cross precipitin reactions with azosera, and azoproteins interact with ureido sera (Mutsaars and Grégoire). Consequently, the number of possible group reactions is definitely enlarged together with the scope of polyallergy.

A third method of conjugation of proteins with aromatic hydrocarbons was described by Gaunt, Higgins, and Wormall in 1936. These investigators coupled at a neutral reaction proteins with a benzyl carbonyl chloride, forming a benzyl carbonato-protein ($R–HCHN \cdot OCOH_2CH_5C_6$). This allergenic protein complex possesses a reduced number of free amino groups and an intact protein specificity, which is destroyed in the course of the preparation of the above-mentioned protein conjugates. This method represents an elaboration of a technique used in 1933 by Bergmann and Zervas in the conjugation of benzylcarbonyl chloride with aminoacids. The injection of the benzylcarbonato-proteins gives rise to the development of precipitins and complement fixing immune bodies.

Wood and Fieser suggested recently that a carcinogenic hydrocarbon may combine directly with an intact constituent of the cell protoplasm by becoming attached to one sulfur following the opening of the proteinoid disulfide (-SS-) linkage. This interaction between carcinogen and cellular protein may represent the initiating change leading to carcinogenesis.

Azophenol glycosides of glucose and galactose coupled with globulin, such as p-aminobenzyl-beta-glucosides of glucose or glucuronic acid, possess an antigenic character, and cause the production of chemospecific antibodies (Goebel, Avery, and Babers; and Goebel and Goodner). Bergmann and Fraenkel-Conrat obtained in vitro by the action of papain, combinations of aniline with acetyl-, benzoyl-, and carbobenzoxy-derivatives of alanine, leucine, and phenylalanine. Only the laevo-forms and not the dextro-rotary isomeric aminoacids participated in these reactions.

In addition to the sensitizations produced in animals by the introduction of aromatic hydrocarbon-protein complexes, there exist a number of experimental observations, confirming similar clinical evidence, which indicate that certain non-conjugated, aromatic chemicals may elicit allergic reactions when brought in contact with the tissues of man and animals [arsphenamine (Swift); neoarsphenamine (Frei; and Sulzberger); phenylhydrazine (Jadassohn); p-phenylene diamine (Mayer; and Diener); 2.4-dinitrochlorobenzol, 1.2.4-trinitrobenzol, p-cresylchloride, and various dichlorodinitrobenzols (Landsteiner and Jacobs); p-aminophenol, p-nitrosophenol, 2.4-dinitrophenol, and acetylaminophenol].

Other chemically similar substances, tested by the same method gave negative results in the hands of Landsteiner and Jacobs (nitrochlorobenzols, quinine, resorcine, acetylsalicylic acid, dibenzanthracene, and diazo dyes coupled with resorcinol), in spite of the fact that some of these substances have given rise to drug allergies in man. Subcutaneous, intravenous, or intraperitoneal injections of suspensions of 1.2.5.6-dibenzanthracene, 3.4-benzpyrene,