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THE STRUCTURE, COMPOSITION AND GROWTH OF BONE 1930-1953

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Marjory C. Spencer
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Reference Librarian

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THE STRUCTURE, COMPOSITION AND GROWTH OF BONE

INTRODUCTION

We have attempted to present here a fairly comprehensive listing of the literature on bone, selected from the sources appended, and covering the period 1930 through 1953 with scattered references to the material of 1954. The exhaustive coverage of the literature to be found in W. von Möllendorff's Handbuch der mikroskopischen Anatomie des Menschen, [Berlin, Julius Springer, 1930, Band 2, Teil 2,] Die Gewebe; Stützgewebe, Knochengewebe, Skeletsystem, together with the listings on bone in the various series of the Index-Catalogue of the Library of The Surgeon General's Office, it was felt, made the year 1930 an appropriate starting point.

A full definition of the scope may be found in Dr. Johnson's preface immediately following this. A few of the bibliography's limitations should be mentioned: (1) It is concerned primarily with the physiology of normal bone, consequently studies on cartilage, marrow, the various pathological states of bone, and its regeneration and repair have been introduced only when they provide insight into the dynamics of bone. (2) Tissue culture studies are limited chiefly to in vivo studies. It was thought the existence of the comprehensive work, A Bibliography of the Research in Tissue Culture, 1884 to 1950, [M. R. Murray and G. Kopeck. New York, Academic Press, 1953. 2v.] made unnecessary the offering of any other than the most basic of in vitro studies. (3) As background material a few references, partly to bibliographies, are included on the closely related subject of teeth, as well as brief lists on the bridging subjects of glycoproteins, crystallography, and collagen, merely to round out the presentation.

The original plan to annotate all the articles listed had to be abandoned. Articles with titles which are incomplete or equivocal are, however, placed under subject headings which expose their true subject content. In addition, references are given to printed abstracts, whenever these have been found in the course of search; to conserve space usually not more than two have been cited for any one entry. In order to bring this bibliography to its users more promptly, not all of the bibliographic lists and citations appearing in the articles examined were pursued.

The arrangement of the listings is by subject. Since the greater part of the bibliography is concerned with calcification, growth and development, osteogenesis, and reconstruction and resorption, references to specific studies on these processes have been placed under the method used in the study, when a particular

one was employed, to avoid massing the citations under a few subject headings, thus leaving the broader terms for general studies on the subjects. An investigation on the effect of the growth hormone on endochondral ossification would appear under the heading "Hormonal influence", for example, while a critical review on ossification or a study involving many methods of study would be placed under "Osteogenesis."

Abbreviations for journal titles are those adopted by the Index-Catalogue of the Library of The Surgeon General's Office.

The Armed Forces Medical Library was fortunate in having as consultants Dr. Lent C. Johnson of the Armed Forces Institute of Pathology, Dr. William B. Savchuck of the National Institute of Dental Research and Captain C. R. Carr formerly of the National Naval Medical Center, and now at the Miller Orthopaedic Clinic, Charlotte, N. C., who developed the scope and gave freely of their time, knowledge, and energy in an effort to make the bibliography as useful as possible. During the early planning of the project, Dr. Franklin C. McLean of the Department of Physiology of the University of Chicago, Dr. Albert E. Sobel, Head of the Department of Biochemistry of the Jewish Hospital of Brooklyn and Dr. Edward C. Reifenstein, Jr., Director of Biological and Therapeutic Research of the Schering Corporation, Bloomfield, New Jersey, very kindly responded to our requests for suggestions on coverage with outlines of their concepts of the most pertinent aspects of the subject. Dr. McLean further cooperated by generously placing at our disposal his extensive personal file, collected over the past twenty years, thus making possible the checking of our listings against his for additions not found through the usual indexing and abstracting services. Miss Marjory C. Spencer, Bibliographer, Reference Division, planned and executed the compilation, assisted by Mrs. Katherine Uhler, Reference Librarian.

ESTELLE BRODMAN
Assistant Librarian
for Reference Services

Washington, D. C.
1 March 1955

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Endocrinology - Sect. 3
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Normal'naia i patologicheskaia morfologiia s embriologiei

Tsentral'nyi Referativnyi Meditsinskii zhurnal

PREFACE

The preparation of this bibliography has been guided by the realization that an investigator can generally trace and assay the literature of his own discipline, but that he can less readily deal with the seemingly perverse tendency of authors to conceal important contributions under deceptive titles in the literature of related but unfamiliar fields. Yet cognizance of such articles is essential in an era of increasing biological synthesis when the classic boundaries between disciplines blur in a vigorous interchange of techniques.

Osseous tissue, a bone as an organ, the skeleton as an organ system, have become the subject of particularly intense investigations in recent years. The finest details of the molecular structure of fiber proteins, the polyelectrolyte properties of sugar polymers, and the manner of growth and of orientation of crystals have become as important to the comprehension of bone and teeth as the role of osteoblasts and osteoclasts, the kinetics of cellular enzyme systems, and the available concentrations of calcium and phosphorus. The dynamics of the cyclic flux and reflux of bone formation and destruction, the basic physiology, remains a mystery toward the solution of which more and more disciplines are contributing.

This volume is a catalog of the investigations of the past 20 years that may provide insight into bone, both those studies that deal directly with bone and those that deal with subjects germane to it. One might, for example, begin a study of the function of bone by a consideration of its form. Today, bone morphology ranges from the gross to the molecular levels in a nearly continuous hierarchical series of individual but interlocking structural patterns. Particularly rapid advances have been made in the realm of submicroscopic anatomy by the use of such tools as polarized light, x-ray microscopy, electron microscopy and diffraction patterns. Interpretation of results so obtained requires consideration of the molecular structure of the chemical constituents of bone. This leads, in turn, to the literature of the colloid chemistry and of the macromolecular morphology of mucopolysaccharides and of collagens. Furthermore, the open steady-state kinetics of these organic components (in their biologic context) underscores the inadequacy of the concentration-dominated theories of calcification; so attention must also focus on the structure and dynamics of the isomorphous crystals that characterize the inorganic phase of bone, and on their surface activity, and on the principles of crystal dislocation and growth in colloid systems.

In bone all of these chemical and physical prosesses are carried out by cells, and therefore consideration is given to the

cells, to the relationships between the cells, and to the manner in which they generate, maintain, and finally destroy chondroid and osteoid matrices. A thorough grasp of normal physiology must embrace also the abnormal, which frequently unmasks basic relationships otherwise unsuspected. The controlled distortions possible, for example, in experimental hyperparathyroidism, rickets, scurvy, and fractures, and in their recovery patterns, illuminate the normal from one direction, while the behavior of isolated cell groups in tissue culture, transparent chambers, and transplants, coupled with the search for chondrogenic and osteogenic extracts, sheds light from another direction.

That a bone is more than a tissue, is in fact an organ, is clearly apparent in the reports of the varied behavior of particular portions of the same bone in response to a single metabolic, circulatory, or mechanical stress. How are circulatory and mechanical stresses translated into sharply localized cell activity which may even override the influence of humoral controls upon the cell? Apparently no generally accepted or adequate concepts are available as yet. However, a full account of the succession of normal transformations in the microstructure of human bone, from the earliest anlage to post-centenarian stages, is beginning to appear. Such structural details indicating both the kind of change and the rate of change (with respect to age, race, species, and individual bones of the skeleton) are fundamental to any satisfactory concept of the mechanism of the change, or of its modification by circulatory and mechanical influences. Furthermore, one finds that bone has not been divorced from its intimate association with the bone marrow on the inside, and the muscle, tendon, and ligament attachments on the outside, nor from its relation to other bones as part of an integrated organ system.

Obviously this bibliography covers a wide range of subjects. Complete citation of the literature in every pertinent field is not possible, but the central core bearing directly on bone seems reasonably complete and a systematic perusal of the references listed in the articles cited should leave few, if any, important gaps. Even though it covers a limited period, key references have been included which lead the reader to the earlier literature.

The increasing complexity and specialization of science have led to the rapid stockpiling of a massive world wide literature which escapes the apprehension of any single individual; yet the data, methods and ideas from a variety of disciplines are needed for the comprehension of any single field. The scientist seems condemned either to continuous reading with little time for work, or to half-blind work with little appreciation of its full meaning. Some form of bibliography complete with respect to its

central theme, which reaches widely but selectively into the literature of all related peripheral fields, is his only hope. It supplies the raw material for a theoretical construction, encouraging each man to make his own tentative synthesis and predictions, from which he may design better experiments. So conceived and so executed, the bibliography serves as a powerful catalyst for accelerating and even inducing investigations that may fill the larger gaps in our knowledge, and lead the sooner to a comprehension of the physiology of bone. The Armed Forces Medical Library has put forth a very special effort in producing such a volume, and research workers in many fields will find themselves increasingly grateful for this contribution.

LENT C. JOHNSON, M.D.

Armed Forces Institute of Pathology
1 December 1954

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472	498	555	558	884
914	947	952	959	963
965	1186	1222	1226	1228
1261	1355	1389	1398	1408
1484	1535	1766	1920	1928
1942	1943	1949	1953	2012
2013	2017	2018	2019	2041
2329	2408	2410	2585	2603
2621	2624	2633	2664	2672
2703	2704	2723	2734	2746
2782	2786	2802	2809	2820
2958				

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see also COLLAGEN AND RETICULIN and subdivisions; GLYCOPROTEINS AND MUCOPOLYSACCHARIDES and subdivisions

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CELLS - OSTEOCYTES

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157	540	1123	1234	1427
1559	1629	1894	1902	1922
1931	1965	1986	2001	2024
2028	2035	2045	2298	2729
2883	2918			

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see also METABOLISM - SULPHUR

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Dziewiatkowski, D. D. SULFATE-SULFUR METABOLISM IN THE RAT FETUS AS INDICATED BY SULFUR35. J. Exp. M., 1953, 98: 119-128. 2 pl. 10 refs. Abstracted in: Chem. Abstr., 1953, 47: 11416[b]; Brit. Abstr. M. Sc., 1954, p. 167. "Radioautographs of sections of the embryos showed that the S35 was highly concentrated in the cartilaginous portion of the skeleton, the concentration in the humeri of 20-day-old embryos being 30 times that in the maternal sternum."

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CHEMISTRY - VARIATIONS WITH AGE AND KINDS OF BONE

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Cartier, P. VARIATIONS DES ANIONS ORGANIQUES DE L'OS (CITRATES ET LACTATES) AU COURS DE LA CROISSANCE. C. rend. Soc. biol., 1949, 143: 37-39. 4 refs. Abstracted in: Chem. Abstr., 1949, 43: 5841[a]. All long bones of 15 growing rabbits, at different stages of development, were analyzed for ash, nitrogen, phosphorus and calcium content and for citrate and lactate content in order to determine the possible relationship between the presence of these organic acids in bone and the degree of mineralization. It was found that variations in citrate levels were small but that the lactate content, high in the initial stages of ossification, decreased progressively with age and reached a low level in adult animals. Results are summarized in a table.

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Cartier, P. RÉPARTITION DES ANIONS ORGANIQUES DANS LES OS LONGS. C. rend. Soc. biol., 1949, 143: 631-632. Abstracted in: Chem. Abstr., 1950, 44: 3115[h]; Excerpta med., Sect. 1, 1950, 4: No. 1420. The long bones of 5 rabbits of different ages were sawed into 3 sections, diaphysis, metaphysis and epiphysis, and mineral and organic determinations were made for each section. It was found that the citrate content remained relatively constant in all parts of the bones at various ages but that the lactate content varied greatly in proportion to the intensity of cellular activity in osseous tissue. This was interpreted as proof of a close relationship between ossification and osteoblast respiration. The results of the experiment are given in a table.

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Dallemagne, M. J. LA DISTRIBUTION DES ÉLÉMENTS MINÉRAUX DANS LA DIAPHYSE ET LES ÉPIPHYSES RADIALES ET CUBITALES DU LAPIN ADULTE. Acta biol. belg., 1941, 1: 451-456. 4 refs. Sections from the diaphyses, distal epiphyses and diaphyses and from the proximal epiphyses of the radius and ulna of the adult rabbit were chemically analyzed for calcium, phosphorus, magnesium, carbon dioxide and total nitrogen content and the percentages of tricalcium phosphate, calcium

CHEMISTRY - VARIATIONS WITH AGE AND KINDS OF BONE (Continued)

carbonate and magnesium phosphate calculated in the different sections. It was found that the tricalcium phosphate-calcium carbonate ratio varies with the area studied. This variability is said to contradict the theory of the mass grouping of bone mineral substances in a complex calcium phosphocarbonate molecule.

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Dallemagne, M. J. ÉTUDE COMPARATIVE DES ÉLÉMENTS MINÉRAUX ET DE L'AZOTE DANS LES CUBITUS, LES RADIUS ET LES TIBIAS DU LAPIN ADULTE. Acta biol. belg., 1941, 1: 406-409. 4 refs. Determinations were made of the content of calcium, phosphorus, magnesium, carbon dioxide and total nitrogen of mid-diaphyseal sections of the ulna, radius and tibia of adult rabbits. It was found that when calculated from the ash weight, the mineral elements were equally distributed in all the bones but that when calculated from dry bone weight there was a difference in distribution, the percentage decreasing progressively from the tibia to the radius to the ulna. Variations in the total nitrogen content indicated that the differences observed were due solely to variations in the proportion of organic substances in the bones.

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Dietz, A. A. DISTRIBUTION OF BONE MARROW, BONE, AND BONE-ASH IN RABBITS. Proc. Soc. Exp. Biol., N. Y., 1944, 57: 60-62. Abstracted in: Biol. Abstr., Balt., 1945, 19: No. 4399. "A study of distribution of bone marrow in rabbits showed 47% of the marrow in the hind legs, 18% in the fore legs, 6% in the ribs, sternum, and clavicles, 9% in the head, and 20% in the vertebrae. The distribution of bone marrow, bone and bone-ash in the individual bones is recorded in the tables."

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Enselme, J., Revol, L. and Trintignac, P. TENEUR EN SOUFRE DES DIAPHYSES ET DES ÉPIPHYSES OSSEUSES. C. rend. Soc. biol., 1939, 131: 278-279. 4 refs. Abstracted in: Chem. Abstr., 1939, 33: 6926[9]. "Dried defatted bones from adult guinea pigs were analyzed. Femur diaphyses contained (av. values) 31.5% organic matter and 0.142%S. Femur epiphyses contained 45.1 and 0.255% respectively, humerus diaphyses 31.6 and 0.098%, and humerus epiphyses 46.5 and 0.246%." - Chem. Abstr.

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Henschen, C. DIE KRISTALLINE STRUKTUR DES KNOCHENS IN IHREN BEZIEHUNGEN ZUR PHYSIOLOGIE UND PATHOLOGIE DES SKELETTES. EINFÜHRUNGSBEISPIEL IN DIE PATHOLOGIE DES FEINBAULICHEN ZUSTANDES. (LEPTOPATHOLOGIE). Schweiz. med. Wschr., 1937, 67: 153-157; 182-185; 202-204; 223-225. Abstracted in: Chem. Abstr., 1939, 33: 2967[5].

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Hess, A. F., Berliner, F. S. and Weinstock, M. AN INVESTIGATION OF THE COMPARATIVE ASH CONTENT OF THE METAPHYSES AND SHAFTS OF BONES. J. Biol. Chem., 1931, 94: 9-19. 5 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1931-32, 1: No. 2554; Chem. Abstr., 1932, 26: 764.

264
Leulier, A., Policard, A. and Revol, L. LA TENEUR EN CALCIUM ET EN PHOSPHORE DES DIVERS CONSTITUANTS HISTOLOGIQUES DES OS LONGS CHEZ LE POULET; SES VARIATIONS AU COURS DES QUATRE PREMIERS MOIS. C. rend. Soc. biol., 1941, 135: 1203-1205. Chicks of the same breed, fed the same diet, were sacrificed at weekly intervals until 4 months of age and determinations made of the calcium and phosphorus content of dried sections of the diaphysis, epiphyseal cartilage and marrow of the long bones. The diaphysis was found to be composed entirely of tricalcium phosphate. The variable calcium and phosphorus content of the epiphyseal cartilage was explained by its peculiar structure in birds. The marrow had a relatively constant content until the end of the second month when the appearance of medullary bone trabeculae caused the calcium and phosphorus levels to rise immediately. It is noted that while the calcium-phosphorus ratio in the diaphysis of chicks is 1.8, in young rats the ratio is 2., a marked species' difference.

265
MacDonald, I. CHEMICAL ANALYSIS OF HUMAN FOETAL SKULL BONES. Biochem. J., Lond., 1954, 57: 437-439. 14 refs. There is "an increase in the proportions of calcium and carbonate as the foetus approaches maturity, but no such increase in phosphorus and collagen. ... The inorganic chemical composition of growing membrane bone... may consist of a mixture of apatite, brushite and calcium carbonate or of a mixture of calcium phosphate, calcium carbonate and small amounts of other calcium salts."

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Monetti, G. COMPORTAMENTO DELLE FRAZIONI DI P ACIDOSOLUBILE NEL TESSUTO OSSEO DI ETÀ DIVERSE. Biochim. ter. sper., 1941, 28: 308-317. 14 refs. English, French and German summaries. Abstracted in: Chem. Abstr., 1946, 40: 3168[4].

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*Neal, W. M., Palmer, L. S., Eckles, C. H. and Gullickson, T. W. EFFECT OF AGE AND NUTRITION ON THE CALCIUM PHOSPHATE-CALCIUM CARBONATE RATIO IN THE BONES OF CATTLE. J. Agr. Res., 1931, 42: 115-121. 12 refs. Abstracted in: Chem. Abstr., 1931, 25: 5451; Nutrit. Abstr., Aberdeen, 1931-32, 1: No. 892.

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Roche, A. and Garcia, I. RECHERCHES SUR L'OSSIFICATION. I. OSSIFICATION NORMALE ET CONSTITUTION DE RÉSERVES MINÉRALES DANS LES OS AU COURS DU DÉVELOPPEMENT. Bull. Soc. chim. biol., Par., 1936, 18: 1014-1026. 8 refs. Abstracted in: Biol. Abstr., Balt., 1937, 11: No. 18518; Chem. Abstr., 1936, 30: 7648[4].

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Strobino, L. J. and Farr, L. E. THE RELATION TO AGE AND FUNCTION OF REGIONAL VARIATIONS IN NITROGEN AND ASH CONTENT OF BOVINE BONES. J. Biol. Chem., 1949, 178: 599-609. 5 refs. Abstracted in: Biol. Abstr., Balt., 1950, 24: No. 1867; Chem. Abstr., 1949, 43: 5844[h].

CHEMISTRY - VARIATIONS WITH AGE AND KINDS OF BONE (Continued)

272
Swanson, W. W. and Iob, V. MINERAL COMPOSITION OF THE BONE AND CARTILAGE OF THE HUMAN FETUS. Am. J. Dis. Child., 1937, 54: 1025-1029. 9 refs. Abstracted in: Chem. Abstr., 1938, 32: 7099[5]; Nutrit. Abstr., 1937-38, 7: No. 5031.

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*Weinges, K. F., Leppelmann, H. J. and Hartl, F. ÜBER DEN CALCIUM-, PHOSPHAT-UND CARBONATGEHALT MENSCHLICHER SKELETTEILE IM ZUSAMMENHANG MIT FRAGEN DER KNOCHENSTRUKTUR UND IHRES UMBAUES UNTER NORMALEN UND KRANKHAFTEN BEDINGUNGEN. Klin. Wschr., 1953, 31: 1057-1059. Abstracted in: Chem. Abstr., 1954, 48: 4076[h].

See:

240	350	354	357	380
381	412	572	2263	2875

CHEMISTRY, INORGANIC

see also METABOLISM, INORGANIC; TRACE ELEMENTS and subdivisions

274
Andreatta, C. and Forni, I. RICERCHE ROENTGENOGRAFICHE SUL COMPONENTE MINERALI DELL'OSSO UMANO NATURALE NON POLVERIZZATA E SULL'OSSA DEMINERALIZZATO. Atti Accad. naz. Lincei, Rendic., Class. sc. fis., 1952, 13: 14-18. 12 refs. Abstracted in: Chem. Abstr., 1953, 47: 6524[d]. Roentgenograms of splinters of dry bone from a human femur before and after demineralization indicated conclusively that "the mineral component of natural human bone, not pulverized nor thermically treated in any way, is an apatite." A measurable line in the roentgenograms of completely demineralized bone suggested that, "its is not improbable that the 15.5° line in the demineralized bone diagrams may be attributed to the organic substance of the bone." The article is preceded by a review of the literature.

275
Bale, W. F. A COMPARATIVE RÖNTGEN-RAY DIFFRACTION STUDY OF SEVERAL NATURAL APATITES AND THE APATITE-LIKE CONSTITUENT OF BONE AND TOOTH SUBSTANCE. Am. J. Roentg., 1940, 43: 735-747. 24 refs. It is shown that the unit cells of bone, tooth enamel, dentine, hydroxylapatite, and tricalcium phosphate hydrate are identical within the range of experimental error. The inorganic substance of bone and tooth enamel tends to approximate the structure of hydroxylapatite. It is suggested that the carbonate present in these substances does not form an integral part of the apatite lattice but is present at boundary regions.

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Bauer, G. C. H. RATE OF BONE SALT FORMATION IN A HEALING FRACTURE DETERMINED IN RATS BY MEANS OF RADIO-CALCIUM. Acta orthop. scand., 1954, 23: 169-191. 14 refs.

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Brasseur, H., Dallemagne, M. J. and Mélon, J. CHEMICAL NATURE OF SALTS FROM BONES AND TEETH AND OF TRICALCIUM PHOSPHATE PRECIPITATES. Nature, Lond., 1946, 157: 453. 7 refs. Abstracted in: Chem. Abstr., 1946, 40: 4095[9]; Nutrit. Abstr., Aberdeen, 1946-47, 16: No. 1845.

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Brasseur, H., Dallemagne, M. J. and Mélon, J. LA NATURE DE LA SUBSTANCE MINÉRALE DE L'OS. Experientia, Basel, 1948, 4: 421-424. 12 refs. Abstracted in: Chem. Abstr., 1949, 43: 5060[c]. "X-ray patterns of bone salts and of hydrated tricalcium phosphate, before and after ignition, indicate that bone salt is not hydroxyl-apatite since it may be converted to either carbonate-apatite or oxyapatite, depending upon the loss of carbon dioxide." - Chem. Abstr.

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Brasseur, H., Dallemagne, M. J. and Mélon, J. REMARQUES SUR LA CONSTITUTION DE L'HYDROXYLAPATITE ET DE LA CHLORAPATITE DE SYNTHÈSE PAR VOIE HUMIDE. Bull. Soc. sc. Liège, 1951, 20: 447-452. 5 refs.

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Burns, C. M. and Henderson, N. THE MINERAL CONSTITUENTS OF BONE. I. METHODS OF ANALYSIS. Biochem. J., Lond., 1935, 29: 2385-2395. 16 refs. Abstracted in: Chem. Abstr., 1936, 30: 2599[7]. "Methods are described for the analysis of the Ca and phosphate of bone with an average accuracy of ±1.5%, and of CO_2 with an accuracy of ±3%. Analysis of bone by a method which involves filtering off an ammonium phosphomolybdate precipitate, or leaching out the salt with alkaline glycerol gives phosphate figures which are too low. In 270 analyses of bone 70% of the results were such as to indicate the presence of a phosphate not tertiary Ca or Mg phosphate."

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Burns, C. M. and Henderson, N. THE SALTS OF YOUNG BONE. J. Physiol., Lond., 1934, 82: Proc., 7. "Variations in carbonate and phosphate content indicates that bone salts are not deposited as a compound of calcium phosphate and carbonate, but rather as a mixture. The chemical changes in bone under different conditions cannot be deduced from the chemical composition unless changes in size and modelling are also considered."

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Cartier, P. LES CONSTITUANTS MINÉRAUX DES TISSUS CALCIFIÉS. I. LA STRUCTURE MINÉRALE DE L'OS, DE LA DENTINE ET DU CÉMENT. Bull. Soc. chim. biol., Par., 1948, 30: 65-73. 17 refs. Abstracted in: Chem. Abstr., 1948, 42: 7852[f]. Solubility studies were made of samples of bone, dentine and cement in buffered solutions of different degrees of acidity and the solubility curves compared with those of alpha tricalcium phosphate, calcium carbonate and natural carbonate apatite (dahllite). These studies and determinations of variations in the calcium-phosphorus ratio in the different solutions indicated that the mineral composition of the tissues studied was a simple mixture of alpha tricalcium phosphate and calcium carbonate.

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Cartier, P. LES CONSTITUANTS MINÉRAUX DES TISSUS CALCIFIÉS. II. LA STRUCTURE MOLÉCULAIRE DU SEL DE L'OS. Bull. Soc. chim. biol., Par., 1948, 30: 73-81. 14 refs. Abstracted in: Chem. Abstr., 1948, 42: 7852[f]; Biol. Abstr., Balt., 1949, 23: No. 15324. From solubility studies of a bone sample at various stages of demineralization it was concluded that while the major constituents of bone salts are alpha tricalcium phosphate and calcium carbonate, minor quantities of other minerals are also present as calcium citrate, trimagnesium phosphate, magnesium carbonate, secondary sodium phosphate and protein-bound calcium and phosphorus.

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Cartier, P. and Barraud, J. ÉTUDE CHIMIQUE ET RADIOCRISTALLOGRAPHIQUE DE LA DÉMINÉRALISATION DE L'OS. J. rech. CNRS, Par., 1951, No. 16, 13-17. 15 refs. A review of the literature and discussion of current theories is followed by a summary of the author's experiments.

CHEMISTRY, INORGANIC (Continued)

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COMPOSITION OF BONES AND TEETH. Nutrit. Rev., 1949, 7: 239-242.

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Coppo, M. RICERCHE SPERIMENTALI SULLA COMPOSIZIONE MINERALE DELLE OSSA. III. Boll. Soc. ital. biol. sper., 1934, 9: 310-314. Abstracted in: Chem. Abstr., 1934, 28: 6472[6].

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Coppo, M. STUDI SULLA COMPOSIZIONE MINERALE DELLE OSSA. NOTA II. L'OSSO UMANO NORMALE. Fisiol. & med., Roma, 1934, 5: 237-249. 10 refs.

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Dallemagne, M. J. CHEMICAL NATURE OF SALTS FROM BONE AND TEETH AND OF TRICALCIUM PHOSPHATE PRECIPITATES. Nature, Lond., 1946, 157: 453. 7 refs.

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Dallemagne, M. J. LA COMPOSITION ET LA CONSTITUTION DE LA SUBSTANCE MINÉRALE OSSEUSE. LA SUBSTANCE MINÉRALE OSSEUSE RENFERME-T-ELLE DES APATITES? Acta biol. belg., 1942, 2: 301-303. 2 refs. From solubility studies of a mixture of phosphate and calcium carbonate in a solution of acetic acid and from determinations of the calcium-phosphorus ratio of the undissolved residue, it was found that the least soluble substance of bone is tricalcium phosphate and that bone does not contain apatites. But it was observed that calcination at 900° centrigrade transforms the mixture of phosphate and calcium carbonate into carbonate apatite. The theories of Policard and Roche are reviewed and refuted and Dallemagne's own earlier theories are revised.

290
Dallemagne, M. J. LA COMPOSITION ET LA CONSTITUTION DE LA SUBSTANCE MINÉRALE OSSEUSE. L'INDÉPENDANCE DU PHOSPHATE TRICALCIQUE ET DU CARBONATE CALCIQUE DANS LES SELS OSSEUX NON CALCINÉS. Acta biol. belg., 1942, 2: 298-300. 2 refs. From studies of the calcium solubility of various bone sections, before and after calcination, in hydrochloric acid solutions of increasing strength and from determinations of the mineral content of the resulting filtrates, it was concluded that before calcination the mineral substance of bone is essentially a mixture of tricalcium phosphate and calcium carbonate but that after calcination at 900° centigrade it is essentially a carbonate phosphorus combination of the carbonate apatite type.

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*Dallemagne, M. J. LA NATURE CHIMIQUE DE LA SUBSTANCE MINERALE OSSEUSE; PREMIERS ESSAIS D'INTERPRETATION DE CERTAINS PHENOMENES PHYSIOPATHOLOGIQUES DE L'OS À LA LUMIERE DE CES NOTIONS NOUVELLES. Liege, Gordinne, 1943. (Thèse d'Agregation de l'Enseignement Superieur.)

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Dallemagne, M. J. QUELQUES CONSIDÉRATIONS D'ORDRE QUALITATIF AU SUJET DES MATIÈRES MINÉRALES DES RADIUS, DES CUBITUS ET DES TIBIAS DU LAPIN ADULTE. Acta biol. belg., 1941, 1: 409-413. 6 refs. From the results of an experiment previously described in which determinations were made of the calcium, phosphorus, magnesium and carbon dioxide of mid-diaphyseal sections of the bones of adult rabbits' legs, the qualitative grouping of these chemical elements was studied. Exception is taken to the theory of Klement and Trömel that bone is exclusively hydroxyapatite, but it is concluded that, in addition to the small quantity of carbonate apatite which forms the chemical axis of bone, there probably exists a small percentage of hydroxyapatite and that around these two fundamental substances the mass of phosphate and calcium carbonate is grouped.

293
Dallemagne, M. J. SOME RECENT FACTS ABOUT THE PROPERTIES OF TRICALCIUM PHOSPHATE AND THE COMPOSITION OF THE BONE SALT. Tr. Conf. Metab. Interrelat., 1952, 4.Conf., 154-168. Conference discussion: p. 166-168. 24 refs.

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*Dallemagne, M. J. and Brasseur, H. LA DIFFRACTION DES RAYONS X PAR LA SUBSTANCE MINÉRALE OSSEUSE. Bull. Soc. sc., Liége, 1942, 11: 451-462; 488-495. Abstracted in: Chem. Abstr., 1944, 38: 2977[9]; 4296[9].

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Dallemagne, M. J. and Brasseur, H. LA NATURE DU SEL PRINCIPAL DE L'OS ETUDIÉE PAR LA DIFFRACTION DES RAYONS X; UN CAS D'INTERPRETATION DIFFICILE. Experientia, Basel, 1947, 3: 469-471. 11 refs. Abstracted in: Chem. Abstr., 1948, 42: 2657[f].

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Dallemagne, M. J. and De Rycker, H. LA COMPOSITION ET LA CONSTITUTION DE LA SUBSTANCE MINÉRALE OSSEUSE. L'ANALYSE THERMIQUE DE LA SUBSTANCE MINÉRALE OSSEUSE. Acta biol. belg., 1942, 2: 445-447. 3 refs. Study of the reactions of bone salts to various degrees of temperature at different atmospheric pressures. This analysis is said to corroborate the conclusions of chemical and x-ray diffraction studies previously described.

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Dallemagne, M. J. and Mélon, J. LA FORMATION DE BRUSHITE À PARTIR DES SELS OSSEUX OU DENTAIRES. Bull. Soc. chim. biol., Par., 1945, 27: 597-599. 17 refs. Abstracted in: Chem. Abstr., 1946, 40: 6140[1]. Experiments, in which brushite was obtained from alpha tricalcium phosphate, from bone, dental cement and dentin, were considered further proof that the principal mineral component of these structures is alpha tricalcium phosphate. Brushite was not obtained from dental enamel.

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Dallemagne, M. J. and Mélon, J. LES INDICES DE REFRACTION DE L'OS, DE LA DENTINE, DU CEMENT ET DE L'EMAIL. C. rend. Soc. biol., 1944, 138: 1028-1031. 8 refs. Measurement of the indices, "led to the conclusions that enamel possesses the chemical qualities of an apatite and that, contrary to current opinion, dentine and cement have not an apatite structure but have a composition similar to that of bone, i.e., a mixture of $CaCO_3$ and tri-calcium phosphate in a combination isomorphous with apatite. Calcining converts this mixture of the two salts into a phosphocarbonate combination."

299
Dallemagne, M. J. and Mélon, J. LE POIDS SPÉCIFIQUE ET L'INDICE DE RÉFRACTION DE L'OS, DE L'ÉMAIL, DE LA DENTINE ET DU CÉMENT. PREMIERS RÉSULTATS RELATIFS À LA DÉTERMINATION DE LA NATURE CHIMIQUE DES CONSTITUANTS MINÉRAUX DE LA DENT. Bull. Soc. chim. biol., Par., 1945, 27: 85-89. 8 refs. Studies of the specific gravity and refractive index of bovine bone and teeth indicate that bone, dental cement and dentine contain a mixture of alpha tricalcium phosphate and calcium carbonate but that the principal constituant of enamel is a carbonate apatite.

300
Dallemagne, M. J., Brasseur, H. and Mélon, J. LA CONSTITUTION DE LA SUBSTANCE MINÉRALE DE L'OS ET LA SYNTHÈSE DES APATITES. Bull. Soc. chim. France, 1949, 16: D138-D145. 36 refs. Abstracted in: Chem. Abstr., 1949, 43: 6716e. Objections to the theory that alpha tricalcium phosphate constitutes the main mineral substance of bone are answered by a series of x-ray diffraction studies, from which it is concluded that tricalcium phosphate really exists in the hydrated form but that, because of the instability of the compound, its preparation in a pure state requires specific and controlled conditions. The article is preceded by a review of the literature from 1862.

301
Dallemagne, M. J., Brasseur, H. and Mélon, J. L'EXISTENCE DU PHOSPHATE TRICALCIQUE α, $[CA_3(PO_4)_2]_3 \cdot H_2(OH)_2$. Bull. Soc. chim. biol., Par., 1949, 3: 425-431. 11 refs. From x-ray diffraction studies it is concluded that alpha tricalcium phosphate is a well defined chemical substance but that the molecule is unstable in an aqueous medium. The article contains a summary of the 5 principal theories in the literature.

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Eisenberger, S., Lehrman, A. and Turner, W. D. THE BASIC CALCIUM PHOSPHATES AND RELATED SYSTEMS. SOME THEORETICAL AND PRACTICAL ASPECTS. Chem. Rev., Balt., 1940, 26: 257-296. 230 refs.

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Fabry, C. LA FIXATION DE CHAUX PAR LE PHOSPHATE TRICALCIQUE EN MILIEU AQUEUX. Biochem. biophys. acta, Amst., 1954, 14: 401-406. 7 refs.

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Follis, R. H., Jr. THE INORGANIC COMPOSITION OF THE HUMAN RIB WITH AND WITHOUT MARROW ELEMENTS. J. Biol. Chem., 1952, 194: 223-226. 10 refs. Abstracted in: Chem. Abstr., 1952, 46: 5170e. Analyses for calcium, phosphorus and carbonate were made and a series of normal values is presented.

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Govaerts, J. ISOTOPIC EXCHANGES AND THE EXISTENCE OF TRICALCIUM PHOSPHATE IN BONE. Nature, Lond., 1954, 174: 831-832. 11 refs. "... our results cannot support the assumption that the principal bone component is hydroxylapatite, which absorbs phosphate enough to give a calcium phosphorus ratio of 1.94."

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Greenwald, I. THE SOLUBILITY OF CALCIUM PHOSPHATE. II. THE SOLUBILITY PRODUCT. J. Biol. Chem., 1942, 143: 711-714.

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Hendricks, S. B. and Hill, W. L. THE INORGANIC CONSTITUTION OF BONE. Science, 1942, 96: 255-257. Abstracted in: Biol. Abstr., Balt., 1943, 17: No. 8970; Chem. Abstr., 1943, 37: 9312. "In general, evidence now available would seem to indicate that bone contains a hydrated tricalcium phosphate type of compound instead of hydroxyapatite as widely accepted and that sodium and carbonate are essential constituents of this compound."

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Hodge, H. C. SOME CONSIDERATIONS OF THE SOLUBILITY OF CALCIUM PHOSPHATE. Tr. Conf. Metab. Interrelat., 1951, 3. Conf., 190-204. Conference discussion: p. 200-204. 15 refs.

309
Klement, R. DIE ANORGANISCHE SKELETSUBSTANZ. IHRE ZUSAMMENSETZUNG, NATÜRLICHE UND KÜNSTLICHE BILDUNG. Naturwissenschaften, 1938, 26: 145-152. 28 refs. The inorganic skeletal structure is analyzed and compared in warm-blooded and cold-blooded animals, fish and birds.

310
Klement, R. and Trömel, G. HYDROXYLAPATIT, DER HAUPTBESTANTEIL DER ANORGANISCHEN KNOCHEN- UND ZAHNSUBSTANZ. Zschr. physiol. Chem., 1932, 213: 263-269. Approx. 25 refs. Abstracted in: Chem. Abstr., 1933, 27: 1037.

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*Klement, R. NEUE UNTERSUCHUNGEN ÜBER DIE ANORGANISCHE KNOCHEN- UND ZAHNSUBSTANZ UND IHRE SYNTHESE. Klin. Wschr., 1937, 16: 591-593.

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Klement, R. DIE ZUSAMMENSETZUNG DER KNOCHEN-STÜTZSUBSTANZ. Hoppe Seyler Zschr., 1929, 184: 132-142. 10 refs. Abstracted in: Biol. Abstr., Balt., 1933, 7: No. 10376.

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Klement, R. DIE ZUSAMMENSETZUNG DER KNOCHEN-STÜTZSUBSTANZ UND IHRE BILDUNG. Hoppe Seyler Zschr., 1931, 196: 140-154. 28 refs. Abstracted in: Biol. Abstr., Balt., 1932, 6: No. 21876; Chem. Abstr., 1931, 25: 3702.

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Klement, R. and Trömel, G. ZUSAMMENSETZUNG UND BILDUNG DER ANORGANISCHEN KNOCHEN- UND ZAHNSUBSTANZ. Klin. Wschr., 1933, 12: 292-294. 16 refs. Also in: Hoppe Seyler Zschr., 1932, 213: 263-269. Abstracted in: Nutrit. Abstr., Aberdeen, 1933-34, 3: No. 530; Chem. Abstr., 1933, 27: 2990.

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Kuyper, A. C. THE CHEMISTRY OF BONE FORMATION. I. THE COMPOSITION OF PRECIPITATES FORMED FROM SALT SOLUTIONS. J. Biol. Chem., 1945, 159: 411-416. 26 refs. Abstracted in: Biol. Abstr., Balt., 1946, 20: No. 616.

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Kuyper, A. C. THE CHEMISTRY OF BONE FORMATION. II. SOME FACTORS WHICH AFFECT THE SOLUBILITY OF CALCIUM PHOSPHATE IN BLOOD SERUM. J. Biol. Chem., 1945, 159: 417-424. 17 refs. Abstracted in: Biol. Abstr., Balt., 1946, 20: No. 617; Chem. Abstr., 1945, 39: 4936[9].

317
Legrand, C., Barraud, J. and Cartier, P. ÉTUDE RADIOCRISTALLOGRAPHIQUE DU MÉLANGE PHOSPHATE TRICALCIQUE α/CARBONATE DE CALCIUM. C. rend. Acad. sc., 1952, 234: 2624-2625. 3 refs. In an effort to determine the calcium carbonate content of bone salts, radiocrystallographic studies were made of the α tricalcium phosphate and calcium carbonate mixture. It was found that it is not possible to detect calcium carbonate by X-ray diffraction when the content is inferior to 10% or 15% of the tricalcium phosphate.

318
Levinskas, G. J. SOLUBILITY STUDIES OF SYNTHETIC HYDROXYLAPATITE. (THE LATTICE OF BONE MINERAL). 134p. University of Rochester Atomic Energy Project, Rochester, N. Y., 1953. (UR-273). 125 refs. Abstracted in: Nuclear Sc. Abstr., 1954, 8: No. 473.

CHEMISTRY, INORGANIC (Continued)

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Levinskas, G. J. SURFACE EFFECTS ON THE SOLUBILITY OF BONE SALT. Fed. Proc., Balt., 1953, 12: No. 471. In the studies reported, "a synthetic, crystalline hydroxyl apatite has been equilibrated with a series of solutions of varying composition. ... Much of the data can be explained as resulting from heteroionic exchange reactions involving the substitution of calcium ions in the crystalline surfaces by sodium and hydronium ions from the solution. Since the solid phase has been shown to vary with variations in the solution phase, it has been concluded that no single specific K_{sp} exists for the basic calcium phosphate system."

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Logan, M. A. COMPOSITION OF CARTILAGE, BONE, DENTIN AND ENAMEL. J. Biol. Chem., 1935, 110: 375-389. 16 refs. Abstracted in: Chem. Abstr., 1935, 29: 5499[3]; Biol. Abstr., Balt., 1936, 10: No. 18598.

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Logan, M. A. and Taylor, H. L. SOLUBILITY OF BONE SALT. J. Biol. Chem., 1937, 119: 293-307. 27 refs. Abstracted in: Chem. Abstr., 1937, 31: 5856[2]; Biol. Abstr., Balt., 1937, 11: No. 16295.

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Logan, M. A. and Taylor, H. L. SOLUBILITY OF BONE SALT. II. FACTORS AFFECTING ITS FORMATION. J. Biol. Chem., 1938, 125: 377-390. 12 refs. Abstracted in: Biol. Abstr., Balt., 1938, 12: No. 15849; Chem. Abstr., 1938, 32: 8516[6].

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Logan, M. A. and Kane, L. W. SOLUBILITY OF BONE SALT. IV. SOLUBILITY OF BONE IN BIOLOGICAL FLUIDS. J. Biol. Chem., 1939, 127: 705-710. 7 refs. Abstracted in: Biol. Abstr., Balt., 1939, 13: No. 7688; Chem. Abstr., 1939, 33: 2962[1].

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MacDonald, R. P. and Kuyper, A. C. CHEMISTRY OF BONE FORMATION: RELATIONSHIP BETWEEN COMPOSITION OF INORGANIC PRECIPITATES AND THEIR SUPERNATANT SOLUTIONS. Fed. Proc., Balt., 1952, 11: 251-252. An abstract.

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See:

7	11	12	13	20
421	478	479	611	619
638	870	871	876	891
894	1152	1182	1205	1223
1231	1235	1241	1363	1378
1402	1404	1406	1429	1544
1545	1888	1889	1893	1905
1940	1972	2003	2132	2387
2396	2724	2829	2896	2900

CHEMISTRY, INORGANIC - CALCIUM

see also METABOLISM, INORGANIC - CALCIUM

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CHEMISTRY, INORGANIC - CALCIUM (Continued)

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See:

251	264	535	1253	1369
1397	1403	1426	1456	1500
1944	1987	2187	2681	2845
2867	2872	2875	2948	2951

CHEMISTRY, INORGANIC - CARBONATE

see also METABOLISM, INORGANIC - CARBONATE

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CHEMISTRY, INORGANIC - MAGNESIUM

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See:

396	809	1193	1231	1285
1971	2621	2704	2810	

CHEMISTRY, INORGANIC - PHOSPHORUS

see also METABOLISM, INORGANIC - PHOSPHORUS

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CHEMISTRY, INORGANIC - PHOSPHORUS (Continued)

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Rogers, H. J., Weidmann, S. M. and Jones, H. G. STUDIES ON THE SKELETAL TISSUES. III. THE RATE OF EXCHANGE OF THE INORGANIC PHOSPHATE IN DIFFERENT BONES AND PARTS OF BONES IN VARIOUS SPECIES OF MAMMAL. Biochem. J., Lond., 1953, 54: 37-42. 22 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 27033; Chem. Abstr., 1953, 47: 7066e. Rabbits, cats, rats and ferrets were injected with ^{32}P as a tracer. The rate of exchange of phosphate in the cortical bone of cats was found to be very much slower than in the same type of bone in rabbits and rats. This difference did not extend to the trabeculae of the cancellous metaphyseal bones. The distribution of the tracer within the femoral and tibial cortical bone of rabbits showed great heterogeneity. The significance of this heterogeneity is discussed.

394
Todd, W. R. THE REMOVAL OF INORGANIC PHOSPHORUS FROM PHOSPHATE SOLUTIONS BY RAT BONE. Arch. Biochem., N. Y., 1943, 1: 369-372. 5 refs. "When a phosphate buffer is added to minced rat bone there is a rapid decrease in the inorganic phosphate content of the buffer. Under the experimental conditions described this phenomenon cannot be due to enzymatic action. The possibility of an ionic interchange is discussed."

395
Zetterström, R. RENEWAL OF PHOSPHATE IN BONE MINERALS. I. RENEWAL RATE OF PHOSPHATE IN RELATION TO THE SOLUBILITY OF THE BONE MINERALS. Biochim. biophys. acta, Amst., 1952, 8: 283-293. 43 refs. "The inorganic part of bone tissue is composed of an unknown number of fractions with different solubility when acetate buffers and saturated inert ammonium sulphates are used as solvent systems. The most soluble fractions also have the most rapid rate of phosphate renewal; one fraction seems to be nearly in ionic equilibrium with orthophosphate in plasma. The significance of these observations has been discussed."

See:

6	7	264	346	351
354	387	1238	1944	1973
2169	2333	2681	2861	2919
2939	2948	2965		

CHEMISTRY, INORGANIC - SODIUM

see also METABOLISM, INORGANIC - SODIUM

396
Dallemagne, M. J. and Mélon, J. L'ÉTAT CHIMIQUE DU MAGNÉSIUM ET DU SODIUM DES SELS OSSEUX. Arch. internat. physiol., 1950, 58: 188-200. 18 refs. Abstracted in: Chem. Abstr., 1952, 46: 5163g. When mineralized the magnesium and sodium of bone salts were present as carbonate; when heated at 600° centigrade they were liberated; before heating they were fixed to the surface of the phosphate crystals.

397
Harrison, H. E. THE SODIUM CONTENT OF BONE AND OTHER CALCIFIED MATERIAL. J. Biol. Chem., 1937, 120: 457-462. 14 refs. The excess sodium of the bone in normal animals and those with various disorders of calcification is, in general, directly proportional to the calcium content, the ratio being 1 to 30 molecules. It is suggested that the sodium found in calcified material is part of an apatite complex similar to the sodium found in the naturally occurring fluorapatite.

CHEMISTRY, INORGANIC - SODIUM (Continued)

398
Hodge, H. C., Koss, W. F., Ginn, J. T., Falkenheim, M., Gavett, E., Fowler, R. C., Thomas, I., Bonner, J. F. and Dessauer, G. THE NATURE OF THE INSOLUBLE SODIUM OF BONE. THE ADSORPTION OF SODIUM AT FORTY DEGREES BY BONE, DENTIN, ENAMEL, AND HYDROXYAPATITE AS SHOWN BY THE RADIOACTIVE ISOTOPE. J. Biol. Chem., 1943, 148: 321-331. 20 refs. Abstracted in: Biol. Abstr., Balt., 1943, 17: No. 23946; Chem. Abstr., 1943, 37: 4082[6].

399
Koss, W. F. and Ginn, J. T. DISTRIBUTION OF SODIUM IN THE TEETH AND BONES OF DOGS AS SHOWN BY THE RADIOACTIVE ISOTOPE. J. Dent. Res., 1941, 20: 465-470. 10 refs. Abstracted in: Biol. Abstr., Balt., 1942, 16: No. 14732; Chem. Abstr., 1942, 36: 1092[9].

400
Stoll, W. R. NATURE OF SODIUM IN BONE. Fed. Proc., Balt., 1954, 13: 306. An abstract.

See:

387

CHEMISTRY, INORGANIC - TRACE ELEMENTS

see TRACE ELEMENTS and subdivisions

CHEMISTRY, INORGANIC - VARIATIONS WITH AGE AND KINDS OF BONE

see CHEMISTRY - VARIATIONS WITH AGE AND KINDS OF BONE

CHEMISTRY, ORGANIC

see also CHEMISTRY; METABOLISM, ORGANIC

401
Dawson, I. M. X-RAY DIFFRACTION PATTERN OF BONE: EVIDENCE OF REFLEXIONS DUE TO THE ORGANIC CONSTITUENT. Nature, Lond., 1946, 157: 660-661. 8 refs. "A comparison was made of the diffraction patterns given by intact rachitic bone, trypsin digested bone and decalcified bone."

402
Eastoe, J. E. and Eastoe, B. THE ORGANIC CONSTITUENTS OF MAMMALIAN COMPACT BONE. Biochem. J., Lond., 1954, 57: 453-459. 36 refs.

403
*Hori, S., Nagao, T. and Niwa, K. CYSTINE AND TRYPTOPHAN CONTENTS OF OSSEIN. I. CYSTINE CONTENT. Kagaku, 1944, 14: 255. Abstracted in: Chem. Abstr., 1950, 44: 10750[d].

404
Inoue, T. BEITRÄGE ZUR KENNTNIS DER ORGANISCHEN BESTANDTEILE DES KNOCHENS. Tôhoku J. Exp. M., 1935, 26: 433-440. Abstracted in: Chem. Abstr., 1935, 29: 8081[2]; Nutrit. Abstr., Aberdeen, 1935-36, 5: No. 2846.

405
Ogino, T. [HISTOLOGICAL STUDIES ON THE GLYCOGEN CONTENT OF THE OSTEOCHONDRAL JUNCTION OF RAT RIBS] Sei-i-kai M. J., 1941, 60: 941-957. pl. English abstract, p. 7-8. Abstracted in: Chem. Abstr., 1942, 36: 540[2].

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Ohno, K. and Nanba, T. EINFLUSS DER SUBCUTANEN INJEKTION DES OSSOPHYTS AUF DEN HEILUNGSVORGANG DER KNOCHENFRAKTUR. Kumamoto M. J., 1934, 10: 401-402.

407
Preto Parvis, V. GLICOGENO E OSSIFICAZIONE IN EMBRIONI DI RATTO. Arch. Ist. biochim. ital., 1938, 10: 281-288. pl. 12 refs. Abstracted in: Chem. Abstr., 1939, 33: 2192[9]. In rat embryos histochemical studies were made of the distribution of glycogen in ossifying tissues.

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Rogers, H. J. OBSERVATIONS ON THE ORGANIC MATRIX OF BONE. Biochem. J., Lond., 1949, 45: Proc., 24-25. Abstracted in: Excerpta med., Sect. 2, 1950, 3: No. 5100.

See:

77	80	703	846	1293
2390	2882			

CHEMISTRY, ORGANIC - CITRIC ACID

409
Beaulieu, M. M. and Dallemagne, M. J. LA CONSTANCE DU TAUX DES CITRATES DE L'OS. Arch. internat. physiol., Liége, 1951, 59: 183-190. 13 refs. Abstracted in: Chem. Abstr., 1953, 47: 2878[i]; Ber. ges. Physiol., 1952-53, 151: 294.

410
Beaulieu, M. M. and Herve, A. RAYONS X ET ACIDE CITRIQUE DE L'OS. Bull. Soc. chim. biol., Par., 1953, 35: 491-493. Abstracted in: Chem. Abstr., 1954, 48: 755[d].

411
*Buffa, P. SULLA PRESENZA DI ACIDO CITRICO NELLE STRUTTURE ANIMALI CALCIFICATE. Atti Accad. naz. Lincei, Rendic., Class. sc. fis., 1952, 13: 417-421. Abstracted in: Chem. Abstr., 1953, 47: 5518[d].

412
Cartier, P. LES CONSTITUANTS MINÉRAUX DES TISSUS CALCIFIÉS. V. LES ANIONS ORGANIQUES DE L'OS. Bull. Soc. chim. biol., Par., 1951, 33: 161-169. 8 refs. The long bones of rabbits and rats of various ages and of sheep embryos at different stages of development were analyzed for calcium, phosphorus and nitrogen content and for citric and lactic acids. It was found that cartilage is rich in lactic acid and poor in citric acid and that the citric acid level in bone tissue is constant while that of lactic acid, high in the early stages of ossification, decreases constantly until it reaches the relatively constant level of definitive bone.

413
CITRIC ACID IN BONE. (Editorial). J. Am. M. Ass., 1942, 120: 208. 2 refs. A short survey with particular reference to Dickens' work.

414
Day, H. G. THE RELATION OF PHYTIN TO THE CALCIFYING ACTION OF CITRATES. J. Nutrit., 1940, 20: 157-168. 23 refs. Abstracted in: Biol. Abstr., Balt., 1941, 15: No. 278. By determinations of bone ash of young rats it was shown that "a beneficial effect of citrates in ricketogenic diets does not occur unless there is a high Ca:P ratio and appreciable quantities of phytin, or perhaps other phosphorus containing complexes of low biological availability."

CHEMISTRY, ORGANIC - CITRIC ACID (Continued)

415
Dickens, F. THE CITRIC ACID CONTENT OF ANIMAL TISSUES, WITH REFERENCE TO ITS OCCURRENCE IN BONE AND TUMOUR. Biochem. J., Lond., 1941, 35: 1011-1023. 30 refs. Abstracted in: Biol. Abstr., Balt., 1942, 16: No. 12451; Chem. Abstr., 1942, 36: 4180[5]. The citric acid content of solid tissues of several species of animals was determined. It was found that the hard substance of bone contains the greatest part (70%) of the total body content. The marrow and cartilage contain much less. Variations in the concentration of citric acid in bone were reported, which would seem to indicate that the skeleton acts as a reservoir from which citric acid can be mobilized.

416
Dixon, T. F. CITRIC ACID AND CALCIUM METABOLISM. J. Bone Surg., 1951, 33B: 268-271. 26 refs. A short review.

417
Dixon, T. F. and Perkins, H. R. CITRIC ACID AND BONE METABOLISM. Biochem. J., Lond., 1952, 52: 260-265. 22 refs. Abstracted in: Chem. Abstr., 1953, 47: 732[f]; Biol. Abstr., Balt., 1953, 27: No. 9661. "It appears that all the parts of bone examined have, by comparison with other tissues, e.g., kidney or liver, citrogenase and aconitase activities much greater than those of isocitric dehydrogenase. The mechanism for the production of a local high concentration of citric acid therefore exists in bone. ... Increasing concentrations of citrate inhibit the calcification of hypertrophic rat cartilage in vitro."

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Fantl, P. and Rome, N. CALCIUM AND CITRIC ACID METABOLISM IN BONE DISEASES. Proc. R. Australas. Coll. Physicians, 1947, 2: 52-55. 15 refs.

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Hathaway, M. L. and Meyer, F. L. CITRIC ACID AND ITS SALTS AS CALCIFYING AGENTS IN RATS. J. Nutrit., 1939, 17: 419-427. 12 refs. Abstracted in: Chem. Abstr., 1939, 33: 6398[1]; Biol. Abstr., Balt., 1939, 13: No. 10945.

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Hennig, W., Schmahl, N. G. and Theopold, W. ÜBER CALCIUM-CITRONENSÄURE-KOMPLEXE. Biochem. Zschr., 1951, 321: 401-409. 29 refs. Abstracted in: Excerpta med., Sect. 2, 1952, 5: No. 1582; Chem. Abstr., 1951, 45: 7302[i].

421
Klinke, K. PROBLEME DES CALCIUMSTOFFWECHSELS UND DER RACHITIS. Mschr. Kinderh., 1950, 98: 113-115. Abstracted in: Chem. Abstr., 1950, 44: 7399[a].

422
Lecoq, R. ACTION DE L'ACIDE CITRIQUE SUR LES DEUX VARIÉTÉS DE RACHITISME EXPÉRIMENTAL. C. rend. Soc. biol., 1949, 143: 452-454. 6 refs. Abstracted in: Chem. Abstr., 1950, 44: 2611[c]; Biol. Abstr., Balt., 1951, 25: No. 623. Young white rats with two kinds of experimental rickets were treated with citric acid. A distinct recalcification of bone lesions was observed in alkalotic rickets, but in acidotic ultraviolet-resistant rickets no effect was noted.

423
Leonards, J. R. and Free, A. H. THE CITRATE CONTENT OF THE SKELETON AS INFLUENCED BY PROLONGED FEEDING OF ACID-PRODUCING AND BASE-PRODUCING SALT. J. Biol. Chem., 1944, 155: 503-506. 11 refs. Abstracted in: Biol. Abstr., Balt., 1945, 19: No. 2403; Chem. Abstr., 1945, 39: 3317. The citrate content of the skeleton was not altered by prolonged feeding of sodium citrate or ammonium fluid.

424
Pin, P. and Delmas, A. RÉSERVES MINÉRALES OSSEUSES DU FOETUS HUMAIN. TENEUR EN CITRATES. C. rend. Ass. anat., 1952, 38.meet., No. 69, 822-824. 3 refs. Determinations were made of the distribution of bone citrates in the human fetus. The relatively high content was greater in the diaphysis than in the epiphysis.

425
Rominger, E. CITRIC ACID AND RICKETS. Acta paediat., Upps., 1948, 36: 336-341. 14 refs. "Vitamin D and citric acid prevent and cure rickets both probably by formation of Ca complex salts which no longer have cationic properties."

426
Schubert, J. AN EXPERIMENTAL STUDY OF THE EFFECT OF ZIRCONIUM AND SODIUM CITRATE TREATMENT ON THE METABOLISM OF PLUTONIUM AND RADIOYTTRIUM. J. Laborat. Clin. M., 1949, 34: 313-325. 8 refs. Abstracted in: Biol. Abstr., Balt., 1949, 23: No. 20673.

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Schubert, J. and White, M. R. EFFECT OF CITRATE SALTS AND OTHER CHEMICAL FACTORS ON THE DISTRIBUTION AND EXCRETION OF BERYLLIUM. J. Laborat. Clin. M., 1950, 35: 854-864. 20 refs. Abstracted in: Excerpta med., Sect. 2, 1951, 4: No. 2183.

428
Shohl, A. T. THE EFFECT OF THE ACID-BASE CONTENT OF THE DIET UPON THE PRODUCTION AND CURE OF RICKETS WITH SPECIAL REFERENCE TO CITRATES. J. Nutrit., 1937, 14: 69-83. 22 refs. Young albino rats were fed diets of eight different calcium-phosphorus ratios. Ammonium chloride-ammonium carbonate mixtures added to non-rachitogenic diets rendered them rachitogenic. Citric acid-sodium citrate mixtures added to rachitogenic diets rendered them non-rachitogenic, in certain conditions. Of the organic acids tested only the citrates and tartrates were effective in rickets prevention.

429
Steenbock, H. and Bellin, S. A. VITAMIN D AND TISSUE CITRATE. J. Biol. Chem., 1953, 205: 985-991. 25 refs. "The citrate content of blood, bone, kidney, heart, and the small intestine of rats on normal or low-P rachitogenic rations was increased by physiological doses of vitamin D." It appears that the increase in urinary citrate is a reflection of its increased accumulation in certain tissues."

430
Taüfel, K. and Krusen, F. DIE CITRONENSÄURE ALS KONSTITUIERENDER BAUSTEIN DER KNOCHEN UND ZÄHNE. Biochem. Zschr., 1952, 322: 368-370. 6 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 16397; Chem. Abstr., 1952, 46: 7196[b].

431
Thunberg, T. OCCURRENCE AND SIGNIFICANCE OF CITRIC ACID IN THE ANIMAL ORGANISM. Physiol. Rev., 1953, 33: 1-12. 72 refs. A general review. For bone, see particularly p. 7. Abstracted in: Chem. Abstr., 1953, 47: 4987[f].

432
Thunberg, T. SOME INFORMATION ON THE CITRIC ACID CONTENT OF BONE SUBSTANCE. Acta physiol. scand., 1948, 15: 38-46. 18 refs. Abstracted in: Excerpta med., Sect. 2, 1948, 1: No. 5008; Biol. Abstr., Balt., 1949, 23: No. 23096. "The citrate content was highest in compact bone and least in spongy bone.

CHEMISTRY, ORGANIC - CITRIC ACID (Continued)

Human bone contained 0.9 to 2 per cent per gram of dried fat-free substance; those of a bird (Larus ridibundus) 0.60 to 2.7 per cent; and the spines of cod, mackerel and herring, 2, 1.6 and 4.3 per cent respectively. The bones of frogs that had been kept in the laboratory for a year contained only about 0.3 per cent." - Excerpta med.

See:

255 256 831 1813 2839
2864 2865 2866 2876 2951

CHEMISTRY, ORGANIC - COLLAGEN AND RETICULIN

see COLLAGEN AND RETICULIN

CHEMISTRY, ORGANIC - ENZYMES

see ENZYME RELATIONSHIPS and subdivisions

CHEMISTRY, ORGANIC - GLYCOPROTEINS AND MUCOPOLYSACCHARIDES

see GLYCOPROTEINS AND MUCOPOLYSACCHARIDES

CHEMISTRY, ORGANIC - LIPOIDS

433
Claassen, V., Vogels, R. J. and Wöstmann, B. S. J. AN INDEPENDANT SYNTHESIS OF PHOSPHOLIPIDS IN THE FEMUR AND TIBIA OF WHITE RATS. Nature, Lond., 1952, 169: 191-192. 3 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1952, 22: No. 877. Experiments performed in vivo in the rat and reproduced in vitro with bone fragments from femur and tibia show that an independent synthesis of phospholipids takes place in bone marrow.

434
Nagy, I., Savay, G. and Csillik, B. A PORCSEJTEK LIPOIDTARTALMA ÉS A CSONTOSODÁS KÖZÖTTI ÖSSZEFÜGGESRÖL. [CORRELATION BETWEEN THE LIPOID CONTENT OF CARTILAGE CELLS AND OSSIFICATION] Kísérletes orvostud., 1951, 3: 267-270. 10 refs. German translation in: Acta morph. hung., 1953, 3: 483-487.

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Nagy, I., Savay, G., Berek, L. and Csillik, B. VERÄNDERUNGEN DES FETTGEHALTES IN DEN KNORPELZELLEN WÄHREND DES EMBRYONALEN LEBENS. Acta morph. hung., 1951, 1: 307-312. 12 refs.

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Newlin, H. E. and McCay, C. M. THE RELATION BETWEEN THE BONE LIPIDS OF RABBITS AND THE DIET. J. Biol. Chem., 1941, 140: Proc. 97-98. An abstract.

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Nicolosi, G. and Petrina, N. REPERTI ISTOCHIMICI LIPOIDEI NEL CALLO OSSEO SPERIMENTALE. Med. sper., Tor., 1948, 19: 265-288. 49 refs. Abstracted in: Excerpta med., Sect. 5, 1949, 2: No. 3410.

438
Nordfeldt, S. THE INFLUENCE OF PHOSPHORUS, CALCIUM AND VITAMIN D_3 UPON THE FAT CONTENT OF THE SKELETON IN GROWING PIGS. J. Nutrit., 1946, 31: 565-572. 13 refs. Abstracted in: Biol. Abstr., Balt., 1946, 20: No. 16959; Chem. Abstr., 1946, 40: 5114^6.

439
Zimmermann, G. CSONTOK ZSÍRTALANÍTÁSA. [EXTRACTION OF FAT FROM BONES] Allatorv. lap., 1935, 58: 298-299. 7 refs.

See:

93 143 2660

CHEMISTRY, ORGANIC - VARIATIONS WITH AGE AND KINDS OF BONE

see CHEMISTRY - VARIATIONS WITH AGE AND KINDS OF BONE

CHONDROGENESIS

440
Baisset, A., Douste-Blazy, L., Montastruc, P., Planel, H. and Virenque, J. CONTRIBUTION À L'ÉTUDE EXPÉRIMENTALE DE L'ACTION DES HORMONES SUR LA CROISSANCE DES OS LONGS. Sem. hôp., Paris, 1953, 29: 63-69. 32 refs. Abstracted in: Internat. Abstr. Surg., 1953, 97: 286. Experiments on male white rats indicated that the development of the epiphyseal cartilage is dependent upon a balance between the sex hormones and the anterior pituitary growth hormone. The article contains a review of the literature.

441
Baume, L. J. and Becks, H. THE TOPOGENESIS OF THE MANDIBULAR PERMANENT MOLARS; A ROENTGENOGRAPHIC AND HISTOLOGIC STUDY IN RHESUS MACAQUE. Oral Surg., 1953, 6: 850-868. 40 refs. In this study of the mandibles of a series of rhesus monkeys it was found that the ramus grows by chondrogenesis and endochondral ossification at the condylar head, which processes in turn induce membranous bone formation chiefly at the posterior border. Growth of the ramus is in a posterolateral direction. The development of the germ is controlled by the differential growth of the odontogenic epithelium at distinct areas. The correlation in time of the ramal and dental development is noted. The study is preceded by a review of the literature.

442
Berezkina, L. F. O VOZMOZHNOSTI INDUKTSII KHRIASHCHEOBRAZOVANIIA IN VITRO. [POSSIBILITY OF INDUCED FORMATION OF CARTILAGE IN VITRO] Izv. Akad. nauk, Moskva, ser. biol., 1943, No. 2, 67-73. 11 refs. English summary. Small pieces of hatching chick retina were added to pure cultures of fibrocites from chick embryo heart and cultivated for 28 days. All elements except the pigment epithelium degenerated and an enhanced formation of fibres took place in the connective tissue. There was no sign of formation of cartilage or bone. Since there is an increased formation of fibres with the use of cartilage or fibrous connective tissue as well as with retina, it is concluded that neither retina nor cartilage can induce cartilage formation in vitro in tissues not endowed with chondrogenic potency.

443
Borghese, E. INDAGINE ISTOCHIMICHE SULLA "SFERULA ACIDOFILA" DELLE CELLULE CARTILAGINEE IPERTROFICHE. Boll. Soc. ital. biol. sper., 1953, 29: 292-293. 7 refs. Abstracted in: Chem. Abstr., 1954, 48: 2212^e.

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Clark, E. R. and Clark, E. L. MICROSCOPIC OBSERVATIONS ON NEW FORMATION OF CARTILAGE AND BONE IN THE LIVING MAMMAL. Am. J. Anat., 1942, 70: 167-200. 30 refs. Abstracted in: Biol. Abstr., Balt., 1942, 16: No. 16424.

445
Dodds, G. S. ROW FORMATION AND OTHER TYPES OF ARRANGEMENT OF CARTILAGE CELLS IN ENDOCHONDRAL OSSIFICATION. Anat. Rec., 1930, 46: 385-399. 2 pl. Abstracted in: Biol. Abstr., Balt., 1931, 5: No. 25546. These studies were made upon developing bones of dog fetuses and young puppies but comparisons were made constantly with material from cat, pig, and man.

CHONDROGENESIS (Continued)

446
Elliott, H. C. STUDIES ON ARTICULAR CARTILAGE. I. GROWTH MECHANISMS. Am. J. Anat., 1936, 58: 127-145. 2 pl. Approx. 25 refs. The study "deals primarily with the mechanism by which articular cartilage compensates for normal wear due to movement in the joint; as a necessary preliminary it also deals with growth in immature subjects - that is, developmental as distinct from maintenance growth."

447
Fell, H. B. CHONDROGENESIS IN CULTURES OF ENDOSTEUM. Proc. R. Soc., Ser. B, Biol. Sc., Lond., 1933, 112: 417-427. 3 pl. 8 refs. Abstracted in: Biol. Abstr., Balt., 1936, 10: No. 6939.

448
Glücksmann, A. STUDIES ON BONE MECHANICS IN VITRO. II. THE ROLE OF TENSION AND PRESSURE IN CHONDROGENESIS. Anat. Rec., 1939, 73: 39-54. 2 pl. 6 refs. Abstracted in: Biol. Abstr., Balt., 1939, 13: No. 4387.

449
Gromtseva, K. E. GISTOLOGICKESKIE ISSLEDOVANIIA KHRIASHCHA. [HISTOLOGICAL STUDY OF CARTILAGE] Izv. Akad. nauk. SSSR, ser. biol., Moskva, 1950, No. 4, 100-107. 6 refs. Changes in the cell elements of hyaline cartilage were studied in man during embryonic and post-natal development.

450
Ham, A. W. THE VARIABILITY OF THE PLANES OF CELL DIVISION IN THE CARTILAGE COLUMNS OF THE GROWING EPIPHYSEAL PLATE. Anat. Rec., 1931, 51: 125-133. pl. 2 refs. Abstracted in: Biol. Abstr., Balt., 1933, 7: No. 11927.

451
Krompecher, S. DIE ENTSTEHUNGSBEDINGUNGEN DES FASERKNORPELS. Anat. Anz., 1938, 85: 229-236.

452
Mattick. ZUR BIOLOGIE DES KNORPELS. Anat. Anz., 1951, 98: Suppl., 78-85. 2 refs. Abstracted in: Excerpta med., Sect. 1, 1953, 7: No. 2132.

453
Nasonov, N. V. OBRAZOVANIE KHRIASHCHA IN VITRO Y AKSOLOTLIA. [THE FORMATION OF CARTILAGE IN VITRO IN THE AXOLOTL] C. rend. Acad. sc. SSSR, 1934, 3: 202-207. 3 refs. In Russian and English. Connective tissue from sides of anterior part of body of 1-year-old axolotl was placed in axolotl blood plasma and an extract of axolotl cartilages from tarsus and epiphyses from fibula, tibia and femur containing a substance called chondrogene was added. Moving cells, surrounded by a more compact basic substance were observed from beginning of growth of cultures. This substance joined the cells and prevented them from spreading. The basic substance became more compact and a tissue possessing characteristics of hyaline cartilage was formed.

454
*Nauch, E. T. VERSUCHE ZUR AUFKLÄRUNG DER ENSTEHUNGSBEDINGUNGEN FÜR KNORPELGEWEBE. Verh. Anat. Ges., 1939, 47: 297-301.

455
Oinuma, S. ZYTOLOGISCHE UNTERSUCHUNGEN DER HYALINKNORPELZELLEN DES MENSCHEN. Okajimas fol. anat., 1939, 18: 307-336. pl. 68 refs.

456
Prader, A. DIE ENTWICKLUNG DER ZWISCHENWIRBELSCHEIBE BEIM MENSCHLICHEN KEIMLING. Acta anat., Basel, 1947, 3: 115-152. 24 refs. Abstracted in: Biol. Abstr., Balt., 1948, 22: No. 18553. The development of the intervertebral disk is studied in serial sections of the vertebral column of the human embryo, fetus and newborn infant.

457
Preto Parvis, V. and Roncoroni, G. CONTRIBUTO MORFOLOGICO E ISTOCHIMICO ALLO STUDIO DELLA CONDROGENESI. Atti. Soc. ital. anat., Pavia, 1951, 13.meet., 263-266. In rats of different ages morphological and histochemical studies were made of the processes of chondrogenesis.

458
Pritchard, J. J. A CYTOLOGICAL AND HISTOCHEMICAL STUDY OF BONE AND CARTILAGE FORMATION IN THE RAT. J. Anat., Lond., 1952, 86: 259-277. 4 pl. 42 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 166601; Brit. Abstr., Sect. AIII, 1953, p. 3.

459
Sensenig, E. C. NOTE ON THE FORMATION OF CARTILAGE. Anat. Rec., 1948, 100: 615-619. pl. 4 refs. Abstracted in: Excerpta med., Sect. 1, 1949, 3: No. 589; Biol. Abstr., Balt., 1949, 23: No. 1143.

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Shands, A. R., Jr. THE REGENERATION OF HYALINE CARTILAGE IN JOINTS; AN EXPERIMENTAL STUDY. Arch. Surg., 1931, 22: 137-178. 25 refs.

461
Sheehan, J. F. A CYTOLOGICAL STUDY OF THE CARTILAGE CELLS OF DEVELOPING LONG BONES OF THE RAT, WITH SPECIAL REFERENCE TO THE GOLGI APARATUS, MITOCHONDRIA, NEUTRAL-RED BODIES AND LIPID INCLUSIONS. J. Morph., 1948, 82: 151-199. 5 pl. Approx. 65 refs. Abstracted in: Excerpta med., Sect. 1, 1949, 3: No. 682.

462
Terada, E. A HISTOLOGIC STUDY OF THE CARTILAGE OF THE LOWER END OF HUMAN FEMUR IN EVERY FETAL STAGE. Jap. J. Obst., 1934, 17: 186-193. 2 pl. 18 refs. Abstracted in: Biol. Abstr., Balt., 1936, 10: No. 4471.

463
Wagenfeld, M. ÜBER DIE NEUBILDUNG VON KNORPELZELLEN. Virchow's Arch., 1952, 321: 535-536. 3 refs. Abstracted in: Excerpta med., Sect. 5, 1953, 6: No. 984.

See:

492 1023 1085 1281 2416

CIRCULATORY INFLUENCE

464
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See:

262	275	284	309	310
314	325	328	329	330
364	383	556	1245	2338
2339	2380	2389	2393	2690

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See:

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705	707	708	1146	1147
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GROWTH AND DEVELOPMENT

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GROWTH AND DEVELOPMENT - VARIATIONS WITH AGE, SEX, SPECIES, PARTS AND KINDS OF BONE

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Coventry, M. B., Ghormley, R. K. and Kernohan, J. W. THE INTERVERTEBRAL DISC: ITS MICROSCOPIC ANATOMY AND PATHOLOGY. PART II. CHANGES IN THE INTERVERTEBRAL DISC CONCOMITANT WITH AGE. J. Bone Surg., 1945, 27: 233-247. 10 refs.

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GROWTH AND DEVELOPMENT - VARIATIONS WITH AGE, SEX, SPECIES, PARTS AND KINDS OF BONE (Continued)

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Evans, F. G., Hayes, J. F. and Powers, J. E. "STRESSCOAT" DEFORMATION STUDIES OF THE HUMAN FEMUR UNDER TRANSVERSE LOADING. Anat. Rec., 1953, 116: 171-187. 2 pl. 5 refs. Abstracted in: Biol. Abstr., Balt., 1954, 28: No. 932; Excerpta med., Sect. 1, 1954, 8: No. 681.

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1107
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Hirsch, C., Paulson, S., Sylvén, B. and Snellman, O. BIOPHYSICAL AND PHYSIOLOGICAL INVESTIGATIONS ON CARTILAGE AND OTHER MESENCHYMAL TISSUES. VI. CHARACTERISTICS OF HUMAN NUCLEI PULPOSI DURING AGING. Acta orthop. scand., 1953, 22: 175-183. 16 refs.

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Peacock, A. OBSERVATIONS ON THE POSTNATAL STRUCTURE OF THE INTERVERTEBRAL DISC IN MAN. J. Anat., Lond., 1952, 86: 162-179. 3 pl. 52 refs. "Descriptions are given of the tissue changes taking place in the structural components of the human intervertebral disc, from birth to 80 years of age." Specimens were examined macroscopically and microscopically.

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Roche, A. and Garcia, I. CONSTANCE DU RAPPORT ENTRE LA TAILLE DU SQUELETTE ET LA MASSE ACTIVE CHEZ LE RAT. C. rend. Soc. biol., 1935, 120: 160-162. 3 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1935-36, 5: No. 3085.

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Silberberg, M and Silberberg, R. AGE CHANGES OF BONES AND JOINTS IN VARIOUS STRAINS OF MICE. Am. J. Anat., 1941, 68: 62-95. 3 pl. 22 refs. Abstracted in: Biol. Abstr., Balt., 1941, 15: No. 10693.

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Sissons, H. A. EXPERIMENTAL DETERMINATION OF RATE OF LONGITUDINAL BONE GROWTH. J. Anat., Lond., 1953, 87: 228-236. pl. 19 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 29906. A radiological study of the epiphyseal cartilage plate of the lower end of the femur of rats and rabbits was made to determine differences in the rate of growth in the two species. The results of this study were "used in interpreting the microscopic structure of the growing region of the bone in each species and in determining the duration of each of the cellular processes concerned in the formation and maturation of bone trabeculae in this situation. The relative duration of the various cellular processes..." was found to vary "from species to species, and this factor, in addition to variation in absolute growth rates" was found to be "responsible for differences in the microscopic structure of the growing region in the two species."

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Tomlin, D. H., Henry, K. M. and Kon, S. K. AUTORADIOGRAPHIC STUDY OF GROWTH AND CALCIUM METABOLISM IN THE LONG BONES OF THE RAT. Brit. J. Nutrit., 1953, 7: 235-252. 4 pl. 17 refs. Abstracted in: Chem. Abstr., 1953, 47: 11421[f]; Biol. Abstr., Balt., 1954, 28: No. 13591.

See:

125	465	688	1135	1138
1140	1142	1216	1932	1957
2047	2116			

HORMONAL INFLUENCE

1120
Albright, F. THE EFFECT OF HORMONES ON OSTEOGENESIS IN MAN. Recent Progr. Hormone Res., 1947, 1: 293-353. 56 refs. Abstracted in: Chem. Abstr., 1948, 42: 1644[f].

1121
Albright, F. OSTEOPOROSIS. Ann. Int. M., 1947, 27: 861-882. 15 refs. The author attributes the osteoporosis of old age partly to loss of gonodal hormones and diminution of the adrenal cortical "N" hormone. He discusses the normal internal dynamics of the skeleton; the factors which influence osteoblastic activity: (a) steroidal hormones (b) mechanical stresses and strains (c) nitrogenous building blocks; and the role an imbalance or a lack of any of these three factors plays in the production of osteoporosis.

HORMONAL INFLUENCE (Continued)

1122
Amprino, R. LA STRUTTURA DELLE OSSA DELL'UOMO IN RELAZIONE A TURBE DELL'ACCRESCIMENTO. RICERCHE SUGLI SCHELETRI DI UN GIGANTE E DI UN NANO. Arch. ital. anat., 1943, 49: 161-193. 10 refs. Abstracted in: Biol. Abstr., Balt., 1948, 22: No. 19899. Histological comparision of the compact bone of the long bones of a young giant and young dwarf demonstrated a deviation from the normal rate of ossification processes, more rapid in the giant, slower in the dwarf. The differences were believed due to hormonal factors. Marked analogy of structure was also noted.

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Bell, G. H. and Cuthbertson, D. P. THE EFFECT OF VARIOUS HORMONES ON THE CHEMICAL AND PHYSICAL PROPERTIES OF BONE. J. Endocr., Oxf., 1943, 3: 302-309. 9 refs. Abstracted in: Biol. Abstr., Balt., 1944, 18: No. 4395; Chem. Abstr., 1944, 38: 2094[9]; Nutrit. Abstr., Aberdeen, 1944-45, 14: No. 359. "...the most striking point about the present experiments... is the constancy of the physical and chemical characteristics of bone - a feature which is presumably of value from the point of view of the survival of the organism. It may be... that we shall have to give up the idea that there are bones of varying quality..."

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*Campbell, I. L. and Turner, C. W. THE RELATION OF THE ENDOCRINE SYSTEM TO THE REGULATION OF CALCIUM METABOLISM. Montana Agr. Exp. Sta. Res. Bull., 1942, No. 352. 134p. Abstracted in: Nutrit. Abstr., Aberdeen, 1945-46, 15: No. 3339.

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Coryn, G. LES ENDOCRINES ET LE SQUELETTE. EXPERIMENTATION ET CLINIQUE. Ann. Soc. sc. méd. natur. Bruxelles, 1937, Bull., 33-37.

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Coryn, G. ÉTUDE DE L'INFLUENCE DES GLANDES ENDOCRINES SUR LE SQUELETTE. Arch. internat. méd. exp., Liege, 1936, 11: 135-403. Bibliogr.: p. 381-403. A digest in: J. radiol. electr., 1936, 20: 123-128.

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Coryn, G. INTRODUCTION À L'ÉTUDE DES AFFECTIONS ENDOCRINIENNES DU SQUELETTE. Presse méd., 1937, 45: 611-613. Abstracted in: Chem. Abstr., 1937, 31: 7995[5].

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Coryn, G. RECHERCHE EXPERIMENTALE SUR L'INFLUENCE DES GLANDES ENDOCRINES SUR L'HISTOLOGIE DU CARTILAGE DE CONJUGAISON. Ann. anat. path., Par., 1939, 16: 27-42. 12 refs.

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Cotellessa, G. and De Maestri, A. IL CONTRIBUTO DIAFISARIO NEL PROCESSO DI ACCRESCIMENTO SCHELETRICO DOPO SOMMINISTRAZIONE DI ALCUNI PREPARATI ORMONICI. Minerva pediat., Tor., 1953, 5: 968-971. 10 refs.

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Follis, R. H., Jr. THE INFLUENCE OF ESSENTIAL NUTRIENTS AND HORMONES ON CARTILAGE AND BONE. Tr. Conf. Metab. Interrelat., 1950, 2.meet., 221-257. 18 refs. Report and discussion of studies.

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Fontaine, R., Mandel, P. and Wiest, E. ÉTUDE ANATOMIQUE, CLINIQUE, HISTOLOGIQUE ET BIOCHIMIQUE DE L'ACTION DE DIFFÉRENTES HORMONES (THYROXINE, DÉSOXYCORTICOSTÉRONE ET CORTISONE) SUR L'EVOLUTION DES FRACTURES EXPÉRIMENTALES CHEZ LE CHIEN. Mém. Acad. chir., Par., 1952, 78: 351-359. 5 refs. Abstracted in: Excerpta med., Sect. 9, 1953, 7: No. 1484.

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Gaillard, P. J. HORMONES REGULATING GROWTH AND DIFFERENTIATION IN EMBRYONIC EXPLANTS. 82p. Par., Hermann, 1942. (Actual. sc. indust. No. 923). Summary of research carried out by the author and his colleagues since 1929, a part of which concerns bone.

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Langenskiöld, F. OM VITAMINERNAS OCH HORMONERNAS INFLYTANDE PA SKELETTET. Nord. med., 1939, 1: 733-738. 16 refs. German summary.

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Loeb, L. HORMONES AND THE PROCESS OF AGEING. Harvey Lect., Balt., 1940-1941, 36: 228-250. 34 refs. A survey.

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Parker, S. G. REGULATION OF LONGITUDINAL BONE GROWTH. Arch. Surg., 1949, 59: 1100-1121. 122 refs. The endocrinological aspects of bone growth are reviewed.

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Schnitman, S. GLANDULAS ENDOCRINAS Y HUESO. Rev. odont., B. Air., 1950, 38: 114-133. 6 refs.

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*Silberberg, M. and Silberberg, R. THE EFFECT OF ENDOCRINES ON ARTICULAR TISSUE AND THEIR RELATION TO AGEING PROCESSES. Ann. Rheumat. Dis., Lond., 1949, 8: 307. Abstracted in: Excerpta med., Sect. 3, 1951, 5: No. 605.

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Silberberg, M. and Silberberg, R. EFFECTS OF HORMONES ON THE SKELETON OF MICE, GUINEA PIGS AND RATS. Endocrinology, 1941, 29: 475-482. 37 refs. Abstracted in: Chem. Abstr., 1941, 35: 7505[5]. The effects on cartilage and bone of growing animals, produced by anterior pituitary preparations, thyroid, hormone, potassium iodide, parathyroid extracts and sex hormones are compared.

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Silberberg, M. and Silberberg, R. INFLUENCE OF THE ENDOCRINE GLANDS ON GROWTH AND AGING OF THE SKELETON. Arch. Path., Chic., 1943, 36: 512-534. 208 refs. Abstracted in: Biol. Abstr., Balt., 1944, 18: No. 10280.

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Silberberg, M. and Silberberg, R. THE RESPONSE OF CARTILAGE AND BONE OF THE NEWBORN GUINEA PIG TO STIMULATION BY VARIOUS HORMONES (ANTERIOR HYPOPHYSEAL EXTRACT, ESTROGEN, THYROXINE). Anat. Rec., 1940, 78: 549-558. 7 refs. "In the newborn guinea pig the cartilage has the tendency to respond to various hormonal stimuli with more proliferative and less retrogressive changes than that of older animals. This is further evidence in favor of the opinion that the age of the animal on which the hormone acts plays an important role in helping to determine the mode of reaction of the cartilage to... various hormones."

HORMONAL INFLUENCE (Continued)

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Silberberg, M. and Silberberg, R. DIE ROLLE DER HORMONE IM WACHSTUM UND ALTERN DES SKELETTS UND IHRE BEDEUTUNG FÜR DIE PATHOGENESE DER ARTHRITIS DEFORMANS. Schweiz. med. Wschr., 1949, 79: 127-132. 39 refs. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 7754.

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Silberberg, M. and Silberberg, R. SOME ASPECTS OF THE ROLE OF HORMONAL AND NUTRITIONAL FACTORS IN SKELETAL GROWTH AND DEVELOPMENT. Growth, Phila., 1949, 13: 359-368. 22 refs. Abstracted in: Biol. Abstr., Balt., 1950, 24: No. 14331; Nutrit. Abstr., Aberdeen, 1950-51, 20: No. 748.

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Thompson, W. O., Heckel, N. J. and Morris, R. M. HORMONAL FACTORS INFLUENCING SKELETAL GROWTH. J. Clin. Invest.,1941, 20: 464. An abstract.

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Williams, H. L. and Watson, E. M. INFLUENCE OF HORMONES UPON PHOSPHATASE CONTENT OF RAT FEMURS. I. EFFECTS OF ADRENAL CORTICAL SUBSTANCES AND PARATHYROID EXTRACT. Endocrinology, 1941, 29: 250-257. 25 refs. Abstracted in: Chem. Abstr., 1941, 35: 7502^{5}.

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Williams, H. L. and Watson, E. M. INFLUENCE OF HORMONES UPON PHOSPHATASE CONTENT OF RAT FEMURS. II. EFFECTS OF SEX HORMONES, THYROXIN AND THYMUS EXTRACT. Endocrinology, 1941, 29: 258-261. 20 refs. Abstracted in: Chem. Abstr., 1941, 35: 7502^{8}.

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Wolterink, L. F. ISOTOPES IN HORMONAL AND NUTRITIONAL STUDIES IN ANIMALS. IN: CONFERENCE ON THE USE OF ISOTOPES IN PLANT AND ANIMAL RESEARCH. Manhatan, Kan., June 1952. U. S. Atomic Energy Commission, Washington, D. C., 1953, p. 122-154. (TID-5098) Approx. 65 refs. Abstracted in: Nuclear Sc. Abstr., 1954, 8: No. 80.

See:

146 967 2178

HORMONAL INFLUENCE - ADRENAL CORTEX

1149
Blunt, J. W., Jr., Plotz, C. M., Lattes, R. Howes, E. L., Meyer, K. and Ragan, C. EFFECT OF CORTISONE ON EXPERIMENTAL FRACTURES IN THE RABBIT. Proc. Soc. Exp. Biol., N.Y., 1950, 73: 678-681. 7 refs. Abstracted in: Chem. Abstr., 1950, 44: 7435^{g}. In rabbits receiving cortisone, the gross healing of fracture and the absorption of the hematoma were greatly delayed.

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Campbell, R. M., Sharp, G., Boyne, A. W. and Cuthbertson, D. P. CORTISONE AND THE METABOLIC RESPONSE TO INJURY. Nature, Lond., 1953, 172: 158-160. 10 refs. Abstracted in: Chem. Abstr., 1953, 47: 11441^{g}.

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Euler, U. S. von. ÜBER DIE WIRKUNG KLEINER ADRENALINMENGEN AUF DEN SAUERSTOFFVERBRAUCH DES KÜNSTLICH DURCHSTRÖMTEN HUNDEBEINS. Arch. internat. pharm. dyn., Gand, 1932, 42: 259-277. Abstracted in: Chem. Abstr., 1933, 27: 1400.

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Fiandaca, S. SULL'INFLUENZA DEGLI ORMONI CORTICALI SUL RICAMBIO MINERALE. Riv. pat. sper., 1936, 16: 407-418. 11 refs. Abstracted in: Chem. Abstr., 1937, 31: 442^{4}. In experiments on rabbits the effects of the cortical hormones were studied in various organs including bone. It was concluded that the adrenal cortex exerted an important influence on body minerals, particularly on the calcium and phosphorus content.

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Follis, R. H., Jr. EFFECT OF CORTISONE ON GROWING BONES OF THE RAT. Proc. Soc. Exp. Biol., N. Y., 1951, 76: 722-724. 6 refs. Abstracted in: Chem. Abstr.,1951, 45: 6723d.

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Follis, R. H., Jr. EFFECT OF 17-HYDROXYCORTICOSTERONE-21-ACETATE ON GROWING BONES OF THE RAT. Bull. Johns Hopkins Hosp., 1952, 90: 337-339. pl. 2 refs. Abstracted in: Excerpta med., Sect. 3, 1952, 6: No. 2150; Brit. Abstr., Sect. AIII, 1953, p. 180. "Skeletal lesions similar to those produced by cortisone may be observed when 17-hydroxycorticosterone-21-acetate is administered to growing rats. The latter is more effective quantity for quantity than the former."

1155
Follis, R. H., Jr. NON-EFFECT OF CORTISONE ON GROWING BONES OF MICE, GUINEA PIGS AND RABBITS. Proc. Soc. Exp. Biol., N. Y., 1951, 78: 723-724. 4 refs.

1156
Fontaine, R., Mandel, P. and Wiest, E. ÜBER DIE WIRKUNG VERSCHIEDENER HORMONE (THYROXIN, DESOXYCORTICOSTERON UND CORTISON) AUF DEN VERLAUF EXPERIMENTELLER KNOCHENBRÜCHE BEIM HUNDE. Medizinische, 1952, p. 899-901. pl. 6 refs. Abstracted in: Chem. Abstr., 1952, 46: 9712^{g}. In dogs the effects of various hormones on fracture healing were studied.

1157
Herrick, E. H., Mead, E. R., Egerton, B. W. and Hughes, J. S. SOME EFFECTS OF CORTISONE ON VITAMIN C-DEFICIENT GUINEA PIGS. Endocrinology, 1952, 50: 259-263. 26 refs. Abstracted in: Chem. Abstr., 1953, 47: 3940^{i}. The addition of cortisone to a scorbutic diet prevented painful joints. Bone structure and testes remained almost normal but adrenal gland cells became atrophied.

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Ingalls, T. H. and Hayes, D. R. EPIPHYSEAL GROWTH: THE EFFECT OF REMOVAL OF THE ADRENAL AND PITUITARY GLANDS ON THE EPIPHYSES OF GROWING RATS. Endocrinology, 1941, 29: 720-724. 5 refs. Abstracted in: Chem. Abstr., 1942, 36: 534^{8}; Biol. Abstr., Balt., 1942, 16: No. 6648.

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Key, J. A., Odell, R. T. and Taylor, L. W. FAILURE OF CORTISONE TO DELAY OR TO PREVENT THE HEALING OF RACTURES IN RATS. J. Bone Surg., 1952, 34A: 665-675. Discussion: p. 675, 677. 9 refs. Cortisone did not delay the healing or alter the microscopic appearance of the process of repair of experimental fractures in animals.

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Kozdoba, A. Z. EXPERIMENTELLE UNTERSUCHUNGEN ÜBER DIE HEILUNG VON KNOCHENBRÜCHEN BEI NEBENNIERENHYPERFUNKTION. Arch. klin. Chir., 1932, 169: 96-106. 47 refs. Abstracted in: Biol. Abstr., Balt., 1933, 7: No. 14393; Nutrit. Abstr., Aberdeen, 1932-33, 2: No. 300.

HORMONAL INFLUENCE - ADRENAL CORTEX (Continued)

1161
Lattes, R., Blunt, J. W., Jr., Rose, H. M., Jessar, R. A., Vaillancourt, de G. and Ragan, C. LACK OF CORTISONE EFFECT IN THE EARLY STAGES OF INFLAMMATION AND REPAIR. Am. J. Path., 1953, 29: 1-19. 8 refs.

1162
Levie, L. H. and Uyldert, I. E. THE INFLUENCE OF ADRENALS ON BONE GROWTH. Acta brevia neerl., 1939, 9: 121-123. 2 pl. 4 refs. Abstracted in: Biol. Abstr., Balt., 1939, 13: No. 11063.

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Lucchese, G. L'INFLUENZA DELLE SURRENALI SULLA FORMAZIONE DEL CALLO OSSEO. RICERCHE SPERIMENTALI. Policlinico, 1934, 41: 579-592. 45 refs. Abstracted in: Biol. Abstr., Balt., 1936, 10: No. 3457.

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Maassen, A. P. ADRENALS AND BONE-GROWTH. Acta endocr., Kbh., 1952, 9: 135-140. 2 refs. Abstracted in: Biol. Abstr., Balt., 1952, 26: No. 27828; Chem. Abstr., 1954, 48: 247i.

1165
Maassen, A. P. THE EFFECT OF DESOXYCORTICOSTERONE ACETATE (DOCA) ON BODY-GROWTH AND OSSIFICATION. Acta endocr., Kbh., 1952, 9: 291-296. 4 refs. Abstracted in: Biol. Abstr., Balt., 1952, 26: No. 27829; Chem. Abstr., 1954, 48: 256g.

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Mandel, P., Fontaine, R., Ebel, A. and Vogeleisen, A. ETUDE DE LA CONSTITUTION DE L'OS CHEZ LE RAT EN CROISSANCE SOUMIS A L'ACTION DE LA CORTISONE. C. rend. Soc. biol., 1953, 147: 511-514. 4 refs. Abstracted in: Chem. Abstr., 1954, 48: 2239i.

1167
Oka, H. [BEITRÄGE ZUM VERHALTEN DER ENDOKRINEN ORGANE BEI KNOCHENFRAKTUR. (I. MITTEILUNG). HISTOLOGISCHE VERÄNDERUNG DER NEBENNIERE IM VERLAUFE DER FRAKTURHEILUNG] Okayama igakkai zassi, 1939, 51: 34-49. 2 pl. 43 refs. German summary, p. 49.

1168
Prader, A. and Maassen, A. P. DIE WIRKUNG DER ANDROGENEN HORMONE AUF DAS SKELETT; KNOCHEN- UND ZAHNENTWICKLUNG, CALCIUM, PHOSPHOR UND PHOSPHATASEN IM SERUM BEIM KONGENITALEN ADRENOGENITALEN SYNDROM. Helvet. paediat. acta, 1953, 8: 136-151. 23 refs. In this study of the effects of congenital adrenocortical hyperplasia in 19 patients, aged 1 month to 37 years, marked changes were observed in bone development while dental development was normal. This was explained by the special position of teeth as endocrine end-organs. It was also concluded that phosphorus is an index of the production of pituitary growth hormone and that estrogen and androgen inhibit this production.

1169
Wolbach, S. B. and Maddock, C. L. CORTISONE AND MATRIX FORMATION IN EXPERIMENTAL SCORBUTUS AND REPAIR THEREFROM. WITH CONTRIBUTIONS TO THE PATHOLOGY OF EXPERIMENTAL SCORBUTUS. A.M.A. Arch. Path., 1952, 53: 54-69. pl. 21 refs. Abstracted in: Excerpta med., Sect. 2, 1952, 5: No. 6342. "Cortisone administration neither accelerates nor depresses the reparative processes in scurvy in the guinea pig. The resumption of formation of intercellular materials is not affected in either direction as far as can be observed by histologic criteria."

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Wyman, L. C. and Tum-Suden, C. THE EFFECT OF ADRENALECTOMY ON THE EPIPHYSEAL CARTILAGE OF THE RAT. Endocrinology, 1945, 36: 340-346. 15 refs. Abstracted in: Biol. Abstr., Balt., 1945, 19: No. 21510.

See:

605 713 740 971

HORMONAL INFLUENCE - PANCREAS ISLETS

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*Hernberg, C. A. THE BONE STRUCTURE IN ALLOXAN-INDUCED DIABETES MELLITUS IN RATS. Acta med. scand., 1952, 142: 274-283. Abstracted in: Excerpta med., Sect. 3, 1952, 6: No. 788.

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Ksendzovskii, M. E. OVLIIANII VNUTRENNEI SEKRETSII NA ZAZHIVLENIE KOSTNYKH PERELOMOV. [INFLUENCE OF INTERNAL SECRETION ON KNITTING OF FRACTURES] Nov. khir. arkh., 1930, 86: 149-156. Abstracted in: Tsentr. med. zh., 1931, 8: 481. Experimental study of effect of insulin, potassium and calcium on knitting of bone fractures in healthy rats. It was found: 1) That isotonic KCl and $CaCl_2$ solutions have no influence on osteogenesis. 2) Insulin injection has a favorable effect on fracture healing. 3) Insulin with isotonic $CaCl_2$ solution injection has a better effect than injection of pure insulin.

1173
Salter, J. and Best, C. H. INSULIN AS A GROWTH HORMONE. Brit. M. J., 1953, II: 353-356. 11 refs. Abstracted in: Fed. Proc. Balt., 1953, 12: No. 399; Chem. Abstr., 1953, 47: 11409b. Hypophysectomized rats were fed a constantly available diet and injected daily with slow-acting protamine zinc insulin in small, gradually increasing doses. Results showed that the animals gained 38 g. in 15 days with an average increase in body protein of 2.6 g. per rat and an average increase in the width of the epiphyseal disk of the tibia of 65%. Results indicate that insulin may stimulate growth and that decreased liberation of insulin may be a factor in limiting growth in the hypophysectomized animal.

See:

748 832 1304

HORMONAL INFLUENCE - PARATHYROID

1174
Albright, F. and Reifenstein, E. C., Jr. THE PARATHYROID GLANDS AND METABOLIC BONE DISEASE; SELECTED STUDIES. 410p. Baltimore, Williams & Wilkins, 1948. Bibliography: p. 312-332.

1175
Barnicot, N. A. THE LOCAL ACTION OF THE PARATHYROID AND OTHER TISSUES ON BONE IN INTRACEREBRAL GRAFTS. J. Anat., Lond., 1948, 82: 233-248. 2 pl. 17 refs. Abstracted in: Biol. Abstr., Balt., 1949, 23: No. 10654. Using parathyroid intracerebral grafts in rats, it was found that bone was eroded only in close proximity to the parathyroid tissue, indicating that parathyroid hormone does effect bone directly.

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HORMONAL INFLUENCE - PARATHYROID (Continued)

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HORMONAL INFLUENCE - PARATHYROID (Continued)

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HORMONAL INFLUENCE - PARATHYROID (Continued)

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Malcolm, J., Griesbach, W. E., Bielschowsky, F. and Hall, W. H. HYPERPLASIA OF THE PARATHYROIDS ASSOCIATED WITH OSTEITIS FIBROSA IN RATS TREATED WITH THIOURACIL AND RELATED COMPOUNDS. Brit. J. Exp. Path., 1949, 30: 17-23. pl. 16 refs. Goitrogens administered to 6-8 week old rats (both sexes) caused enlargement of the parathyroids. In 9 of 33 animals there was a concomitant generalized osteitis fibrosa. Histological findings are discussed.

HORMONAL INFLUENCE - PARATHYROID (Continued)

1231
Marx, J. DAS VERHALTEN DES MAGNESIUMSPIEGELS BEI DER RECKLINGHAUSENSCHEN ERKRANKUNG. Arch. klin. Chir., 1935, 182: 214-219. 5 refs. Abstracted in: Biol. Abstr., Balt., 1937, 11: No. 3759.

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Morgan, A. F. and Samisch, Z. THE SEQUENCE AND EXTENT OF TISSUE CHANGES RESULTING FROM MODERATE DOSES OF VIOSTEROL AND PARATHYROID EXTRACT. J. Biol. Chem., 1935, 108: 741-752. 15 refs. Abstracted in: Biol. Abstr., Balt., 1936, 10: No. 754; Chem. Abstr., 1935, 29: 4052[3]. Rats were used in this study. The serum, metaphyses, shafts of femurs, hearts, lungs and kidneys were examined for ash, water, fat, and, in the last case, also for calcium and phosphorus content.

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Morgan, A. F., Kimmel, L., Thomas, R. and Samisch, Z. THE EFFECT OF MODERATE DOSES OF VIOSTEROL AND OF PARATHYROID EXTRACT UPON BONE COMPOSITION. J. Biol. Chem., 1933, 100: Proc., 71-72. An abstract. Abstracted in: Nutrit. Abstr., Aberdeen, 1933-34, 3: No. 1573. "It is stated that, in rats, treatment with varying doses of viosterol and parathyroid extract affected the ash content of the bone metaphyses more rapidly than that of the shaft. Calcium and phosphate retentions were decreased by injection of parathyroid extract." - Nutrit. Abstr.

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Morgan, A. F., Kimmel, L., Thomas, R. and Samisch, Z. THE EFFECTS OF MODERATE DOSES OF VIOSTEROL AND OF PARATHYROID EXTRACT UPON RATS. J. Biol. Chem., 1934, 106: 531-544. 21 refs. Abstracted in: Chem. Abstr., 1934, 28: 6793[1].

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Nitschke, A. UNTERSUCHUNGEN ÜBER DIE ABHANGIGKEIT DER KNOCHENBILDUNG JUNGER SAUGENDER RATTEN VON SCHILDDRÜSEN- UND NEBENSCHILDDRÜSENTÄTIGKEIT DES MUTTERTIERES. Mschr. Kinderh., 1934, 62: 33-38.

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O'Donovan, D. K. THE PRIMARY SITE OF ACTION OF PARATHYROID HORMONE. Irish J. M. Sc., 1951, 6.ser., No. 306, 252-264. 32 refs. Current theories are surveyed and the view is advanced that the parathyroid hormone has a direct resorptive effect upon bone and that this action is dependent upon a self-limiting enzyme system. The results of some clinical observations and animal experiments are discussed.

1241
Parhon, C.-I., Dérevici, H. and Dérevici, M. SUR LE CALCIUM ET LE PHOSPHORE DES OS CHEZ DES CHIENS HYPERTHYROÏDISÉS, HYPERPARATHYROÏDISÉS OU SOUMIS A CES DEUX TRAITEMENTS COMBINÉS. C. rend. Soc. biol., 1932, 109: 1396-1398. Abstracted in: Biol. Abstr., Balt., 1934, 8: No. 5766; Chem. Abstr., 1932, 26: 4088. "Hyperthyroidization of dogs by thyroid ingestion or injection of thyroxine, hyperparathyroidization by injection of parathormone, or both, decreased calcium of the bones. Combined treatment and thyroxine injection increased phosphorus, but injection of parathormone decreased phosphorus." - Biol. Abstr.

1242
Parhon, C.-I., Lavrenenco, N. and Stirbu, A. RECHERCHES HISTOLOGIQUES SUR LES LIPOÏDES DES PARATHYROÏDES CHEZ LES ANIMAUX PORTEURS DE FRACTURES EXPÉRIMENTALES. C. rend. Soc. biol., 1932, 109: 245-246. In rabbits after experimental fracture of the foreleg an increase in granulations was observed in the external parathyroids.

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Pazzagli, R. and Paoletti Perini, A. PARATIROIDI E CALLO DI FRATTURA. Sperimentale, 1934, 88: 456-481. 50 refs. Abstracted in: Biol. Abstr., Balt., 1936, 10: No. 21338. "In rabbits with multiple costostomies unilateral parathyroidectomy retarded the formation of callus, which remained fibrous for a long period. Injections of parathyroid extracts hastened the formation and ossification of callus, but non-specific protein had no appreciable effect on callus formation. Experiments were controlled by radiological and histological examination." - Biol. Abstr.

1244
Pugsley, L. I. and Selye, H. THE HISTOLOGICAL CHANGES IN THE BONE RESPONSIBLE FOR THE ACTION OF PARATHYROID HORMONE ON THE CALCIUM METABOLISM OF THE RAT. J. Physiol., 1933, 79: 113-117. 3 refs. Abstracted in: Chem. Abstr., 1933, 27: 5394; Nutrit. Abstr., Aberdeen, 1933-34, 3: No. 3291. In rats, fed daily doses of parathyroid hormone, a study was made of the relation between the early and late histologic changes in the long bones and the accompanying changes in calcium metabolism. All changes were found to coincide exactly.

1245
Reynolds, L., Corrigan, K. E., Hayden, H. S., Macy, I. G. and Hunscher, H. A. DIFFRACTION STUDIES OF THE EFFECT OF SODIUM FLUORIDE AND PARATHORMONE UPON THE INCISORS AND TIBIAE OF RATS. Am. J. Roentg., 1938, 39: 103-126. 58 refs. Abstracted in: Chem. Abstr., 1938, 32: 2187[7]; Nutrit. Abstr., Aberdeen, 1938-39, 8: No. 731. "The interest in this work was centered on the structural changes such as crystal structure, orientation, and particle size, as affected by diets containing sodium fluoride, injection of parathormone, and combinations of the two, and also a mixture of sodium fluoride with aluminum sulphate."

HORMONAL INFLUENCE - PARATHYROID (Continued)

1246
Roche, J. and Mourgue, M. ACTION COMPARÉE DE L'HORMONE PARATHYROÏDIENNE ET DE LA VITAMINE D_2 SUR LA CONSOLIDATION DES FRACTURES OSSEUSES EXPÉRIMENTALES. C. rend. Soc. biol., 1939, 130: 1138-1141. 1 ref. Abstracted in: Biol. Abstr., Balt., 1939, 13: No. 12863; Nutrit. Abstr., Aberdeen, 1939-40, 9: No. 247.

1247
Rumiantsev, A. V. and Berezkina, L. F. ON THE MECHANISM OF ACTION OF THE PARATHYROID HORMONE ON THE BONE TISSUE IN EXPERIMENTS IN VITRO. C. rend. Acad. sc. URSS, 1944, 43: 270-272. 11 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1944-45, 14: No. 3329.

1248
Selye, H. ACTION OF PARATHYROID HORMONE ON THE EPIPHYSEAL JUNCTION OF THE YOUNG RAT. Arch. Path., Chic., 1932, 14: 60-65. 14 refs.

1249
Selye, H. MECHANISM OF PARATHYROID HORMONE ACTION. Arch. Path., Chic., 1942, 34: 625-632. pl. 24 refs. Abstracted in: Chem. Abstr., 1943, 37: 1490[3]. "Complete nephrectomy in the rat does not prevent the action of the parathyroid hormone on the bones. Nephrectomy itself causes mild bone changes, probably by stimulating the production of the hormone, since these can be prevented by parathyroidectomy. Neither the liver nor the thyroid has any effect on the action of the parathyroid hormone." - Chem. Abstr.

1250
Selye, H. ON THE STIMULATION OF NEW BONE-FORMATION WITH PARATHYROID EXTRACT AND IRRADIATED ERGOSTEROL. Endocrinology, 1932, 16: 547-668. 14 refs. Abstracted in: Biol. Abstr., Balt., 1934, 8: No. 3280.

1251
Selye, H., Mortimer, H., Thomson, D. L. and Collip, J. B. EFFECT OF PARATHYROID EXTRACT ON THE BONES OF THE HYPOPHYSECTOMIZED RAT: A HISTOLOGIC STUDY. Arch. Path., Chic., 1934, 18: 878-880. 3 refs. Abstracted in: Biol. Abstr., Balt., 1935, 9: No. 13957; Nutrit. Abstr., Aberdeen, 1934-35, 4: No. 3585.

1252
Shelling, D. H., Asher, D. E. and Jackson, D. A. CALCIUM AND PHOSPHORUS STUDIES. VII. THE EFFECTS OF VARIATIONS IN DOSAGE OF PARATHORMONE AND OF CALCIUM AND PHOSPHORUS IN THE DIET ON THE CONCENTRATIONS OF CALCIUM AND INORGANIC PHOSPHORUS IN THE SERUM AND ON THE HISTOLOGY AND CLINICAL COMPOSITION OF THE BONES OF RATS. Bull. Johns Hopkins Hosp., 1933, 53: 348-389. 32 refs. Abstracted in: Biol. Abstr., Balt., 1935, 9: No. 9260; Chem. Abstr., 1934, 28: 7321[4].

1253
Silberberg, M. and Silberberg, R. THE EFFECTS OF PARATHYROID HORMONE AND CALCIUM GLUCONATE ON THE SKELETAL TISSUES OF MICE. Am. J. Path., 1943, 19: 839-859. 3 pl. 27 refs. Abstracted in: Biol. Abstr., Balt., 1944, 18: No. 604; Chem. Abstr., 1944, 38: 1556[2]. "Combined administration of parathyroid hormone and calcium gluconate does not intensify the ageing effect exerted on the growing cartilage by each substance alone." Parathyroid hormone promotes the changes characteristic of skeletal ageing. Calcium gluconate also promotes the ageing of growing epiphyseal cartilage. Resorptive processes, however, are temporarily inhibited in both young and adult mice.

1254
Snapper, I. PARATHYROID HORMONE AND MINERAL METABOLISM. Bull. N. York Acad. M., 1953, 29: 612-624. 27 refs. A review. Excess parathyroid hormone production stimulates proliferation of cancellous bone osteoclasts thereby increasing bone trabeculae erosion. This results in hypercalcemia and hypercalciuria and in hypo- rather than hyperphosphatemia due to the strong parathyroid hormone stimulation of phosphate excretion by the kidneys. "There is also reason to believe that the spread of the decalcification of the skeleton in hyperparathyroidism may depend not only upon a negative calcium and phosphorus balance, but also upon other as yet obscure mechanisms."

1255
Striganova, A. R. VLIIANIE GORMONA OKOLOSHCHITOVIDNOI ZHELEZY NA BELKOVYI METABOLIZM KOSTNOI TKANI. [INFLUENCE OF PARATHYROID HORMONE ON ALBUMIN METABOLISM OF THE OSSEOUS TISSUE] Arkh. pat., Moskva, 1949, 11: No. 2, 50-56. 10 refs. Abstracted in: Chem. Abstr., 1950, 44: 1589[i]. Intramuscular injection of a large dose of "paratireokrin" caused a sharp increase of proteolytic activity of the osseous tissue and considerable disturbance in nitrogen metabolism equilibrium; general nitrogen content decreased while amino-nitrogen content remained normal. After repeated "paratireokrin" injections, only proteolytic activity of bone is increased. The regular consecutive variations in protein metabolism of bone after "paratireokrin" injections represent a specific reaction for injected hormone and point to the intensive processes of protein metabolism in bone.

1256
Talmage, R. V., Kraintz, F. W. and Kraintz, L. EFFECT OF PARATHYROIDS ON RADIOCALCIUM UPTAKE AND EXCHANGE IN RAT TISSUES. Proc. Soc. Exp. Biol., N. Y., 1952, 80: 553-557. 5 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 1008; Chem. Abstr., 1952, 46: 10342[i].

1257
Talmage, R. V., Lotz, W. E. and Comar, C. L. ACTION OF PARATHYROID EXTRACT ON BONE PHOSPHORUS AND CALCIUM IN THE RAT. Proc. Soc. Exp. Biol., N. Y., 1953, 84: 578-582. 9 refs. Abstracted in: Chem. Abstr., 1954, 48: 4073[g].

1258
Thomson, D. L. and Collip, J. B. THE PARATHYROID GLANDS. Physiol. Rev., 1932, 12: 309-383. 543 refs. See particularly p. 339-345 for relation of the parathyroid hormone to the calcium of the skeleton.

1259
Tweedy, W. R. and Campbell, W. W. THE EFFECT OF PARATHYROID EXTRACT UPON THE DISTRIBUTION, RETENTION, AND EXCRETION OF LABELED PHOSPHORUS. J. Biol. Chem., 1944, 154: 339-347. 16 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1944-45, 14: No. 2484. A study of various tissues including bone.

1260
Tweedy, W. R., Chilcote, M. E. and Patras, M. C. THE DISTRIBUTION, RETENTION, AND EXCRETION OF RADIOPHOSPHORUS FOLLOWING THYROPARATHYROIDECTOMY, OR BILATERAL NEPHRECTOMY, AND THE ADMINISTRATION OF PARATHYROID EXTRACT. J. Biol. Chem., 1947, 168: 597-610. 15 refs. Abstracted in: Chem. Abstr., 1947, 41: 5631[b].

HORMONAL INFLUENCE - PARATHYROID (Continued)

1261
Weinmann, J. P. and Schour, I. EXPERIMENTAL STUDIES IN CALCIFICATION. III. THE EFFECT OF PARATHYROID HORMONE ON THE ALVEOLAR BONE AND TEETH OF THE NORMAL AND RACHITIC RAT. Am. J. Path., 1945, 21: 857-875. 4 pl. 21 refs. Abstracted in: Biol. Abstr., Balt., 1945, 19: No. 21920; Nutrit. Abstr., Aberdeen, 1945-46, 15: No. 3430.

1262
Wilton, A. THE ACTION OF PARATHORMONE (COLLIP) ON BONE TISSUE. Acta paediat., Upps., 1934, 17: 72-82. 2 pl. 40 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1934-35, 4: No. 3586. "The histological changes in the ribs of guinea pigs after single injections of parathormone (20 units per 100 g.) are described. The collagen disappears along with the calcium and not subsequently as has been stated." - Nutrit. Abstr.

1263
Yanagida, H. [EFFECT OF PARATHORMONE PREPARATION ON POTASSIUM AND CALCIUM METABOLISM IN ALBINO RABBIT AND THE LATTERS' EFFECT ON THE HEALING OF FRACTURED BONE] Sei-i-kai M. J., 1939, 58: 895-956. 3 pl. 30 refs. Abstracted in: Chem. Abstr., 1942, 36: 5526^{9}.

1264
Zetterström, R. and Engfeldt, B. RENEWAL OF BONE PHOSPHATE IN EXPERIMENTAL HYPERPARATHYROIDISM. Nature, Lond., 1951, 168: 81-82. 10 refs. Abstracted in: Chem. Abstr., 1952, 46: 620^{h}; Nutrit. Abstr., Aberdeen, 1951-52, 21: No. 3666.

See:

154	156	189	499	641
689	698	704	763	793
808	842	908	910	1173
1364	1375	1434	1483	2128
2129	2375	2706		

HORMONAL INFLUENCE - PITUITARY

1265
Albright, F. and Bartter, F. C. THE EFFECTS OF ANTERIOR PITUITARY ADRENOCORTICOTROPIC HORMONE (ACTH) ON BONE METABOLISM. Tr. Conf. Metab. Interrelat., 1950, 2.meet., 258-267. 1 ref. A report on experiments which indicate that calcium loss in ACTH therapy might result from pitressin present in ACTH as a contaminant, rather than from the hormone itself.

1266
Asling, C. W., Simpson, M. E., Li, C. H. and Evans, H. M. DIFFERENCES IN THE RESPONSE TO GROWTH HORMONE OF THE RAT'S PROXIMAL AND DISTAL TIBIAL EPIPHYSES. Anat. Rec., 1950, 107: 399-407. 8 refs. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 30584; Excerpta med., Sect. 1, 1951, 5: No. 504.

1267
Asling, C. W., Walker, D. G., Simpson, M. E. and Evans, H. M. DEATHS IN RATS SUBMITTED TO HYPOPHYSECTOMY AT AN EXTREMELY EARLY AGE AND THE SURVIVAL EFFECTED BY GROWTH HORMONE. Anat. Rec., 1952, 114: 49-65. 2 pl. 6 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 12765. Brain growth continued while cranial growth was arrested due to the cessation of endochondral osteogenesis. Treatment with growth hormone restored normal osteogenesis and cranial growth.

1268
Asling, C. W., Walker, D. G., Simpson, M. E. and Evans, H. M. DIFFERENCES IN THE SKELETAL DEVELOPMENT ATTAINED BY 60-DAY-OLD FEMALE RATS HYPOPHYSECTOMIZED AT AGES VARYING FROM 6 TO 28 DAYS. Anat. Rec., 1950, 106: 555-569. pl. 11 refs.

1269
Baker, B. L. and Ingle, D. J. GROWTH INHIBITION IN BONE AND BONE MARROW FOLLOWING TREATMENT WITH ADRENOCORTICOTROPIN (ACTH). Endocrinology, 1948, 43: 422-429. 1 pl. 17 refs. Examination of the tibias of adult male rats treated with ACTH in doses of 1 and 3 mg. daily for 21 days revealed retardation of chondrogenesis and osteogenesis, and atrophy of red marrow with apparent replacement by fat. Changes in the vertebrae were less noticeable. Variations of diet did not significantly modify these results.

1270
Barbour, E. P. and Cook, S. F. THE EFFECTS OF LOW PHOSPHORUS DIET AND HYPOPHYSECTOMY ON THE STRUCTURE OF COMPACT BONE AS SEEN WITH THE ELECTRON MICROSCOPE. Anat. Rec., 1954, 118: 215-230. 13 refs.

1271
Bartter, F. C., Forbes, A. P. and Albright, F. A COMPARISON OF THE EFFECT ON BONE FORMATION OF THE HYPERADRENOCORTICISM OF CUSHING'S SYNDROME WITH THAT INDUCED BY ADRENOCORTICOTROPIC HORMONE (ACTH). J. Clin. Endocr., 1948, 8: 592. An abstract. Data on clinical studies, which support the hyopthesis that ACTH causes elaboration of an adrenal cortical hormone which inhibits the production of bone matrix by osteoblasts.

1272
Becks, H. and Evans, H. M. ATLAS OF THE SKELETAL DEVELOPMENT OF THE RAT (LONG-EVANS STRAIN); NORMAL AND HYPOPHYSECTOMIZED. San Francisco, American Institute of Dental Medicine, 1953. 2v. 45 refs.

1273
Becks, H., Asling, C. W., Collins, D. A., Simpson, M. E., Li, C. H. and Evans, H. M. RESPONSE TO PITUITARY GROWTH HORMONE AND THYROXIN OF THE THIRD METACARPAL IN THE HYPOPHYSECTOMIZED FEMALE RAT. Anat. Rec., 1948, 101: 17-22. Abstracted in: Biol. Abstr., Balt., 1949, 23: No. 702; Excerpta med., Sect. 1, 1949, 3: No. 721. Injections of pituitary growth hormone, 285 to 433 days after hypophysectomy reactivated chondrogenesis and osteogenesis at the epiphyseal cartilage plate. Injections of thyroxin caused epiphyseal closure. Injections of both hormones had a similar effect.

1274
Becks, H., Asling, C. W., Simpson, M. E., Li, C. H. and Evans, H. M. THE GROWTH OF HYPOPHYSECTOMIZED FEMALE RATS FOLLOWING CHRONIC TREATMENT WITH PURE PITUITARY GROWTH HORMONE. III. SKELETAL CHANGES: TIBIA, METACARPAL, COSTOCHONDRAL JUNCTION AND CAUDAL VERTEBRAE. Growth, Phila., 1949, 13: 175-189. 7 refs. Abstracted in: Biol. Abstr., Balt., 1950, 24: No. 6146. "The injection of pure growth hormone for 14 months in hypophysectomized rats resulted in marked growth of all skeletal dimensions studied. The length of the tibia actually exceeded normal, while the metacarpals and the caudal vertebrae equalled normal length. The bones also grew in breadth. All bones examined histologically showed lines of accretion indicating that periosteal osteogenesis was stimulated."

1275
Becks, H., Collins, D. A., Asling, C. W., Simpson, M. E., Li, C. H. and Evans, H. M. THE GIGANTISM PRODUCED IN NORMAL RATS BY INJECTION OF THE PITUITARY GROWTH HORMONE. V. SKELETAL CHANGES: SKULL AND DENTITION. Growth, Phila., 1948, 12: 55-67. 3 refs. Abstracted in: Biol. Abstr., Balt., 1948, 22: No. 23721.

HORMONAL INFLUENCE - PITUITARY (Continued)

1276
Becks, H., Kibrick, E. A., Marx, W. and Evans, H. M. THE EARLY EFFECT OF HYPOPHYSECTOMY AND OF IMMEDIATE GROWTH HORMONE THERAPY ON ENDOCHONDRAL BONE FORMATION. Growth, Ithaca, 1941, 5: 449-456. 6 refs. Abstracted in: Biol. Abstr., Balt., 1942, 16: No. 12099; Chem. Abstr., 1942, 36: 3244[9]. "Skeletal structures were thus maintained after hypophysectomy by a dose level of growth hormone inadequate for maintaining normal body weight gains."

1277
Becks, H., Ray, R. D., Simpson, M. E. and Evans, H. M. EFFECT OF THYROXINE AND THE ANTERIOR PITUITARY GROWTH HORMONE ON ENDOCHONDRAL OSSIFICATION. SPECIES USED: THE RAT. Arch. Path., Chic., 1942, 34: 334-357. Abstracted in: Biol. Abstr., Balt., 1943, 17: No. 4722; Chem. Abstr., 1943, 37: 1490[1]. "In rats with the thyroid, parathyroids and hypophysis removed, the growth hormone extract and thyroxine repaired the defect, which thyroxine alone failed to do." - Chem. Abstr.

1278
Becks, H., Scow, R. O., Simpson, M. E., Asling, C. W., Li, C. H. and Evans, H. M. RESPONSE BY THE RAT THYRO-PARATHYROIDECTOMIZED AT BIRTH TO GROWTH HORMONE AND TO THYROXIN GIVEN SEPARATELY OR IN COMBINATION. III. SKELETAL CHANGES: TIBIA, METACARPAL, AND CAUDAL VERTEBRAE. Anat. Rec., 1950, 107: 299-317. 5 refs. Abstracted in: Excerpta med., Sect. 3, 1951, 5: No. 104. Histologic and roentgenographic findings showed that thyroidectomy retarded growth and differentiation, that growth hormone stimulated growth without differentiation, and that thyroxin stimulated both growth and differentiation.

1279
Becks, H., Simpson, M. E. and Evans, H. M. OSSIFICATION AT THE PROXIMAL TIBIAL EPIPHYSIS IN THE RAT. II. CHANGES IN FEMALES AT PROGRESSIVELY LONGER INTERVALS FOLLOWING HYPOPHYSECTOMY. Anat. Rec., 1945, 92: 121-133. 3 pl. 9 refs. Abstracted in: Biol. Abstr., Balt., 1945, 19: No. 21511.

1280
Becks, H., Simpson, M. E., Evans, H. M., Ray, R. D., Li, C. H. and Asling, C. W. RESPONSE TO PITUITARY GROWTH HORMONE AND THYROXIN OF THE TIBIAS OF HYPOPHYSECTOMIZED RATS AFTER LONG POSTOPERATIVE INTERVALS. Anat. Rec., 1946, 94: 631-655. 3 pl. 7 refs. Abstracted in: Biol. Abstr., Balt., 1946, 20: No. 17160. Osteogenic processes were reawakened in the epiphyseal cartilage by administration of pituitary growth hormone. Thyroxine had a synergic effect on this response by the epiphyseal cartilage but antagonized the response by cartilage covering the head of the tibia.

1281
Becks, H., Simpson, M. E., Li, C. H. and Evans, H. M. EFFECTS OF ADRENOCORTICOTROPIC HORMONE ON THE OSSEOUS SYSTEM IN NORMAL RATS. Endocrinology, 1944, 34: 305-310. 2 pl. 2 refs. Abstracted in: Chem. Abstr., 1944, 38: 4019[8]; Biol. Abstr., Balt., 1944, 19: No. 19103; Nutrit. Abstr., Aberdeen, 1944-45, 14: No. 2386. Chondrogenesis and osteogenesis in the epiphyseal region of the tibia were retarded.

1282
Becks, H., Simpson, M. E., Marx, W., Li, C. H. and Evans, H. M. ANTAGONISM OF PITUITARY ADRENOCORTICOTROPIC HORMONE (ACTH) TO THE ACTION OF GROWTH HORMONE ON THE OSSEOUS SYSTEM OF HYPOPHYSECTOMIZED RATS. Endocrinology, 1944, 34: 311-316. 2 pl. 4 refs. "Comparisons have been made of the proximal epiphyseal regions of the tibias of hypophysectomized rats, when uninjected, injected with ACTH, with growth hormone or with the combination."

1283
Becks, H., Simpson, M. E., Scow, R. O., Asling, C. W. and Evans, H. M. SKELETAL CHANGES IN RATS THYROIDECTOMIZED ON THE DAY OF BIRTH AND THE EFFECTS OF GROWTH HORMONE IN SUCH ANIMALS; TIBIA, METACARPAL AND CAUDAL VERTEBRAE. Anat. Rec., 1948, 100: 561-575. 3 pl. 11 refs. Abstracted in: Biol. Abstr., Balt., 1949, 23: No. 14855; Ber. ges. Physiol., 1950, 141: 77; Excerpta med., Sect. 1, 1950, 4: No. 1571. Histologic examination confirmed measurement and roentgenographic evidence that skeletal growth and differentiation were greatly retarded but not completely checked by thyroidectomy. Injections of growth hormone resulted in increased size without advance in differentiation.

1284
Belkin, R. I. VLIIANIE VESHCHESTVA ZADNEI DOLI GIPOFIZA NA REGENERATSIIU Y AKSOLOTLEI. [INFLUENCE OF THE POSTERIOR PITUITARY SUBSTANCE ON REGENERATION IN THE AXOLOTL] Doklady Akad. nauk SSSR, 1934, 2: 317-320. 5 refs. Russian and German texts.

1285
Cannavò, L. and Indovina, R. EINFLUSS DES PROLANS AUF DIE MAGNESIUMBILANZ UND AUF DEN MAGNESIUMGEHALT VERSCHIEDENER ORGANE. Biochem. Zschr., 1933, 261: 45-46 and folded tab. 5 refs.

1286
Casuccio, C., Santacroce, A. and Banfo, G. STUDIO ISTO-CHIMICO SULL'AZIONE DELL'ACTH SULL'ACCRESCIMENTO SCHELETRICO CON RIFERIMENTI ALL'ACCRESCIMENTO MORFOLOGICO GENERALE. Ortop. traumat. app. motore, 1953, 21: 83-107. 36 refs. ACTH seemed to inhibit general growth and caused a disturbance in chondrogenesis and osteogenesis in the epiphyseal discs. Histochemical staining showed a decrease of mucopolysaccharides.

1287
Collins, D. A., Becks, H., Asling, C. W., Simpson, M. E. and Evans, H. M. CHANGES IN THE OSSIFICATION OF THE THIRD METACARPAL OCCURRING AT PROGRESSIVELY LONGER INTERVALS FOLLOWING HYPOPHYSECTOMY IN THE FEMALE RAT. Anat. Rec., 1948, 101: 13-16. 1 ref. Abstracted in: Excerpta med., Sect. 1, 1949, 3: No. 720. "Regressive changes, starting as early as 6 days following the operation, consisted in cessation of chondrogenesis and osteogenesis, and calcification of the juxtamedullary portions of the cartilage plate. These changes culminated in marked atrophy of the plate and its complete sealing off from the marrow cavities on both sides. This cartilage plate failed to be resorbed at the usual time of epiphyseal closure, and persisted in a dormant state."

1288
Collins, D. A., Becks, H., Asling, C. W., Simpson, M. E. and Evans, H. M. THE GROWTH OF HYPOPHYSECTOMIZED FEMALE RATS FOLLOWING CHRONIC TREATMENT WITH PURE PITUITARY GROWTH HORMONE. V. SKELETAL CHANGES: SKULL AND DENTITION. Growth, Phila., 1949, 13: 207-220. 8 refs. Abstracted in: Biol. Abstr., Balt., 1950, 24: No. 6148.

HORMONAL INFLUENCE - PITUITARY (Continued)

1289
Dandy, W. E. and Reichert, F. L. STUDIES ON EXPERIMENTAL HYPOPHYSECTOMY IN DOGS. III. SOMATIC, MENTAL AND GLANDULAR EFFECTS. Bull. Johns Hopkins Hosp., 1938, 62: 122-155. 13 refs. Abstracted in: Biol. Abstr., Balt., 1939, 13: No. 3810. In this study made with puppies, the rate of growth of the skull, of the right hind limb, the index of skeletal growth, the condition of epiphyseal lines and their time of closure were determined by roentgenograms made at frequent intervals. Data is summarized in tables.

1290
Domm, L. V. and Bloom, W. MEDULLARY BONE FORMATION IN BABY CHICKS FOLLOWING INJECTION OF GONADOGEN. Anat. Rec., 1931, 81: Suppl., 91-92. An abstract.

1291
Ducommun, P. L'INFLUENCE DE L'ACTH SUR LE CARTILAGE ET LE TISSU OSSEUX DES RATS IMMATURES. Acta endocr., Kbh., 1950, 4: 343-350. 11 refs. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 4619.

1292
Ellis, S., Hublé, J. and Simpson, M. E. INFLUENCE OF HYPOPHYSECTOMY AND GROWTH HORMONE ON CARTILAGE SULFATE METABOLISM. Proc. Soc. Exp. Biol., N. Y., 1953, 84: 603-605. 7 refs. Abstracted in: Chem. Abstr., 1954, 48: 4074^{b}.

1293
Ellis, S., Simpson, M. E. and Evans, H. M. THE EFFECT OF GROWTH HORMONE ON TIBIA GLYCOGEN CONTENT OF THE HYPOPHYSECTOMIZED RAT. Endocrinology, 1953, 52: 554-558. 7 refs. Abstracted in: Biol. Abstr., Balt., 1954, 28: No. 830; Chem. Abstr., 1954, 48: 3509^{f}.

1294
Evans, H. M., Asling, C. W., Simpson, M. E. and Becks, H. THE GROWTH OF HYPOPHYSECTOMIZED FEMALE RATS FOLLOWING CHRONIC TREATMENT WITH PURE PITUITARY GROWTH HORMONE. IV. SKELETAL CHANGES: DIFFERENCES IN RESPONSE FROM THAT OF INTACT RATS. Growth, Phila., 1949, 13: 191-205. 10 refs. Abstracted in: Biol. Abstr., Balt., 1950, 24: No. 6150. Study by roentgenograms. "In the growth of the hypophysectomized rats injected with growth hormone many skeletal disproportions developed, notably in the head and pelvis. In the injected intact rats, however, proportionality was maintained in the skeletal growth, almost without exception."

1295
Evans, H. M., Becks, H., Asling, C. W. and Li, C. H. DIFFERENCES IN BONES AS REGARDS THEIR RESPONSE TO THE PITUITARY GROWTH HORMONE. Anat. Rec., 1948, 100: 739.

1296
Evans, H. M., Becks, H., Asling, C. W., Simpson, M. E. and Li, C. H. THE GIGANTISM PRODUCED IN NORMAL RATS BY INJECTION OF THE PITUITARY GROWTH HORMONE. IV. SKELETAL CHANGES: TIBIA, COSTOCHONDRAL JUNCTION, AND CAUDAL VERTEBRAE. Growth, Phila., 1948, 12: 43-54. 3 refs. Normal female rats, approximately 210 days old, were used. "The outstanding fact of this experiment is that skeletal growth was still continuing, even though slowly, at the end of the 437 day period of growth hormone injection."

1297
Freud, J. and Dingemanse, E. THE ACTION OF LARGE DOSES OF GROWTH HORMONE IN HYPOPHYSECTOMIZED RATS. Acta brevia neerl., 1940, 10: 102-105. 2 refs. Skeletal growth in rats as exemplified by growth of pelvis and tail, and increase in body weight, was normal. Growth hormone action appeared to be independent of other endocrines and to have a direct effect upon the skeleton, muscles and various organs. It was believed that other points of attack existed apart from the cartilage of the epiphyseal growth disc.

1298
Freud, J., Levie, L. H. and Kroon, D. B. OBSERVATIONS ON GROWTH (CHONDROTROPHIC) HORMONE AND LOCALIZATION OF ITS POINT OF ATTACK. J. Endocr., Oxf., 1939, 1: 56-64. 3 pl. 30 refs. Abstracted in: Biol. Abstr., Balt., 1940, 14: No. 6398. In hypophysectomized rats cessation of longitudinal bone growth and epiphyseal closure were observed especially in the tail. Administration of growth hormone failed to reverse this condition. When growth hormone was administered before epiphyseal closure growth continued normally. It was concluded that the growth defect after hypophysectomy is localized in the growing epiphyseal cartilage and that the point of attack of growth hormone is the proliferating cartilage.

1299
Gaillard, P. J. DIE GLANDULA HYPOPHYSIS VON KANINCHEN IN DER GEWEBEZÜCHTUNG, IHRE STRUKTURVERÄNDERUNGEN UND IHR EINFLUSS AUF DAS WACHSTUM VON MIT DIESEN ZUSAMMENGEZÜCHTETEN KULTUREN OSTEOGENETISCHER ZELLEN. Protoplasma, Lpz., 1937, 28: 1-17. 7 refs.

1300
Geschwind, I. I., Li, C. H. and Evans, H. M. THE EFFECTS OF HYPOPHYSECTOMY AND OF GROWTH HORMONE ON THE UPTAKE OF RADIOACTIVE PHOSPHORUS BY TISSUES. Arch. Biochem., N. Y., 1951, 31: 168-182. The uptake of P^{32} by the tibia of the hypophysectomized rat was less than normal. When the hypophysectomized animal was maintained with growth hormone decrease in bone P^{32} uptake due to hypophysectomy was prevented.

1301
Handelsman, M. B. and Gordon, E. F. GROWTH AND BONE CHANGES IN RATS INJECTED WITH ANTERIOR PITUITARY EXTRACT. J. Pharm. Exp. Ther., 1930, 38: 349-362. pl. 18 refs. Abstracted in: Biol. Abstr., Balt., 1933, 7: No. 5613; Chem. Abstr., 1930, 24: 3282.

1302
Hsieh, K., Wang, T. and Blumenthal, H. T. EFFECT OF SOMATOTROPIN ON EMBRYONAL BONE GROWTH. Fed. Proc., Balt., 1953, 12: 392. An abstract. This experiment deals with the tibias of chick embryos. It was found that "growth hormone produces a marked increase in mitotic activity of both the growth zones and periosteum, followed by an increase in the average cell volume of the growth zone, resulting in a thickening of the latter area." There is also "an increase in total nitrogen content of bone, but no appreciable change in calcium or phosphorus content. ... results indicate an enhancement of protein synthesis in embryonal bone by growth hormone..."

1303
Jongh, S. E. de. GROEIHORMOON EN GROEI. Hormoon, 1951, 15: 154-169. 23 refs. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 35999. See particularly p. 156-157 for discussion of growth hormone and the skeleton.

HORMONAL INFLUENCE - PITUITARY (Continued)

1304
Jongh, S. E. de, Paesi, F. J. A. and Wieringen, G. van. THE INFLUENCE OF GROWTH HORMONE ON THE GROWTH OF THE SKELETON AND SOFT TISSUES OF THE BODY. Arch. internat. pharm. dyn., Par., 1950, 82: 148-154. 8 refs. Abstracted in: Biol. Abstr., Balt., 1952, 26: No. 715; Chem. Abstr., 1950, 44: 7951h.

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Li, C. H., Evans, H. M. and Simpson, M. E. ISOLATION AND PROPERTIES OF THE ANTERIOR HYPOPHYSEAL GROWTH HORMONE. J. Biol. Chem., 1945, 159: 353-366. 26 refs.

1307
Lichtwitz, A., Parlier, R. and Thiéry, G. LE MÉCANISME DE LA CROISSANCE DES OS LONGS. Rev. rhumat., Par., 1953, 20: 256-263. Traces the processes of growth in the epiphyseal cartilage from a series of cells to bone trabeculae. These processes, probably enzymatic, are controlled by hormones. Growth is controlled almost exclusively by somatropin, the growth hormone of the anterior pituitary. Arrested growth depends on the sex hormones. In large doses sex hormones cause symphysis of the epiphyseal cartilage, in weak doses they promote multiplication of pituitary eosinophil cells which produce somatropin. Thus, the same hormone is capable of retarding and promoting growth.

1308
Lucke, H. and Hückel, R. EXPERIMENTELLE UNTERSUCHUNGEN ZUR FRAGE DER WACHSTUMSWIRKUNG VON HYPOPHYSENVORDERLAPPENEXTRAKTEN. Arch. exp. Path., Lpz., 1933, 169: 290-297. 10 refs. Abstracted in: Biol. Abstr., Balt., 1936, 10: No. 16143.

1309
Martin Cazorla, F. APORTACIONES AL ESTUDIO DEL SISTEMA ESQUELÉTICO EN RELACIÓN CON EL SISTEMA INCRETOR ORAL. JUICIO CRÍTICO EN LA PRIMERA MITAD DEL DESARROLLO EMBRIONARIO. Actual. méd., Granada, 1951, 27: 84-93. 8 refs. Abstracted in: Excerpta med., Sect. 1, 1952, 6: No. 88.

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Marx, W. and Reinhardt, W. O. LACK OF EFFECT OF GROWTH HORMONE ON DEPOSITION OF RADIOSTRONTIUM IN BONE. Proc. Soc. Exp. Biol., N. Y., 1942, 51: 112-114. 4 refs. Abstracted in: Biol. Abstr., Balt., 1943, 17: No. 8479; Nutrit. Abstr., Aberdeen, 1943-44, 13: No. 2384. In hypophysectomized rats, treated with growth hormone, the deposition of radioactive strontium in femur and mandible was the same as in untreated hypophysectomized rats.

1311
Marx, W., Simpson, M. E. and Evans, H. M. SPECIFICITY OF THE EPIPHYSEAL CARTILAGE TEST FOR THE PITUITARY GROWTH HORMONE. Proc. Soc. Exp. Biol., N. Y., 1944, 55: 250-252. 7 refs. Study of the action of the purified hypophyseal hormones, other than the growth hormone, on the epiphyseal cartilage of the rat.

1312
Quimby, F. H., Bartlett, R. G. and Artress, J. L. EFFECTS OF HORMONE, VITAMIN, AND LIVER SUPPLEMENTS ON THE APPETITE AND GROWTH OF THE YOUNG RAT DURING RECOVERY FROM CHRONIC STARVATION. Am. J. Physiol., 1951, 166: 566-567. 26 refs. Abstracted in: Chem. Abstr., 1952, 46: 174c. "Reduced but continued bone growth occurred during chronic starvation. Althought the growth rate was increased by refeeding, the femur after 60 days recovery did not attain a normal size. None of the treatments in the amounts administered produced any measurable effect on the size of the skeleton. It appears that chronic starvation produces a fundamental irreversible change in the mechanism of bone growth resulting in a degree of permanent skeletal dwarfing."

1313
Ray, R. D., Asling, C. W., Walker, D. G., Simpson, M. E., Li, C. H. and Evans, H. M. GROWTH AND DIFFERENTIATION OF THE SKELETON IN THYROIDECTOMIZED-HYPOPHYSECTOMIZED RATS TREATED WITH THYROXIN, GROWTH HORMONE, AND THE COMBINATION. J. Bone Surg., 1954, 36A: 94-103. 23 refs.

1314
Ray, R. D., Evans, H. M. and Becks, H. THE EFFECT OF GROWTH HORMONE INJECTIONS ON THE COSTOCHONDRAL JUNCTION OF THE RAT RIB. Anat. Rec., 1942, 82: 67-75. 2 pl. 4 refs. Abstracted in: Biol. Abstr., Balt., 1942, 16: No. 12133.

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Ray, R. D., Evans, H. M. and Becks, H. EFFECT OF THE PITUITARY GROWTH HORMONE ON THE EPIPHYSEAL DISK OF THE TIBIA OF THE RAT. Am. J. Path., 1941, 17: 509-528. 3 pl. 12 refs. Abstracted in: Biol. Abstr., Balt., 1942, 16: No. 22011.

1316
Ray, R. D., Simpson, M. E., Li, C. H., Asling, C. W. and Evans, H. M. EFFECTS OF THE PITUITARY GROWTH HORMONE AND OF THYROXIN ON GROWTH AND DIFFERENTIATION OF THE SKELETON OF THE RAT THYROIDECTOMIZED AT BIRTH. Am. J. Anat., 1950, 86: 479-516. 24 refs. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 964; Excerpta med., Sect. 3, 1951, 5: No. 767. The effects of growth hormone and thyroxin injections in rats thyroparathyroidectomized at birth were studied with regard to body length, body weight, and skeletal maturation as measured roentgenographically, chemically, and histologically.

1317
Ribeiro do Valle, J. SÔBRE A INFLUÊNCIA DO LÔBO ANTERIOR DA HIPÓFISE NO PROCESSO DE OSSIFICAÇÃO ENDOCONDRAL. Rev. brasil. biol., 1944, 4: 13-26. 16 refs. English summary. Abstracted in: Chem. Abstr., 1944, 38: 63526.

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Ross, E. S. and McLean, F. C. THE INFLUENCE OF THE GROWTH-PROMOTING HORMONE OF THE ANTERIOR LOBE OF THE PITUITARY UPON GROWTH ACTIVITY IN THE LONG BONES OF THE RAT. Endocrinology, 1940, 27: 329-339. pl. 14 refs. Abstracted in: Biol. Abstr., Balt., 1941, 15: No. 360; Chem. Abstr., 1940, 34: 69941.

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Sammartino, R. ESTUDIO HISTOLOGICO DEL PROCESO DE OSIFICACION EN ANIMALES HIPOFISOPRIVOS. 79p. Buenos Aires, A. López, 1938. (Tesis de Profesorado). 8 refs.

HORMONAL INFLUENCE - PITUITARY (Continued)

1320
Shepanek, L. A. THE EFFECT OF ENDOCRINE SUBSTANCES (ACTH AND GROWTH HORMONE) ON EXPERIMENTAL FRACTURE. Surg. Gyn. Obst., 1953, 96: 200-204. 4 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 16395; Excerpta med., Sect. 9, 1954, 8: No. 2151.

1321
Silberberg, M. EFFECT OF CATTLE ANTERIOR PITUITARY EXTRACT ON BONE AND CARTILAGE OF THE JOINT (ACROMEGALIC ARTHROPATHIA). Proc. Soc. Exp. Biol., N. Y., 1936, 34: 333-334. 3 refs. Abstracted in: Biol. Abstr., Balt., 1937, 11: No. 11439; Chem. Abstr., 1936, 30: 8324[1].

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Silberberg, M. EFFECTS OF EXTRACT OF CATTLE ANTERIOR PITUITARY GLAND ON ENDOCHONDRAL OSSIFICATION IN YOUNG GUINEA PIGS. Proc. Soc. Exp. Biol., N. Y., 1935, 32: 1423-1425. 2 refs. Abstracted in: Chem. Abstr., 1936, 30: 3879[8].

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Silberberg, M. EFFECTS OF EXTRACT OF CATTLE ANT. PITUITARY ON ENDOCHONDRAL OSSIFICATION IN THYROIDECTOMIZED YOUNG GUINEA PIGS. Proc. Soc. Exp. Biol., N. Y., 1936, 33: 554-558. 11 refs. Abstracted in: Biol. Abstr., Balt., 1937, 11: No. 13601.

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Silberberg, M. and Silberberg, R. CHANGES IN THE RIBS OF GUINEA PIGS FOLLOWING ADMINISTRATION OF CATTLE ANTERIOR PITUITARY EXTRACT. Proc. Soc. Exp. Biol., N. Y., 1937, 36: 622-625. 2 refs. Abstracted in: Chem. Abstr., 1937, 31: 7112[3]. The report deals only with the action of anterior pituitary extract on the chondro-osseous junction of the ribs of normal as well as of thyroidectomized guinea pigs.

1325
Silberberg, M. and Silberberg, R. COMBINED EFFECTS OF AN ESTROGEN AND AN ANTERIOR HYPOPHYSIAL EXTRACT ON THE SKELETON OF THE GROWING MOUSE. Arch. Path., Chic., 1945, 39: 381-387. 13 refs. "The two hormones oppose each other in their action on the growth of cartilage, but they cooperate in accelerating the age changes in the latter and in the overproduction of bone, anterior hypophysial hormone by stimulating osteoblastic bone formation and estrogen by promoting hyalinization of the marrow and by inhibiting the resorption of bone. Thus, the two hormones do not neutralize each other but each tends to exert its own effects on the receptor tissue. The skeletal effects of estrogen are direct ones and not mediated by the anterior lobe of the hypophysis."

1326
Silberberg, M. and Silberberg, R. A COMPARISON OF THE EFFECTS OF ANTERIOR PITUITARY HORMONE ON SKELETAL TISSUES OF YOUNG AND MATURE GUINEA PIGS. Am. J. Path., 1939, 15: 547-560. pl. 7 refs. Abstracted in: Biol. Abstr., Balt., 1940, 14: No. 4554.

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Silberberg, M. and Silberberg, R. EFFECT OF ACID EXTRACT OF CATTLE ANT. PITUITARY ON BONE REPAIR IN THYROIDECTOMIZED GUINEA PIGS. Proc. Soc. Exp. Biol., N. Y., 1936, 34: 108-110. 3 refs. Abstracted in: Biol. Abstr., Balt., 1937, 11: No. 10930. "Thus anterior pituitary extract of cattle counteracts and overcomes the growth preventing effect on cartilage and bone of young guinea-pigs exerted by thryoidectomy and causes an accelerated healing tendency of the fracture and a faster consolidation of the callus. The extract evidently exerts its influence independently of the thyroid gland. There is under these conditions a parallelism between the process of endochondral ossification in the epiphyseal line and the healing of the fractures by means of a callus."

1328
Silberberg, M. and Silberberg, R. THE EFFECT OF THYROIDECTOMY AND ADMINISTRATION OF ANTERIOR PITUITARY EXTRACT OF CATTLE ON THE GROWTH OF CARTILAGE AND BONE OF IMMATURE QUINEA PIGS. Am. J. Path., 1940, 16: 505-524. 2 pl. 32 refs. Abstracted in: Biol. Abstr., Balt., 1941, 15: No. 2149.

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Silberberg, M. and Silberberg, R. EFFECTS OF PROLONGED INJECTIONS OF BOVINE ANTERIOR PITUITARY EXTRACT ON BONE AND CARTILAGE OF GUINEA PIGS. Arch. Path., Chic., 1940, 29: 355-367. 21 refs. Abstracted in: Biol. Abstr., Balt., 1940, 14: No. 11827.

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Silberberg, M. and Silberberg, R. EFFECTS OF SYNGENESIOTRANSPLANTS AND OF EXTRACTS OF THE ANTERIOR LOBE OF THE BOVINE HYPOPHYSIS ON THE AGE CHANGES IN THE LONG BONES AND JOINTS OF MICE. Am. J. Path., 1941, 17: 189-210. 3 pl. 22 refs. Abstracted in: Biol. Abstr., Balt., 1941, 15: No. 12311.

1331
Silberberg, M. and Silberberg, R. EFFECTS OF THE "GROWTH HORMONE" OF THE ANTERIOR HYPOPHYSIS (ANTUITRIN G) ON THE SKELETON OF MICE AND GUINEA PIGS. Am. J. Path., 1942, 18: 1141-1157. pl. 25 refs. Abstracted in: Biol. Abstr., Balt., 1943, 17: No. 8488; Chem. Abstr., 1944, 38: 5911[2]. In growing animals antuitrin G induced temporary stimulation of epiphyseal cartilage proliferation, followed by a shortened growth period and premature and accelerated aging. Bone formation and resorption were also stimulated. In adult mice epiphyseal cartilage proliferation did not occur but existing processes were accelerated. It was concluded that the action of alkaline hypophyseal extract upon bone and cartilage was essentially the same as that of the acid extracts of the bovine anterior hypophysis, previously tested.

1332
Silberberg, M. and Silberberg, R. INFLUENCE OF ACID EXTRACT OF CATTLE ANTERIOR PITUITARY GLAND ON BONE REPAIR IN YOUNG GUINEA PIGS. Proc. Soc. Exp. Biol., N. Y., 1936, 33: 177-179. 1 ref. Abstracted in: Biol. Abstr., Balt., 1937, 11: No. 5935.

1333
Silberberg, M. and Silberberg, R. INFLUENCE OF CATTLE ANTERIOR PITUITARY EXTRACT ON ENDOCHONDRAL OSSIFICATION IN YOUNG OVARIECTOMIZED GUINEA PIGS. Proc. Soc. Exp. Biol., N. Y., 1937, 37: 446-450. 4 refs. Abstracted in: Chem. Abstr., 1938, 32: 5461[2].

1334
Simpson, [M. E.] LES FACTEURS HORMONAUX DANS LA CROISSANCE OSSEUSE. Marseille chir., 1951, 3: 448-449. An abstract.

1335
Simpson, M. E., Van Dyke, D. C., Asling, C. W. and Evans, H. M. REGENERATION OF THE CALVARIUM IN YOUNG NORMAL AND GROWTH HORMONE TREATED HYPOPHYSECTOMIZED RATS. Anat. Rec., 1953, 115: 615-625. 3 pl. 3 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 27450; Excerpta med., Sect. 3, 1954, 8: No. 209. After removal of the calvarium of young rats, regeneration was soon complete, bone forming at the cut edges and from islands in the dura. It was noted that removal of the dura with the calvarium was followed by complete lack of bony regeneration which led to the assumption that calvarium bone forms from osteoblasts left in the dura at operation. It was also observed that there was complete lack of bone repair in hypophysectomized rats not treated with growth hormone.

HORMONAL INFLUENCE - PITUITARY (Continued)

1336
Spinelli, A. and Talia, F. IPOFISI E CALLO OSEO (RICERCHE SPERIMENTALI). Arch. radiol., Nap., 1930, 6: 748-762. 5 pl. 28 refs. Abstracted in: Biol. Abstr., Balt., 1933, 7: No. 12950.

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Ulrich, F., Copp, D. H., Asling, C. W., Li, C. H. and Reinhardt, W. O. THE EFFECTS OF ACTH ON THE METABOLISM OF RADIOACTIVE CALCIUM IN NORMAL AND HYPOPHYSECTOMIZED RATS. Endocrinology, 1951, 48: 245-248. 7 refs. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 30614; Chem. Abstr., 1953, 47: 1270h.

1338
Ulrich, F., Reinhardt, W. O. and Li, C. H. THE EFFECTS OF HYPOPHYSEAL GROWTH HORMONE ON THE METABOLISM OF CA^{45} IN HYPOPHYSECTOMIZED RATS. Endocrinology, 1951, 49: 213-217. 9 refs. Abstracted in: Biol. Abstr., Balt., 1952, 26: No. 27907; Nutrit. Abstr., Aberdeen, 1951-52, 21: No. 5145. The hormone increased slightly the deposition of Ca^{45} in the bones but had no definite effect on calcium metabolism.

1339
Ulrich, F., Reinhardt, W. O. and Li, C. H. SOME ASPECTS OF THE ROLE OF PITUITARY HORMONES IN CALCIUM METABOLISM. I. ADRENOCORTICOTROPHIC HORMONE. Acta endocr., Kbh., 1952, 10: 97-116. 21 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 3880.

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Ulrich, F., Reinhardt, W. O. and Li, C. H. SOME ASPECTS OF THE ROLE OF PITUITARY HORMONES IN CALCIUM METABOLISM. II. GROWTH HORMONE. Acta endocr., Kbh., 1952, 10: 117-127. 4 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 3831; Chem. Abstr., 1954, 48: 2426.

1341
Walker, D. G., Asling, C. W., Simpson, M. E., Li, C. H. and Evans, H. M. STRUCTURAL ALTERATIONS IN RATS HYPOPHYSECTOMIZED AT SIX DAYS OF AGE AND THEIR CORRECTION WITH GROWTH HORMONE. Anat. Rec., 1952, 114: 19-48. 13 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 12774. Skeletal growth was not immediately arrested after operation but showed retardation and lack of further differentiation after three weeks. Treatment with growth hormone restored growth but no further maturation was observed. Other organs and tissues were also studied.

1342
Walker, D. G., Simpson, M. E., Asling, C. W. and Evans, H. M. GROWTH AND DIFFERENTIATION IN THE RAT FOLLOWING HYPOPHYSECTOMY AT 6 DAYS OF AGE. Anat. Rec., 1950, 106: 539-554. 11 refs. "Skeletal growth of H28 rats was reduced to a very slow rate immediately after operation, whereas skeletal growth of H6 rats continued for three weeks at a rate of 60% of normal... then continued at a very slow rate. Differentiation or maturation of the skeleton did not cease abruptly in either group..."

1343
Weisschedel, E. DIE MANGELHAFTE LEISTUNG VERSCHIEDENER INKRETORISCHER ORGANE UND DIE HEILUNG VON KNOCHENBRÜCHEN. Arch. klin. Chir., 1951, 267: 187-188.

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Wolbach, S. B. and Maddock, C. L. VITAMIN-A ACCELERATION OF BONE GROWTH SEQUENCES IN HYPOPHYSECTOMIZED RATS. A.M.A. Arch. Path., 1952, 53: 273-278. Abstracted in: Biol. Abstr., Balt., 1952, 26: No. 20661; Nutrit. Abstr., Aberdeen, 1952, 22: No. 1825. "We conclude that the skeletal responses to excessive vitamin A administration are not mediated through the pituitary gland."

See:

440	778	779	780	832
833	849	1158	1251	1444
1472	1474	1493	1526	1540
2131				

HORMONAL INFLUENCE - SALIVARY GLANDS

see SALIVARY GLANDS - INFLUENCE

HORMONAL INFLUENCE - SEX HORMONES

1345
Amante, S. and Bidone, E. AZIONE DEL DIPROPIONATO DI ANDROSTENDIOLO SULLA FORMAZIONE DEL CALLO NELLE FRATTURE SPERIMENTALI. Minerva chir., Tor., 1950, 5: 779-784. 22 refs. Abstracted in: Excerpta med., Sect. 5, 1951, 4: No. 3071.

1346
Armstrong, W. D., Knowlton, M. and Gouze, M. INFLUENCE OF ESTRADIOL AND TESTOSTERONE PROPIONATES ON SKELETAL ATROPHY FROM DISUSE AND ON NORMAL BONES OF MATURE RATS. Endocrinology, 1945, 36: 313-322. 12 refs. Abstracted in: Biol. Abstr., Balt., 1945, 19: No. 21521; Chem. Abstr., 1945, 39: 4129[1].

1347
Berezkina, L. F. VLIIANIE POLOVAGO GORMONA NA REGENEROTSIIU KOSTI. [INFLUENCE OF SEX HORMONE ON BONE REGENERATION] Doklady Akad. nauk SSSR, 1948, 59: 147-150. 10 refs. An experimental study on 70 2-month-old rats (40 males and 30 females). All rats were subjected to fracture of leg and given testosterone propionate or estrone injection in oil solution. It was found excess of hormone stimulates the knitting process of fracture only when testosterone is given to males and estrone to females. Injection of estrone in males has no influence on bone regeneration.

1348
Bloom, M. A., Bloom, W. and McLean, F. C. THE ROLE OF ANDROGEN IN THE PRODUCTION OF MEDULLARY BONE IN PIGEONS BY THE ADMINISTRATION OF SEX HORMONES. Am. J. Physiol., 1941, 133: P216. An abstract.

1349
Buchwald, K. W. and Hudson, L. THE BIOCHEMICAL EFFECTS OF INJECTIONS OF SEX HORMONES INTO HYPOPHYSECTOMIZED RATS. Endocrinology, 1947, 41: 111-118. 13 refs. Abstracted in: Biol. Abstr., Balt., 1948, 22: No. 8711; Excerpta med., Sect. 3, 1948, 2: No. 822.

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Budy, A. M., Urist, M. R. and McLean, F. C. THE EFFECT OF ESTROGENS ON THE GROWTH APPARATUS OF THE BONES OF IMMATURE RATS. Am. J. Path., 1952, 28: 1143-1167. 6 pl. 19 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 9659; Chem. Abstr., 1953, 47: 5522e. The only effect of moderate doses of estrogen upon the bones of rats is interference with resorption of the spongy bone in the metaphysis. Testosterone propionate given alone or with estrogen produced no reaction.

HORMONAL INFLUENCE - SEX HORMONES (Continued)

1351
Common, R. H., Rutledge, W. A. and Hale, R. W. OBSERVATIONS ON THE MINERAL METABOLISM OF THE PULLETS. VIII. THE INFLUENCE OF GONADAL HORMONES ON RETENTION OF CALCIUM AND PHOSPHORUS. J. Agr. Sc., Lond., 1948, 38: 64-80. 4 pl. 50 refs. Androgen and oestrogen together produced retention of Ca and P as if the birds were coming into lay. With increased retention there was not an increase in mechanical strength of long bones. Though ossification in bone marrow of the tibiae was apparent, the epiphyses were frequently looser than in birds receiving only one hormone or none. Fat-free long bones were less compact in spite of an increased rate of storage of calcium and phosphorus in the birds.

1352
Gardner, W. U. INFLUENCES OF SEX HORMONES ON BONE. RECENT RESEARCH ON OSSEOUS TISSUE. Yale Sc. Mag., 1945, 20: No. 3, 7-8, 24, 26, 28. 11 refs. Abstracted in: Biol. Abstr., Balt., 1946, 20: No. 10045. A review of the effects of estrogen, the steroid hormones and testerone on the bones of guinea pigs and mice. Estrogen induces medullary bone growth in mice.

1353
Gardner, W. U. MODIFICATIONS OF BONES OF ANIMALS RECEIVING SEX HORMONES. Anat. Rec., 1940, 76: Suppl., 22-23. An abstract.

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Gardner, W. U. and Pfeiffer, C. A. INFLUENCE OF ESTROGENS AND ANDROGENS ON THE SKELETAL SYSTEM. Physiol. Rev., 1943, 23: 139-165. 226 refs. Abstracted in: Chem. Abstr., 1943, 37: 3813[3]; Biol. Abstr., Balt., 1944, 18: No. 4435.

1355
Gardner, W. U. and Pfeiffer, C. A. INHIBITION OF ESTROGENIC EFFECTS ON THE SKELETON BY TESTOSTERONE. Proc. Soc. Exp. Biol., N. Y., 1938, 38: 599-602. Abstracted in: Biol. Abstr., Balt., 1938, 12: No. 6421. "Testosterone propionate inhibits the skeletal changes (pubic resorption and hypercalcification of the skeleton) which occur when estrogens are injected over extended periods."

1356
Gardner, W. U. and Pfeiffer, C. A. SEX HORMONES AND BONE CHANGES IN MICE. Anat. Rec., 1939, 73: Suppl. No. 2, 21. An abstract.

1357
*Godfrey, E. F. and Jaap, R. G. SOME EFFECTS OF SEX HORMONES ON BONE DEVELOPMENT AND GROWTH IN CHICKENS. Poultry Sc., 1951, 30: 915. An abstract.

1358
Lichtwitz, A., Parlier, R. and Thiéry, G. CROISSANCE ET HORMONES GÉNITALES. Rev. rhumat., Par., 1953, 20: 165-178. Experiments with young rats showed that small doses of the sex hormones, particularly folliculine, induced obvious and invariable changes in epiphyseal cartilage growth after 7 days, characterized by multiplication of cells of the seried cartilage and the hypertrophic cartilage and lengthening of the bone trabeculae.

1359
Lichtwitz, A., Parlier, R., Thiéry, G. and Delaville, M. MÉCANISME DE L'ACTION DES HORMONES GÉNITALES SUR LE CARTILAGE DE CONJUGAISON. Sem. hôp., Par., 1951, 27: 260-265. Translation in: Prensa méd. argent., 1951, 38: 1409-1414.

1360
Lichtwitz, A., Thiéry, G., Parlier, R. and Delaville, M. LES HORMONES GÉNITALES ET LE CARTILAGE DE CONJUGAISON. Sem. hôp., Par., 1951, 27: 247-260. Translation in: Prensa méd. argent., 1951, 38: 1339-1351.

1361
Norman, G. F. and Mittler, A. INTERRELATIONSHIP OF VITAMIN D AND THE SEX HORMONES IN CALCIUM AND PHOSPHORUS METABOLISM OF RATS. Proc. Soc. Exp. Biol., N. Y., 1948, 67: 104-111. 22 refs. Abstracted in: Biol. Abstr., Balt., 1948, 22: No. 18003; Nutrit. Abstr., Aberdeen, 1948-49, 18: No. 390.

1362
Reifenstein, E. C., Jr. and Albright, F. THE METABOLIC EFFECTS OF STEROID HORMONES IN OSTEOPOROSIS. J. Clin. Invest., 1947, 26: 24-56. 26 refs. Abstracted in: Chem. Abstr., 1949, 43: 5487[i].

1363
Wentworth, J. H., Smith, P. K. and Gardner, W. U. THE COMPOSITION OF BONES OF MICE RECEIVING ESTROGENS AND ANDROGENS. Endocrinology, 1940, 26: 61-67. 13 refs. Abstracted in: Biol. Abstr., Balt., 1941, 15: No. 2163; Chem. Abstr., 1940, 34: 13724.

See:

440 1307

HORMONAL INFLUENCE - SEX HORMONES, FEMALE

see also HORMONAL INFLUENCE - SEX HORMONES

1364
Baker, B. L. and Leek, J. H. THE RELATIONSHIP OF THE PARATHYROID GLANDS TO THE ACTION OF ESTROGEN ON BONE. Am. J. Physiol., 1946, 147: 522-526. 13 refs. "Study of the tibiae of parathyroidectomized and intact rats treated with large doses of alpha-estradiol dipropionate showed that 'hyperossification' could be induced in the absence of the parathyroid glands. It was concluded that even though the hypophysis is essential to this phenomenon, the parathyroids are unnecessary and, therefore, the secretion of a parathyrotrophic factor by the hypophysis need not be postulated."

1365
Baldini, J. T. and Zarrow, M. X. ESTROGEN AND SERUM CALCIUM LEVELS IN THE BOB WHITE QUAIL. Poultry Sc., 1952, 31: 800-804. 18 refs. "Treatment with estrogens increases the serum calcium to values as high as 140 mg. percent. In the starved bird estrogen is still able to produce a hypercalcemia indicating an action on the skeletal calcium as well as absorption through the gastrointestinal tract."

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Barnicot, N. A. THE LOCAL ACTION OF CALCIFEROL AND OESTRADIOL ON BONE. J. Anat., Lond., 1951, 85: 120-134. 42 refs. Small calciferol pellets attached to pieces of mouse parietal bone were grafted intracerebrally to litter mates and a diffuse local resorption was observed after 14 days. This was accompanied by osteoclasts and some new bone resorption. Similar experiments with estradiol showed no local action.

HORMONAL INFLUENCE - SEX HORMONES, FEMALE
(Continued)

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Barnicot, N. A. LOCAL ACTION OF CALCIFEROL AND VITAMIN A ON BONE. Nature, Lond., 1948, 162: 848-849. 6 refs. Abstracted in: Biol. Abstr., Balt., 1949, 23: No. 28545. Calciferol, vitamin A acetate, cholesterol or estradiol was attached to small pieces of parietal bone from 10-day-old mice and the combination inserted vertically into the cerebral hemisphere of litter mates. Subsequent examination showed marked resorption in the calciferol and vitamin A grafts but no change in the cholesterol nor estradiol grafts.

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Benoit, J. ACTION DE LA FOLLICULINE SUR LE MÉTABOLISME DU CALCIUM CHEZ LES OISEAUX EN RÉGIME NORMAL ET EN RÉGIME ACALCIQUE. Bull. Acad. med., Par., 1942, 126: 464-465. 2 refs.

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Benoit, J. and Clavert, J. HYPERCALCÉMIE ET OSTÉOGENÈSE MÉDULLAIRE FOLLICULINIQUES CHEZ LE CANARD DOMESTIQUE SOUMIS À UN RÉGIME ACALCIQUE. C. rend. Soc. biol., (1944) 1945, 139: 737-740. 4 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1946-47, 16: No. 778.

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Benoit, J. and Clavert, J. OSTEOGÉNÈSE FOLLICULINIQUE CHEZ LES OISEAUX. INFLUENCE DES DIVERSES GLANDES ENDOCRINES. C. rend. Ass. anat., (1950) 1951, 37: 533-535. Birds were injected with the female sex hormone, which induced formation of medullary bone, and the effects of the endocrine glands on the bone formation studied: parathyroidectomy caused lack of mineralization, thyroidectomy caused lack of basic protein substance, hypophysectomy seemed to inhibit thyroid secretion and adrenalectomy had little effect.

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Benoit, J. and Clavert, J. RÔLE INDISPENSABLE DES PARATHYROÏDES DANS LA CALCIFICATION DE L'OS FOLLICULINIQUE CHEZ LE CANARD DOMESTIQUE. C. rend. Soc. biol., (1944) 1945, 139: 743-746. 2 refs.

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HORMONAL INFLUENCE - SEX HORMONES, FEMALE
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Dallemagne, M. J., Govaerts, J., and Mélon, J. INFLUENCE DE LA FOLLICULINE SUR LE MÉTABOLISM CALCIQUE DU PIGEON, ÉTUDIÉE À L'AIDE DU RADIOCALCIUM. Arch. internat. physiol., 1950, 58: 157-187. 28 refs. Young adult male and female pigeons were injected with radiocalcium and with folliculine for various periods. The folliculine was observed to have a profound effect upon calcium metabolism throughout the organism. In bone, it was particularly manifested in the femur and least in the humerus.

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Dallemagne, M. J., Govaerts, J. and Sue, P. L'ORIGINE DE L'OS FOLLICULINIQUE ÉTUDIÉE À L'AIDE DU RADIOPHOSPHORE COMME INDICATEUR. C. rend. Soc. biol., 1947, 141: 541-543. 1 ref. In pigeons radiophosphorus tracer studies were made to determine the origin of folliculin-induced bone.

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Day, H. G. and Follis, R. H., Jr. SKELETAL CHANGES IN RATS RECEIVING ESTRADIOL BENZOATE AS INDICATED BY HISTOLOGICAL STUDIES AND DETERMINATIONS OF BONE ASH, SERUM CALCIUM AND PHOSPHATASE. Endocrinology, 1941, 28: 83-93. 26 refs. Abstracted in: Biol. Abstr., Balt., 1941, 15: No. 8075; Chem. Abstr., 1941, 35: 1491^8. "The evidence indicates that estrogen causes a decrease in normal destruction of bony trabeculae just beneath the cartilage shaft junction. There is also some increase in osteoblastic activity at the cartilage shaft junction, but not elsewhere. This change in activity increases the density of the epiphyses and apparently accounts for the increase in concentration of ash in the whole bone. However, the total amount of bone is reduced owing to decreased growth in length. The skeletal changes are greater in females than in males." - Chem. Abstr.

HORMONAL INFLUENCE - SEX HORMONES, FEMALE
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Dogliotti, V. EFFETTO DELLA CASTRAZIONE SUL CALCIO DELLE OSSA. Ann. ostet. gin., 1934, 56: 443-455. 50 refs. Abstracted in: Biol. Abstr., Balt., 1936, 10: No. 15762. In rabbits the ash and calcium content determined in the metatarsals was slightly lower after oophorectomy than before.

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Ettori, J., Grangaud, R., Benoit, J. and Clavert, J. ACTION DE LA FOLLICULINE SUR LE MÉTABOLISME DU CALCIUM CHEZ LES OISEAUX. II. OSSIFICATION FOLLICULINIQUE ET PHÊNOMÊNES DE LA CALCIFICATION PRIMAIRE. Tr. Soc. chim. biol., 1942, 24: 1322-1328. 10 refs. In pigeons the processes of calcification were demonstrated in folliculin-induced medullary bone. The residual calcium-phosphorus ratio indicated that in the process of primary calcification dicalcium phosphate is the first salt deposited. This is transformed into tricalcium phosphate during the processes of secondary calcification.

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Gaarenstroom, J. H. and Levie, L. H. DISTURBANCE OF GROWTH BY DIETHYLSTILBOESTROL AND OESTRONE. J. Endocr., Oxf., 1939, 1: 420-429. 2 pl. 22 refs. Abstracted in: Biol. Abstr., Balt., 1940, 14: No. 13155.

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Gardner, W. U. THE BREAKING STRENGTH OF FEMURS OF MICE RECEIVING ESTROGENS. Proc. Soc. Exp. Biol., N. Y., 1940, 45: 230-232. 4 refs. Abstracted in: Biol. Abstr., Balt., 1941, 15: No. 4066. "The average breaking-strength of femurs of estrogen-treated mice was 2499 g. or 844 g. greater than that of untreated controls."

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Gardner, W. U. and Clouet, D. H. OSSEOUS PROLIFERATION IN ESTROGEN-TREATED HYPOPHYSECTOMIZED MICE. Anat. Rec., 1944, 88: 433. An abstract. "The osseous changes in the hypophysectomized mice show that estrogen may act upon the intramedullary bone in as specific a manner as upon the genital tissues."

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Gardner, W. U. and Mahan, M. L. OSSEOUS CHANGES IN ESTROGEN-TREATED HYPOTHYROID AND LOW-PROTEIN FED MICE. Anat. Rec., 1946, 94: 462. An abstract. Neither thiourea treatment nor low-protein deit altered the response of bone to estrogen.

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Gardner, W. U. and Pfeiffer, C. A. SKELETAL CHANGES IN MICE RECEIVING ESTROGENS. Proc. Soc. Exp. Biol., N. Y., 1938, 37: 678-679. 4 refs. "Endosteal bone nearly or completely replaces the marrow cavities of the femurs of mice which have received estrogen (250 I.U. or more weekly) for long periods. Direct examination of the bones and X-ray photographs show that similar changes occur throughout the skeleton except in the immediate vicinity of the pubic symphysis."

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Govaerts, J. and Dallemagne, M. J. INFLUENCE OF FOLLICULIN ON BONE METABOLISM, STUDIED BY MEANS OF RADIOPHOSPHORUS $^{32}_{15}P$. Nature, Lond., 1948, 161: 977. Abstracted in: Nutrit. Abstr., Aberdeen, 1948-49, 18: No. 2193; Chem. Abstr., 1948, 42: 8288[c].

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Koneff, A. A., Simpson, M. E. and Evans, H. M. EFFECTS OF CHRONIC ADMINISTRATION OF DIETHYLSTILBESTROL ON THE PITUITARY AND ENDOCRINE ORGANS OF HAMSTERS. Anat. Rec., 1946, 94: 169-195. pl. 7 refs. Abstracted in: Chem. Abstr., 1948, 42: 5968[a]. "The histological findings ...indicated decreased bone formation, rather than the increased bone formation commonly observed following estrinization in other forms, such as rat, mouse and pigeon."

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Landauer, W. and Zondek, B. OBSERVATIONS ON THE STRUCTURE OF BONE IN ESTROGEN-TREATED COCKS AND DRAKES. Am. J. Path., 1944, 20: 179-204. 6 pl. 53 refs. Abstracted in: Biol. Abstr., Balt., 1944, 18: No. 8376; Nutrit. Abstr., Aberdeen, 1944-45, 14: No. 375.

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HORMONAL INFLUENCE - SEX HORMONES, FEMALE
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Merlino, A. OSTEOGENESIS, ORMONE OVARICO E VITAMINA DELLA FECONDITA. Lattante, 1935, 6: 469-494. 7 pl. 65 refs.

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Pfeiffer, C. A. and Gardner, W. U. SKELETAL CHANGES AND BLOOD SERUM CALCIUM LEVEL IN PIGEONS RECEIVING ESTROGENS. Endocrinology, 1938, 23: 485-491. 13 refs. Abstracted in: Biol. Abstr., Balt., 1939, 13: No. 3883; Chem. Abstr., 1938, 32: 9228[7].

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Pfeiffer, C. A., Kirschbaum, A. and Gardner, W. U. RELATION OF ESTROGENS TO OSSIFICATION AND THE LEVELS OF SERUM CALCIUM AND LIPOID IN THE ENGLISH SPARROW, PASSER DOMESTICUS. Yale J. Biol., 1940, 13: 279-284. pl. 8 refs. Abstracted in: Chem. Abstr., 1941, 35: 1108[2]; Biol. Abstr., Balt., 1941, 15: No. 8098.

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Riddle, O., Rauch, V. M. and Smith, G. C. CHANGES IN MEDULLARY BONE DURING THE REPRODUCTIVE CYCLE OF FEMALE PIGEONS. Anat. Rec., 1944, 90: 295-305. 11 refs.

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Ruiz-Gijón, J. LA ACCIÓN DEL DIPROPIONATO DE ESTILBENO SOBRE EL HUESO Y OTROS ÓRGANOS. Farm. y ter., Madr., 1943, 4: 405-413. 20 refs.

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Sabaino, D. and Conti, T. DIETA, ESTROGENI E FRATTURA DELLE OSSA. Arch. sc. med., Tor., 1953, 95: 445-447. 3 refs. Two groups of rats were fed different diets containing casein with stilbestrol and wheat germ with stilbestrol, respectively. It was observed that large doses of stilbestrol reduced the fracture resistance of the long bones in the animals fed casein much more than in the animals fed wheat germ. But it was also observed that there was a greater reduction of the Ca and P content of the bones of the animals on the wheat germ diet than of those on the casein diet.

1438
Salomon, K., Gabrio, B. W., Reinhard, E. and Silberberg, R. EFFECTS OF ESTRADIOL BENZOATE AND THEIR MODIFICATION BY BLEEDING. STUDIES ON THE SKELETON AND THE BLOOD CALCIUM OF THE COCKEREL. Arch. Path., Chic., 1947, 43: 76-85. 11 refs. Abstracted in: Biol. Abstr., Balt., 1947, 21: No. 19481; Chem. Abstr., 1947, 41: 5936[d].

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HORMONAL INFLUENCE - SEX HORMONES, FEMALE
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See:

4 349 640 917 1325
1343 1495 1496 1497 1516
1533

HORMONAL INFLUENCE - SEX HORMONES, MALE

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HORMONAL INFLUENCE - SEX HORMONES, MALE
(Continued)

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HORMONAL INFLUENCE - THYMUS, SPLEEN AND PINEAL BODY

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825	933	1156	1179	1189
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1273	1277	1278	1280	1283
1313	1316	1323	1328	1334
1343	1370	1415	1471	1484

MARROW RELATIONSHIPS

see also TISSUE EXTRACTS; TISSUE TRANSPLANTS

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MECHANICAL INFLUENCE

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Altmann, K. UNTERSUCHUNGEN ÜBER FRAKTURHEILUNG UNTER BESONDEREN EXPERIMENTELLEN BEDINGUNGEN. EIN BEITRAG ZUR BIOMECHANIK DER FRAKTURHEILUNG. Zschr. Anat. Entw., 1950, 115: 52-81. 22 refs. In rats, the fibula was fractured in the middle and the site isolated from surrounding soft parts by encasement in a piece of macerated boiled rat femur. Bone consolidation followed, sometimes with incorporation of the casing. It is concluded that, while various factors contribute to osteogenesis, "the basic condition for every bone formation is to be sought in exactly definable mechanical causes."

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METABOLISM, INORGANIC

see also METABOLISM; TRACE ELEMENTS and subdivisions

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Bogdonoff, M. D., Shock, N. W. and Nichols, M. P. CALCIUM, PHOSPHORUS, NITROGEN, AND POTASSIUM BALANCE STUDIES IN THE AGED MALE. J. Geront., 1953, 8: 272-288. Abstracted in: Chem. Abstr., 1953, 47: 11422b; Nutrit. Abstr., Aberdeen, 1954, 24: No. 799; Brit. Abstr., 1954, p. 167. "Elderly men in positive N balance required 850 mg. per day of Ca, about the same as the needs of younger men. These elderly subjects were able to retain Ca, P, N, and K, suggesting that protoplasm was being built up. Elderly males with osteoporosis, however, retained only a little Ca when large amounts were given, suggesting that some defect in osteoid formation or its calcification was present." - Brit. Abstr.

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Carlsson, A. ON THE MECHANISM OF THE SKELETAL TURNOVER OF LIME SALTS. Acta physiol. scand., 1952, 26: 200-211. Addendum, p. 211. 17 refs. Abstracted in: Excerpta med., Sect. 2, 1953, 6: No. 2795. Radiocalcium was administered to rats and the uptake in the incisors studied during the next 18 hours. The process was noted to have been irreversible and no return of radiocalcium from incisors to blood was demonstrated. "The results suggested a diurnal rhythmic variation in calcium uptake" and were considered to support the view of a close relationship between the renewal of bone salt and that of bone tissue. The article is preceded by a review of the literature.

1749
Carlsson, A. TRACER EXPERIMENTS ON THE EFFECT OF VITAMIN D ON THE SKELETAL METABOLISM OF CALCIUM AND PHOSPHORUS. Acta physiol. scand., 1952, 26: 212-220. 17 refs. Abstracted in: Chem. Abstr., 1953, 47: 715d. A study was made with rats. Eighteen hours after administration of isotopes, the tracers indicated that uptake of lime salts was favored by vitamin D in the long bones more than in the incisors, although the vitamin had produced an increased ash weight of the incisors and no increase in ash weight of the bones. It was concluded that vitamin D favored the removal of lime slats from the bones. The article is preceded by a review of the literature.

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Ercoli, N. and Lewis, M. N. THE AGE FACTOR IN THE RESPONSE OF BONE TISSUE TO ALIZARIN DYES AND THE MECHANISM OF DYE FIXATION. Anat. Rec., 1943, 87: 67-76. 25 refs. Adult and immature white mice were used in the experiments.

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1758
Greenberg, D. M THE DYNAMICS OF CALCIUM AND PHOSPHATE METABOLISM. Univ. California Pub. Physiol., 1947, 8: No. 18, 277-292. 93 refs. This review is devoted to the relation of calcium and phosphate ions to bone.

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Greenberg, D. M. MINERAL METABOLISM, MAGNESIUM, AND PHOSPHORUS. Annual Rev. Biochem., 1939, 8: 269-300. 175 refs. For bone, see particulary, p. 273-276.

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Hansen, I. G. and Mollgaard, H. INVESTIGATIONS OF THE EFFECT OF LACTIC ACID ON THE METABOLISM OF CALCIUM AND PHOSPHORUS. Acta physiol. scand., 1947, 14: 158-170. 4 refs. Abstracted in: Chem. Abstr., 1948, 42: 651c. "Strong lactic acid fermentation in the intestines of the pig effect an increase of the absorption of calcium and phosphate and by that way a superior bone formation. It further promotes health and growth of young pigs considerably."

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METABOLISM OF PHYTIN LABELED WITH P^{32}. Nutrit. Rev., 1951, 9: 111-112. A short review.

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Munro, H. N. and Cumming, M. C. NITROGEN METABOLISM AFTER FRACTURE. Nature, Lond., 1948, 161: 560-561. 3 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1948-49, 18: No. 2123. In this study with rats it was found that nitrogen lost from the injured limb accounts for only a small part of the nitrogen excreted after fracture.

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Pavalnský, R. KOSTNÍ ATROFIE SE ZRETELEM NA VÝMENU MINERÁLNÍCH LATEK A ŽIVOT KOSTI. [BONE ATROPHY WITH SPECIAL REFERENCE TO MINERAL METABOLISM AND PHYSIOLOGY OF THE BONE] Sborn. lék., 1946, 48: 344-352; 1947, 48: 353-405. 4 p. refs. English and French summaries, p. 391-402. A review.

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METABOLISM, INORGANIC (Continued)

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2620 2740 2772 2842 2887
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METABOLISM, INORGANIC - CALCIUM

see also METABOLISM, INORGANIC

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Armstrong, W. D., Johnson, J. A., Singer, L. Lienke, R. I. and Premer, M. L. RATES OF TRANSCAPILLARY MOVEMENT OF CALCIUM AND SODIUM AND OF CALCIUM EXCHANGE BY THE SKELETON. Am. J. Physiol., 1952, 171: 641-651. 21 refs. Abstracted in: Chem. Abstr., 1953, 47: 3959[h]. Dogs were given radiocalcium and radiosodium and the quantities of these isotopes present in plasma and blood estimated separately at intervals. Methods are described, and evidence is presented that calcium-binding by plasma proteins does not impede the transcapillary movement of calcium. The rates of this movement of calcium and sodium are calculated and the quantities of skeletal calcium and tissue sodium exchanged up to 340 minutes are estimated.

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Bellin, J and Laszlo, D. METABOLISM AND REMOVAL OF CA^{45} IN MAN. Science, 1953, 117: 331-334. 20 refs. Abstracted in: Chem. Abstr., 1953, 47: 8200[d]. A single dose of $Ca^{45}Cl_2$[4] was injected rapidly into the anticubital vein of fasting controlled patients. Blood and urine analyses were made at frequent intervals and stool analyses daily. It was found that the Ca^{45} rapidly disappeared from the blood stream, appeared in the excreta and was deposited in bone. The rate at which these processes occur is believed to vary depending on the state of bone metabolism and to be, therefore, a useful indicator of skeletal activity. When the Ca^{45} levels approximated equilibrium in serum and excreta, sodium salt of ethylene diamine tetracetic acid was infused intravenously and the following increase in Ca^{45} excretion was studied as an indication of the rates of skeletal demineralization.

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METABOLISM, INORGANIC - CALCIUM (Continued)

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Fournier, P. L'ABSORPTION DU CALCIUM CHEZ LE RAT ADULTE. III. INFLUENCE DE L'ÉTAT INITIAL DE L'ANIMAL. C. rend. Acad. sc., 1953, 236: 2537-2539. 4 refs. Two groups of adult rats were fed a Ca deficient diet for a short and a long period respectively, and then fed a diet containing 41% Ca. It was noted that the group deprived of Ca for a short time absorbed little Ca when it was made available while the second group of rats absorbed large initial quantities which soon decreased. The question is raised whether this high and quickly reduced absorption of Ca indicates a rapid remineralization of insufficiently calcified bone.

1800
Greenberg, D. M. STUDIES IN MINERAL METABOLISM WITH THE AID OF ARTIFICIAL RADIOACTIVE ISOTOPES. VIII. TRACER EXPERIMENTS WITH RADIOACTIVE CALCIUM AND STRONTIUM ON THE MECHANISM OF VITAMIN D ACTION IN RACHITIC RATS. J. Biol. Chem., 1945, 157: 99-104. 7 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1945-46, 15: No. 238. It was demonstrated that vitamin D promotes absorption of calcium from the digestive tract and that it has a direct action on the mineralization of bone in rachitic animals.

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1812
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1813
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METABOLISM, INORGANIC - CALCIUM (Continued)

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Nicolaysen, R., Eeg-Larsen, N. and Malm, O. J. PHYSIOLOGY OF CALCIUM METABOLISM. Physiol. Rev., 1953, 33: 424-444. 126 refs. Abstracted in: Biol. Abstr., Balt., 1954, 28: No. 10495. See particularly p. 433-439 for review of the literature on the skeleton.

1815
Randoin, L. and Causeret, J. LE CALCIUM EN BIOLOGIE ET DANS L'ALIMENTATION HUMAINE. Bull. Soc. sc. hyg. aliment., Par., 1951, 39: 249-266. A review of the role of calcium in animal life, which considers its distribution in the tissues (including bone), calcium metabolism and calcium deficiency.

1816
Rubin, M., Thomas, R. D., Litovitz, T. A. and Geschickter, C. F. DYNAMICS OF CALCIUM METABOLISM. Tr. Conf. Metab. Interrelat., 1953, 5.Conf., 53-71. Conference discussion: p. 64-71. 16 refs.

1817
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1818
Singer, L. and Armstrong, W. D. DIETARY RESTRICTIONS AND MOBILIZATION OF 'STABLE' CALCIUM FRACTION OF THE SKELETON. Fed. Proc., Balt., 1953, 12: 268. An abstract.

1819
Singer, L. and Armstrong, W. D. RETENTION AND TURNOVER OF RADIOCALCIUM BY THE SKELETON OF LARGE RATS. Proc. Soc. Exp. Biol., N. Y., 1951, 76: 229-233. 12 refs. Abstracted in: Chem. Abstr., 1951, 45: 5289^{c}. Findings suggest there are two kinds of skeletal calcium, which differ strongly in their rate of turnover and in the period of time over which they fix radiocalcium.

1820
Singer, L., Armstrong, W. D. and Premer, M. L. SKELETAL CALCIUM TURNOVER IN NON-GROWING RATS. Proc. Soc. Exp. Biol., N. Y., 1952, 80: 643-646. 6 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 9665; Chem. Abstr., 1952, 46: 11373^{i}.

1821
Thomas, R. O., Litovitz, T. A., Rubin, M. I. and Geschickter, C. F. DYNAMICS OF CALCIUM METABOLISM. TIME DISTRIBUTION OF INTRAVENOUSLY ADMINISTERED RADIOCALCIUM. Am. J. Physiol., 1952, 169: 568-575. 10 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 461; Nutrit. Abstr., Aberdeen, 1953, 23: No. 659.

1822
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1823
Tomlin, D. H., Henry, K. M. and Kon, S. K. AUTORADIOGRAPHIC STUDIES OF CALCIUM METABOLISM IN BONES AND TEETH. Proc. Nutrit. Soc., Cambr., 1953, 12: iv. 1 ref. An abstract.

1824
Underwood, E. [E.], Fisch, S. and Hodge, H. C. METABOLISM OF CALCIUM IN NORMAL, RACHITIC AND VITAMIN D-TREATED RATS AS EVIDENCED BY RADIOCALCIUM CA^{45} STUDIES. Am. J. Physiol., 1951, 166: 387-393. 21 refs. Abstracted in: Biol. Abstr., Balt.,1952, 26: No. 432; Nuclear Sc. Abstr., 1951, 5: No. 6106. "The experiments suggest that vitamin D in rachitic rats increases Ca absorption of Ca from the gastro-intestinal tract, aids in mobilizing inorganic P from organic sources and locally accelerates the mineralization of bone. Active healing of rachitic bone, as shown by the upswing in the curve of deposition of Ca^{45}, begins between the 48th and 72d hour after the administration of the vitamin." - Biol. Abstr.

See:

418	987	1017	1119	1124
1148	1244	1256	1258	1259
1337	1338	1339	1340	1351
1365	1403	1418	1431	1495
1541	1749	1865	2330	2331
2652	2682	2687	2688	2689
2700	2701	2708	2874	2879
2890	2907			

METABOLISM, INORGANIC - CARBONATE

1825
Armstrong, W. D. and Schubert, J. STUDIES ON THE TURNOVER OF CARBON IN CALCIFIED TISSUES. Tr. Conf. Metab. Interrelat., 1949, 1.Conf., 77-84. 3 refs.

1826
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Armstrong, W. D., Schubert, J. and Lindenbaum, A. FURTHER WORK ON THE UPTAKE OF CARBON^{14} BY BONES AND OTHER TISSUES OF THE RAT. Tr. Conf. Metab. Aspects Convalesc., 1948, 17. meet., 67-78. 8 refs.

1829
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METABOLISM, INORGANIC - CARBONATE (Continued)

1830
Greulich, R. C. and Leblond, C. P. RADIOAUTOGRAPHIC VISUALIZATION OF RADIOCARBON IN THE ORGANS AND TISSUES OF NEWBORN RATS FOLLOWING ADMINISTRATION OF C^{14}-LABELLED BICARBONATE. Anat. Rec., 1953, 115: 559-585. 2 pl. 24 refs. Rats were sacrificed at 4, 24, and 72 hours after administration of C^{14}-labelled bicarbonate. Radioautographic reactions were observed in all organs and tissues at the three time intervals. In cartilage cells, the cytoplasm at 4 hours showed an intense reaction, at 24 hours the cellular reaction was absent but the matrix had become reactive, while at 72 hours only the matrix remained reactive. In bones, the periosteal trabeculae and the subepiphyseal spicules gave sharp reactions at 4 hours, the reactive areas appearing to be displaced inwardly with time. In incisor teeth, the layer of pre-dentin immediately adjacent to the odontoblasts and the pre-enamel exhibited a reaction at 4 hours, the enamel less intense than the dentin. By 72 hours the pre-dentin reaction had moved outwards in the dentin itself, close to the dentino-enamel junction.

1831
Kornberg, H. L., Davies, R. E. and Wood, D. R. THE METABOLISM OF ^{14}C-LABELLED BICARBONATE IN THE CAT. Biochem. J., Lond., 1952, 51: 351-357. 23 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 431. At the end of 5 hours, 80% of the injected C^{14} was expired, 3.1% was incorporated in the urea; at the end of 4 hours, 6% was present in bone (the carbon of which exchanges relatively slowly with blood carbonates) and about 1% in the blood, the muscles and the viscera.

1832
Nakao, A. and Buchanan, D. L. STUDIES ON THE PHYSIOLOGICAL STATUS OF BONE CARBONATE. Fed. Proc., Balt., 1952, 11: 111-112. An abstract. Abstracted in: Biol. Abstr., Balt., 1952, 26: No. 20532.

1833
Skipper, H. E., Nolan, C. and Simpson, L. STUDIES ON THE HAZARD INVOLVED IN USE OF C^{14}. III. LONG TERM RETENTION IN BONE. J. Biol. Chem., 1951, 189: 159-166. 7 refs. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 22819. "As judged from autoradiographs made from long bones of mice injected with $NaHC^{14}O_3$, the rate of turnover of carbonate C by various areas in the bone cross-section may be listed as follows: marrow and epiphyseal cartilage > metaphysis of the growing end > epiphysis and the non-growing end > bone shaft (diaphysis). After 4 months the greatest part of the injected radioactive carbon can be found in the bone. The approximate per cent of the injected dose retained in the skeleton was 0.25 at the end of 24 hours, 0.03 at the end of 1 month, 0.02 at the end of 6 months, and 0.01 at the end of 1 year."

METABOLISM, INORGANIC - PHOSPHORUS

see also METABOLISM, INORGANIC

1834
Angrist, A. A., Schwarz, A. W., Brodie, S. S. and Shapiro, A. J. STUDY OF EARLY PHASES OF CALCIFICATION IN BONE WITH RADIOACTIVE PHOSPHORUS. Bull. Hosp. Joint Dis., N. Y., 1951, 12: 87-109. 36 refs. Abstracted in: Chem. Abstr., 1953, 47: 751d.

1835
Armstrong, W. D. PHOSPHORUS METABOLISM IN THE SKELETON. IN: PHOSPHORUS METABOLISM; A SYMPOSIUM ON THE ROLE OF PHOSPHORUS IN THE METABOLISM OF PLANTS AND ANIMALS. (McElroy, W. D. and Glass, B., eds.) Balt., Johns Hopkins Press, 1952, 2: 698-731. Discussion: p. 727-731. 113 refs.

1836
Armstrong, W. D. TURNOVER OF BONE MEASURED WITH RADIOPHOSPHORUS. Fed. Proc., Balt., 1947, 6: 235. An abstract.

1837
Bernhard, K. and Brubacher, G. UBER DIE BETEILIGUNG DES WACHSENDEN UND KONSOLIDIERTEN HIRSCHGEWEIHES AM PHOSPHATSTOFFWECHSEL. EIN BEITRAG ZUR KENNTNIS DES GEWEIHWACHSTUMS. Hoppe Seyler Zschr., 1952, 290: 237-246. 5 refs.

1838
Caputo, V., Ström, L. and Tessarolo, G. INFLUENZA DELLA VITAMINA D SULLA DISTRIBUZIONE SCHELETRICA DEL RADIOFOSFORO NELLE CAVIE ADULTE. Clin. ortop., Parma, 1953, 5: 69-71. 3 refs. Abstracted in: Excerpta med., Sect. 9, 1954, 8: No. 2152.

1839
Chievitz, O. and Hevesy, G. RADIOACTIVE INDICATORS IN THE STUDY OF PHOSPHORUS METABOLISM IN RATS. Nature, Lond., 1935, 136: 754-755. Data showed that a phosphorus atom remains in the organism about two months. This result was interpreted as indicating that the formation of the bones is a dynamic process involving the continuous replacement of previously lost atoms.

1840
Chievitz, O. and Hevesy, G. STUDIES ON THE METABOLISM OF PHOSPHORUS IN ANIMALS. Danske Videnskab. Selsk. Biol. Meddel., 1937, 13: No. 9. 24p. Studies were made in the normal, pregnant and rachitic rat of the bones, incisors, molars, liver, foeta and placenta.

1841
Claassen, V. and Wöstmann, B. S. J. THE UPTAKE OF INJECTED RADIOACTIVE PHOSPHORUS IN THE SKELETON OF THE GROWING WHITE RAT. I. THE UPTAKE OF INTRAVENOUSLY INJECTED ^{32}P BY RACHITIC AND CONTROL ANIMALS DURING THE FIRST 24 HOURS. Biochim. biophys. acta, Amst., 1953, 12: 432-438. 14 refs. Abstracted in: Chem. Abstr., 1954, 48: 2214c.

1842
Claassen, V. and Wöstmann, B. S. J. THE UPTAKE OF INJECTED RADIOACTIVE PHOSPHORUS IN THE SKELETON OF THE GROWING WHITE RAT. II. THE EFFECT OF CALCIFEROL ON THE RAPID UPTAKE OF ^{32}P BY RACHITIC AND CONTROL ANIMALS. Biochim. biophys. acta, Amst., 1953, 12: 577-583. 8 refs. Abstracted in: Chem. Abstr., 1954, 48: 4653i.

1843
*Claassen, V. and Wöstmann, B. S. J. UPTAKE OF INJECTED RADIOACTIVE PHOSPHORUS IN THE SKELETON OF THE GROWING WHITE RAT. III. METABOLISM OF SKELETAL P32 IN EXPERIMENTS OF LONGER DURATION, PERFORMED WITH RACHITIC AND CONTROL ANIMALS. Biochim. biophys. acta, Amst., 1954, 13: 48-53. Abstracted in: Chem. Abstr. 1954, 48: 5315i.

1844
Claassen, V. and Wöstmann, B. S. J. UPTAKE OF ^{32}P IN THE FEMUR OF GROWING RACHITIC AND NORMAL RATS AS COMPARED WITH THE UPTAKE IN THE TOTAL SKELETON. Biochim. biophys. acta, Amst., 1953, 10: 625-626. 8 refs. Abstracted in: Chem. Abstr., 1953, 47: 7067c

METABOLISM, INORGANIC - PHOSPHORUS (Continued)

1845
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1846
Dols, M. J. L., Jansen, B. C. P., Sizoo, G.J. and de Vries, J. PHOSPHORUS METABOLISM IN NORMAL, RACHITIC AND "TREATED" RATS. Nature, Lond., 1937, 139: 1068. 4 refs. Abstracted in: Chem. Abstr., 1937, 31: 6309[9]. Using radioactive phosphorus isotopes as tracers, a rapid entrance of the active phosphorus into the bones was perceptible in all three groups but no significant differences in extent of the deposition of phosphorus were established.

1847
Dols, M. J. L., Jansen, B. C. P., Sizoo, G.J. and Van der Maas, G. J. DISTRIBUTION OF PHOSPHORUS IN THE LEG BONES OF CHICKENS. Nature, Lond., 1938, 142: 953-954. 2 refs. Abstracted in: Chem. Abstr., 1939, 33: 2561[9]. Both radioactivity measurements and radiographs showed that P metabolism is greater in the bones of rachitic chickens than in those of healthy chickens and in the same bone greater in the epiphyseal than in the diaphyseal part.

1848
*Engfeldt, B. BIOPHYSICAL STUDIES ON BONE TISSUE. II. THE IN VITRO UPTAKE OF RADIOACTIVE PHOSPHATE IN NORMAL AND PAGET BONE. Acta path. microb. scand., 1953, 32: 529-533. Abstracted in: Chem. Abstr., 1953, 47: 10662[e]; Nutrit. Abstr., Aberdeen, 1954, 24: No. 796.

1849
Engfeldt, B., Engström, A. and Zetterström, B. RENEWAL OF PHOSPHATE IN BONE MINERALS. II. RADIOAUTOGRAPHIC STUDIES OF THE RENEWAL OF PHOSPHATE IN DIFFERENT STRUCTURES OF BONE. Biochem. biophys. acta, Amst., 1952, 8: 375-380. 9 refs. "Labelled phosphate, when injected intravenously, is unevenly distributed in bone tissue. Radioautographic and microradiographic examinations have shown that young Haversian systems have the highest uptake of radioactive phosphate. When a system becomes older and the amount of mineral salts approaches a maximum value the uptake of radioactive phosphate becomes very low. The main reason for the rapid initial uptake of labelled phosphate cannot be the occurrence of surface reactions throughout the whole bone tissue."

1850
Falkenheim, M. and Hodge, H. C. PHOSPHATE EXCHANGE IN BONE USING RADIOPHOSPHORUS IN VITRO. Fed. Proc., Balt., 1946, 5: 133. An abstract.

1851
Hahn, L. A., Hevesy, G. C. and Lundsgaard, E. C. THE CIRCULATION OF PHOSPHORUS IN THE BODY REVEALED BY APPLICATION OF RADIOACTIVE PHOSPHORUS AS INDICATOR. Biochem. J., Lond., 1937, 31: 1705-1709. 5 refs. "The ratio between active and normal phosphorus was found to be highest in the kidney, in the muscles and in the liver, and lowest in the bones, especially in the diaphysis."

1852
*Havermann, H. and Scharpenseel, H. W. UNTERSUCHUNGEN ÜBER DIE PHOSPHORAUFNAHME UND-ABLAGERUNG JUNGER SCHWEINE DURCH ETIKETTIERUNG MIT ^{32}P. Arch. Tierernähr., 1952, 2: 327-337. Abstracted in: Nutrit. Abstr., Aberdeen, 1953, 23: No. 3253; Chem. Abstr., 1953, 47: 12561[b]. "Of the total radio-activity 65·84 per cent was found in the skeleton, 18·93 in the flesh, 4·48 in the intestine, 3·5 in the liver and smaller amounts in the blood, bristles, hoof, skin, brain, heart, lungs, pancreas, stomach, spleen, kidneys and bladder." - Nutrit.

1853
Hodge, H. C. and Falkenheim, M. THE ADSORPTION OF PHOSPHATES BY ENAMEL, DENTIN, AND BONE. II. THE ADSORPTION RATES FROM CONCENTRATED SOLUTION. J. Biol. Chem., 1945, 160: 637-638. 1 ref. Abstracted in: Biol. Abstr., Balt., 1946, 20: No. 6407; Chem. Abstr., 1946, 40: 1186[1].

1854
Johansson, E. G. and Hodge, H. C. ADSORPTION OF PHOSPHATES BY BONE, DENTIN AND ENAMEL AFTER PROLONGED EXPOSURE TO PHOSPHATE SOLUTIONS AS SHOWN BY THE RADIOACTIVE ISOTOPE. Fed. Proc., Balt., 1944, 3: 59. An abstract.

1855
Johansson, E. G., Falkenheim, M. and Hodge, H. C. THE ADSORPTION OF PHOSPHATES BY ENAMEL, DENTIN, AND BONE. I. ADSORPTION TIME STUDIED BY MEANS OF THE RADIOACTIVE ISOTOPE. J. Biol. Chem., 1945, 159 129-134. "Powdered bone, dentin, and enamel adsorb marked phosphates from neutral solutions of sodium acid phosphate at 40°C. Increasing amounts of marked phosphate are adsorbed by each of these tissues with increasing exposure times (at least up to 64 hours). Up to 16 hours exposure time, the tissues adsorb phosphate in the order of bone >dentin >enamel. This order is found to be reversed at 64 hours."

1856
LeFevre, M. L. and Bale, W. F. INORGANIC PHOSPHORUS METABOLISM OF RAT BONES AND TEETH AS INDICATED BY THE RADIOACTIVE ISOTOPE. J. Dent. Res., 1939, 18: 265. An abstract.

1857
Manly, M. L. and Bale, W. F. THE METABOLISM OF INORGANIC PHOSPHORUS OF RAT BONES AND TEETH AS INDICATED BY THE RADIOACTIVE ISOTOPE. J. Biol. Chem., 1939, 129: 125-134. 10 refs. Abstracted in: Biol. Abstr., Balt., 1939, 13: No. 14547; Chem. Abstr., 1939, 33: 7364[5].

1858
Manly, R. S., Hodge, H. C. and Manly, M. L. THE RELATION OF THE PHOSPHORUS TURNOVER OF THE BLOOD TO THE MINERAL METABOLISM OF THE CALCIFIED TISSUES AS SHOWN BY RADIOACTIVE PHOSPHORUS. J. Biol. Chem., 1940, 134: 293-299. 3 refs. Abstracted in: Biol. Abstr., Balt., 1940, 14: No. 13093; Chem. Abstr., 1940, 34: 5957[3].

1859
Monetti, G. IL FOSFORO ACIDOSOLUBILE DELL'OSSO RACHITICO. Vitaminologia, 1942, 1: 155-160. 1 ref.

1860
Percival, W. L. and Leblond, C. P. RAPID EXCHANGE OF THE BONE SALTS IN NEWBORN RAT AS DEMONSTRATED WITH RADIOACTIVE PHOSPHORUS. Rev. canad. biol., 1948, 7: 217-235. 4 pl. 13 refs. Abstracted in: Chem. Abstr., 1948, 42: 5978[c]; Nuclear Sc. Abstr., 1948, 1: No. 1058.

1861
Polonovski, M. and Cartier, P. LE PHOSPHORE DANS L'ORGANISME. Bull. Soc. sc. hyg. aliment., Par., 1951, 39: 238-248. A review of the role of phosphorus in animal life, which discusses phosphorus distribution in the tissues (including the calcified tissues) and the metabolism of the phosphates and phosphorylated derivatives.

1862
Shimotori, N. and Morgan, A. F. MECHANISM OF VITAMIN D ACTION IN DOGS SHOWN BY RADIOACTIVE PHOSPHORUS. J. Biol. Chem., 1943, 147: 201-210. 14 refs.

METABOLISM, INORGANIC - PHOSPHORUS (Continued)

1863
Smith, A. H., Kleiber, M,, Black, A. L., Edick, M., Robinson, R. R. and Heitman, H., Jr. DISTRIBUTION OF INTRAVENOUSLY INJECTED RADIO-ACTIVE PHOSPHORUS (P^{32}) AMONG SWINE TISSUES. J. Animal Sc., 1951, 10: 893-901. 5 refs. "In the younger animals, much of the administered phosphate is deposited in the bone, leaving little to be distributed among the soft tissues. In older animals, however, little of the phosphate is deposited in the bone, consequently more of the injected dose is available for distribution among the soft tissues. Thus, the standard specific activity of the tissues tends to increase with increasing age."

1864
Steenbock, H. and Bunkfeldt, R. THE EFFECT OF A VITAMIN D-FREE FAT ON THE ABSORPTION AND RETENTION OF PHOSPHORUS. Arch. Biochem., N. Y., 1951, 32: 309-316. 34 refs. Abstracted in: Biol. Abstr., Balt., 1952, 26: No. 430; Chem. Abstr., 1952, 46: 1633c. "It follows that data on calcification of bone cannot always be used as a criterion of the over-all state of P equilibrium in the animal."

1865
Taylor, T. G. P EXCHANGE IN NEW MEDULLARY BONE OF LAYING PULLETS. J. Bone Surg., 1953, 35B: 495. From proceedings and reports of Bone and Tooth Soc., Casual Communications, meeting, 21 January 1953. Pullets were fed P^{32} continuously for periods from 14 to 27 days. After laying, each bird was killed and the specific activity of P in old (cortical) bone was found to vary between 6.7% and 15.7% of that of new (medullary) bone. In rats fed Ca^{45} for 14 days, the bones of one-month-old rats showed 15% exchange of Ca, of six-month rats 8% and of nine-month rats 5%.

1866
Wojta, H. BEITRAG ZUM PHOSPHORSTOFFWECHSEL IN KNOCHENTRANSPLANTATEN. EINE EXPERIMENTELLE STUDIE MIT VERWENDUNG DES RADIOAKTIVEN ISOTOPS P^{32}. Arch. klin. Chir., 1953, 277: 394-416. 17 refs. Abstracted in: Chem. Abstr., 1954, 48: 4675g.

1867
Zambelli, E. and Campi, L. LA DISTRIBUZIONE DEL RADIOFOSFORO NELLA SOMMINISTRAZIONE INTRAPERITONEALE ED ORALE E LE VARIAZIONI METABOLICHE IN RAPPORTO ALLA DOSE RADIANTE. Arch. sc. med., Tor., 1953, 96: 770-797. 24 refs. Abstracted in: Chem. Abstr., 1954, 48: 4018a.

See:

551	629	988	1185	1260
1264	1300	1351	1460	1503
1749	1803	1804	1807	1977
2002	2331	2688	2689	2772
2907	2923			

METABOLISM, INORGANIC - SODIUM

1868
Bauer, G. C. H. LONG TERM REDISTRIBUTION OF BONE SODIUM STUDIED IN RATS BY MEANS OF NA^{22} RADIO-AUTOGRAPHY. Acta orthop. scand., 1954, 23: 192-197. 10 refs.

1869
Edelman, I. S., James, A. H. and Moore, F. D. THE LOCATION AND THE TURNOVER OF THE SODIUM OF BONE. Tr. Conf. Metab. Interrelat., 1952, 4.Conf., 240-247. Conference discussion: p. 245-247. 9 refs.

1870
Miller, H. and Wilson, G. M. THE MEASUREMENT OF EXCHANGEABLE SODIUM IN MAN USING THE ISOTOPE ^{24}NA. Clin. Sc., Lond., 1953, 12: 97-111. 24 refs. Abstracted in: Chem. Abstr., 1954, 48: 2208b. Gastric juice, skin, muscle, spleen, rib and cerebrospinal fluid were studied. In rib about 1/4 of the bone sodium is available for exchange. In man slightly less that 1/3 of the total exchangeable sodium is in bone.

1871
Odeblad, E. and Boström, H. AN AUTORADIOGRAPHIC STUDY OF THE INCORPORATION OF SULFUR^{35}-LABELED SODIUM SULFATE IN DIFFERENT ORGANS OF ADULT RATS AND RABBITS. Acta path. microb. scand., 1952, 31: 339-344. Abstracted in: Chem. Abstr., 1953, 47: 733g.

See:

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METABOLISM, ORGANIC

see also METABOLISM

1872
Albright, F., Bartter, F. C., Dempsey, E. F., Forbes, A. P., Henneman, P. H. and Reifenstein, E. C., Jr. SERUM ALBUMIN AND BONE MATRIX. Tr. Conf. Metab. Interrelat., 1953, 5.Conf., 277-305. Conference discussion: p. 302-305. 9 refs.

1873
CITRIC ACID METABOLISM IN BONE. Nutrit. Rev., 1953, 11: 118-120. The experimental literature on the role of citric acid in metabolism is reviewed and from the observations made it is "concluded that the increased concentrations of citrate made available at sites of new bone formation facilitate the deposition of calcium. On the other hand, citrate may, by binding calcium, limit its availability for deposition in bone, or... in excess, may act to mobilize calcium and by this means cause dissolution of bone."

1874
Class, R. N. and Smith, A. H. THE SKELETON AS A SOURCE OF ENDOGENOUS CITRIC ACID. J. Biol. Chem., 1943, 151: 363-368. 12 refs. Abstracted in: Chem. Abstr., 1944, 38: 1551^2. "On the basis of studies of the citric acid balance and of analysis of bone of pair-fed rats... the excess citric acid excreted by the kidney after the administration of sodium bicarbonate and sodium malate does not originate in the skeleton, but is a product of intermediary metabolism."

1875
Fischer, A. AMINO-ACID METABOLISM OF TISSUE CELLS IN VITRO. Nature, Lond., 1948, 161: 1008. Abstracted in: Excerpta med., Sect. 2, 1949, 2: No. 705. For cultivation in vitro of myo- and osteoblasts it was found that cystine is the most essential of the amino-acids and that arginine tryptophane, glutamine and lysine in descending order are of next importance.

1876
Forbes, A. P. STUDIES ON THE RELATION OF THE SERUM ALBUMIN TO THE FORMATION OF BONE MATRIX. J. Clin. Invest., 1947, 26: 1181. An abstract.

1877
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See:

165 924 1255

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See:

478	510	518	795	820
841	857	1419	1558	1717

NUTRITIONAL INFLUENCE

1917
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*Bunkfeldt, R. and Steenbock, H. THE EFFECT OF DIETARY FAT ON BONE CALCIFICATION IN THE GROWING RAT. J. Nutrit., 1943, 25: 479-489. Abstracted in: Biol. Abstr., Balt., 1943, 17: No. 21330; Chem. Abstr., 1943, 37: 4708[1].

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Sanfilippo, G. LA CALCEMIA E LA COMPOSIZIONE CHIMICA DELLE OSSA DURANTE LA SOMMINISTRAZIONE PROLUNGATA DEL SUCCO DI AGLIO. Boll. Soc. ital. biol. sper., 1946, 22: 282-283. Abstracted in: Biol. Abstr., Balt., 1948, 22: No. 13866; Chem. Abstr., 1947, 41: 528[h].

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226 268 414 428 1131
1143 1491 1768

NUTRITIONAL INFLUENCE - CARBOHYDRATES

1942

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1943

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1944

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1945

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1946

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1947

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1948

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1949

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1950

Tuba, J., Siluch, K. A., Robinson, M. I. and Madsen, N. B. THE RELATIONSHIP OF DIETARY FACTORS TO RAT SERUM ALKALINE PHOSPHATASE. IV. EFFECT OF DIETARY OXALATE. Canad. J. M. Sc., 1952, 30: 515-519. 27 refs. Abstracted in: Chem. Abstr., 1953, 47: 4447[f].

1951

Yamane, T. [ÜBER DIE SOGENANNTE OSTEOPATHEA ALIMENTARIA. I. DIE DURCH EINFÜHRUNG VON ROHRZUCKER VERURSACHTE KNOCHENVERÄNDERUNG BEI JUNGEN KANINCHEN] Arch. jap. Chir., 1932, 9: 1028-1051. 2 pl. 13 refs. German summary, p. 1028-1029.

NUTRITIONAL INFLUENCE - FATS

1952

Booth, R. G., Henry, K. M. and Kon, S. K. A STUDY OF THE ANTI-RACHITIC EFFECT OF FAT ON RATS RECEIVING HIGH CALCIUM-LOW PHOSPHORUS RACHITOGENIC DIETS. Biochem. J., Lond., 1942, 36: 445-455. 32 refs.

1953

Dutta, N. C. ANTIRACHITIC EFFECT OF COCONUT OIL AND ITS MODE OF ACTION ON BONE CALCIFICATION. Ann. Biochem. Exp. M., Calc., 1948, 8: 69-78. 14 refs. Abstracted in: Chem. Abstr., 1948, 42: 8275[c]. The study indicated that the beneficial influence of coconut oil on bone calcification is due chiefly to the improved absorption and retention of phosphorus.

1954

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1955

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1956

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1957

Silberberg, R. and Silberberg, M. STRAIN DIFFERENCES IN SKELETAL GROWTH AND AGEING OF MICE FED A HIGH FAT DIET. Fed. Proc., Balt., 1950, 9: 344. An abstract. "Possibly, an as yet undetermined age change in the growing cartilage may be the common denominator for strain and sex differences in the response to various nutritional and normal stimuli."

NUTRITIONAL INFLUENCE - FATS (Continued)

1958
Silberberg, R., Opdyke, M. and Silberberg, M. SIGNIFICANCE OF CALORIC INTAKE AND SPECIFIC EFFECTS OF HIGH-FAT DIETS ON SKELETAL GROWTH AND DEVELOPMENT OF MICE. Growth, Phila., 1952, 16: 127-150. 2 pl. 6 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 5958; Chem. Abstr., 1953, 47: 8863b.

See:

436 1864

NUTRITIONAL INFLUENCE - MINERALS

1959
Adams, C. O. EFFECT OF INORGANIC PHOSPHORUS ON BONE GROWTH AND REPAIR. Proc. Soc. Exp. Biol., N. Y., 1938, 38: 449-451. Abstracted in: Chem. Abstr., 1938, 32: 5882[1]; Biol. Abstr., Balt., 1938, 12: No. 7264. Study was made with rabbits. "There was no evidence, as demonstrated in roentgenograms or microscopic sections, that the feeding of inorganic P affected in any way the healing of the fractures. The tibiae of the animals fed the P did not grow long, on the average, as did the tibiae of the control groups." - Biol. Abstr.

1960
Bassett, C. F., Harris, L. E. and Wilke, C. F. EFFECT OF VARIOUS LEVELS OF CALCIUM, PHOSPHORUS, AND VITAMIN D INTAKE ON BONE GROWTH. II. MINKS. J. Nutrit., 1951, 44: 433-442. Abstracted in: Excerpta med., Sect. 2, 1952, 5: No. 3281; Nutrit. Abstr., Aberdeen, 1951-52, 21: No. 3352. "In practice a nutrient allowance of 0.4 to 1.0% calcium, 0.4 to 0.8% phosphorus, and 0.82 I.U. vitamin D per g. of dry food would give satisfactory results, provided a calcium to phosphorus ratio of between 0.75:1.00 and 1.7:1.0 is maintained."

1961
Bell, G. H., Cuthbertson, D. P. and Orr, J. STRENGTH AND SIZE OF BONE IN RELATION TO CALCIUM INTAKE. J. Physiol., Lond., 1941, 100: 299-317. 19 refs. Abstracted in: Ber. ges. Physiol., 1943, 133: 325; Nutrit. Abstr., Aberdeen, 1941-42, 11: No. 3276.

1962
Bethke, R. M., Edgington, B. H. and Kick, C. H. EFFECT OF THE CALCIUM-PHOSPHORUS RELATIONSHIP OF THE RATION ON GROWTH AND BONE FORMATION IN THE PIG. J. Agr. Res., 1933, 47: 331-338. 9 refs. Abstracted in: Chem. Abstr., 1934, 28: 2044[6]; Biol. Abstr., Balt., 1935, 9: No. 1335; Nutrit. Abstr., Aberdeen, 1933-34, 3: No. 3792. In this study a histological study and ash analysis were made of portions of ribs, including the costochondral junctions, and both femurs.

1963
Bloom, C. J. SECONDARY CALCIUM PHOSPHATE PREVENTS AND CURES RICKETS WITHOUT VITAMIN D. 2. CALCIFICATION STUDIES. Proc. Soc. Exp. Biol., N. Y., 1932, 29: 861-863.

1964
Boelter, M. D. D. and Greenberg, D. M. SEVERE CALCIUM DEFICIENCY IN GROWING RATS. I. SYMPTOMS AND PATHOLOGY. J. Nutrit., 1941, 21: 61-74. 6 refs. Abstracted in: Chem. Abstr., 1941, 35: 4067[6].

1965
Boelter, M. D. D. and Greenberg, D. M. SEVERE CALCIUM DEFICIENCY IN GROWING RATS. II. CHANGES IN CHEMICAL COMPOSITION. J. Nutrit., 1941, 21: 75-84. 13 refs. Abstracted in: Chem. Abstr., 1941, 35: 4067[6].

1966
Brooke, R. O., Smith, A. H. and Smith, P. K. INORGANIC SALTS IN NUTRITION. VII. CHANGE IN COMPOSITION OF BONE OF RATS ON A DIET POOR IN INORGANIC CONSTITUENTS. J. Biol. Chem., 1934, 104: 141-148. 22 refs. Abstracted in: Biol. Abstr., Balt., 1935, 9: No. 4838; Chem. Abstr., 1934, 28: 1388[8]; Nutrit. Abstr., Aberdeen, 1934-35, 4: No. 500.

1967
Cartarr, M. S., McLean, F. C. and Urist, M. R. THE EFFECT OF THE CALCIUM AND PHOSPHORUS CONTENT OF THE DIET UPON THE FORMATION AND STRUCTURE OF BONE. Am. J. Path., 1950, 26: 307-331. 28 refs. Abstracted in: Chem. Abstr., 1950, 44: 6504[d]. The long bones of young rats, maintained on diets of different calcium and phosphorus content were studied and compared. It was found that "optimum" diets produced longer metaphyses, less osteoblastic and osteoclastic activity, greater trabeculae calcification and a much denser shaft than "adequate" diets and that diets enriched in calcium but not in phosphorus resulted in the withdrawal of phosphorus from the diet in the intestinal tract in insoluble form which was followed by various changes in the bones. The study is illustrated by tables and roentgenograms.

1968
Clarke, M. F., Bassin, A. L. and Smith, A. H. SKELETAL CHANGES IN THE RAT INDUCED BY A RATION EXTREMELY POOR IN INORGANIC SALTS. Am. J. Physiol., 1936, 115: 556-563. 22 refs. "Although increase in body weight ceased, the length and weight of the femur, humerus, fibula and radius continued to increase slowly. During... salt restriction the moisture of the bone increased, the ash decreased and a marked distortion of the A/R ratio was established. Even after relatively long periods of realimentation with an adequate diet, the percent of moisture and ash and the dimensions of the bone failed to attain values normal for the age. Breaking strength appears to be more closely correlated with organic pattern as reflected in the size of the bone than with the proportion of inorganic salts."

1969
Coleman, R. D., Becks, H., Copp, D. H. and Frandsen, A. M. SKELETAL CHANGES OF SEVERE PHOSPHORUS DEFICIENCY IN THE RAT. II. SKULL, TEETH, AND MANDIBULAR JOINT. Oral. Surg., 1953, 6: 757-764. 10 refs. Abstracted in: Excerpta med., Sect. 5, 1954, 7: No. 276; Brit. Abstr., 1954, p. 645.

1970
Copp, D. H., Chace, M. J. and Duffy, F. EFFECTS OF SEVERE PHOSPHORUS DEFICIENCY ON THE METABOLISM AND HISTOLOGY OF BONE. Fed. Proc., Balt., 1947, 6: 245. An abstract. "These findings indicate the inhibition of growth of soft tissue and extreme demineralization of bone associated with severe phosphorus deficiency."

1971
Cunningham, I. J. MAGNESIUM IN ANIMAL DIETS. THE INFLUENCE OF THE LEVEL OF DIETARY MAGNESIUM ON THE MAGNESIUM AND CALCIUM CONTENTS OF THE BONES, THE BODIES, AND THE BLOOD SERUM OF RATS. N. Zealand J. Sc., 1933, 15: 191-198. 12 refs. Abstracted in: Biol. Abstr., Balt., 1935, 9: No. 2745; Chem. Abstr., 1934, 28: 2395[7].

1972
Dallemagne, [M.] J., Derivaux, J., Liegeois, F. and Mélon, J., ÉTUDE DU SQUELETTE DE PORCS SOUMIS À UN RÉGIME HYPERPHOSPHORÉ. Bull. Soc. chim. biol., Par., 1950, 32: 250-254. 6 refs. Following diets with a Ca:P ratio of 1:5.5 to 1:7.3, subnormal mineralization was observed in irregular areas of the bones of growing pigs.

NUTRITIONAL INFLUENCE - MINERALS (Continued)

1973
Day, H. G. and McCollum, E. V. MINERAL METABOLISM, GROWTH, AND SYMPTOMATOLOGY OF RATS ON A DIET EXTREMELY DEFICIENT IN PHOSPHORUS. J. Biol. Chem., 1939, 130: 269-283. 28 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1939-40, 9: No. 3288. "The results show that dietary deficiency of P results in rapid depletion of skeletal P but that, until this has become very extensive, transfer of P from bone to soft tissues occurs despite continuous loss of P, the P transferred being used, together with N, for such growth as occurs." - Nutrit. Abstr.

1974
Downs, W. G., Jr. and McKeown, R. M. HISTOLOGY OF HEALING FRACTURES IN RATS ON DIETS LOW IN TOTAL SALT, CALCIUM AND PHOSPHORUS. Arch. Surg., 1932, 25: 108-121. 9 refs. Abstracted in: Biol. Abstr., Balt., 1934, 8: No. 16549.

1975
Duckworth, J., Godden, W. and Warnock, G. McM. THE EFFECT OF ACUTE MAGNESIUM DEFICIENCY ON BONE FORMATION IN RATS. Biochem. J., Lond., 1940, 34: 97-108. 17 refs. Abstracted in: Chem. Abstr., 1940, 34: 4431^{2}; Biol. Abstr., Balt., 1940, 14: No. 10119.

1976
Euler, H. v. and Rydbom, M. ÜBER DEN EINFLUSS VON MAGNESIUMSALZEN AUF KNOCHENBILDUNG UND RACHITIS. I. Biochem. Zschr., 1931, 241: 14-22. 14 refs. Abstracted in: Biol. Abstr., Balt., 1933, 7: No. 8235; Chem. Abstr., 1932, 26: 1012.

1977
Feaster, J. P., Shirley, R. L., McCall, J. T. and Davis, G. K. P^{32} DISTRIBUTION AND EXCRETION IN RATS FED VITAMIN D-FREE AND LOW PHOSPHORUS DIETS. J. Nutrit., 1953, 51: 381-392. 11 refs. Abstracted in: Biol. Abstr., Balt., 1954, 28: No. 10491. "... the deposition and turnover of orally and intramuscularly administered P^{32} in the blood, liver, kidney, muscle, and femur of growing rats maintained on diets that were (1) adequate, (2) adequate but lacking in vitamin D, and (3) low in P were compared."

1978
Fischer, F. and Key, J. A. LOCAL ATROPHY OF BONE. III. EFFECTS OF VITAMIN D AND OF CALCIUM ON LOCAL ATROPHY, AND UNION. Arch. Surg., 1934, 29: 312-315. 14 refs.

1979
Fraser, H. F. A CHRONIC DEFICIENCY OF (1) CALCIUM, (2) VITAMIN C, AND (3) BOTH CALCIUM AND VITAMIN C IN MONKEYS. Pub. Health Rep., 1942, 57: 959-967. 9 refs. Abstracted in: Biol. Abstr., Balt., 1943, 17: No. 1521. Bones were included in this study.

1980
Gillis, M. B. FURTHER STUDIES ON THE ROLE OF POTASSIUM IN GROWTH AND BONE FORMATION. J. Nutrit., 1950, 42: 45-57. 10 refs. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 10120; Chem. Abstr., 1950, 44: 10832^{b}.

1981
Goff, O. E. and Upp, C. W. THE INFLUENCE OF ELEMENTAL SULFUR UPON CHICK GROWTH AND BONE ASH. Poultry Sc., 1940, 19: 270-280. 20 refs. Abstracted in: Chem. Abstr., 1940, 34: 7358^{4}.

1982
Green, H. H. MINERALS IN RELATION TO DISEASE OF THE LARGER DOMESTICATED ANIMALS. Empire J. Exp. Agr., 1935, 3: 363-378. 43 refs. "A brief survey of the dietary significance of phosphorus, calcium, magnesium, iron, copper, iodine, fluorine, chlorine, sodium, and potassium is given with reference to diseased conditions in the animal, such as osteoporosis, osteomalacia, rickets, osteofibrosis, nutritional anaemaias, and hypomineralaemias."

1983
Higgins, G. M. and Sheard, C. THE EFFECT OF DICALCIUM PHOSPHATE, WITHOUT VITAMIN D, IN THE NUTRITION OF CHICKS. Anat. Rec., 1933, 56: 395-408. pl. 10 refs. Abstracted in: Biol. Abstr., Balt., 1934, 8: No. 19829. It was concluded that "dicalcium phosphate, without vitamin D, is not adequate to maintain growing chicks and will not protect against leg weakness and other skeletal deficiencies which arise as a result of a disturbed calcium metabolism."

1984
Howe, P. R., Wesson, L. G., Boyle, P. E. and Wolbach, S. B. LOW CALCIUM RICKETS IN THE GUINEA-PIG. Proc. Soc. Exp. Biol., N. Y., 1940, 45: 298-301. 6 refs. "Typical rachitic changes in bones and teeth have been produced in young guinea pigs by a diet low in calcium and in vitamin D. In older animals the changes in the bones were obscured by arrested skeletal growth, but those in the teeth were constant."

1985
Irving, J. T. A COMPARISON OF THE ACTION OF VITAMIN D ON THE TEETH OF RACHITIC RATS WITH THAT OF ADDITIONAL CALCIUM OR PHOSPHORUS ADDED TO RACHITOGENIC DIETS. J. Physiol., Lond., 1946, 104: 253-265. 3pl. 24 refs. Abstracted in: Biol. Abstr., Balt., 1946, 20: No. 20110. Studies of the bones and teeth of young rats whose rachitogenic diets were improved by the addition of calcium or phosphorus or by administration of vitamin D.

1986
Kruse, H. D., Schmidt, M. M. and McCollum, E. V. STUDIES ON MAGNESIUM DEFICIENCY IN ANIMALS. VI. CHEMICAL CHANGES IN THE BONE, WITH ASSOCIATED BLOOD CHANGES, RESULTING FROM MAGNESIUM DEPRIVATION. J. Biol. Chem., 1934, 106: 573-593. 38 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1934-35, 4: No. 2552.

1987
Lanford, C. S. and Sherman, H. C. FURTHER STUDIES OF THE CALCIUM CONTENT OF THE BODY AS INFLUENCED BY THAT OF THE FOOD. J. Biol. Chem., 1938, 126: 381-387. 6 refs. Abstracted in: Chem. Abstr., 1939, 33: 6975.

1988
Lecoq, R. INFLUENCE DE L'IODE ET DE QUELQUES COMPOSÉS IODÉS MINÉRAUX ET ORGANIQUES SUR LES LÉSIONS OSSEUSES DU RACHITISME EXPÉRIMENTAL. C. rend. Acad. sc., 1937, 204: 1891-1893. 2 refs. The bone lesions of young white rats with experimental rickets, produced by a rachitogenic diet, were cured when pure iodine or mineral or organic iodized compounds were added to the diet. It is suggested that the presence of iodine in a ration may be the cause of error in the estimation of its antirachitic value.

1989
Lecoq, R. LA PRODUCTION DU RACHITISME EXPÉRIMENTAL EST-ELLE SPÉCIFIQUEMENT LIÉE AU DÉSÉQUILIBRE PHOSPHOCALCIQUE DE LA RATION? C. rend. Acad. sc., 1942, 215: 330-332. 6 refs. Studies of white rats on various rachitogenic diets led to the conclusion that a phosphorus-calcium imbalance alone does not produce chronic experimental rickets but that it is produced rather by a mineral imbalance which causes alkalosis.

NUTRITIONAL INFLUENCE - MINERALS (Continued)

1990
Lecoq, R. and Duffau, R. VARIATIONS DE QUELQUES CONSTITUANTS MUSCULAIRES CHEZ LE RAT PRÉALABLEMENT RACHITISÉ PUIS GUÉRI PAR ADJONCTION, À LA RATION, D'IODE OU DE DÉRIVÉS IODÉS. C. rend. Soc. biol., 1938, 128: 619-621. 5 refs. Young rats were cured of experimental rickets when minimum adequate quantities of iodine or iodine derivatives were added to their rachitogenic diets. Iodine treatment was accompanied by a drop in muscular orthophosphates and in total acid soluble phosphorus which returned to normal levels after cure. This is interpreted as indicating that the antirachitic action of iodine consists in provoking the transfer of inorganic phosphorus from muscle to bone.

1991
Lecoq, R. and Gallier, R. LE PHOSPHORE EST-IL DOUÉ DE PROPRIÉTÉS ANTIRACHITIQUES? C. rend. Soc. biol., 1934, 116: 1383-1384. 5 refs. Young white rats with experimental rickets were fed rachitogenic diets containing various amounts of phosphorated oil. At autopsy, 10 days after the start of the experiment, no effect was observed on calcification. It is suggested that the antirachitic action attributed to phosphorus is actually due to a particular combination of phosphorus compounds and not to phosphorus alone.

1992
Light, R. F. and Frey, C. N. BONE FRACTURES DUE TO LOW CALCIUM DIETS. Proc. Soc. Exp. Biol., N. Y., 1951, 48: 256-258. 1 ref. Abstracted in: Biol. Abstr., Balt., 1942, 16: No. 3906; Nutrit. Abstr., Aberdeen, 1941-42, 11: No. 3277.

1993
Lilly, C. A. COMPARISON OF BONE ASH OF RACHITIC RATS TREATED WITH VIOSTEROL AND WITH PHOSPHATE ION. Proc. Soc. Exp. Biol., N. Y., 1932, 30: 175-176.

1994
Lilly, C. A., Peirce, C. B. and Grant, R. L. THE EFFECT OF PHOSPHATES ON THE BONES OF RACHITIC RATS. J. Nutrit., 1935, 9: 25-35. 2 pl. 18 refs. "Rickets was produced in white rats by a diet high in calcium and low in phosphorus. The subsequent addition of phosphates to this diet, caused x-ray, chemical, and histological evidences of healing, at least equal to that caused by the addition of irradiated ergosterol (viosterol) to the diet of another group of rats previously made rachitic in the same manner."

1995
McKay, G. F., Lalich, J. J. and Angevine, D. M. PATHOGENESIS OF BONE LESIONS IN RATS FED SWEET PEAS (LATHYRUS ODORATUS). Fed. Proc., Balt., 1954, 13: 438. An abstract.

1996
McKeown, R. M. Harvey, S. C. and Lumsden, R. W. THE BREAKING STRENGTH OF HEALING FRACTURED FIBULAE OF RATS. V. OBSERVATIONS ON A LOW CALCIUM DIET. Arch. Surg., 1932, 25: 1011-1034. 34 refs. Abstracted in: Biol. Abstr., Balt., 1935, 9: No. 10223.

1997
Marek, J., Wellmann, O. and Urbányi, L. UNTERSUCHUNGEN ÜBER RACHITIS UND VERWANDTE KNOCHENERKRANKUNGEN. VI. MITTEILUNG. EINFLUSS DES MINERALSTOFFVERHÄLTNISSES SOWIE DES D-VITAMINGEHALTES IM FUTTER AUF DIE AUSNÜTZUNG DER MINERALSTOFFE. Deut. tierärztl. Wschr., 1940, 48: 69-74. Abstracted in: Vet. Bull., Lond., 1941, 11:

1998
Marek, J., Wellmann, O. and Urbányi, L. UNTERSUCHUNGEN ÜBER DEN MINERALSTOFFWECHSEL DES TIERISCHEN ORGANISMUS. VIII. MITTEILUNG. BEEINFLUSSUNG DES MINERALSTOFFWECHSELS DURCH EIN VERSCHIEDENARTIG MIT KALKCARBONAT ERGÄNZTES PHOSPHORARMES BZW. PHOSPHORREICHES FUTTER. Arch. wiss. prakt. Tierh., 1942, 78: 129-139. Abstracted in: Ber. ges. Physiol., 1943, 133: 177-178.

1999
Marek, J., Wellmann, O. and Urbányi, L. UNTERSUCHUNGEN ÜBER DEN MINERALSTOFFWECHSEL DES TIERKÖRPERS. IX. MITTEILUNG. AUSWIRKUNG MINERALSTOFFICH VERSCHIEDEN ZUSAMMENGESETZTER FUTTERMITTEL AUF DIE AUSNÜTZUNG DER MINERALSTOFFE NACH IHRER GEGENSEITIGEN VERTAUSCHUNG. Arch. wiss. prakt. Tierh., 1942, 78: 140-147.

2000
Mendel, L. B., Hubbell, R. B. and Wakeman, A. J. THE INFLUENCE OF SOME COMMONLY USED SALT MIXTURES UPON GROWTH AND BONE DEVELOPMENT OF THE ALBINO RAT. J. Nutrit., 1937, 14: 261-272. 25 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1937-38, 7: No. 3504.

2001
Nakajima, T. and Sugita, T. [ON THE INFLUENCE OF THE FEED UPON BONES. I. CHEMICAL COMPONENTS OF THE BONE OF NORMAL DEVELOPING RATS AND THE INFLUENCE OF THE FEED SUPPLEMENTED WITH CALCIUM ON THE COMPOSITION AND DEVELOPMENT OF THE BONE] Jap. J. Vet. Sc., 1950, 12: 13-22. 13 refs. English summary. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 9037.

2002
*Nakajima, T., Ōmori, S., Ōtsuka, J., Nozaki, H. and Hagahata, S. [PHOSPHORUS METABOLISM IN RABBITS SUFFERING FROM SO-CALLED OSTEOMALACIA] Bull. Nat. Inst. Agr. Sc., Chiba, ser. G, 1953, No. 6, 37-42. English summary. Abstracted in: Nutrit. Abstr., Aberdeen, 1954, 24: No. 816.

2003
Owen, E. C. BONE AS A MINERAL RESERVE. Brit. J. Nutrit., 1952, 6: 415-423. 65 refs. Abstracted in: Excerpta med., Sect. 2, 1953, 6: No. 1772. A review which stresses the lability of bone calcium and phosphorus reserves. Where diets are deficient in calcium, phosphorus and magnesium, the soft tissues compete and minerals are lost from the adult skeleton, while the growing skeleton becomes undermineralized. Vitamin D favors bones at the expense of soft tissues. In teeth, minerals are irreversibly deposited.

2004
Oya, M. [ON THE INFLUENCE OF DIET, TO WHICH CALCIUM HAS BEEN ADDED, ON THE OSTEOGENESIS OF ALBINO RATS. REPORT I] Sei i Kai M. J., 1940, 59: 661-699. 7 pl. 34 refs. English abstract, p. 1-2.

2005
POTASSIUM-PHOSPHORUS INTERRELATIONSHIP. Nutrit. Rev., 1951, 9: 104-106.

2006
Randoin, L. and Causeret, J. RECHERCHES EXPÉRIMENTALES RELATIVES À L'INFLUENCE DE LA TENEUR DU RÉGIME ALIMENTAIRE EN PHOSPHORE, EN CALCIUM, EN MAGNÉSIUM ET EN VITAMINE D, SUR LE DÉVELOPPEMENT OSSEUX DU RAT BLANC. Bull. Soc. sc. hyg. aliment., Par., 1945, 33: 134-143. 20 refs. Abstracted in: Chem. Abstr., 1947, 41: 4203e; Nutrit. Abstr., Aberdeen, 1946-47, 16: No. 4510.

NUTRITIONAL INFLUENCE - MINERALS (Continued)

2007
Rogoziński, F. and Głowczyński, Zb. O KRZYWICY DOŚWIADCZALNEJ. VI. WPŁYW SOLI MAGNEZOWYCH. SUR LE RACHITISME EXPÉRIMENTAL. VI. L'INFLUENCE DES SELS DE MAGNÉSIUM. Bull. internat. Acad. polon. sc., Ser. B. Sc natur.(II), 1934, 197-208. pl. 7 refs. In French. Abstracted in: Biol. Abstr., Balt., 1936, 10: No. 13052.

2008
Spildo, L. S. UNDERSØGELSER OVER VAEKSTEN HOS SVIN. I. KALK- OG FOSFORSYREOMSAETNINGEN HOS UNGE, VOKSENDE SVIN. Ber. Forsøgslaborat., Kbh., 1933, No. 151, 238p. 2 pl. 155 refs. English summary.

2009
Stewart, J. THE EFFECTS OF PHOSPHORUS DEFICIENT DIETS ON THE METABOLISM, BLOOD AND BONES OF SHEEP WITH SPECIAL REFERENCE TO CONDITIONS EXISTING IN GREAT BRITAIN. Univ. Cambridge Inst. Animal Path. Rep. Dir., 1934-1935, 4: 179-205. 13 refs. For addendum to this article see Innes, J. R. M. THE ANATOMICAL CHANGES IN THE BONES AND THEIR RELATIONSHIP TO RICKETS. 1934-1935, 4: 206-211. 2 pl. 9 refs. Abstracted in: Chem. Abstr., 1937, 31: 7093[4]; Biol. Abstr., Balt., 1937, 11: No. 8311.

2010
Takahashi, S. [NEUE EXPERIMENTELLE STUDIEN ÜBER DIE KALKMETASTASE. II. MITTEILUNG.] Mitt. Med. Akad. Kioto, 1937, 20: 205-218. 2 pl. 12 refs. German summary, p. 510-511. Abstracted in: Nutrit. Abstr., Aberdeen, 1937-38, 7: No. 2136.

2011
Tomlinson, T. H., Jr. PATHOLOGY OF ARTIFICIALLY INDUCED SCURVY IN THE MONKEY - WITH AND WITHOUT CHRONIC CALCIUM DEFICIENCY. Pub. Health Rep., Wash., 1942, 57: 987-993. 2 pl. 3 refs. Abstracted in: Biol. Abstr., Balt., 1942, 16: No. 22344.

2012
Weinmann, J. P. and Schour, I. EXPERIMENTAL STUDIES IN CALCIFICATION. V. THE EFFECT OF PHOSPHATE ON THE ALVEOLAR BONE AND THE DENTAL TISSUES OF THE RACHITIC RAT. Am. J. Path., 1945, 21: 1057-1067. 2 pl. 7 refs. Abstracted in: Chem. Abstr., 1946, 40: 2509[3]; Nutrit. Abstr., Aberdeen, 1945-46, 15: No. 3430.

2013
Zucker, T. F., Hall, L. and Young, M. GROWTH AND CALCIFICATION ON A DIET DEFICIENT IN PHOSPHATE BUT OTHERWISE ADEQUATE. J. Nutrit., 1941, 22: 139-151. 18 refs. Abstracted in: Chem. Abstr., 1941, 35: 8029[7].

See:

71	370	374	438	540
1181	1252	1270	1369	1397
1614	1818	1919	2025	2129
2130	2656	2896	2905	2906

NUTRITIONAL INFLUENCE - PROTEIN

2014
Armstrong, W. D. and Estremera, H. EFFECT OF PROTEIN DEFICIENT DIETS ON THE SKELETON OF THE MATURE RAT. Fed. Proc., Balt., 1947, 6: 235. An abstract.

2015
Aschkenasy, A., Mignot, J. and Aschkenasy-Lelu, P. LES ALTÉRATIONS OSSEUSES DU RAT EN FONCTION DE LA TENEUR DU RÉGIME EN PROTÉINES. C. rend. Soc. biol., 1948, 142: 1378-1379. 3 refs. Abstracted in: Chem. Abstr., 1949, 43: 5097[h]; Nutrit. Abstr., Aberdeen, 1949-50, 19: No. 843.

2016
Bauer, W. H. ACTION OF CYSTINE ON BONES AND TEETH OF YOUNG DOGS. J. Am. Coll. Dentists, 1946, 13: 34-37. 5 refs. Abstracted in: Chem. Abstr., 1948, 42: 5116[f]. Both roentgenographic and microscopic examinations of the skeleton of experimental animals, fed excessive amounts of cystine, failed to show differences from the control dogs.

2017
Conner, R. T. and Sherman, H. C. SOME ASPECTS OF PROTEIN INTAKE IN RELATION TO GROWTH AND RATE OF CALCIFICATION. J. Biol. Chem., 1936, 115: 695-706. 11 refs. Abstracted in: Biol. Abstr., Balt., 1937, 11: No. 15959.

2018
Conner, R. T., Kao, H. C. and Sherman, H. C. FURTHER STUDIES ON THE RELATIONSHIP OF THE PLANE OF PROTEIN INTAKE TO THE RATE OF NORMAL CALCIFICATION DURING GROWTH. J. Biol. Chem., 1941, 139: 835-841. 5 refs. Abstracted in: Chem. Abstr., 1941, 35: 5166[7]. "There was no consistent evidence in either sex that the increased gain in body weight resulting from the higher protein levels studied had an accelerating effect upon skeletal development as reflected in the percentage of body calcium."

2019
Conti, T. and Sabaino, D. PROTEIDI ANIMALI E VEGETALI E COSTITUZIONE MINERALE DELLA OSSA. Arch. sc. med., Tor., 1953, 95: 79-83. 3 refs. Two groups of rats were fed protein diets of casein and wheat germ, respectively, and the effects on the long bones studied. Wheat germ favored a greater deposit of Ca, P, and CO_2 in the bones than did casein and simultaneously inhibited the deposit of Mg. Casein encouraged linear growth of the tibia and femur and increased their resistance to fracture.

2020
Dasler, W. THE EFFECTS OF EXCESS TRYPTOPHAN AND EXCESS LYSINE ON THE PRODUCTION OF RICKETS IN THE RAT. J. Nutrit., 1950, 41: 499-505. 8 refs.

2021
Doyle, M. D. and Porter, T. E. THE EFFECT OF KIND AND LEVEL OF PROTEIN IN THE DIET ON THE PRODUCTION OF SOFT AND SKELETAL TISSUES. J. Nutrit., 1951, 45: 29-46. 12 refs. Abstracted in: Chem. Abstr., 1952, 46: 168[f]; Biol. Abstr., Balt., 1952, 26: No. 11316. In young rats on a low calcium diet, casein favors bone formation to a greater extent than does gluten. This may be considered a direct effect of protein on bone formation.

2022
Estremera, H. R. and Armstrong, W. D. EFFECT OF PROTEIN INTAKE ON THE BONES OF MATURE RATS. J. Nutrit., 1948, 35: 611-618. 11 refs. Abstracted in: Biol. Abstr., Balt., 1949, 23: No. 475; Chem. Abstr., 1948, 42: 5519[b]. "Diets containing 9.0 and 4.5% protein were inadequate to support normal skeletal constitution in mature rats, and interfered with the normal growth in length of the humeri of rats which were near the end of the period of skeletal growth. The composition of the bone ash, however, was not affected by feeding protein-deficient diets to mature rats."

NUTRITIONAL INFLUENCE - PROTEIN (Continued)

2023
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1312 1743 1943

OSTEOGENESIS

see also ENZYME RELATIONSHIPS; ENZYME RELATIONSHIPS - PHOSPHATASE; HORMONAL INFLUENCE - SEX HORMONES, FEMALE, and - PITUITARY; TISSUE TRANSPLANTS; VITAMIN INFLUENCE - VITAMIN C, and - VITAMIN D

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See:

4	83	158	159	165
167	168	211	316	407
441	445	458	492	507
513	676	767	774	904
911	920	1002	1012	1085
1120	1286	1323	1333	1348
1352	1488	1489	1506	1879
1975	2004	2021	2405	2406
2424	2425	2426	2694	2746
2754	2764	2765	2769	2770
2967				

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Evans, F. G. and Lebow, M. REGIONAL DIFFERENCES IN SOME OF THE PHYSICAL PROPERTIES OF THE HUMAN FEMUR. J. Appl. Physiol., 1951, 3: 563-572. 21 refs. Abstracted in: Excerpta med., Sect. 9, 1952, 6: No. 7096; Biol. Abstr., Balt., 1951, 25: No. 24022.

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Evans, F. G. and Lebow, M. THE STREGTH OF HUMAN COMPACT BONE AS REVEALED BY ENGINEERING TECHNICS. Am. J. Surg., 1952, 83: 326-331. 12 refs. Comparative studies of the tensile strength and percentage elongation were made in wet and dried sections of cadaveric compact bone of the extremities, particularly of the femur. All fibulas tested exceeded the femurs in tensile strength and energy-absorbing capacity.

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Leriche, R. DE L'OSTÉOGENÈSE APRÈS OSTÉOLYSE. DES OSTÉOLYSES AVEC RECONSTRUCTION. Progr. méd., Par., 1939, No. 8, 261-266.

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Pincussen, L. and Neumann, B. ÜBER BEZIEHUNGEN DER KNOCHENBRUCHHEILUNG ZU CHEMISCHEN VERÄNDERUNGEN IM BLUTE UND IHRE BEEINFLUSSUNG DURCH CALCIUM-VITAMINBEHANDLUNG. Arch. klin. Chir., 1931, 165: 483-494. 7 refs. Abstracted in: Biol. Abstr., Balt., 1932, 6: No. 21881. During fracture healing blood determinations at regular intervals demonstrated a shift in blood cations. In rabbits the shift was to potassium, in man to magnesium. After treatment with Pro Ossa the fluctuations decreased and improved and accelerated callus formation was observed in man and animal.

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See:

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506	510	511	518	520
524	526	536	543	546
557	837	906	923	928
994	1029	1132	1172	1189
1196	1201	1206	1208	1212
1237	1243	1246	1320	1327
1332	1335	1336	1343	1345
1347	1459	1461	1465	1550
1551	1554	1732	1763	1769
1776	1811	1881	1882	1903
1912	1913	1959	1974	1978
2033	2037	2040	2070	2098
2103	2104	2106	2112	2266
2296	2299	2301	2302	2403
2421	2422	2430	2549	2550
2603	2707	2718	2719	2720
2727	2768	2776	2777	2780
2868	2966			

REGENERATION AND REPAIR - ENZYME RELATIONSHIPS

see ENZYME RELATIONSHIPS - IN REGENERATION AND REPAIR; ENZYME RELATIONSHIPS - PHOSPHATASE IN REGENERATION AND REPAIR

RESORPTION AND RECONSTRUCTION

see also HORMONAL INFLUENCE - PARATHYROID, and - SEX HORMONES, FEMALE

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Amprino, R. A CONTRIBUTION TO THE FUNCTIONAL MEANING OF THE SUBSTITUTION OF PRIMARY BY SECONDARY BONE TISSUE. Acta anat., Basel, 1948, 5: 291-300. 14 refs. Abstracted in: Biol. Abstr., Balt., 1949, 23: No. 18850; Excerpta med., Sect. 1, 1949, 3: No. 777. Secondary ossification of the tendons of the legs of fowl seems to refute in part Gebhardt's hypothesis that the changing structure of bone, dependent upon mechanical stimuli, progressively increases mechanical resistance. The author considers more plausible his own theory, suggested in earlier papers, that the structural changes in the bone matrix depend largely on the need for continued mobilisation of the mineral salts temporarily stored in the calcified tissues.

2238
Amprino, R. LA DISTRIBUZIONE ED IL RINNOVAMENTO DEI MINERALI DELLE OSSA STUDIATI IN RAPPORTO AI PROCESSI DI RICOSTRUZIONE STRUTTURALE. Boll. Soc. ital. biol. sper., 1951, 27: 1713-1716. Abstracted in: Excerpta med., Sect. 1, 1953, 7: No. 1694. Autoradiographic studies were made of ground sections of whole bone treated with solutions of radiocalcium and radiophosphorus. The uptake of the minerals varied in the different bone tissues and was regulated by the chemico-physical composition of the ground substance. Differences in the composition of the ground substance was also considered partly responsible for differences in mineral fixation at various ages. Structural bone changes were regarded as the main mechanism of mineral liberation and fixation. Liberation was always carried on by the gradual resorption of calcified substance by the osteoclasts but fixation went through 2 processes: 1) immediate calcification of the organic matrix at the moment it was deposited, and 2) gradual and slower secondary calcification of new bone material.

2239
Amprino, R. INFLUENZA DEL RIMANEGGIAMENTO SULLA DISTRIBUZIONE DEI SALI DI CALCIO NELL'OSSO. Monit. zool. ital., 1951, 60: Suppl., 89-95. Studies of mineral deposition, during bone construction and reconstruction, in internal sections of the diaphysis of the long bones of individuals of different ages and species, were made by x-ray absorption and diffraction methods. Tracer studies were also made on dog bones, in vitro and in vivo, with radiocalcium and radiophosphorus. The general conclusions drawn were that mineral salts are deposited in the skeleton not only upon neoformation of fundamental substance but also, over a long period of time, through the further fixation of new mineral atoms to the already calcified fundamental substance.

2240
Amprino, R. RAPPORTI FRA PROCESSI DI RICOSTRUZIONE E DISTRIBUZIONE DEI MINERALI NELLE OSSA. I. RICERCHE ESEGUITE COL METODO DI STUDIO DELL'ASSORBIMENTO DEI RAGGI ROENTGEN. Zschr. Zellforsch., 1952, 37: 144-183. 68 refs. Abstracted in: Excerpta med., Sect. 1, 1953, 7: No. 1696. A microphotographic study was made of sections of the long bones of numerous animals (including amphibians, birds and man) and the calcium content of the compact substance analyzed. In all species, bone renewal processes caused significant changes in mineral distribution. In old bone the calcium content was unchanged and the mineral concentration unaffected by the relative proportion of osteomucoid and collagen. In new bone the calcium content was relatively low but increased progressively until it equalled that of the old bone. This calcification was more rapid near the vascular canals. Differences in the quality and rapidity of bone renewal and calcification were marked at different ages in the same species and at the same age in different species.

2241
Amprino, R. RAPPORTI FRA PROCESSI DI RICOSTRUZIONE E DISTRIBUZIONE DEI MINERALI NELLA OSSA. II. RICERCHE CON METODO AUTORADIOGRAFICO. Zschr. Zellforsch., 1952, 37: 241-273. 44 refs. Abstracted in: Excerpta med., Sect. 1, 1953, 7: 1133. Radiocalcium and radiophosphorus tracer studies were made of ground sections of the long bones of various animals, including amphibians, birds and man. The uptake of minerals was greater in new than old bone tissues and was regulated largely by the relative proportion of collagen and osteomucoid. Variations in quantity of minerals deposited depended not on the relation of tissue to osseous blood vessels, but on the minute structure and chemical composition of the basic bone substance. Elemental physico-chemical processes, rather than vital cell and enzyme activity, were responsible for mineral fixation. The marked differences in the fixation capacity of bone in different species were dependent on the minute structural differences of bone tissue and on quantitative differences in the processes of structural reconstruction

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Amprino, R. RISULTATI DI UN DECENNIO DI RICERCHE SUL SIGNIFICATO FUNZIONALE DEL RIMANEGGIAMENTO DELL'OSSO. Monit. zool. ital., 1947, 56: Suppl., 142-152. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 8316; Excerpta med., Sect. 1, 1950, 4: No. 1429. Histological examination of the bones of a large number of persons indicated that the constant changes in bone structure at every age are due, not only to mechanical stresses of different intensities exerted upon bone as a supporting structure but also and in greater degree to the constant mineral demands of the body made upon bone as a mineral reservoir. The article contains a review of other pertinent theories.

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Barnicot, N. A. STUDIES ON THE FACTORS INVOLVED IN BONE ABSORPTION. I. THE EFFECT OF SUBCUTANEOUS TRANSPLANTATION OF BONES OF THE GREY-LETHAL HOUSE MOUSE INTO NORMAL HOSTS AND OF NORMAL BONES INTO GREY-LETHAL HOSTS. Am. J. Anat., 1941, 68: 497-531. 2 pl. 15 refs. Abstracted in: Biol. Abstr., Balt., 1941, 15: No. 17837.

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Häggqvist, G., Wilton, A. and Orell, S. OM BENNYBILDNING OCH BENNEDBRYTNING. [NEW BONE FORMATION AND BONE DEGENERATION] Nord. med., 1944, 21: 477-487.

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1617	1623	1663	1877	2133
2239	2712	2741		

RICKETS, EXPERIMENTAL (including manganese, beryllium, strontium and alkali rickets)

see also VITAMIN INFLUENCE - VITAMIN D

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58 828 1195 2020 2854 2883

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2148	2210	2806		

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*Sosnovskaia, E. M. NEKOTORYE DANNYE OB ELASTICHESKIKH VOLOKNAKH V KOSTI. [SOME DATA ON THE ELASTIC FIBRES IN BONES] Arch. russ. anat., 1936, 15: No. 2, 64-72. German summary: p. 167-168. Abstracted in: Biol. Abstr., Balt., 1937, 11: No. 17147.

2327
Zimmermann, A. A CSONTOK MIKROSZKÓPOS SZERKEZETÉRÖL. ÖSSZEFOGLALÓ ISMERTETÉS. [MICROSCOPIC STRUCTURE OF BONES] Allatorv. lap., 1938, 61: 5-6.

See:

233	506	870	1054	1057
1122	1566	1678	1730	1967
2046	2084	2085	2119	2259

2328
Amprino, R. AUTORADIOGRAPHIC ANALYSIS OF THE DISTRIBUTION OF LABELLED CA AND P IN BONES. Experientia, Basel, 1952, 8: 20-22. 28 refs. Abstracted in: Biol. Abstr., Balt., 1952, 26: No. 17193; Excerpta med., Sect. 2, 1952, 5: No. 4315. Studies of ground sections of fresh bone indicated that the uptake of calcium and of phosphorus was greater in new, not yet mineralized, bone than in old bone and greater in youth than in age. The mechanism of the calcification of compact bone is discussed.

2329
*Amprino, R. LA CROISSANCE ET LE REMANIEMENT DES OS ÉTUDIES PAR L'EMPLOI DU RADIOCALCIUM. C. rend. Ass. anat., 1953, No. 74, 493-498. Abstracted in: Bull. Anal. CNRS, 1953, 14: pt. 2, No. 127621. "The degree of calcification generally increases with age. This progressive calcification can be demonstrated by the use of calcium and phosphorus radioactive isotopes." - Bull. anal. CNRS.

2330
Amprino, R. FURTHER EXPERIMENTS ON THE FIXATION IN VITRO OF RADIOCALCIUM TO SECTIONS OF BONE. Experientia, Basel, 1952, 8: 380-382. 7 refs. Abstracted in: Chem. Abstr., 1953, 47: 3355h. Ground sections of bone were given various treatments and then placed in a weak solution of radioactive calcium chloride. Autoradiographic studies of the sections showed that only complete destruction of the organic matrix resulted in appreciable modification of radiocalcium distribution.

2331
Amprino, R. IL METODO DI STUDIO AUTOGRAFICO DI SEZIONI DI OSSA TRATTATE IN VITRO CON RADIOCALCIO. Chir. org. movim., 1953, 38: 139-153. 23 refs. An autoradiographic method of studying the in vitro uptake of radioactive calcium or phosphorus by recently formed bone is described in detail. The method is as useful in studying secondary as primary ossification. Several studies of normal and diseased bone are illustrated and discussed.

2332
Arnold, J. S. and Webster, S. S. HAVERSIAN SYSTEM GROWTH AND FORMATION IN RABBITS. Anat. Rec., 1953, 115: 276. An abstract. In the radioautographic study made on ground tibial bone sections of 3 month old rabbits given 1 mc Ca^{45} intravenously, and sacrificed at 1 to 24 hours later, growth areas were most marked over the innermost lamellas of some Haversian systems and over the edges of resorption cavities. In animals sacrificed 7 or 21 days after injections, growth occurred at varying positions from the central to the peripheral area. "The number of resorption cavities in a particular area of bone was proportional to the number of Haversian systems showing Ca^{45} concentration. The established theory that Haversian systems are formed by the filling of resorption cavities with concentric lamellas of bone is experimentally verified."

2333
Leblond, C. P., Wilkinson, G. W., Bélanger, L. F. and Robichon, J. RADIO-AUTOGRAPHIC VISUALIZATION OF BONE FORMATION IN THE RAT. Am. J. Anat., 1950, 86: 289-341. pl. 33 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1951-52, 21: No. 2330; Nuclear Sc. Abstr., 1951, 5: No. 3911. The deposition of bone phosphate in the tibia and humerus of newborn and adult rats was studied at various intervals after injection of radiophosphorus.

STRUCTURE - AUTORADIOGRAPHIC STUDIES
(Continued)

See:

24	672	1830	1833	1849
2238	2241	2256	2601	2685
2708				

STRUCTURE - CRYSTAL

see CRYSTAL STRUCTURE AND SURFACE ACTIVITY

STRUCTURE - ELECTRONMICROSCOPIC STUDIES

2334
*Ascenzi, A. LA STRUTTURA DELL'OSSEO UMANO OSSERVATA AL MICROSCOPIO ELETTRONICO. Rendic. Ist. sup. san., Roma, 1949, 12: 893-902. Abstracted in: Excerpta med., Sect. 1, 1952, 6: No. 56.

2335
Barbour, E. P. A STUDY OF THE STRUCTURE OF FRESH AND FOSSIL HUMAN BONE BY MEANS OF THE ELECTRON MICROSCOPE. Am. J. Phys. Anthrop., 1950, 8: 315-329. pl. 9 refs. Abstracted in: Excerpta med., Sect. 1, 1951, 5: No. 593.

2336
Kellenberger, E. and Rouiller, C. DIE KNOCHEN-STRUKTUR, UNTERSUCHT MIT DEM ELEKTRONENMIKROSKOP. Schweiz. Zschr. allg. Path., 1950, 13: 783-788. 10 refs. Abstracted in: Biol. Abstr., Balt., 1951, 26: No. 34063; Excerpta med., Sect. 5, 1951, 4: No. 2634.

2337
Robinson, R. A. ELECTRON MICROGRAPHY ON BONE. Tr. Conf. Metab. Interrelat., 1951, 3.Conf., 271-289. Conference discussion: p. 287-289. 12 refs.

2338
Robinson, R. A. AN ELECTRON-MICROSCOPIC STUDY OF THE CRYSTALLINE INORGANIC COMPONENT OF BONE AND ITS RELATIONSHIP TO THE ORGANIC MATRIX. J. Bone Surg., 1952, 34A: 389-435, 476. 127 refs. Abstracted in: Chem. Abstr., 1953, 47: 5974^{h}. The components and structure of inorganic bone crystals and bone collagen were examined and their relation to each other and to the cement substance studied. Hydroxyapatite crystals of varying size and shape, the inorganic crystals of bone, were found to lie in the cement substance and not in the collagen fibers, which may serve as a nidus for crystal formation in the bone matrix. The cells of the bone matrix play an essential role in organic-inorganic relationships. The findings of this study were correlated with the data of other methods of investigation of bone crystals.

2339
Robinson, R. A. and Watson, M. L. COLLAGEN-CRYSTAL RELATIONSHIPS IN BONE AS SEEN IN THE ELECTRON MICROSCOPE. Anat. Rec., 1952, 114: 383-410. 8 pl. 19 refs. Abstracted in: Nuclear Sc. Abstr., 1953, 7: No. 2947; Biol. Abstr., Balt., 1954, 28: No. 15977.

2340
Robinson, R. A. and Watson, M. L. ELECTRON MICROGRAPHY OF BONE. Tr. Conf. Metab. Interrelat., 1953, 5.Conf., 72-104. Conference Discussion: p. 103-104. 116 refs.

2341
*Rouiller, C., Huber, L. and Rutishauser, E. LES FIBRILLES DE LA SUBSTANCE FONDAMENTALE DU CARTILAGE HYALIN. ETUDE AU MICROSCOPE ÉLECTRONIQUE. (NOTE PRÉLIMINAIRE). Arch. sc., Genève, 1952, 5: 215-218. Abstracted in: Excerpta med., Sect. 1, 1953, 7: No. 1481.

2342
Rouiller, C., Huber, L. and Rutishauser, E. LA STRUCTURE DE LA DENTINE. ÉTUDE COMPARÉE DE L'OS ET DE L'IVOIRE AU MICROSCOPE ELECTRONIQUE. Acta anat., Basel, 1952, 16: 16-28. 22 refs. English and German summaries. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 16394; Excerpta med., Sect. 1, 1953, 7: No. 1299.

2343
Rouiller, C., Huber, L., Kellenberger, E. and Rutishauser, E. LA STRUCTURE LAMELLAIRE DE L'OSTÉONE. Acta anat., Basel, 1952, 14: 9-22. 12 refs. English and German summaries. Abstracted in: Biol. Abstr., Balt., 1952, 26: No. 21688; Excerpta med., Sect. 1, 1953, 7: No. 66. Study was made with optical and electron microscope, using the replica technique.

2344
*Rutishauser, E., Huber, L., Kellenberger, E., Majno, G. and Rouiller, C. ETUDE DE LA STRUCTURE DE L'OS AU MICROSCOPE ÉLECTRONIQUE. Arch. sc., Genève, 1950, 3: 175-180. Abstracted in: Biol. Abstr., Balt., 1952, 26: No. 31244; Excerpta med., Sect. 1, 1951, 5: No. 1350.

2345
Schwarz, W. and Pahlke, G. ELEKTRONENMIKROSKOPISCHE UNTERSUCHUNGEN AN DER INTERZELLULARSUBSTANZ DES MENSCHLICHEN KNOCHENGEWEBES. Zschr. Zellforsch., 1953, 38: 475-487. 12 refs.

See:

562	565	1270

STRUCTURE - MECHANICAL INFLUENCE

see MECHANICAL INFLUENCE

STRUCTURE - POLARIZED AND OTHER LIGHT STUDIES

2346
Dallemagne, M. and Mélon, J. LA PROPORTION DES ÉLÉMENTS MINÉRAUX ET ORGANIQUES DANS LES DIFFÉRENTES RÉGIONS DU SYSTÈME HAVERSIEN DE L'OS. C. rend. Soc. biol., 1944, 138: 1031-1034. 2 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1946-47, 16: No. 607. Studies in polarized light of cross sections of the Haversian systems demonstrated that the light and dark zones observed in the surrounding lamellae were not due to differences in calcification, since the relative birefringeance was identical.

2347
Fowler, E. P. and Applebaum, E. BONE STUDIES IN ULTRA-VIOLET LIGHT. Anat. Rec., 1933, 55: 23-39. 15 refs. A method is described and data obtained by this method is presented.

2348
Jaccard, R. and Grosjean, M. DIE UNTERSUCHUNG VON HARTGEWEBEN (KNOCHEN UND ZÄHNEN) IM REFLEKTIERTEN LICHT. Deut. zahnärztl. Zschr., 1949, 4: 1234-1250. Abstracted in: Biol. Abstr., Balt., 1950, 24: No. 15964.

2349
Sestini, [F.] OSSERVAZIONI COL MICROSCOPIO A LUMINESCENZA. (2ª NOTA). OSSERVAZIONI SUL TESSUTO OSSEO. Atti Accad. fisiocr. Siena, 1934, 11.ser., 2: sez. med. fis., 30.

See:

129	560	561	620

STRUCTURE - VARIATIONS WITH AGE

2350
Amprino, R. COME SI COSTITUISCE L'ARCHITETTURA DELLA SOSTANZA SPUGNOSA DELLE EPIFISI. (RICERCHE SUL FEMORE DELL'UOMO NELLE VARIE ETÀ). Monit. zool. ital., 1938, 48: Suppl., 275-278. pl. Studies in polarized light of frontal sections of the upper end of the femur of individuals of different ages showed a great and rapid change in the arrangement of the trabeculae from the second year of life, which decreased with age. These changes were believed to depend upon mechanical stimuli, since it was observed that from the first appearance of the epiphyseal nucleus the distribution of the trabeculae corresponded to the lines of weight-bearing. Simultaneous modifications in the structure of the spongiosa trabeculae of the second and third order were also noted.

2351
Amprino, R. LA STRUCTURE DU TISSU OSSEUX ENVISAGÉE COMME EXPRESSION DE DIFFÉRENCES DANS LA VITESSE DE L'ACCROISSEMENT. Arch. biol., Par., 1947, 58: 315-330. 15 refs. Discussion of the relation between bone structure and the rate of somatic growth. Structural variations in the bones of animals of different species or of the same species are attributed to difference in rates of somatic growth.

2352
Amprino, R. LA STRUTTURA DELLE OSSA DELL'UOMO SOTTRATTE ALLE SOLLECITAZIONI MECCANICHE. CONSIDERAZIONI SUL SIGNIFICATO FUNZIONALE DELLE STRUTTURE DELLA SOSTANZA COMPATTA. Roux Arch., 1938, 138: 305-322. Abstracted in: Biol. Abstr., Balt., 1939, 13: No. 9492. A study of the structure of the diaphyseal compact bone of the immobilized extremities of individuals of various ages. The structure is qualitatively the same as that of bones under normal mechanical stress, but the processes of reconstruction are slower than in normal bone.

2353
Amprino, R. TRANSFORMATIONS HISTOLOGIQUES PENDANT L'ACCROISSEMENT ET LA REMANIEMENT DU COL DU FÉMUR APRÈS LA NAISSANCE. C. rend. Ass. anat., 1937, 32: 19-35. Studies in polarized light with special staining methods were made of sections of the femur neck of 37 individuals from birth to old age. The progressive modifications observed in the structure and distribution of the spongiosa trabeculae and lamellae suggested a gradual reorientation of bone structure for more perfect mechanical resistance.

2354
Amprino, R. and Bairati, A. PROCESSI DI RICOSTRUZIONE E DI RIASSORBIMENTO NELLA SOSTANZA COMPATTA DELLE OSSA DELL'UOMO. RICERCHE SU CENTO SOGGETTI DALLA NASCITA SINO A TARDA ETÀ. Zschr. Zellforsch., 1936, 24: 439-511. Approx. 93 refs. The processes of change in the compacta of sections of the human diaphysis, upper occipital squamosa, humerus, tibia and digital phalanx, pre-natal to old age, were studied in direct and polarized light and with appropriate staining. Histological modifications observed are described in detail and the mechanical significance of structural changes in the compacta at the various ages are discussed. The article contains a review of the literature.

2355
Amprino, R. and Trivellini, A. IL SIGNIFICATO FUNZIONALE DELL'ARCHITETTURA E DELLA STRUTTURA DEL COLLO DEL FEMORE NELLE VARIE ETÀ ED IN CONDIZIONI PATOLOGISCHE. Arch. ital. chir., 1937, 47: 1-36. 18 refs.

2356
Ascenzi, A. CONTRIBUTO ALLO STUDIO DELLE PROPRIETÀ OTTICHE DELL'OSSO UMANO NORMALE. I. SULL'INDICE DI RIFRAZIONE. Atti Accad. naz. Lincei, Rendic., Class. sc. fis., 1948, 4: 777-783. 6 refs. Abstracted in: Biol. Abstr., Balt., 1949, 23: No. 29326.

2357
Ascenzi, A. QUANTITATIVE RESEARCHES IN THE OPTICAL PROPERTIES OF HUMAN BONE. Nature, Lond., 1949, 163: 604. 8 refs. Abstracted in: Excerpta med., Sect. 1, 1949, 3: No. 1614; Biol. Abstr., Balt., 1949, 23: No. 28381.

2358
Bader, L. and Canuto G. I CANALI DI HAVERS IN RAPPORTO ALL'ETA. Arch. antrop. crim., Tor., 1930, 50: 232-241. 10 refs. Abstracted in: Biol. Abstr., Balt., 1932, 6: No. 8307.

2359
Bohatirchuk, F. SOME MICRORADIOGRAPHICAL DATA ON BONE AGING. Anat. Rec., 1953, 115: 286-287. An abstract. The author believes that lack of a satisfactory method of bone examination is one of the causes of delay in the progress of this study. With microradiography, the necessity of preliminary decalcification and possible artefacts may be avoided. It is pointed out that in microradiographs two kinds of exostosis may be differentiated; that having the structure of bone, which is pathologic and the structureless, which may be seen in normal old persons.

2360
Brouwer, E. OVER BEENSTRUCTUUR EN VOEDING BIJ MENS EN DIER. Voeding, 1952, 13: 55-65. 14 refs. Abstracted in: Excerpta med., Sect. 2, 1953, 6: No. 4913. Microscopic studies of sections of the tubular bones of man and cattle indicate marked differences in the structure of compact bone. In cattle this structure consists mainly of thin scales, laminae, of coarsely fibrous bone arranged concentrically around the central cavity of the shaft with some lamellae deposited on either side. In man a similar structure exists in youth but is gradually changed by continual resorption and rebuilding into the structure of haversian, interstitial and basic lamellae of the adult. Mechanical influences (pressure pull, bend, torsion) are considered as factors in the change.

2361
Bruno, G. RICERCHE SULLO SVILLUPO E SULLA MORFOLOGIA DELLO SPERONE FEMORALE (LAMINA FEMORALIS INTERNA) NELL'UOMO ED IN ALTRI VERTEBRATI. Arch. ital. anat., 1933, 31: 253-285. 34 refs. Abstracted in: Biol. Abstr., Balt., 1935, 9: No. 19824.

2362
Bruno, G. ÜBER SENILE STRUKTURVERÄNDERUNGEN DER PROXIMALEN HUMERUS EPIPHYSE. Fortsch. Röntgenstrahl., 1934, 50: 287-289.

2363
Chamberlin, G. W. METABOLIC BONE CHANGES WITH AGING. Pennsylvania, M. J., 1953, 56: 984-985. An editorial pointing out to the physician the structural changes in bone associated with aging; description of the changes, their detection and treatments in senile osteoporosis, Paget's disease and degenerative joint disease are briefly discussed.

STRUCTURE - VARIATIONS WITH AGE (Continued)

2364
Filogamo, G. FORMA E LUNGHEZZA DEGLI OSTEONI DELLA COMPATTA DELLE OSSA LUNGHE, NELL'UOMO. Ricer. morf., 1952, 22: 91-98. 2 pl. 4 refs. English, French and German summaries. Complete reconstructions of Haversian systems in different bones of man at different ages were carried out. It was shown: concentric Haversian systems pass into fragments of debris and seldom exist as complete cylindrical systems; they become shorter with advancing age; at points where remodelling takes place earlier (as at points of insertion of tendons) they are very short.

2365
Filogamo, G. LA FORME ET LA TAILLE DES OSTÉONES CHEZ QUELQUES MAMMIFÈRES. Arch. biol., Par., 1946, 57: 137-143. 6 refs. A study of the size and shape of the Haversian systems of the compact bone of the ox, the horse and the dog at different ages. Comparisons are made with findings in bones of man.

2366
Gellért, A. AZ EMBERI CSONTOK TÉRFOGATARÁNYAI ES POROSITÁS VISZONYAI TIZ EGYÉN CSONTVÁZÁN. A CSIGOLYAKNAK ÉS A CSONTOS GERINCOSZLOP SZAKASZAINAK TÉRFOGATARÁNYAI. [VOLUME, PROPORTION AND POROSITY OF THE HUMAN BONES; STUDY OF 10 SKELETONS] Magy. orv. arch., 1930, 31: 229-246. 5 refs.

2367
Orlov, M. IA. K VOPROSU O VOZRASTNYKH IZMENENIAKH GISTOSTRUKTURY BEDRA U CHELOVEKA. [AGE VARIATIONS OF HISTOSTRUCTURE OF THE FEMUR IN MAN] Antrop. J., Moskva, 1937, No. 2, 83-101. 38 refs.

2368
Peacock, A. OBSERVATIONS ON THE POSTNATAL STRUCTURE OF THE INTERVERTEBRAL DISC IN MAN. J. Anat., Lond., 1952, 86: 162-179. 3 pl. 52 refs. Abstracted in: Excerpta med., Sect. 1, 1953, 7: No. 2277; Biol. Abstr., Balt., 1953, 27: No. 19693.

See:

287 559 1542 1567 1615
1628 1670 2292

STRUCTURE - X-RAY DIFFRACTION STUDIES

2369
Amprino, R. and Engström, A. RISULTATI DI UNO STUDIO SULL'ASSORBIMENTO E SULLA DIFFRAZIONE DEI RAGGI ROENTGEN DA PARTE DEL TESSUTO OSSEO. Boll. Soc. ital. biol. sper., 1950, 26: 148-151. Abstracted in: Excerpta med., Sect. 2, 1951, 4: No. 1954. X-ray-absorption and -diffraction studies of the relative concentrations of calcium salts in treated sections of long and flat bones of various species (man, horse, dog, rabbit, fowl) at various ages.

2370
Amprino, R. and Engström, A. STUDIES ON X-RAY ABSORPTION AND DIFFRACTION OF BONE TISSUE. Acta anat., Basel, 1952, 15: 1-22. 50 refs. French and German summaries. Abstracted in; Excerpta med., Sect. 1, 1953, 7: No. 461; Brit. Abstr., Sect. AIII, 1953, p. 133. Ground sections of compact and spongy bone of different mammals of various ages were studied and the mineral distribution, relative calcium content and calcification processes analyzed.

2371
*Bale, W. F. X-RAY DIFFRACTION STUDIES OF BONE AND TOOTH SUBSTANCE. Rochester, N. Y. (Thesis-Univ. Rochester). Unpublished. Dr. Bale's doctoral dissertation has not been published in entirety in any form. A part of it appeared in his report in the Am. J. Roentg., 1940, 43: 735-747.

2372
*Carlstrom, D. and Finean, J. B. X-RAY DIFFRACTION STUDIES ON THE ULTRASTRUCTURE OF BONE. Biochim. biophys. acta, Amst., 1954, 13: 183-191.

2373
Dawson, I. M. THE INVESTIGATION OF BONE STRUCTURE BY X-RAY DIFFRACTION. Biochem. J., Lond., 1945, 39: Proc. 37. An abstract. Specimens of normal and rachitic bone were examined. The study indicated that the chemical constitution and the orientation of the principal constituents of bone are unaltered in rickets and that any change in bone strength is due to change in the proportion of the constituents.

2374
*Engström, A. and Amprino, R. X-RAY DIFFRACTION AND X-RAY ABSORPTION STUDIES OF IMMOBILIZED BONES. Experientia, Basel, 1950, 6: 267-269. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 17473.

2375
Engström, A. and Engfeldt, B. X-RAY DIFFRACTION STUDIES ON BONE TISSUE DURING HYPERPARATHYROIDISM. Acta path. microb. scand., 1951, 28: 152-156. 5 refs. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 33384; Chem. Abstr., 1951, 45: 5296c.

2376
Finean, J. B. and Engström, A. LOW ANGLE REFLECTION IN X-RAY DIFFRACTION PATTERNS OF BONE TISSUE. Experientia, Basel, 1954, 10: 63-64. 2 refs. Abstracted in: Biol. Abstr., Balt., 1954, 28: No. 23508.

2377
Finean, J. B. and Engström, A. THE LOW-ANGLE SCATTER OF X-RAYS FROM BONE TISSUE. Biochim. biophys. acta, Amst., 1953, 11: 178-189. 25 refs. In this study of longitudinal and cross-sections from intact normal human bone, "the scattering particles appear to be of uniform size and to approximate to rods which have a diameter of about 75A and are about 210A long. The particles appear to be well-aligned, with their long axes in the direction of the longitudinal axis of the bone and parallel to the collagen fibre axis. Particles from other types of normal bone seem to be of a similar shape and size."

2378
Henny, G. C. and Spiegel-Adolf, M. X-RAY DIFFRACTION STUDIES ON FISH BONES. Am. J. Physiol., 1945, 144: 632-636. 12 refs. Abstracted in: Chem. Abstr., 1946, 40: 1403. X-ray diffraction patterns of fish bones were compared with those of bones of various mammals.

2379
Hirschman, A. and Fankuchen, I. A MICRO X-RAY DIFFRACTION STUDY ON THE STRUCTURE OF IMMATURE RAT BONE. Anat. Rec., 1949, 103: 469.

2380
Lamarque, P. ETUDE DE L'OS HUMAIN PAR LA DIFFRACTION DES RAYONS X. C. rend. Acad. sc., 1943, 216: 804-805. 2 refs. Abstracted in: Chem. Abstr., 1944, 38: 46234.

2381
Lamarque, P. and Mering, J. ÉTUDE SUBMICROSCOPIQUE DE L'OS HUMAIN PAR LA DIFFRACTION DES RAYONS X. J. radiol. électr., 1942-43, 25: 201-205. 5 refs.

STRUCTURE - X-RAY DIFFRACTION STUDIES
(Continued)

2382
Reed, C. I. and Reed, B. P. ALTERATIONS IN X-RAY DIFFRACTION PATTERN OF RAT TIBIA IN RICKETS. Proc. Soc. Exp. Biol., N. Y., 1942, 50: 196-198. 8 refs. Abstracted in: Biol. Abstr., Balt., 1943, 17: No. 1528. "Diffractograms of normal bone shows preferred orientation in d-3.34. In rickets there is disorientation that persists even after 275 days on an antirachitic diet." - Biol. Abstr.

2383
Reed, C. I. and Reed, B. P. EVIDENCE OF THE PERIPHERAL ACTION OF VITAMIN D FROM X-RAY DIFFRACTION STUDIES. Am. J. Physiol., 1945, 143: 413-419. 5 refs. Abstracted in: Biol. Abstr., Balt., 1945, 19: No. 15847.

2384
Reed, C. I., Struck, H. C. and Reed, B. P. A COMPARATIVE STUDY OF NORMAL, RACHITIC AND HEALED RACHITIC BONE BY X-RAY DIFFRACTION TECHNIC. Fed. Proc., Balt., 1942, 1: Pt. 2, 70. An abstract.

2385
Spiegel-Adolf, M. and Henny, G. C. X-RAY DIFFRACTION STUDIES ON FISH BONES. Fed. Proc., Balt., 1945, 4: 105. An abstract.

See:

20	275	383	401	556
617	619	621	626	627
639	640	641	658	659
2088	2239	2240		

STRUCTURE - X-RAY MICROSCOPIC STUDIES

2386
Amprino, R. ASPETTI DEL METABOLISMO MINERALE DELLO SCHELETRO ANALIZZATI CON L'ASSORBIMENTO DEI RAGGI ROENTGEN. Arch. "Putti", 1952, 2: 173-183. 13 refs. Abstracted in: Excerpta med., Sect. 5, 1953, 6: No. 1318. The mineral metabolism of sections of bone ground substance is studied by a microphotographic-photometric method of x-ray absorption. The method is described.

2387
Amprino, R. RECHERCHES SUR LA DISTRIBUTION DES MINÉRAUX DANS LA SUBSTANCE FONDAMENTALE DE L'OS. Arch. anat., Strasb., 1952, 34: 9-17. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 6506. X-ray absorption studies of ground sections of fresh bone from young animals were made to determine mineral concentration during the formation of the ground substance. Primary bone attained a high degree of calcification during its formation and thereafter remained relatively uniform while the calcification of secondary bone differed in accordance with the periods in which it was formed. In the same bone, the calcification of primary bone was a more rapid process than that of secondary bone.

2388
Andreatta, C. and Forni, I. CONFRONTO FRA SPETTROGRAMMI DEBYE DI CARTILAGINE UMANA NATURALE, DI OSSO DEMINERALIZZATO E DI OSSO NATURALE. Atti Accad. naz. Lincei, Rendic., Class. sc. fis., 1953, 15: 147-149. pl. 4 refs. Abstracted in: Chem. Abstr., 1954, 48: 3514[f].

2389
Becher, H., Hoegen, K. and Pfefferkorn, G. SUBLICHTMIKROSKOPISH-MORPHOLOGISCHE UNTERSUCHUNGEN DES ANORGANISCHEN KNOCHENANTEILS. Acta anat., Basel, 1954, 20: 105-115. 8 refs. Electron-microscopic study. "The units are 10-40 mμ crystals of hydroxylapatite. They show a lamellated structure of one or several layers which are separated from one another by small fissures. The quantity of the inorganic matter during osteogenesis increases first in the diaphysis. X-rays show an equal distribution of small crystals throughout the bone and larger crystals in the outermost layer only. In stereophotographs the arrangement of the hydroxylapatite crystals may be seen parallel to the white fibril. Several layers of crystals surround the lattice of white fibres."

2390
Clark, G. L., Bucher, C. S. and Lorenz, O. AN EXTENSION OF X-RAY RESEARCHES ON THE FINE STRUCTURES OF COLLOIDS TO NORMAL AND PATHOLOGICAL HUMAN TISSUES. Radiology, 1931, 17: 482-504. Discussion: p. 502-504. 25 refs. Abstracted in: Chem. Abstr., 1931, 25: 5679. Bone and cartilage were included in the tissues studied.

2391
Cohen, J. and Lacroix, P. COMPARISON OF MICRORADIOGRAPHIC AND HISTOLOGIC PATTERNS IN BONE. Laborat. Invest., 1953, 2: 447-450. 4 refs. Microradiographic "patterns of mineral distribution compared with the histologic staining pattern, showed that, in general, when the mineral concentration was high, the organic content was low, and vice versa."

2392
Engström, A. and Engfeldt, B. LAMELLAR STRUCTURE OF OSTEONS DEMONSTRATED BY MICRORADIOGRAPHY. Experientia, Basel, 1953, 9: 19. 9 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 6172.

2393
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see also CELLS and subdivisions

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Lacroix, P. ON THE ORIGIN OF THE DIAPHYSIS. Anat. Rec., 1945, 92: 433-438. pl. 9 refs. Abstracted in: Biol. Abstr., Balt., 1946, 20: No. 869. "In rabbits, the central part of the growth cartilage of the distal radius or of the rib has been grafted into the brain, the medullary cavity of the tibia and under the kidney capsule. Now, under these circumstances, a bony ring identical to that of the ossification groove appears around the cartilage. Consequently it may be said that the formation of the perichondrial ring and of the primitive diaphysis must be considered as an induction phenomenon directed by the growing cartilage." - Biol. Abstr.

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Levander, G. L'INDUCTION DANS LA RÉGÉNÉRATION TISSULAIRE. Presse méd., 1951, 59: 295-297. 27 refs. Abstracted in: Excerpta med., Sect. 5, 1952, 5: No. 1354. Experiments are described in which bone tissue transplantation into soft parts was followed by new bone formation. Similar results were also obtained by injecting alcoholic bone extracts into muscle. The new bone was observed to arise from undifferentiated mesenchymal tissue upon stimulation by a specific inductive substance released by the graft or the bone extract. Certain solubility characteristics of the inductive substance indicated its possible relation to the lipoid or steroid groups. The article contains a discussion of the work of other investigators.

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TISSUE TRANSPLANTS (Continued)

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TISSUE TRANSPLANTS (Continued)

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Studitskii, A. N. O POTENTSIIAKH NADKOSTNITSY PERVICHNOGO I VTORICHNOGO OKOSTENENIIA PO DANNYM KUL'TUR NA ALLANTOISE. [POTENCIES POSSESSED BY THE PERIOSTEUM OF PRIMARY AND SECONDARY OSSIFICATION ACCORDING TO THE DATA OBTAINED BY THE CULTIVATION OF PERIOSTEAL GRAFTS ON THE ALLANTOIS] C. rend. Acad sc. URSS, 1934, 1: 74-79. In Russian and English. Abstracted in: Biol. Abstr., Balt., 1936, 10: No. 19673.

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Studitskii, A. N. OB USLOVIIAKH DIFFERENTSIROVKI KOSTNOI TKANI CHELOVECHESKOGO ZARODYSHA V KUL'TURAKH NA ALLANTOISE. ON THE CONDITIONS OF THE DIFFERENTIATION OF THE OSSEOUS TISSUE OF A HUMAN EMBRYO IN GRAFTS ON THE ALLANTOIS. C. rend. Acad. sc. URSS, 1934, 1: 267-272. In Russian and English. Abstracted in: Biol. Abstr., Balt., 1936, 10: No. 19675. Grafts of periosteum from the frontal bone and the long bones and grafts of joints (the core of cartilage isolated from the perichondrium of the phalanx and wrapped in periosteum) were used in these experiments. Results indicate that the chick allantois is a most favorable medium for development of human osseous tissue. Chick cells were depressed.

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Urist, M. R. and McLean, F. C. OSTEOGENETIC POTENCY AND NEW-BONE FORMATION BY INDUCTION IN TRANSPLANTS TO THE ANTERIOR CHAMBER OF THE EYE. J. Bone Surg., 1952, 34A: 443-476. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 1109; Brit. Abstr., Sect. AIII, 1953, p. 628. The osteogenetic activity of 250 samples of various kinds of musculoskeletal tissues transferred to the anterior chamber of the eye in rats was studied. Findings seemed to indicate that new-bone formation, instead of depending solely upon either the mechanism of survival and proliferation of the transplanted cells or upon that of induction of the cells of the host, may also occur through a combination of the two. The literature is reviewed.

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Urist, M. R. and McLean, F. C. OSTEOGENETIC POTENCY AND OSTEOGENETIC INDUCTOR SUBSTANCES OF PERIOSTEUM, BONE MARROW, BONE GRAFTS, FRACTURE CALLUS, AND HYALINE CARTILAGE TRANSFERRED TO THE ANTERIOR CHAMBER OF THE EYE. Tr. Conf. Metab. Interrelat., 1951, 3.Conf., 55-89. Conference discussion: p. 80-89. 10 refs.

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TISSUE TRANSPLANTS (Continued)

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Wilde, C. E. STUDIES ON THE ORGANOGENESIS IN VITRO OF THE URODELE LIMB-BUD. J. Morph., 1950, 86: 73-113. 5 pl. 49 refs. Studies to determine: 1) Variations in capacity of the limb-bud primordium for self-determination with its state of development at time of explantation; 2) Time sequence of differentiation of component structures of limb-bud; 3) Relation of size of tissue mass explanted to amount of differentiation expressed in explant.

2547
Willis, R. A. THE GROWTH OF EMBRYO BONES TRANSPLANTED WHOLE IN THE RAT'S BRAIN. Proc. R. Soc., Lond., Ser. B, 1936, 120: 496-498. pl. 2 refs. Abstracted in: Biol. Abstr., Balt., 1937, 11: No. 14868.

2548
Zanaboni, A. and Parola, P. CONTRIBUTO ALL'OSTEOGENESI SPERIMENTALE ETEROTOPICA MEDIANTE INNESTI DI LEMBI OMOPLASTICI DI ARTERIA ELASTICA. Osp. maggiore, Milano, 1950, 38: 107-112. 20 refs. Abstracted in: Excerpta med., Sect. 9, 1951, 5: No. 7632

See:

97	198	447	463	534
671	755	756	797	1082
1175	1190	1222	1366	1367
1550	1763	1808	1866	2065
2244	2294	2295	2566	2730
2793	2794			

TISSUE EXTRACTS

2549
Annersten, S. EXPERIMENTELLE UNTERSUCHUNGEN ÜBER DIE OSTEOGENESE UND DIE BIOCHEMIE DES FRACTURCALLUS. Acta chir. scand, 1940, 84: Suppl. 60. 181p. Bibliography: p. 172-181. Abstracted in: Biol. Abstr., Balt., 1946, 20: No. 17293; Chem. Abstr., 1941, 35: 25866. Experiments on rabbits are described in which osteogenesis was promoted in muscle by injection of alcohol bone extracts and other experiments in which the biochemical processes of ossification were studied in the fracture callus. The work is in two parts. Each part contains a review and discussion of the pertinent literature.

2550
Annersten, S. UEBER DIE OSTEOGENESE BEI DER FRAKTURHEILUNG. Chirurg., 1941, 13: 76-82. 31 refs. On the theory that the processes of osteogenesis in fracture healing can be explained through a study of the mechanisms of bone regeneration, or of bone formation in the soft tissues, the following experiment was conducted: In rabbits alcohol and bone extracts were injected into muscles. Studies of the new bone or cartilage formation indicated that the injected substances released a mechanism which promoted differentiation of non-specific cells. The article is preceded by a review of the literature.

2551
Axhausen, W. ZUR KNOCHENNEUBILDUNG IM MUSKEL NACH INJEKTION ALKOHOLISCHER KNOCHENEXTRAKTE. Zbl. Chir., 1951, 76: 402-404. 17 refs. Abstracted in: Excerpta med., Sect. 9, 1951, 5: No. 6842.

2552
Bertelsen, A. EXPERIMENTAL INVESTIGATIONS INTO POST-FOETAL OSTEOGENESIS. Acta orthop. scand., 1944, 15: 139-181. Approx. 120 refs. In this survey of the literature on causal genesis of post-foetal ossification, the osteoblast and osteocyte theories, the doctrine of metaplasy and the dualistic conception are discussed. The author describes his own investigations, which confirm the extraction experiments of Levander and Annersten. He also notes his additional finding that marrow extracts are more constantly active than extracts of other bone components.

2553
*Bucher, O. and Weil, J. T. L'INFLUENCE D'UN EXTRAIT OSSEUX (OSSOPAN) SUR LA CONSOLIDATION DE FRACTURES IN VITRO. Experientia, Basel, 1951, 7: 38-40. Abstracted in: Biol. Abstr., Balt., 1952, 26: No. 8850; Excerpta med., Sect. 9, 1951, 5: No. 7975.

2554
Del Bello, N. OSTEOGENESI SPERIMENTALE DA INIEZIONI SOTTOPERIOSTEE DI SOSTANZE ORGANICHE E DI SOLUZIONE FISIOLOGICA IN ANIMALI ADULTI. Pat. sper., Tor., 1948, 37: 305-326. 75 refs. Abstracted in: Excerpta med., Sect. 5, 1951, 4: No. 2329.

2555
Del Bello, N. RICERCHE SPERIMENTALI SUL COSIDETTO "CHONDRIUM NOVUM." Ann. ital. chir., 1948, 25: 111-123. 17 refs.

2556
Fogliati, E. STUDI SPERIMENTALI SULL'OSTEOGENESI ETEROTOPICA. CONTRIBUTO ALLO STUDIO DELL'OSTEOGENESI ETEROTOPICA. OSTEOGENESI CONSECUTIVA AD INIEZIONE DI ESTRATTI ALCOOLICI DI OSSA. NOTA PRIMA. Chir. org. movim., 1950, 34: 129-131. Abstracted in: Excerpta med., Sect. 5, 1950, 3: No. 3705.

2557
Hartley, J. and Tanz, S. S. EXPERIMENTAL OSTEOGENESIS IN RABBIT MUSCLE. A.M.A. Arch. Surg., 1951, 63: 845-851. 11 refs. "Although various extracts (50% alcohol, lipid, phospholipid, fatty acid) of bone and bone marrow of rabbits and calves produced bone and/or cartilage at the site of injection into rabbit skeletal muscle, the reaction is probably nonspecific and may be the result of the irritating qualities of the material injected or its solvent."

2558
Hartley, J., Tanz, S. S. and Schneider, M. OSTEOGENESIS PRODUCED BY A CHEMICAL EXTRACT OF BONE. J. Mount Sinai Hosp., N. Y., 1949, 15: 383-387. 10 refs. "Experiments are recorded which confirm previous reports that alcoholic extracts of the growing ends of post-fetal bone contain a chemical substance which, when injected into muscle, can iniate new bone information.

2559
Heinen, J. H., Jr., Dabbs, G. H. and Mason, H. A. THE EXPERIMENTAL PRODUCTION OF ECTOPIC CARTILAGE AND BONE IN THE MUSCLES OF RABBITS. J. Bone Surg., 1949, 31A: 765-775. 20 refs. Abstracted in: Chem. Abstr., 1953, 47: 2859h; Excerpta med., Sect. 5, 1950, 3: No. 2349.

2560
Hellstadius, A. A STUDY OF NEW BONE FORMATION PROVOKED BY SUBPERIOSTEAL INJECTIONS OF BLOOD PLASMA, EXTRACT OF BONE MARROW, ETC.: AN INVESTIGATION BY EXPERIMENTS ON ANIMALS. Acta chir. scand., 1947, 95: 31-53. pl. 25 refs. Abstracted in: Excerpta med., Sect. 5, 1949, 2: No. 990; Biol. Abstr., Balt., 1948, 22: No. 8515.

TISSUE EXTRACTS (Continued)

2561
Hempel, J. ZUR FRAGE DER WIRKUNGSWEISE VON GEWEBSAUTOLYSATEN, INSBESONDERE VON KALLUS-AUTOLYSAT. MIT EINEM BEITRAG ZUR SPONTANEN ENTSTEHUNG VON KNOCHENZYSTEN. Deut. Zschr. Chir., 1931, 231: 387-404. 40 refs. Abstracted in: Biol. Abstr., Balt., 1933, 7: No. 1011. In guinea pigs bone and callus autolysates were injected into the articular membranes, periosteum and connective tissue of the musculature and the results studied histologically. Neither new bone formation nor metaplasia of connective tissue into osseous tissue was observed, unless preceded by trauma.

2562
Henschen, C. ERZEUGUNG VON CHONDRIUM NOVUM DURCH WIEDERHOLTE SUBPERICHONDRALE EINSPRITZUNGEN VON KNORPELZELLENAUTOLYSAT ODER KNORPELZELLENAUFSCHWEMMUNGEN AN OHR- ODER RIPPENKNORPEL. Zbl. Chir., 1939, 66: 929-936. 16 refs.

2563
Henschen, C. ERZEUGUNG VON OS NOVUM DURCH WIEDERHOLTE SUBPERIOSTALE EINSPRITZUNGEN EINER PERIOST-MARKZELLENAUFSCHWEMMUNG UNTER DAS PERIOST DER TIBIA, DER CRISTA ILEI ODER DES STERNUMS. Zbl. Chir., 1939, 66: 514-523. 10 refs.

2564
Hoffmeister, W. BEEINFLUSSUNG SCHLECHT-HEILENDER FRAKTUREN DURCH EIN EIWEISSFREIES EXTRACT AUS KNOCHENKEIMGEWEBE. Münch. med. Wschr., 1933, 80: 1055-1057.

2565
Lacroix, P. NOTE SUR LES PROPRIÉTÉS OSTÉOGÈNES DES EXTRAITS DE TISSUS SQUELETTIQUES. Arch. anat., Strasb., 1952, 34: 249-252. 11 refs. Review of the literature, 1949-1950.

2566
Lacroix, P. RECENT INVESTIGATIONS ON THE GROWTH OF BONE. Nature, Lond., 1945, 156: 576. On the basis of 2 experiments of cartilage transplantation in rabbits which resulted in ossification and one experiment in which ossification followed injection into muscle of an alcoholic extract from the epiphyseal cartilage of a newborn rabbit, it was concluded that an organizer exists in cartilage.

2567
Levander, G. ON THE CAUSATION OF NEW-BONE FORMATION. Acta chir. scand., 1936, 78: 217-219. Discussion: p. 218-219.

2568
Levander, G. and Willstaedt, H. ALCOHOL-SOLUBLE OSTEOGENIC SUBSTANCE FROM BONE MARROW. Nature, Lond., 1946, 157: 587. 4 refs.

2569
Lindahl, O. and Orell, S. EXPERIMENTS WITH BONE EXTRACTS. Acta chir. scand., 1951, 101: 136-142. 10 refs. Abstracted in: Excerpta med., Sect. 9, 1951, 5: No. 7977.

2570
Miszurski, B. FURTHER CONTRIBUTION TO THE INFLUENCE OF EXTRACTS FROM EMBRYOS OF DIFFERENT AGE ON THE GROWTH OF CARTILAGE AND OSSIFICATION IN VITRO. Arch. exp. Zellforsch., 1939, 23: 80-83. 1 ref. Abstracted in: Biol. Abstr., Balt., 1940, 14: No. 2715.

2571
Miszurski, B. RECHERCHES SUR L'INFLUENCE DES EXTRAITS D'EMBRYONS DE DIFFÉRENTS AGES SUR LA CROISSANCE ET LA DIFFERENCIATION DU CARTILAGE ET DE L'OS EN CULTURE. Arch. anat. micr., Par., 1939-40, 35: 223-241. pl. 9 refs. Abstracted in: Biol. Abstr., Balt., 1941, 15: No. 17946.

2572
Mondolfo, S. INVESTIGACIONES EXPERIMENTALES SOBRE LA ACELERACIÓN DEL CALLO ÓSEO EN LAS FRACTURAS. Rev. ortop. traumat., B. Air., 1949, 19: 47-60. Abstracted in: Excerpta med., Sect. 9, 1951, 5: No. 2451. "Experiments were carried out in 158 animals to hasten bone callus formation by means of alcoholic extract of bone, antireticulocytotoxic serum and total embryonic extract. Experiments have failed to obtain an osteogenic substance from bovine bones following Annersten's technique. Adult guinea pigs treated by injections of antireticular serum develop more callus than controls. Clinically sound union, however, is obtained in the same period of time. Total embryonic extracts also develop a hypertrophic callus but union takes the same time as in controls." - Excerpta med.

2573
Rendano, C. SU DI UN PARTICOLARE PRINCIPIO OSTEOGENETICO CONTENUTO NELLE OSSA NORMALI. Ann. ital. chir., 1942, 21: 249-271. 16 refs. In rabbits studies were made of the experimental induction of bone in soft tissue by injection of alcoholic extracts. The results were essentially negative.

2574
Roth, H. EXTRAKTVERSUCHE MIT KONSERVIERTEM KNOCHENGEWEBE. Schweiz. med. Wschr., 1950, 80: 1051-1053. 5 refs. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 17443; Excerpta med., Sect. 1, 1951, 5: No. 978.

2575
Schreiber, B. ULTERIORI OSSERVAZIONI SULLA INDUZIONE OSSEA NEGLI ANFIBI PER MEZZO DI ESTRATTI ALCOLICI DI OSSO. Boll. Soc. ital. biol. sper., 1950, 26: 526-528. 8 refs.

2576
Shkurov, B. I. GISTOLOGICHNI DANI PRO VPLYV PRODUKTIV ROZPADU TKANYN I ORGANIV NA REGENERATSIIU KISTKOVOI TKANYNY V UMOVAKH EKSPERYMENTU. [HISTOLOGICAL DATA ON THE EFFECT OF THE PRODUCTS OF DEGENERATION OF TISSUES AND ORGANS UPON THE REGENERATION OF BONE TISSUE IN EXPERIMENTAL CONDITIONS] Eksp. med., Kharkov, 1940, No. 1, 76-87. French summary.

2577
Wachsmuth, G. EXPERIMENTELLER BEITRAG ZUM KAUSALEN PROBLEM DER OSTEOGENESE. Arch. klin. Chir., 1950, 265: 58-68. Abstracted in: Excerpta med., Sect. 1, 1951, 5: No. 60.

2578
Willestaedt, H. and Levander, G. STUDIES IN OSTEOGENESIS. Acta orthop. scand., 1950, 19: 419-432. 6 refs. English, French and German summaries. Abstracted in: Chem. Abstr., 1951, 45: 5794g. The osteogenic activity of an alcohol extract of bone was not removed by benzene or petroleum either but was precipitated by acetone. The precipitate was soluble in water and insoluble in oil." - Chem. Abstr.

See:

710	712	821	2453	2483
2491	2494	2495	2496	2524

TRACE ELEMENTS (ADVENTITIOUS AND NORMALLY OCCURRING)

2579
Alexander, G. V., Nusbaum, R. E. and MacDonald, N. S. THE BORON AND LITHIUM CONTENT OF HUMAN BONES. J. Biol. Chem., 1951, 192: 489-496. 21 refs. Abstracted in: Nuclear Sc. Abstr., 1951, 5: No. 6580; Chem. Abstr., 1952, 46: 2158a. Spectrographic investigations were made on 116 ashed samples of bone from 33 individuals to determine the amounts of boron and lithium normally to be found in the human skeleton. Results are discussed and presented in tables.

TRACE ELEMENTS (ADVENTITIOUS AND NORMALLY OCCURRING) (Continued)

2580
Asling, C. W., Hamilton, J. G., Axelrod-Heller D. and Louie, B. J. THE LOCALIZATION OF CERTAIN ALKALINE AND RARE EARTH ELEMENTS IN THE COSTOCHONDRAL JUNCTION OF THE RAT. Anat Rec., 1952, 113: 285-300. 12 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 1098.

2581
Barclay, R. K., Peacock, W. C. and Karnofsky, D. A. DISTRIBUTION AND EXCRETION OF RADIOACTIVE THALLIUM IN THE CHICK EMBRYO, RAT AND MAN. J. Pharm. Exp. Ther., 1953, 107: 178-187. 21 refs. Abstracted in: Ber. ges. Physiol., 1953, 161: 122. The femur, humerus, skull, sternum, rib and intervertebral disc were included among the various tissues studied.

2582
Braude, R., Free, A. A., Page, J. E. and Smith, E. L. THE DISTRIBUTION OF RADIOACTIVE COBALT IN PIGS. Brit. J. Nutrit., 1949, 3: 289-292. 17 refs. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 555. "The values for pancreas, liver and bile were lower, those for cartilage and long bone higher."

2583
Comar, C. L., Singer, L. and Davis, G. K. MOLYBDENUM METABOLISM AND INTERRELATIONSHIPS WITH COPPER AND PHOSPHORUS. J. Biol. Chem., 1949, 180: 913-922. 14 refs. Abstracted in Biol. Abstr., Balt., 1950, 24: No. 3488.

2584
Copp, D. H. IMPLICATIONS OF ATOMIC ENERGY IN MEDICINE AND DENTISTRY. III. APPLICATION IN THE STUDY OF BONES AND TEETH. Oral Surg., 1950, 3: 613-621. 47 refs. Abstracted in: Nuclear Sc. Abstr., 1950, 4: No. 4200. "After a brief review of the properties of bone tissue, a description is presented of work utilizing P^{32}, Ca^{45}, $Sr^{85,89,90}$, C^{14} in the study of mineral exchange, general bone metabolism, parathyroid effects on bone, rickets, severe P deficiency, and specific uptake by osteogenic tissue. This is followed by a brief discussion of the deposition of plutonium and fission products in bone and their elimination..." - Nuclear Sc. Abstr.

2585
Goldenberg, H. and Sobel, A. E. CALCIFICATION. IX. INFLUENCE OF ALKALINE EARTHS ON SURVIVAL OF THE CALCIFYING MECHANISM. Proc. Soc. Exp. Biol., N. Y., 1952, 81: 695-698. 16 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 19690; Chem. Abstr., 1953, 47: 4502^{f}. The influence of Ca, Sr, Mg, Ba, Be, Mn, Co and Ni were studied.

2586
Hamilton, J. G. THE METABOLISM OF THE FISSION PRODUCTS AND THE HEAVIEST ELEMENTS. Radiology, 1947, 49: 325-343. 10 refs. Abstracted in: Excerpta med., Sect. 2, 1949, 2: No. 3508; Chem. Abstr., 1948, 42: 2328^{g}.

2587
Hevesy, G. [C.] APPLICATION OF RADIOACTIVE INDICATORS IN BIOLOGY. Annual Rev. Biochem., 1940, 9: 641-662. 95 refs. See particulary, Skeleton: p. 645-646.

2588
Jolibois, P. and Hébert, C. SUR LA COMPOSITION CHIMIQUE DES PHOSPHATES DE CALCIUM NATURELS. C. rend. Acad. sc., 1946, 222: 569-572. Abstracted in: Chem. Abstr., 1946, 40: 3697^{6}.

2589
Katz, J. and Kornberg, H. A. ABSORPTION AND DEPOSITION IN THE SKELETON AND SOFT TISSUES OF THE RAT OF PLUTONIUM FED CHRONICALLY AS SOLUTIONS OF VERY LOW MASS CONCENTRATION. Hanford Atomic Products Operation, Biology Research. Annual Report, 1952. Richland, Wash., 1953, p. 78-84. 4 refs.

2590
Katz, J., Kornberg, H. A. and Parker, H. M. ABSORPTION OF PLUTONIUM FED CHRONICALLY TO RATS. I. FRACTION DEPOSITED IN SKELETON AND SOFT TISSUES FOLLOWING ORAL ADMINISTRATION OF SOLUTIONS OF VERY LOW MASS CONCENTRATION. 20p. Hanford Atomic Products Operation, Richland, Wash., 1953. (HW-28991) 7 refs.

2591
Kidman, B., Tutt, M. L. and Vaughan, J. M. EXCRETION OF YTTRIUM-91 IN RABBITS. Nature, Lond., 1951, 167: 858. Abstracted in: Biol. Abstr., Balt., 1951, 25: No. 36043. "Sr^{89} and Y^{91} in radioactive equilibrium were injected into weanling and adult rabbits, and the decay curves of their excreta were analyzed. The weanlings retained 0.63% of the dose of Y^{91} per g. of bone, adults 0.33%; weanlings excreted 12% in urine, adults 24%. (No age difference had been reported for rats.) Differences in excretion were not correlated with dietary differences."- Biol. Abstr.

2592
Koch, W. DER NACHWEIS VON THORIUM X IN DER WACHSTUMSFUGE UND SEIN EINFLUSS AUF DAS LÄNGENWACHSTUM BEIM JUGENDLICHEN KANINCHEN. Zschr. Orthop., 1951, 80: 532-546. 13 refs.

2593
Koch, W. DIE VERTEILUNG VON PETEOSTHOR UND SEINER HAUPTBESTANDTEILE THORIUM X UND PLATIN IM HERANWACHSENDEN ORGANISMUS UND DER EINFLUSS VON THORIUM X AUF DAS FUGENWACHSTUM BEIM JUGENDLICHEN KANINCHEN. Strahlentherapie, 1951, 85: 253-289. 15 refs. Abstracted in: Nuclear Sc. Abstr., 1952, 6: No. 63.

2594
Lindemann, R. EMISSIONSSPEKTROGRAPHISCHE ALUMINIUM BESTIMMUNG IN ASCHEN BIOLOGISCHER MATERIALIEN. Zschr. Physik., 1935, 95: 6-29. 23 refs. Abstracted in: Chem. Abstr., 1935, 29: 6916^{3}. The aluminum contents of various organs including bones of the dog are given in tabular form.

2595
Lux, H. DIE HÄUFIGKEIT DER SELTENEN ERDEN IN TIERKNOCHEN. Zschr. anorg. Chem., 1938, 240: 21-30. 11 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1938-39, 8: No. 4834; Chem. Abstr., 1939, 33: 2158^{4}. "X-ray spectrophotographs... showed the presence of Sc, V, La, Ce, Nd, Gd and Dy, the average concentration being 4 per kg. bone ash. This is approximately one-thousandth of their concentration in the earth's crust and the evidence is considered to prove that they do not occur in the lattice structure of the hydroxy-apatite of the bone." - Nutrit. Abstr.

2596
MacClure, F. J. MINERAL METABOLISM (FLUORINE AND OTHER TRACE ELEMENTS). Annual Rev. Biochem., 1949, 18: 335-354. 197 refs. A review of the literature appearing in the past five years on fluorine, boron, cobalt, manganese and zinc. A considerable portion of the section on manganese deals with bone.

2597
MacDonald, N. S. FIXATION OF METAL IONS BY BONE TISSUE. Fed. Proc., Balt., 1953, 12: 346. An abstract.

2598
MacDonald, N. S., Nusbaum, R. E., Alexander, G. V., Ezmirlian, F., Spain, P. and Rounds, D. E. THE SKELETAL DEPOSITION OF YTTRIUM. J. Biol. Chem., 1952, 195: 837-841. 8 refs. Abstracted in: Biol. Abstr., Balt., 1952, 26: No. 24245; Nuclear Sc. Abstr., 1952, 6: No. 5971. "It is concluded that yttrium is not a "boneseeker" of the same degree as stontium and lead."

TRACE ELEMENTS (ADVENTITIOUS AND NORMALLY OCCURRING) (Continued)

2599
Nishimura, H. ZINC DEFICIENCY IN SUCKLING MICE DEPRIVED OF COLOSTRUM. J. Nutrit., 1953, 49: 79-97. 2 pl. 25 refs. Abstracted in: Biol. Abstr., Balt., 1953, 27: No. 21628.

2600
Nusbaum, R. E., MacDonald, N. S., Alexander, G. V., Ezmirlian, F. and Spain, P. THE BORON AND LITHIUM CONTENT OF HUMAN BONES. 14p. University of California Atomic Energy Project, Los Angeles, Calif., 1951. (UCLA-129) 23 refs. Abstracted in: Nuclear Sc. Abstr., 1951, 5: No. 3837.

2601
Rayner, B., Tutt, M. and Vaughan, J. THE DEPOSITION OF ^{91}Y IN RABBIT BONES. Brit. J. Exp. Path., 1953, 34: 138-145. 12 refs. Abstracted in: Chem. Abstr., 1953, 47: 10649b. After a single intravenous injection of ^{91}Y in young rabbits, chemical and autoradiographic studies were made of the bones. Deposition of the element was extremely rapid and concentrated in the site of active growth beneath the epiphysis and in patches in the shaft "presumably in association with the connective tissue around the blood vessels." New bone formed long after the original injection also contained traces of the radio-yttrium, believed to have been reabsorbed from the blood in the normal processes of resorption.

2602
Rutishauser, E. ÜBER DIE VERTEILUNG DER SCHWERMETALLE IN SKELETT. BETRACHTUNGEN ÜBER DAS STÄRKERE BEFALLENSEIN GEWISSER KNOCHEN UND KNOCHENTEILE BEI GENERALISIERTEN KNOCHENLEIDEN. (DISKUSSIONSBEMERKUNG.) Schweiz. Mschr. Zahnh., 1935, 45: 93-95. 2 refs.

2603
Rygh, O. IMPORTANCE OF TRACE ELEMENTS IN NUTRITION. Research, Lond., 1949, 2: 340-341. 2 refs. Strontium and vanadium increase bone calcification while barium, zinc and thallium break down osseous tissue.

2604
Rygh, O. RECHERCHES SUR LES OLIGO-ÉLÉMENTS. I. DE L'IMPORTANCE DU STRONTIUM, DU BARYUM ET DU ZINC. Bull. Soc. chim. biol., Par., 1949, 31: 1052-1061. 10 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1949-50, 19: No. 5193; Chem. Abstr., 1950, 44: 3105a.

2605
Rygh, O. RECHERCHES SUR LES OLIGO-ÉLÉMENTS. II. DE L'IMPORTANCE DU THALLIUM ET DU VANADIUM, DU SILICIUM ET DU FLUOR. Bull. Soc. chim. biol., Par., 1949, 31: 1403-1407. 5 refs. Abstracted in: Nutrit. Abstr., Aberdeen, 1950-51, 20: No. 719; Excerpta med., Sect. 2, 1951, 4: No. 1248.

2606
Rygh, O. RECHERCHES SUR LES OLIGO-ÉLÉMENTS. III. SUR L'IMPORTANCE DU STRONTIUM, DU VANADIUM, DU BARYUM, DU THALLIUM ET DU ZINC DANS LE SCORBUT. Bull. Soc. chim. biol., Par., 1949, 31: 1408-1412. 13 refs.

2607
Schubert, J., Finkel, M. P., White, M. R. and Hirsch, G. M. PLUTONIUM AND YTTRIUM CONTENT OF THE BLOOD, LIVER, AND SKELETON OF THE RAT AT DIFFERENT TIMES AFTER INTRAVENOUS ADMINISTRATION. J. Biol. Chem., 1950, 182: 635-642. 23 refs.

2608
Scott, K. G., Axelrod, D. J. and Hamilton, J. G. THE METABOLISM OF CURIUM IN THE RAT. J. Biol. Chem., 1949, 177: 325-335. 2 pl. 4 refs. Abstracted in: Biol. Abstr., Balt., 1949, 23: No. 14386.

2609
Scott, K. G., Axelrod, D. J., Fisher, H., Crowley, J. F. and Hamilton, J. G. THE METABOLISM OF PLUTONIUM IN RATS FOLLOWING INTRAMUSCULAR INJECTION. J. Biol. Chem., 1948, 176: 283-293. 2 pl. 3 refs. "Plutonium was not found to be absorbed from the gastrointestinal tract to any extent. The skeleton was the main organ of deposition of plutonium, and the degree of retention in this organ was very great. No significant differences were observed in the metabolic properties of plutonium absorbed by the body for its three valence states. Radioautographs demonstrate the deposition of plutonium in the region of the endosteum, periosteum, and the endosteal covering of the trabecular bone."

2610
Scott, K. G., Copp, D. H., Axelrod, D. J. and Hamilton, J. G. THE METABOLISM OF AMERICIUM IN THE RAT. J. Biol. Chem., 1948, 175: 691-703. 2 pl. 7 refs. Abstracted in: Biol. Abstr., Balt., 1949, 23: No. 6341; Chem. Abstr., 1949, 43: 744n.

2611
Sheldon, J. H. and Ramage, H. A SPECTROGRAPHIC ANALYSIS OF HUMAN TISSUES. Biochem. J., Lond., 1931, 25: 1608-1627. 20 refs. Tissues both healthy and diseased were examined to determine if chemical elements other than those recognized as universal constituents of protoplasm were present. For cartilage, copper was found in traces in all specimens except from a full-term foetus; manganese was found in a specimen from a two-year-old female infant only; rubidium occurred in all; while a trace of lead was present in one and merest traces in four specimens. For parietal bone, copper was detected in specimens from both infant and foetus, but manganese and rubidium were absent. Bone from the infant contained a trace of lead.

2612
*Timm, F. BARIUM IN ANIMAL BONES. Deut. Zschr. gerichtl. Med., 1932, 19: 279. Abstracted in: Nutrit. Abstr., Aberdeen, 1933-34, 3: No. 533; Chem. Abstr., 1932, 26: 6000.

2613
White, M. R. and Schubert, J. THE ACTION OF SALTS OF ZIRCONIUM AND OTHER METALS ON PLUTONIUM AND YTTRIUM DISTRIBUTION AND EXCRETION. J. Pharm. Exp. Ther., 1952, 104: 317-324. 14 refs.

See:

426 427 727 1245 2058
2248 2402 2616 2675 2697
2707 2710

TRACE ELEMENTS - COPPER

see also TRACE ELEMENTS

2614
Baxter, J. H. and Van Wyk, J. J. A BONE DISORDER ASSOCIATED WITH COPPER DEFICIENCY. I. GROSS MORPHOLOGICAL, ROENTGENOLOGICAL, AND CHEMICAL OBSERVATIONS. Bull. Johns Hopkins Hosp., 1953, 93: 1-24. 5 pl. 22 refs. Abstracted in: Biol. Abstr., Balt., 1954, 28: No. 3006; Nutrit. Abstr., Aberdeen, 1954, 24: No. 852; Chem. Abstr., 1954, 48: 4656c; Excerpta med., Sect. 2, 1954, 7: No. 2051.

TRACE ELEMENTS - COPPER (Continued)

2615
Baxter, J. H., Van Wyk, J. J. and Follis, R. H., Jr. A BONE DISORDER ASSOCIATED WITH COPPER DEFICIENCY. II. HISTOLOGICAL AND CHEMICAL STUDIES ON THE BONES. Bull. Johns Hopkins Hosp., 1953, 93: 25-40. 4 pl. 11 refs. Abstracted in: Excerpta med., Sect. 2, 1954, 7: No. 2052. "It was concluded that the bone disorder consisted of a diffuse osteoporosis, with no primary disturbance in the calcification mechanism."

2616
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See:

2581 2583 2611

TRACE ELEMENTS - FLUORINE

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See:

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TRACE ELEMENTS - GALLIUM

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See:

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See:

2611 2626 2698

TRACE ELEMENTS - MANGANESE

see also TRACE ELEMENTS

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TRACE ELEMENTS - MANGANESE (Continued)

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2269	2596	2611		

TRACE ELEMENTS - PORPHYRINS

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TRACE ELEMENTS - RADIUM

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Calhoun, J. A. and Aub, J. C. THE DEPOSITION OF RADIUM SALTS IN BONES AND THEIR RELATION TO CALCIUM METABOLISM. J. Clin. Invest., 1937, 16: 664.

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Hoecker, F. E. and Roofe, P. G. STRUCTURAL DIFFERENCES IN BONE MATRIX ASSOCIATED WITH METABOLIZED RADIUM. Radiology, 1949, 52: 856-865. Discussion: p. 864-865. 5 refs. The distribution of radium in certain rat bones containing metabolically deposited radium is described.

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TRACE ELEMENTS - RADIUM (Continued)

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TRACE ELEMENTS - STRONTIUM

see also TRACE ELEMENTS

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2606	2651	2687		

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Roasenda, F. and Camurati, C. MODIFICAZIONI DELLA CARTILAGINE DI ACCRESCIMENTO DELLE OSSA LUNGHE NEL RATTO ALBINO IN CARENZA ACUTA SPERIMENTALE DI VITAMINA A. Minerva ortop., Tor., 1952, 3: 174-176. 8 refs. A study of the knee joint and tibia of young rats kept on a completely vitamin A-deficient diet showed reduction of thickness of the metaphyseal cartilage, irregularity and partial absence of the stratum of hypertrophic cells, reduction of osteoblastic and osteoclastic activity and marked scantness and irregularity of osseous trabeculae. These facts were interpreted as attesting the arrest of endochondral ossification and of the exchange processes of bone. The article begins with a review of the literature.

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VITAMIN INFLUENCE - VITAMIN A (Continued)

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Wolbach, S. B. and Hegsted, D. M. HYPERVITAMINOSIS A IN YOUNG DUCKS; THE EPIPHYSEAL CARTILAGE. A.M.A. Arch. Path., 1953, 55: 47-54. 8 refs. Abstracted in: Excerpta med., Sect. 5, 1953, 6: No. 3805; Nutrit. Abstr., Aberdeen, 1953, 23: No. 4150. Young ducks fed excessive doses of vitamin A in their diet for 2 to 3 weeks were then killed and their epiphyseal cartilages compared with those of control ducks. Many evidences of accelerated endochondral ossification were found in the hypervitaminosis A ducks. On the basis of earlier experiments, it was concluded that the response was exactly the same as that in chicks and mammals and that "the only differences are quantitative..."

2755
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VITAMIN INFLUENCE - VITAMIN B COMPLEXES

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See:

753	811	836	840	853
955	964	1157	1169	1206
1219	1441	1446	1510	1616
1979	2011	2142	2162	2253
2260	2606	2915		

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VITAMIN INFLUENCE - VITAMIN D (Continued)

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See:

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See:

788 1430

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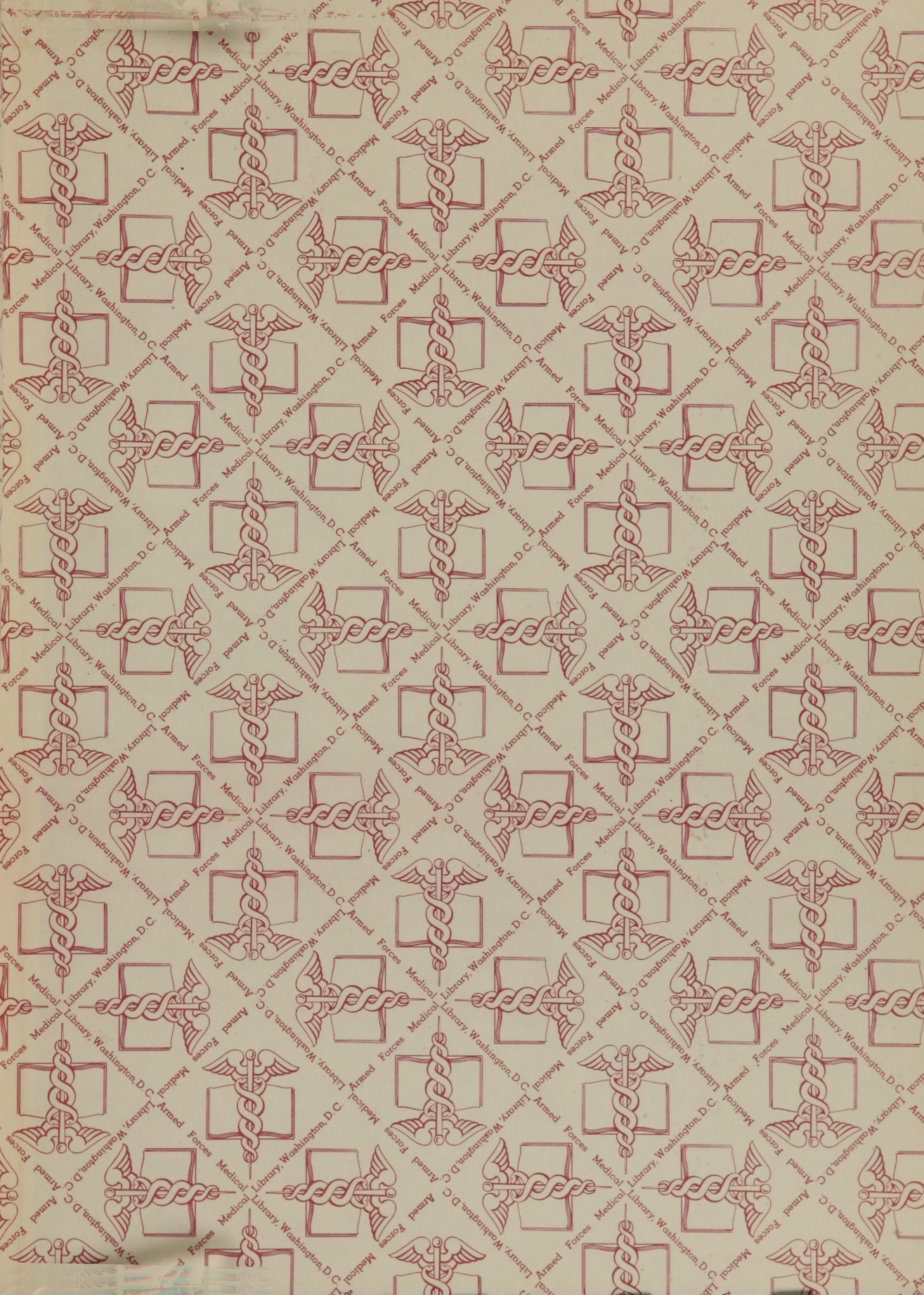
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