on, 224
 — growth of, effect of androgens on, 223 ff.
 — hypertrophy of, after gonadotrophin, 222, 224
 — musculature of, effect of castration on, counteracted by androgen, 228
 — — effect of oestrogen on, 291
 — rudimentary, in female, effect of androgens on, 224 ff.
 Pepsin, inactivation of hormones by, 2 ff.
 Perineum, effect of androgen on, 222 ff.
 Permeability of capillaries, *see* Permeation of capillaries
 Permeation of capillaries, effect of oestrogens on, 382
Peromyscus leucopus noveboracensis, effect of illumination on gonads of, 37
Phoxinus laevis, androgen treatment of, after breeding season, 202
 Pigeon's crop-gland, effect of adrenal hormones on, 452
 — effect of prolactin on, 345 ff.
 'Pigeon's milk', 345
 Pigmentation, effect of androgen on, 162, 240 ff.
 — in birds, effect of LH on, 17
 — — effect of oestrogen on, 128, 241
 — in brunettes with virilism, 240 ff.
 — in castrated male, effect of androgen on, 240 ff.
 — in chicken explants, influence of gonadal hormones on, 241
 Piperidinomethylbenzodioxan, action of, on uterus, effect of sex hormones on, 324
 Pitocin, 423 ff.; *see* Glossary
 Pitressin, 423 ff.; *see* Glossary
- PITUITARY:**
 — anterior lobe of, as source of gonadotrophin, 6, 32 ff.
 — — factors influencing cytology and weight of, 85–95
 — autotransplantation of, 39
 — bipotential, in newborn rat, 61
 — castration changes in, prevented by androgen, 63, 89
 — — effect of oestrogens on, 63, 88
 — cell-counts in female and male, 92
 — chromophobe swellings of, caused by oestrogen, 151
 — component of, activating placental gonadotrophin, 11
 — conduction of afferent impulses to, 38 ff.
 — control of, by androgen, 55 ff., 88 ff.
 — — by oestrogen, 51 ff., 88 ff.
 — — by ovary, 21
 — — by progesterin, 57 ff., 91
 — control of adrenals by, 442
 — control of androgen production by, 172 ff.
 — control of oestrogen output by, 24
 — control of reproduction by, 32–84
 — control of seasonal breeding by, 73
 — co-operation of, with placental gonadotrophin, 29
 — — with pregnancy-urine gonadotrophin, 29
 — cytology of, 85–95
 — — and gonadal activity, 85 ff.
 — — during lactation, 87 ff.
 — — during oestral cycle, 86 ff.
 — — during pregnancy and pseudopregnancy, 87 ff.
 — — effect of administered gonadotrophin on, 60, 91 ff.
 — — effect of adrenalectomy on, 94, 449
 — — effect of age on, 94 ff.
 — — effect of androgens on, 89 ff.
 — — effect of castration on, 93 ff.
 — — effect of castration and treatment with oestrogen on, 88 ff.
 — — effect of cryptorchidism on, 46, 49 ff., 94
 — — effect of gonadal hormones on, 88 ff.
 — — effect of gonadectomy on, 88 ff., 93 ff.
 — — effect of ligation of vasa efferentia on, 94
 — — effect of oestrogen on, 88 ff., 279
 — — effect of oestrous cycle on, 86 ff.
 — — effect of parathyroidectomy on, 94
 — — effect of pituitary implants on, 91
 — — effect of placental extracts on, 91
 — — effect of pregnancy and pseudopregnancy on, 87 ff.
 — — effect of progestin on, 88, 91 ff.
 — — effect of sex on, 62, 92
 — — effect of thyroidectomy on, 94
 — — effect of under-feeding on, 94
 — — effect of vitamin deficiencies on, 94
 — — female and male, 62, 92 ff.
 — — in breeding season, 85
 — — in chorionepithelioma, 88
 — — in pregnancy and pseudopregnancy, 87 ff.
 — — under different influences, 85 ff.
 — deficiency of, androgen treatment of, 201
 — counteractive methods in, 1, 6, 17
 — cytology of, 85
 — effects of, 1, 6, 201
 — *See also* Hypophysectomy
 — disorders of, and changes in adrenal cortex, 442
 — effect of acetylcholine and prostigmine on, 39
 — effect of administered gonadotrophin on, 59 ff., 91 ff.
 — effect of androgen on, 55 ff., 89 ff., 176, 184, 217
 — effect of atropine on, 39
 — effect of castration on, counteracted by androgen, 89
 — effect of deoxycorticosterone on, 438
 — effect of gonadal hormones on sex-type of, 61 ff.
 — effect of oestrogen on, 41 ff., 51 ff., 88 ff., 277 ff., 434
 — effect of partial gonadectomy on, 46 ff.
 — effect of progesterone on, 41 ff., 57 ff., 91, 404 ff., 434
 — effect of testosterone on, 90
 — embryonic, chromophobe cells in, 85

INDEX

507

Pituitary (*cont.*)

- enlargement of, caused by oestrogen, 277 ff.
- factors influencing gonadotrophic activity of, 32–69
- female, effect of implanted testes on, 61
- female and male, comparison of luteinizing effect of, 63 ff.
- — effects of gonadal grafts on, 61, 63
- — gonadotrophic potencies of, compared, 45, 60 ff., 92 ff.
- — weights of, 64, 92
- function of, effect of castration on, 14
- gonadal restraint of, 44–59
- gonadotrophic activity of, effect of afferent stimuli on, 34 ff.
- — effect of external temperature on, 40 ff.
- — effect of partial gonadectomy on, 47 ff.
- — effect of psychological stimuli on, 39
- — factors influencing, 32–69
- — seasonal variations in, 41
- gonadotrophic potency of, cyclical variations in, 43
- — during oestrous cycle, 41 ff.
- — during pregnancy, 44
- — effect of age on, 31
- — effect of cryptorchidism on, 45 ff., 49 ff.
- — effect of enzymes on, 2 ff.
- — effect of gonadectomy on, 44 ff.
- — effect of gonadotrophin on, 59 ff.
- — effect of illumination on, 34 ff.
- — effect of X-ray sterilization on, 50 ff.
- — increase of by gonadectomy, counteracted by gonadal hormones, 62
- — inhibition of, by androgen, 55 ff., 113 ff.
- — — by gonadal hormones, 51 ff., 113 ff.
- — — by oestrogens, 41 ff., 51 ff.
- — — by progesterin, 57 ff., 114, 406
- human, female and male compared, 61 ff.
- inhibition of, by gonads, 50–9
- luteinizing action of, assisted by oestrogen, 16
- — inhibited by implanted testes, 61
- mare's and stallion's, effects on rat ovaries compared, 63
- of castrate, cryptorchid and normal rat, 45 ff., 238
- participation of, in reversible reactions, 142
- potency of, in gonadectomized female and male rat, 62
- response of, to oestrogen, in different strains of mice, 278
- reversible enlargement of, caused by oestrogen, 278
- stimuli to, hormonal and nervous conduction of, 39
- transmission of stimuli to, nervous and hormonal, 34 ff.
- transplantation of, and gonadotrophin production, 39
- trophins of, as controls of androgen formation, 172
- weights of female and male, 64, 92
- Pituitary extract, antigenic potencies of, 80
- effect on castrated males, 164
- effect on follicles, 21
- effect on parental behaviour, 145
- masculinization action of, 106, 110
- Pituitary gonadotrophin, *see* Gonadotrophin, pituitary
- Pituitary grafts, activity of, 39
- as source of gonadotrophin, 39
- Pituitary growth-hormone, 369 ff.
- Pituitary hormones, *see* Gonadotrophin
- Pituitary hormones, output of, controlled by adrenal cortex hormones, 443
- Pituitary implants, and oestral stage of donor, 42
- effect on chicks, 70
- effect on testes, 26 ff.
- Pituitary tumours, caused by oestrogen, 277 ff.
- Pituitary-adrenal relationship, 443
- Pituitary-gonadal balance, 21 ff., 47, 441 ff.
- Pituitary-gonadal relationship, 91 ff., 150, 443
- Pituitary-ovary balance, 17 ff., 51 ff., 70 ff.
- effect of partial gonadectomy on, 24
- Pituitary-testis balance, 50 ff.
- Pituitrin, 424 ff.; *see* Glossary
- Placenta, as source of gonadal hormones and gonadotrophin, 6, 255 ff., 400 ff., 415
- formation of, induced by progesterone with oestrogen, 420
- — action of progesterin in, 419 ff.
- Placentoma, 419 ff.
- Plumage of female and male birds, effect of androgen and oestrogen on, 17, 101, 114, 241, 270, 376
- Precocious sexual maturity, 31
- induced by adrenal implant, 163
- induced by adrenocortical extracts, 448 ff.
- induced by androgens, 145 ff., 160, 201
- induced by gonadotrophin, 27 ff., 73, 145 ff.
- induced by pituitary implants, 18
- of prostate induced by androgens, 217
- Pregnancy, diagnosis of, by pregnanediol estimations, 412
- effect of oestrogen supply in, 321
- effect of progesterin in, 415 ff.
- effect on cytology of pituitary, 85, 87 ff.
- gonadotrophic activity of pituitary in, 44
- maintenance of, effect of corpora lutea on, 421
- — effect of oestrone on, 421
- — effect of progesterone on, 421
- of rodents, copulation during, 419
- 'Pregnancy cells' in pituitary, 85, 87 ff.
- Pregnancy changes and progesterin, 88. *See also* 'Pregnancy cells'
- 'Pregnancy changes' in pituitary function, 44, 91
- Pregnancy test, Aschheim and Zondek, 5, 7 ff. *See also* Glossary
- mouse test, *see* Glossary
- rabbit test, *see* Glossary
- Pregnanediol, and derivatives, normal excretion of, 392 ff.
- — pathological excretion of, 391 ff.
- biological effect of, 414
- effect on vagina of spayed mice, 414
- excretion of, by bull, 105, 394

- Pregnanediol, excretion of, during menstrual cycle, 392 ff.
 — from progesterone, 392 ff.
 — significance of, in urine, 392 ff., 412
 Pregnanediol glycuronate, sodium salt of, pathological excretion of, 392 ff.
*epiallo*Pregnaneolone, 394
 Pregnane-3:20-triol, 394
 Pregneninolone, 112, 389, 434. *See also* Appendix
 Preputial glands, castration atrophy of, prevented by androgen and oestrogen, 221 ff.
 — effect of androgens and oestrogens on, 221 ff., 301
 — effect of gonadal hormones on, 116
 Progestational changes, after hypophysectomy, effect of androgen on, 209
 — co-operation of oestrogen and progesterone in, 426 ff.
 — effect of gonadal hormones on, 117, 208 ff.
 — effect of oestrogen and progesterone on, 429
 — effect of oestrogen dosage on, 429
 — in spayed rats, effect of androgen on, 209
 Progestational effect of luteal extract, 416. *See also* Corpora lutea; Progesterone
 Progesterone, 114, 389 ff.
 — and androgens, similar effects of, 109 ff.
 — and deoxycorticosterone, similarity of, 99, 438
 — and oestrogen in nidation of ova, 418
 — as cause of oedema, 437 ff.
 — assay of, 417
 — — with minnow's ovipositor, 439
 — conversion of, into pregnanediol, 394
 — effect of dosage of, 433 ff.
 — effect on accessory genital organs, 111, 413–35
 — effect on endometrium, 208
 — effect on excretion of water, 437
 — effect on glycogen content of endometrium, 420 ff.
 — effect on nidation of ova, 417 ff.
 — effect on ovary and pituitary, 58
 — effect on pituitary production of FRH, 428
 — effect on pituitary production of LH, 409
 — effect on uterus, 450 ff.
 — effect on vagina, 451
 — estimation of, as pregnanediol, 412
 — excretion of, as pregnanediol, 392 ff.
 — formation and properties of, 110, 114, 394
 — from corpora lutea, 390
 — increases fertility of rats, 417
 — indirect effect on oestrogen production, 428
 — in uterine conversion of oestrone into oestriol, 428
 — metabolism of, 392 ff.
 — production of, in placenta, 423
 — progestational response to, 208
 — protective action of, against oestrogen, 111
 — sources of, in commerce, *see* Appendix
 — species-difference in reaction to, 429, 433
 — structural formula, 99, 389
 — *See also* Progestin
 α -Progesterone and β -progesterone, 395
 Progestin, 389–405
 — absence of storage of, 392
 — adrenals as source of, 391
 — androgen and oestrogen, similar effects of, 111
 — biological action of, 406–39
 — corpora lutea as source of, 390
 — definition of, 100 ff., 389 ff., 406
 — effect of, in oestrous cycle, 410 ff.
 — effect on accessory male reproductive organs, 407 ff.
 — effect on embryological development of reproductive organs, 406
 — effect on menstrual bleeding, 411 ff.
 — effect on menstruation, 57 ff.
 — effect on output of pituitary gonadotrophin, 58 ff., 406
 — effect on ovary, 408 ff.
 — effect on ovulation, 57, 402
 — effect on pituitary, 41, 57 ff., 88, 91, 406, 409, 438
 — effect on spermatogenesis, 406 ff.
 — effect on testis, 406 ff.
 — effect on uterus, 417 ff.
 — effect on vaginal keratinization and mucification, 413
 — function of, 101
 — in formation of placenta, 419
 — in regulation of oestrus and ovulation, 57
 — placenta as source of, 390
 — preparation of, from placentae, 391
 — production of, during oestrous cycle, 43
 — source of, in adrenal, placenta or ovary, 415
 — sources, functions and metabolism of, 389–405, 415
 — storage in body of, 392
 — *See also* Progesterone
 Progestogen, definition of, 389 n.
 Prolactin, effect of, counteracted by oestrogen, 346
 — effect on mammals, 345 ff.
 — effect on pigeon's testes, 344
 — production of, effect of oestrogen on, 346
 — properties of, 342 ff.
 Prolan, 4, 10 ff. *See also* Gonadotrophin, chorionic; Gonadotrophin, placental; Gonadotrophin, pregnancy-urine; Hormone, pregnancy-urine; *see also* Glossary
 — and pituitary extracts, comparison of, 10 ff., 16 ff.
 — and placental gonadotrophin, similarity of, 11
 — and pregnant mare's serum gonadotrophin, comparison of, 12
 — antibodies, 79
 — definition of, 4
 — isoelectric point of, 4
 — nature of, 80
 — source of, 10
 — synergistic effect of, 74
 Prooestrogens, definition of, 127
 Prostate, and coagulating glands, effect of androgens on, 215 ff.
 — atrophy of, after hypophysectomy, 1
 — enlargement of, origin and therapy of, 153, 216 ff., 297 ff.

INDEX

509

- Prostrate, enlargement of, treated by castration, 152, 218, 299
 — hypertrophy of, excess of testicular androgen in, 216
 — maintenance of, by testis, 188
 — vestigial, in females, effect of androgens on, 217
 Prostatic epithelium, effect of androgen and oestrogen on, 217 ff., 295 ff.
 Pseudopregnancy, effect on cytology of pituitary, 87 ff.
 — vaginal epithelium in, 413
 Ptyalin, crude, effect on FRH and LH, 3
 — inactivation of hormones by, 3
 Puberty, and seasonal breeding, 30
 — and sexual activity, 30
 — precocious, induced by gonadotrophin, 73.
See also Precocious sexual maturity
- Rana sylvatica*, temperature effect on larvae of, 185 ff.
 Resistance, acquired, to gonadal hormones, 150
 — to gonadotrophin, 76 ff.
Rhodeus amarus, effect of gonadal hormones on, 109
Rhodnius prolixus, ovary controlled by corpus allatum, 21
- Sarcoma, caused by gonadal hormones, 151, 250, 268; 376, 383
 Scarlet red in cytology of adrenal, 233
 Scrotum, effect of androgen on, 201, 222 ff.
 — effect of castration on, 222
 — effect of oestrogen on, 291
 — motor function of, effect of castration on, 223
 — shrinkage of, caused by hypophysectomy, 200
 Secondary sexual characters depending on genes, 139
 Seminal epithelium, destruction of, effect on pituitary, 93 ff.
 — in vitamin-E deficiency, 94
 Seminal fluid coagulated by enzyme action, 215
 Seminal vesicles, atrophy of, after hypophysectomy, 1, 57
 — effect of androgens on, 218 ff., 224
 — effect of oestrogen on, 218 ff., 296 ff.
 — maintenance of, by testis, 188
 — of rats, effect of light and gonadotrophin on, 38
 Seminoma, *see under* Cancer
 — effect on gonadotrophin output, 8 ff.
 Sensitization of uterus to action of progesterone, by oestrogen, 427
 Serum, antigonadotrophic, 77 ff.
 — production of, by gonadotrophic extracts, 80
 — by non-gonadotrophic protein, 79
 — gonadotrophic potency of, affected by gonadotrophin, 55
 — affected by hypophysectomy, 55
 — affected by spaying, 55
 — inhibited by oestrogen, 55
- Sex characters and gonadal activity, history of, 96
 Sex determination, effect of gonadal hormones on, 113, 151
 Sex, effect of, on gonadotrophic potencies, 60
 Sex reversal, and genic constitution, 151, 183 ff.
 — in artificial symbiosis, 181 ff., 271
 — induced by androgen in embryos, 186
 — of larval frogs and salamanders, induced by androgen, 183
 — of larval salamanders, induced by oestrogen, 272 ff.
 — without change of sex chromosomes, 151
 Sexual maturity, precocious, induced by gonadotrophin, 27 ff., 73
 Siderophile granules in virilizing tumours, 454
 'Signet ring' cells of pituitary, after castration, 93
 Skeleton, effect of androgen on, 107, 241 ff.
 — hypercalcification of, effect of oestrogen on, prevented by androgen, 244
 — graded response to oestrogen in, 268
 Skin, action of androgen on, 239 ff.
 — effect of oestrogen on, 240, 376
 Sodium, excretion of, effect of pregnanediol and progesterone on, 437. *See also* Electrolytes and water, excretion of
 Sodium pregnanediol glycuronate, pathological excretion of, 392 ff.
Sorex minutus, intersexual characters in, 208
 Spayed hen, neutral plumage of, 101
 Spaying, effect on plumage of, 101
 — partial, 21 ff., 47 ff. *See also* Castration, partial; Gonadectomy, partial
 — cancer as sequel of, 47
 — effect on mammae, 48
 — effect on oestral cycle, 48
 — effect on remaining ovarian tissue, 47
 — effect on uterus, 48
 — oestrogen output increased by, 48
 — unilateral, effect on fecundity, 21 ff.
 — *See also under* Castration; Gonadectomy
 Sperm motility, as test for androgen, 202
 — effect of androgen on, 202
 Spermatogenesis, after hypophysectomy, maintained by androgen, 198 ff.
 — effect of gonadal hormones on, 406 ff.
 — effect of oestrogen on, 284
 — effect of temperature on, 206
 — inhibited by hypophysectomy, 198 ff.
 — restrained by excess of androgen, 196
 Spermatozoa, survival of, in pregnancy, 419
 Sterility in cattle, related to progestin, 410
 Sterilization by X-rays, 46 ff., 50 ff.
 Stilboestrol, as cause of fibromyoma, 317
 — detoxication of, effect of pregnancy on, 262
 — inhibition of growth by, 369
 — *See also* Diethylstilboestrol
 Storage, of androgen, absent or exceptional, 165
 — of gonadal hormones, not appreciable, 102
 — of gonadotrophins, not appreciable, 4
 — of oestrogen, not detected, 259
Streptopelia decaocta syn. *risoria*, 273 ff.

- Submaxillary salivary gland, cytology of, 239
 — effect of castration on, counteracted by androgen, 239
 — effect of gonadal hormones on, 239
 — sexual dimorphism of, 239
 Superfecundation induced by gonadotrophin, size of litters in, 20
 Superovulation, induced by gonadotrophin, 20
 Symbiosis, artificial, 179, 181
 — definition of, 179
 — natural, 179
 — *See also* Parabiosis
 Synergism, 74. *See also* Augmentation
- Temperature, effect on development of ovary, 185
 — effect on embryos and larvae, 185 ff.
 — effect on epididymis and testis, 206
 — effect on gonadal response to gonadotrophin, 84
 — effect on production of androgen, 84, 161
 — effect on spermatogenesis, 30, 84
 — effect on testicular changes, 84, 161 ff.
 — effect on undescended testis, 30, 84, 161
 — external, in relation to breeding season, 40
 Teratoma, testicular, 8, 10. *See also* under Tumours
- Testes, and ovary, similar actions of, 107
 — atrophy of, after hypophysectomy, 1, 25 ff.
 — — after hypophysectomy counteracted by gonadotrophin, 25 ff.
 — — caused by androgens, 55, 196 ff., 216
 — — counteracted by gonadotrophin, 56 ff., 196 ff.
 — — caused by oestradiol, counteracted by testosterone, 202
 — — caused by oestrogen, 283 ff.
 — cytology of embryonic tissue of, 177
 — descent of, 202 ff.
 — — action of gubernaculum on, 206
 — — clinical use of gonadotrophin in, 205
 — — conditions favourable to, 206
 — — effect of androgens on, 198, 202, 205 ff., 288
 — — effect of dosage of testosterone on, 205
 — — effect of FRH on, 203
 — — effect of general health on, 65 ff.
 — — effect of gonadotrophin on, 27 ff., 202 ff., 288
 — — effect of LH on, 203
 — — factors affecting, 202 ff., 205
 — — influenced by androgens and gonadotrophin, 184, 202 ff., 205, 288
 — — inhibited by gonadal hormones, 58, 112, 205 ff.
 — — descent of paraffin model of, 203
 — — descent or retraction of, caused by androgens, 198, 202 ff.
 — — development of, 176 ff.
 — — drakes', effect of blinding on, 36
 — — effect of adrenalectomy on, 448
 — — effect of androgen on, prevented by gonadotrophin, 197
 — — development and function of, 183 ff., 196 ff., 216
 — — immature, 184
 — — effect of excessive androgen on, 196 ff.
 — — effect of FRH and LH on weight of, 15
 — — effect of gonadotrophins on, 12, 25 ff.
 — — effect of gonadotrophins on, during treatment with testosterone, 184
 — — effect of prolactin on, 344
 — — effect of progestin on, 406 ff.
 — — effect on androgens in perfused blood, 157
 — — embryonic, interstitial glandular cells of, 177
 — — differentiation of, 176 ff.
 — — indifference of, to androgens, 183 ff.
 — — sexually indifferent stage of, 183
 — — feminizing effect of ovarian hormones on, 275
 — — fluid in intertubular spaces of, 204
 — — gonadotrophin supply to, inhibited by androgen, 184
 — — grafted in spayed females, effect on bone growth of, 371
 — — hyperplasia of interstitial tissue of, caused by oestrogen, 284
 — — immature, effect of pituitary implants on, 26
 — — interstitial tissue of, as source of androgen, 158 ff.
 — — effect on cock's comb, 158
 — — location of, during experiments, 29 ff.
 — — neoplasia of interstitial tissue of, caused by oestrogen, 284 ff.
 — — non-descent of, caused by gonadal hormones, 112
 — — caused by oestrogen, 275, 287 ff.
 — — effect of vitamin-E deficiency on, 288
 — — *See also* Cryptorchidism
 — of immature animals, effect of androgens on, 196
 — of immature rats, effect of gonadotrophin on, 203
 — of mature rats, effect of androgens on, 197
 — of sparrows, effect of prolonged illumination on, 37
 — production of androgens in, 157
 — progestational effect of, 208, 392
 — retarded development of, caused by oestrogen, 275
 — undescended, atrophy of, affected by temperature, 30, 84, 161
- Testicular androgen, compared with androsterone, 217
 Testicular cancer, frequency of, in retained testes, 287
 Testicular changes affected by temperature, 84, 161 ff.
 Testicular extract, effect on castrated guinea-pigs, 215
 Testicular extracts, effect of treatment with, 153
 Testis, single, compensatory hypertrophy of, 26
 Testosterone, alteration of, before excretion, 165 ff.
 — and methyltestosterone in progestational changes, 208
 — — effects compared, 97 ff.
 — and prevention of mammary cancer, 150
 — and sarcoma, 151

INDEX

511

- Testosterone, and testosterone esters, effects compared, 131
 — and testosterone propionate in progestational responses, 209
 — conversion of, into androsterone, 154, 157, 165
 — conversion of, into oestrogen, 103
 — dosage of, effect on ovary, 193
 — effect on castrated rats, 57
 — effect on cryptorchid testes in hypophysectomized rats, 200
 — effect on embryonic ovary, 182 ff.
 — effect on larval axolotls, 188
 — effect on Müllerian and Wolffian systems, 186 ff.
 — effect on oviducts of new-born rats, 188
 — effect on pituitary, 90
 — effect on pregnant mice, 186 ff.
 — effect on testes, 56
 — effect on testis in hypophysectomized rats, 199
 — effect on vagina of immature rats, 190
 — in treatment of pituitary deficiency, 201
 — *in utero*, as cause of male structure in female litter, 188 ff.
 — metabolism of, 102, 103, 154
 — natural and synthetic, 154
 — production of, in testis, 157
 — secretion and inactivation of, 157, 165 ff.
 — structural formula, 98, 102
 — suppresses pituitary FRH, 57
 — transformation of, before excretion, 165 ff., 172
 — *See also* Androgens; Hormones, Gonadal
 Testosterone propionate, and intersexualism in embryos, 113
 — effect on excretion of gonadotrophin, 215
 Thecal cells, as source of oestrogen, 254
 Thecoma, excretion of oestrogen in, 254
 Theelin, 251
 Thymus, effect of androgens and oestrogens on, 239
 — effect of castration on, 238
 Thyroid, effect of androgen on, 238
 — effect of castration and cryptorchidism on, 237
 — effect of, on gonadotrophic potency of pituitary, 69
 Thyroidectomy, effect on pituitary, 94
 — effect on production of pituitary gonadotrophin, 69
 — effect on testes, 237
 Thyrotrophin, effect of proteolytic enzymes on, 3
 — inactivation of, by thyroid gland, 5
 — production of, after gonadectomy, 238
 — responsiveness of individuals to, 80
 Thyroxin, effect on immature male testes, 238
 Tissue growth and cancer, induced by gonadal hormones, 147 ff.
 — cellular differentiation in, controlled by gonadal hormones, 147 ff.
 — — — gradients of reactivity in, 140, 149
 — — — irresponsive and responsive tissues, 149
 Transplants, normal reactions of, to hosts' hormones, 101, 114, 270, 305
 Triphenylchloroethylene, inhibition of lactation by, 340
 Triphenylethylene, and mammary cancer, 98
 — in co-operation with androgens, 214
 — oestrogenic action of, 98, 415
 — structural formula, 105
Triton cristatus, changes of, in breeding season, 158
Triturus torosus, male predominant in parabiosis, 181
 Trophin, definition of, *see* Glossary
 Trophins, production of, in pituitary, 1, 32, 172
 Trypsin, inactivation of hormones by, 2 ff.
- TUMOURS: *see also* Cancer
 Adenoma of breast, benign, 332
 Adrenal hyperplasia and neoplasia, 453
 — excretion of androgens in, 163, 455 ff.
 — excretion of oestrogen in, 103, 257
 — excretion of progestin in, 111, 392, 394
 Arrhenoma and ovarian androgen, 162 ff.
 Cystic glandular hyperplasia of uterus, caused by oestrogen, 313
 — caused by testosterone, 208
 — caused by X-rays, 349 ff.
 Cystic mastopathy and oestrogen, 328 ff., 333 ff.
 Cysts, of uterus masculinus, caused by oestrogen, 299
 — ovarian, caused by androgens, 182, 192, 196, 283
 — — caused by excess of gonadotrophin, 25, 48
 — — caused by oestrogens, 151, 196, 283
 — — caused by partial spaying, 48
 — — in acromegaly, 25
 — uterine, caused by partial spaying, 48
 Deciduoma, dependence on corpora lutea, 405, 428 ff.
 — caused by androgen, 109, 211, 319
 — caused by progestin, 419
 — caused by testosterone, 211
 — co-operation of two hormones in, 117
 — formation of, prevented by oestrogen, 428 ff.
 Deciduoma reaction, 428. *See also* Placentoma
 Endometrial moles and endometriosis, caused by oestrogen, 318
 Endometrioma, androgen-treatment of, 208
 Endometriosis, stromatous, caused by oestrogen, 319
 Feminizing tumours, cytology of, 454
 Fibro-adenoma of mamma in rats, caused by oestrogen, 350
 Fibroid tumours, in males and females, caused by oestrogen, 317 ff.
 Fibromyoma of uterus, caused by oestrogen, 211 ff., 316 ff.
 — prevented by androgen or progestin, 317
 — induced by different oestrogens, 317
 Granulosa cell tumour, excretion of oestrogen in, 254 ff., 318, 349 ff.

Tumours (*cont.*)

- Granulosa tumours induced by X-rays, 349 ff.
- Haemangioma of liver caused by oestrogen, 377
- Hepatoma caused by oestrogen, 377
- Hyperplasia, of adrenal cortex, and virilism, 163, 453
 - of endometrium, 318
 - of interstitial tissue of testis, 285 ff.
 - of uterine stroma, 316
- Interstitial tissue of testis, tumour of, androgen production by, 160, 285
 - caused by oestrogen, 284 ff.
- Lymphoid tumours caused by oestrogen, 383
- Mammary adenoma caused by oestrogen, 151
- Placentoma, 419 ff. *See also* Deciduoma
- Pregnenediol glycuronate, sodium, excretion of, in adrenal tumours, 392 ff.
- Sarcoma, induced by androgen, 250
 - oestrogen, 268, 373, 376
- Seminoma, increase of urinary gonadotrophin in, 8 ff.
- Testis, chorionepithelioma of, 8
 - teratoma of, caused by zinc chloride, 49
 - diagnosis of, 8, 10
 - gonadotrophin excreted in, 8, 10
- Thecoma, excretion of oestrogen in, 254
- Tumours, adrenal, and gynaecomastia, 452
 - excretion of androgens in, 103, 163, 173, 453 ff.
 - excretion of oestrogens in, 103, 455
 - excretion of sex hormones in, 163, 455 ff.
 - of men, excretion of oestrogen in, 456
 - hormonal disturbance in, 456
 - pigmentation of areola in, 456
 - of women, as cause of virilism, 163, 453 ff.
 - excretion of *transdehydroandrosterone* in, 163
 - excretion of 17-ketosteroids in, 163
 - staining reactions of, 453 ff.
 - virilizing, cytology of, 453 ff.
- caused by gonadal hormones, 151, 182, 192, 196
 - caused by oestrogen, 151, 313–19. *See also under* Cancer; Cysts *supra*; Oestrogens
 - effect of sex on dosage needed, 317 ff.
 - prevented by androgen, 317
 - prevented by progestin, 317
 - osseous, caused by oestrogen, 268, 373
 - spontaneous, in mice, 373
 - ovarian, and cysts, caused by androgen or oestrogen, 283
 - pituitary, caused by oestrogen, 25, 277 ff.
 - testicular, Aschheim-Zondek test in, 7 ff.
 - excretion of gonadotrophin in, 9
 - following partial castration, 49
 - induced by oestrogen, 284 ff.
 - in retained testes, 287
 - types of, caused by gonadal hormones, 151

- virilizing, staining reactions of, 453 ff.
- See also* Cancer; Tissue growth
- Uterus, cysts of, caused by partial spaying, 48
 - fibromyoma of, 211 ff., 316 ff.
- Uterus masculinus, cyst of, caused by oestrogen, 299
- Twins, embryo bovine, gonads of, 180
- Ultra-violet light, inactivation of prolactin by, 2
- Under-feeding, and incidence of mammary cancer, 139
 - effect on accessory reproductive organs, counteracted by gonadal hormones, 65 ff.
 - effect on female and male gonads, 64 ff., 94
 - effect on gonadotrophic activity of pituitary, 64 ff., 67
 - effect on gonads, counteracted by gonadotrophin, 65 ff.
 - counteracted by pituitary implants, 66
 - effect on oestrogen production, 139
 - effect on oestrus, 65
 - effect on ovarian follicles, 65
 - effect on seminal epithelium, 94
 - reversible effects of, 65
 - *See also* Nutritional deficiency; Vitamin deficiency
- Ureteral dilatation in pregnancy, effect of gonadal hormones on, 325
- Urethra, as accessory male reproductive organ, 227
 - epithelial metaplasia of, caused by oestrogen, 291
 - female, effects of androgens on, 227
 - hypertrophy and hypospadias of, 227
 - male, castration atrophy of, counteracted by androgen, 228
 - development of, 227 ff.
 - effect of androgen on, 227 ff.
- Uterine bleeding, cause of, 211, 319 ff.
 - effect of spaying on, 211
 - inhibition of, by gonadal hormones, 211, 319 ff.
- Uterine cysts, *see under* Tumours
- Uterine hyperaemia, induced by oestrogen and release of acetylcholine, 311
- Uterine musculo-fibrous stroma, hypertrophy of, caused by androgen, 207, 214
- Uterine response, to adrenaline, effect of oestrogen on, 324
 - to piperidinomethylbenzodioxan, effect of oestrin and progestin on, 324
 - to pituitrin, effect of oestrogen on, 324
 - to pituitrin, effect of progestin on, 423 ff.
- Uterine stroma, hyperplasia of, caused by oestrogen, 316
- Uterus, atrophy of, caused by deficiency of ovarian hormones, 310
 - caused by hypophysectomy, 1, 310
 - caused by spaying, 310
 - carcinoma of, caused by oestrogen, 313 ff.
 - castration atrophy of, counteracted by oestrogen, 310
 - cholinergic action of oestrogen on, 312

INDEX

513

- Uterus, co-operative effect of androgen and oestrogen on, 209
- co-operative effect of oestrogen and progesterone on, 415
 - cystic glandular hyperplasia of, caused by oestrogen, 313
 - cysts of, caused by partial spaying, 48
 - effect of adrenaline on, reversed by oestrogen, 324
 - effect of androgen on, 207 ff.
 - effect of androgen and oestrogen on, 208 ff.
 - effect of deoxycorticosterone on, 450 ff.
 - effect of dosage of oestrogen on, 319
 - effect of light and gonadotrophin on, 38
 - effect of oestrogens on, 310–24
 - effect of progestin on, 417 ff.
 - effect of progesterone on, influenced by oestradiol, 429
 - enlargement of, during pregnancy, 425
 - — — effect of hormones on, 426 ff.
 - fibromyoma of, androgen treatment questioned, 212
 - — caused by oestrogen, 211 ff., 316 ff.
 - human, condition of, after menopause, 312
 - infection of, influence of oestrogens in, 309
 - leucocytosis of, 315
 - motility of, effect of adrenaline on, 423 ff.
 - — effect of hypogastric stimulation on, 424 ff.
 - — effect of oestrone and androgen on, 209 ff.
 - — effect of oestrone on, 425
 - — effect of progesterone on, 423 ff.
 - muscular activity of, effect of oestrogen on, 323 ff.
 - of spayed and non-spayed rats, effect of androgens on, 207 ff.
 - of spayed animals, effect of oestrogen on, 310 ff.
 - respiration of, effect of oestrogen on, 312
 - sensitization of, by oestrogen, to action of ergot, 323
 - — — to action of progesterone, 427
 - squamous carcinoma of, caused by oestrogen, 314
 - stroma of, effect of gonadal hormones on, 207
 - water content of, during menstrual and oestrous cycles, 311
- Uterus masculinus, cyst of, caused by oestrogen, 299
- maintained by oestrone, 275 ff.
 - embryological origin of, 299 ff.
- Vagina, acidity of, caused by oestrogens, 306 ff.
- atresia of, caused by oestrogen, 290
 - atrophy of, in spayed animal, counteracted by androgen, 213 ff.
 - — — counteracted by oestrogen, 305
 - cornification of, and copulation, 302 ff.
 - — as test of oestral cycle, 302 ff.
 - — caused by androgens in infancy, 190
 - — caused by vitamin-A deficiency, 303
 - — effect of hormones on, 210 ff., 302 ff., 413 ff.
 - — effect of hyperaemia and trauma on, 303
 - — effect of oestrogen on, 302 ff.
 - — — effect of oestrogen dosage on, 414
 - — — inhibited by deoxycorticosterone, 451
 - — — inhibited by progesterone, 451
 - — — presence of glycogen in, 307
 - — — prevented by androgen, 210, 212
 - effect of androgen on, 189 ff., 212 ff.
 - effect of oestrogen on, 302–8
 - effect of progestin on, 413 ff.
 - electrical potential changes in, 307 ff.
 - epithelium of, effect of gonadal hormones on, 214 ff., 302 ff.
 - — cytology of, 304
 - — metaplasia of, in response to oestrogen, 304
 - fibromuscular stroma of, hypertrophy caused by androgen, 214
 - hyperaemia of stroma of, caused by oestrogen, 305
 - keratinization of, *see* Cornification
 - — — effect of oestrogen on, in infancy, 190
 - leucocytic invasion of, 308 ff., 315 ff.
 - mucification of, 117 ff., 214 ff., 304 ff., 413 ff., 451
 - — antagonism of hormones in, 57 ff., 413 ff.
 - — co-operation of hormones in, 117 ff.
 - — co-operation of oestrogen and progesterone in, 414 ff.
 - — effect of deoxycorticosterone on, 451
 - — effect of pregnanediol, 414
 - — effect of progesterone on, 451
 - of normal and spayed rats, effect of androgen on, 207
 - opening of, in hypophysectomized rats, effect of androgen on, 213
 - — in immature rats, effect of androgen on, 212
 - — in spayed rats, effect of androgens on, 213
 - post-castration atrophy of, counteracted by androgen, 213
- Vaginitis, gonococcal, treated by oestrogen, 306
- Vas deferens, effect of oestrogen and of androgen on, 219 ff.
- effect of oestrogen on, 300
 - motility of, effect of gonadal hormones on, 219
- Vasa efferentia, ligation of, effect on seminal epithelium, 94
- Virilism, adrenal, 453 ff. *See also* Masculine characters; Masculinization
- — fuchsinophilia of cortex in, 453 ff.
 - and excretion of androgen, 152, 163, 453 ff.
 - and excretion of oestrogen, 455
 - in men, 160, 456
- Vitamin deficiency, *see* Nutritional deficiency; Under-feeding
- Vitamin-A deficiency, effect on gonads, 67 ff.
- effect on pituitary, 67 ff., 94
- Vitamin-B complex deficiency, anoestrus caused by, 66
- effect on gonads, 66, 159
 - effect on male gonads, counteracted by androgen, 159
 - effect on pituitary, 66

- Vitamin-E deficiency, effect on female and male pituitary, 68 ff., 94
— irreversible effect on testis, 69
Voluntary muscle, development of, influenced by hormones, 375
Vulvovaginitis, oestrogen treatment of, 290
- Water, accumulation of, in tissues, androgens as cause of, 236
— — — corticosterone as cause of, 247
— — — gonadal hormones as cause of, 305
— — — oestrogens as cause of, 236
— — — *See also* Electrolytes and water, excretion of
— excretion of, effect of progesterone on, 437
White blood cells, effect of oestrogens on, 382 ff.
Wolffian ducts, differentiation of, 187 ff.
— effect of testis grafts on, 185
- Wolffian system, effect of androgen on, 184 ff.
— embryonic, effect of oestrogen on, 275 ff.
— maintenance of, 184 ff.
- Xenopus laevis*, hormonal induction of ovulation in, 110, 191
X-rays, specific effect on seminal epithelium, 13, 159
— sterilization of ovary, masculinization effect of, 105, 110
— sterilization of testis, and overproduction of FRH, 13 ff., 51
— — effect on pituitary, 14, 94
X-substances and activity of androgen, 131 ff.
X-substances, augmentative, 131 ff.
 α zone, *see* Adrenal α -zone
- Zosterops*, artificial illumination of, effect on song season, 38