

Index

- A.C. electrical properties of skin 267, *see also* skin, electrical properties
- acetylsalicylic acid, effect on mechanical properties of skin 101
- acoustic spectrometer 57
- age, effect on
- alinear viscoelastic properties of skin 135
 - mechanical properties of rat skin 97
 - skin energy absorption 61–64
 - skin refractive index 295
- alcohol, effects on energy absorption of skin 63
- alinear viscoelastic properties of skin 135, 138
- alternating current *see* A.C.
- antiperspirants evaluation 176
- basal cell epitheliomas 15
- bilirubin
- absorption spectrum 254
 - absorption and LIR spectrum 279
- biomechanics in diagnosis and therapy 3
- biopsy, histometric analysis 179
- blisters, experimental production 305
- cantilever mode transducer 55–56
- carotene, absorbance and LIR spectrum 279
- cohesion measurements 229–231, 237
- computerized image analysis in dermatology 173
- corneocytes
- computerized classification 177
 - size and stratum corneum function 227
- corticosteroids, effect on skin mechanical properties 100
- cream, effect on energy absorption of skin 63
- dermis, directional mechanical properties 87
- desnotropic drugs, effect on skin mechanical properties 97
- desquamating skin, textural and dynamic analysis 178, 180
- desquamation and intracorneal cohesion 237
- eczema, intracorneal cohesion in 237
- elastic properties of skin 45
- electrical properties of skin 197, *see also* skin A.C. properties 267
- electrolyte content of skin 197
- ellipsometry and skin refractive index measurement 291
- epidermal water and pain 303
- epidermal water and electrolytes 197
- epidermoid cyst 218
- exfoliated corneocytes, computerised classification 177
- extensiometer 33, *see also* skin, mechanical properties
- finger nails, flexural properties of 15
- flow hygrometry for measuring TWL 159
- flexural properties of human finger nails 15
- gas bearing electro dynamometer *see* GBE
- GBE
- associated equipment 121
 - description 114–115, 120–121
 - for measuring mechanical changes in skin 113
- Guinea pig skin 67, 129
- hair, wave propagation in 245
- haemoglobin absorption spectrum 254
- hydration *see* water
- ichthyosis, intracorneal cohesion in 237
- image analysis by computer 173
- impedance of soft tissues 106
- indentometer 46, *see also* skin, elastic properties
- indentometry 46–49, *see also* skin, elastic properties

BIOENGINEERING AND THE SKIN

- indomethacin, effect on skin mechanical properties 101
- "Incredible Hulk" 3
- instruments, international standards for 9, 123
- international standards for measurement 9
- intracorneal cohesion measurement 229, 237
- Karl Langer 5
- Langers' lines 5, 136
- levarometry 50, *see also* skin, elastic properties
- lipoma 219
- lipometre, for measuring sebum excretion rate 183
- LIR spectrum of skin 275
- lymphoedema, effect on rheological properties of skin 151
- lymphoma 221
- Magiscan image analyser 173
- mathematical models
for TWL 164
of soft tissue impedance 104
- mechanical properties of skin 197, *see also* skin
- melanin
absorption spectrum 254
absorption and LIR spectrum 279
- mice, X-irradiation of skin of 15
- mineral oil, effect on nail flexural properties 26
- moisturiser cream, effect on skin refractive index 298
- myxoid cyst 218
- nails *see* fingernails
- nail flexometer 24, 25
- optical radiation transfer in skin 253
- oxyhaemoglobin
absorption spectrum 254
absorption and LIR spectrum 279
- pain threshold and epidermis 303
- D-penicillamine, effect on skin mechanical properties 101
- phenylbutazone, effect on skin mechanical properties 101
- phospholipids, effect on nail flexural properties 26
- photoacoustic spectroscopy
for measuring water in skin 187
in dermatology 283
- photochemotherapy *see* PUVA
- photometry for measuring sebum excretion 183
- photosclerosis, induction of 75
- plasticization of skin by water 67
- point impedance characterization 103
- prednisolone, effect on skin mechanical properties 31, 101
- pretibial myxoedema 221
- pseudo xanthoma elasticum *see* PXE
- psoralens, induction of photosclerosis by 75, *see also* PUVA
- psoriasis
intracorneal cohesion in 237
skin thermoregulation and 311
- PUVA (photochemotherapy with long wavelength u.v. irradiation) 3
blistering during 79
effects on skin mechanical properties 31
effect on skin rheological properties 78
induction of photosclerosis 75
long term risks 80
- PXE effect on skin mechanical properties 143-145
- radiotherapy *see* X-irradiation
- rat skin 97
- recoil apparatus 34, *see also* skin, mechanical properties
- reflectance spectroscopy of skin 276
- remittance spectroscopy and optical radiation transfer in skin 253
- remittance spectrum of normal and erythematous skin 263
- resonance frequency technique for measuring energy absorption 55
- refractive index of skin, measurement 291
- rhetorical properties
of skin and scar tissue 147
of skin during PUVA 78

tissue, rheological properties 147
- sebum excretion measurement 183
- sex, effect on alinear viscoelastic properties of skin 135
- skin
A.C. electrical impedance 267
alinear viscoelastic properties in vivo 135
biochemical characterization 4-7
effect of age on 61-64
elastic properties 45
electrical properties 197
energy absorption by 55
impedance of 106
LIR spectrum 275
mechanical changes, measurement of 113
mechanical model 4, 94
mechanical properties 94, 197
current methods of measurement 124
directional 87
effect of prednisolone and PUVA 31

INDEX

- effect of u.v. irradiation 129
- effect of X-rays 15
- international standards for measurement 123
 - rat skin 97
- optical properties in vivo 275
- optical radiation transfer in 253
- pain threshold 303
- physical properties and function, international standards 9-11
- pigments, absorption spectra 254
- plasticization by water 67
- refractive index 291
- rheological properties 147
- slackness measurement 50
- structure 93
 - model 276
 - study by computerised image analysis 173
- surface patterns 87
- surface transluence measurements
 - thermal properties 197
 - thermoregulatory mechanisms 311
 - water and electrolyte content 197, 287
 - water content, measurement 187
 - X-irradiation, effect on mechanical properties 15
- skin disorders
 - assessment techniques 215
 - desquamation in 236
- skin surface, textural analysis 178
- skin tumours 15
 - diagnosis 215
- soap, effect on energy absorption by skin 63
- soft tissues
 - load deformation behaviour 3
 - measurement of mechanical changes in 113
 - point impedance characterization 103
- standards see international standards
- stratum corneum
 - energy absorption by 55
 - function and corneocyte size 227
 - plasticization by water 67
 - water in 187
 - surface transluence meter 319
 - sweat gland, hydration model 211
- TEWL *see* TWL
- thermal properties of skin 197, 303
- thermography of skin 311
- thermometry of skin 311
- transducer 57
- transepidermal water loss *see* TWL
- tumours of skin 215
- TWL
 - athematical model 164
 - measurement of 159, 229
- ultra sound techniques and skin disorders 215
- ultra violet radiation
 - effect on skin mechanical properties 129, *see also* PUVA
- venous blood flow and skin thermoregulation 311
- viscoelastic properties of skin 135
- water
 - content of epidermis 197
 - effect of fingernails 25
 - effect on waves in hair 247
 - in skin
 - measurement 287
 - refractive index 297
 - measurement in stratum corneum 187
 - plasticization of stratum corneum by 67
 - water loss from skin *see* TWL
- wounds and TWL 169
- xeroradiography and skin disorder assessment 215
- X-irradiation, effect on skin mechanical properties 15