(ions or radicals) as they pass a group invite (by their unsatisfied affinity) an individual of the group to leave it, and every now and then one of these free individuals is impelled to attach itself to a group. Let us suppose we have twenty such groups, and this compound group (or giant molecule) by actual count has this formula: $White_{200}$, $Negro_{250}$, $Indian_{85}$, $Chinese_{50}$. If a couple of children stray away the group becomes $white_{200}$, $negro_{249}$, $Indian_{84}$, $Chinese_{50}$, and the group is no longer the same. This is precisely what is occurring in the giant molecules of the body; the arrival of a new ion of food material, the separation of a few ions of excreted matter make for the moment a new aggregation, and these small changes mean a constant rearrangement, and constitute the matabolism of living matter.[1]

The Chemistry of the Nucleus.—The composition of the nucleus differs from that of the cytoplasm; **it contains no potassium, no carbohydrates, and, speaking generally, no fats, but, on the contrary, does contain phosphorus and "masked" iron (that is, iron in a complex ion), which appear in the cytoplasm but rarely and in small amount.**

The proteins of the nucleus show some peculiar characters; gastric juice will dissolve ordinary proteins, but the nucleus of a cell is resistant to it, because its nucleoproteins consist of albumin and nuclein combined, and the latter is resistant. **Nucleins** contain 2 to 9 per cent. of phosphorus, can be split up into albumin and a nucleinic (or nucleic) acid, of which there are several. Nucleinic acid can be further disintegrated into the **xanthin** and other **purin bases** (uric acid, xanthin, guanin, adenin, and hypoxanthin). These derivatives are important clinically because they exercise a toxic effect upon tissues, especially the kidney, and it is these which constitute the drawback to a protein diet in persons whose powers of elimination are imperfect. The existence of phosphorus and the xanthin-base groups constitutes the difference between the nucleus and other protoplasms. These groups and the "masked" iron and phosphorus are specially concerned with oxidation, the importance of which for the cell is absolute.

Before leaving this part of the subject we would recapitulate our idea that the "biophoric molecules" or masses are the active part of the cell; that they are huge molecules aggregated of many large groups, of which each may be considered a ring of molecules with affinities which are being satisfied by various other groups; that some affinities are constantly unsatisfied; that ions and molecules are being shed off and taken on, and groups are joining groups by new affinities, that groups are breaking off and that this activity means metabolism, means **life.** It must be understood, too, that while from moment to moment the composition of the biophore may vary, the average composition over long periods of time remains the same.

[1] For a fuller statement of these views regarding the structure of the protein molecules see Adami's Principles of Pathology. A very clear expression of similar views is given in the first chapter of Vaughan on Protein Split Products (New York and Philadelphia, 1913), a work that well deserves study.