the biological control of this central event of the cell cycle. In the case of calf thymus DNA polymerase, no primer occurring naturally has yet been detected in cells, and the existence of such primer may be an extremely transient event in the cell. It is perhaps significant that hypotheses proposing control of DNA synthesis through regulation of precursor pools was not mentioned during the discussions.

Although the main emphasis was on the relation of DNA synthesis to the cycle, several speakers dealt in whole or in part with such problems as growth in dry mass during the cell cycle and the control of cell division by specific compounds. Papers dealing with proteins associated with chromosomes led to the generalized conclusion that all proteins of the chromosome, including histones, are normally turning over or being replaced continuously in the chromosome. The recent demonstrations of greater heterogeneity among histone molecules have produced more vigorous consideration of the question of control of genetic activity by these proteins. Histone heterogeneity so far demonstrated is still far short of the amount required by such a thesis. It was also pointed out that a stretch of DNA was insufficient information to specify the synthesis of its own histone and that these proteins must have their origin in a limited fraction of the genome.

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Nucleon Structure

More than 400 physicists from twenty countries attended the recent international conference on nucleon structure at Stanford University, Stanford, California (24–27 June). Of principal interest was the present experimental evidence concerning the theory of elementary particles based on analyticity principles and Regge poles. The latest results on K-meson-proton scattering experiments at the Brookhaven Alternating Gradient Synchrotron, reported by Lindenbaum, are very similar to the π meson-proton scattering results previously reported and thus are quite different from the behavior of proton-proton scattering cross section as a function of energy. In the analyticity theories, all strongly interacting particles are taken as composites involving

all other strongly interacting particles; hence, at high energies, all should show the same scattering behavior. The conclusion is that simple Regge poles do not dominate the scattering process. This had already been suspected by some theorists. The Brookhaven proton-antiproton elastic scattering results are also quite different from the proton-proton scattering although the number of events reported was not large enough to be definitive. Further evidence against the simple Regge pole concept was provided by the Dubna (U.S.S.R.) report on proton-proton scattering at high energies but at angles small enough to show interference between the coulomb force and the nuclear force (V. Grishin).

An alternative way of characterizing the elementary particles, that of unitary symmetry, has become increasingly important (Y. Ne'eman). Of the various Lie algebras of rank two into which the elementary particles may be fitted, the SU (3) group is the only one which does not give predictions which are contradicted by experiment. Some particles predicted by the SU (3) group approach have not as yet been seen, but the unitary symmetry concept appears very promising. The extension of experiments to still higher energies is most desirable.

Investigations on the effects due to two-photon exchanges have been made with the Cambridge Electron Accelerator. The results, reported by J. K. Walker, are in agreement with the Rosenbluth one-photon exchange formula up to momentum transfers of 1.3 Bev/c. The Stanford experiments of Browman and Pine, while inconclusive because of the low counting rates, indicate little if any difference between electron-proton and positron-proton cross sections. A preliminary report by J. Perez y Jorba (Orsay) on a very difficult experiment measuring the polarization of the recoiling protons in elastic electron-proton scattering showed that a small polarization is indicated but the results are not yet firm enough to be significant.

Groups of researchers at Stanford, Cornell, Orsay, and Harvard have made measurements of nucleon electromagnetic form factors. The proton electric and magnetic form factors have been determined with increased precision at energies up to 1.3 Bev. Preliminary measurements by the Harvard group up to momentum transfers of 2 Bev/c can be fitted by a range of values but it is clear that the two form factors

cannot be equal and also be independent of momentum transfer at the higher momentum-transfer values. Studies of the neutron electromagnetic form factors from electron-deuteron scattering were reported by Stanford after using electron-proton coincidence techniques, and by Cornell with electron-neutron and electron-proton coincidence techniques.

Another possible approach to the determination of the neutron form factors was outlined by R. Hofstadter in his description of the Stanford electron-scattering experiments on tritium and helium-3. By using a simplified model by Schiff, the previously measured proton electric and magnetic form factors, and the neutron magnetic form factor, an electric form factor for the neutron can be derived which is in good agreement with that determined from electron-deutron experiments. The nuclear form factors of tritium and helium-3 are also determined. The radii associated with both tritium form factors and the helium-3 magnetic form factor are about 1.7 fermis while that of the helium-3 electric form factor is almost 2 fermis. A more exact theoretical treatment is needed before detailed information can be obtained from these measurements.

The Harvard group also reported on the beginnings of nucleon spectroscopy. Inelastic scattering of electrons on protons clearly shows the first two excited states of the pion-proton system.

C. S. Wu discussed her experiments testing the conserved-vector-current theory and weak-interaction form factors. The telegraphic report from CERN concerning the neutrino experiment, which announced a counting rate about 50 times that achieved in the Brookhaven-Columbia neutrino experiment indicated that weak-interaction form factors will be measurable in the not-too-distant future although still higher counting rates will be needed.

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Forthcoming Events

August

26–30. American **Mathematical** Soc., 68th summer, Boulder, Colo. (Mrs. R. Drew-Bear, Special Projects Dept., AMS, 190 Hope St., Providence 6, R.I.)

26–30. **Rheology**, 4th intern. congr., Providence, R.I. (R. S. Rivlin, Brown Univ., Providence 12)

26–30. **Solar Spectrum**, intern. symp., Utrecht, Netherlands. (C. de Jager, Theoretical Dept., Sterrewacht, Servaasbolwerk 13, Utrecht)

26–31. **Haematology**, European Soc., 9th congr. Lisbon, Portugal. (Secretary, Haematology Congr., Dept. of Haematology, Inst. of Tropical Medicine, Lisbon)

27–30. **Alaskan Science** Conf., Anchorage. (A. H. Mick, Alaska Agricultural Experiment Station, Palmer)

27–30. American **Physiological** Soc., Coral Gables, Fla. (M. Edwards, Physiology Dept., Univ. of Miami School of Medicine, Coral Gables 34)

27–30. **Computing Machinery** Assoc., natl. conf., Denver, Colo. (F. P. Venditti, Univ. of Denver, Denver 10)

27–31. American Inst. of **Biological Sciences**, Amherst, Mass. (R. A. Jester, Dept. of Floriculture, Univ. of Massachusetts, Amherst)

The following member societies will hold business meetings during the annual AIBS meeting in Amherst, Mass.

For further information, contact the secretary of the society in question.

American Bryological Soc., 26 Aug.

American Fern Soc., 27 Aug.

American Microscopical Soc., 28 Aug.

American Phytopathological Soc., 26 Aug.

American Soc. of Plant Taxonomists, 25 Aug.