

bility beyond the limits of reason or common sense. Mr. Paterson told an amusing story of how he had operated some years ago on one of the leaders of the sect for perforated duodenal ulcer. When she was convalescent he asked her how she reconciled a surgical operation with her principles. She replied that he had told her that if she did not have the operation she would die, and that would have been suicide, which was not permissible in Christian Science!

Ancient workers in magic did not give the reasons on which their rites were based, and therein they showed their wisdom. The osteopaths, the latest cult of wonder workers, were less wise in that they based their methods of treatment on a supposition unsupported by scientific principles. They traced all diseases to a common cause, the pressure on nerves and arteries of misplaced or maladjusted bones, especially the spinal vertebrae. Would that diagnosis were so simple! These osteopathic lesions had never been observed by anatomists or pathologists or demonstrated by radiography, yet it was suggested in all seriousness that a Royal Commission should be appointed to inquire into osteopathic claims. If the osteopathic teaching were true, then all the medical knowledge accumulated step by step through the centuries by patient experiment and observation had been built up on a foundation of quicksands. The human body was a wonderful construction, and its ills were too varied to have a common cause.

The fame of anyone reputed to have magical powers spread very quickly, and cures were noised abroad, but those who had received no benefit realized their foolishness and maintained silence. A quack at a fair near Paris was selling nostrums and doing a roaring trade. At last the police intervened, and required him to produce his licence to practise. To their astonishment he did so, but begged them not to let the public know of it, as, if it were known, he would have no customers! The field of human credulity was boundless, and throughout the centuries knowledge and experience had had to bow the knee to stupidity. Was it too much to hope, asked Mr. Paterson in conclusion, that with the wider diffusion of scientific and medical knowledge the time would come when credulity and superstition would exist no more?

STRANGWAYS RESEARCH LABORATORY, CAMBRIDGE

The rapid development during 1934 of the embryological, physiological, pathological, and radiological researches in this institution, as shown in the report of the trustees, is all the more noteworthy because there is only space to accommodate thirteen workers at any one time. Reference is made to twenty-eight investigations, several of which are being pursued in association with researches in other institutions, including the Cambridge Biological Laboratories; the Lister Institute, University College, St. Bartholomew's Hospital, and Westminster Hospital, London; and the Storrs Agricultural Experiment Station, U.S.A. Among the conclusions that emerge may be mentioned the following.

An experimental analysis of the undifferentiated mandibular mesoderm in the embryonic fowl showed that the developmental potentialities of certain areas as regards the evolution of bone, cartilage, or muscle were completely and inherently determined, and that the osteogenic, myogenic, and probably also the chondrogenic tissues did not originate in the relative positions which they finally occupied in the jaw. From experiments *in vitro* on the knee-joint in the embryonic fowl it was concluded that the separation of the articular surfaces was the mechanical result of differential growth caused by the resistance of the undifferentiated tissue of the joint region and perichondrium to the expansion of the more rapidly growing centres, and that the characteristic shape of the knee-joint was intrinsic in the limb mosaic. The influence of environmental factors on the histological development of bone is being tested. It has been shown that the effect of pressure varies with the degree of calcification of the ground substance; when this is slight the cells and main fibre bundles become orientated at right angles to the pressure lines, whereas when this is more advanced they become orientated along the lines

of pressure. Defective nutrition prevented the osteoblasts from forming normal osteoid tissue and bone, there being produced large masses of soft collagenous tissue which did not calcify and contained very few cells. Grafting of osteogenic cultures or fragments of living bone on to the chorio-allantois led to partial or complete vascularization, the less well vascularized grafts showing much better ossification than the others. Tooth development *in vitro* is now being secured, it is believed, for the first time. All the stages in dentine formation have been demonstrated in hanging-drop cultures, but the evolution of enamel has not yet been shown. The formation of the vitelline artery from undifferentiated blood vessels has been proved to be preceded by a preliminary relative dilatation of a group of vessels before the circulation starts through it; this dilatation was not due to growth, since there was little or no mitosis in the vessel walls, and the endothelial nuclei became more separated. True growth did not begin until some eight or ten hours after the origination of the circulation through the dilated vessel. The study of fibrillation which is continuing has confirmed the view that its origin is the elongation of the tissue beats into cycles and their subsequent fusion. The biological effect of gamma rays on cell division *in vitro* is constant for the same dose below a certain critical value whatever its intensity within experimental limits. The periods of maximum radio-sensitivity of fowl embryos *in ovo* to gamma radiation appear to correspond with the periods of maximum growth rate. The pathology of cutaneous wound healing *in vitro* is being studied in explants of foetal rat and human skin.

The trustees appeal for a modest but sufficient income to enable the work of any year to proceed without the embarrassment consequent upon the fear lest there may be no funds to complete researches which are showing definite signs of valuable fruit. The increase in subscriptions has not kept pace with the growth in the work of the laboratory and the necessity of endowing the new lines of research which grow out of it. The laboratory, it is added, is the recognized centre for tissue culture work and also a training place for those wishing to follow lines of research which seem likely to favour the progress of medicine as well as of biology.

EPSOM COLLEGE

The eighty-second annual general meeting of the governors of Epsom College was held at 49, Bedford Square, W.C., on June 21st, with the president, Lord Leverhulme, in the chair. The governors received the names of the foundationers and pensioners elected by the Conjoint Committee, as well as details of the amounts granted to some of the unsuccessful applicants from the new Sherman Bigg Fund.

In presenting the report of the council for the past year the president paid a tribute to the prudence, foresight, and efficiency of the retiring treasurer, Sir William Hale-White, who during the ten years of his office had done so much for the College. In this relatively short space of time the College had extended its benefits, got rid of its debts, enlarged and modernized its buildings, and increased its endowed fund. Turning to the work of the other members of the College Council, Lord Leverhulme spoke of the value of the services so generously given by the chairman of the council, Sir Raymond Crawford, Dr. Henry Robinson, chairman of the Conjoint Committee, Dr. Harold Spitta, chairman of the Executive Committee, Dr. John Fawcett, Mr. George E. Waugh, and Dr. Arnold Lyndon, deputy chairman of the executive committee for finance, school, and selection matters. On the motion of Sir William Hale-White, Dr. John Fawcett was unanimously elected treasurer of the College in his place.

The report was adopted, and the proceedings ended with the passing of a warm vote of thanks to Lord Leverhulme for presiding. A list of the successful candidates is advertised in this issue and appears on another page.

Founder's Day will be celebrated at Epsom College on Saturday, July 27th—the second day of the cricket match between the College and the Old Boys. After a service in chapel for College and parents there will be an assault-at-arms at 2.15 p.m. At 3 Mr. T. Hollis Walker, K.C., will give away the prizes and declare open the block of new classrooms. Tea will be served on the cricket ground, and at 8 p.m. the Choral Society will perform *The Pirates of Penzance*.