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THE question about the internal structure of the stars cannot be separated from the problems of stellar evolution. This is a consequence of the simple fact that individual stellar configurations, observed by us, must be considered as links of certain evolutionary sequences. The stores of energy, which supply stellar radiation, are determined by the initial state of the star at its origin. It is extremely important, therefore, for the theories of internal structure of the stars to know in what way and what kind of matter the stars originate from.

Traditional is the point of view that stars originate from diffuse matter, from nebulæ, in particular. This point of view has become so habitual that it seems rather audacious to suggest that there are no serious grounds supporting it. But meanwhile it is just the way matters are standing.

A study of stellar associations permitted us to pick out stars of a quite recent origin. Such *young stars* belong, in the main, to two types: (1) blue stars of high luminosity and (2) late type dwarfs with irregular changes of their luminosity (T Tauri type stars)—It is possible that there exist young stars of some other categories (there are some direct proofs in favour of it, but we shall discuss here the above-mentioned two types of stars).

It is rather essential that blue stars of high luminosity, usually met in groups in the space (0-associations and open clusters) are very frequently connected with diffuse nebulæ, sometimes very bright ones. For instance, among stellar clusters, containing 0-type stars, almost all of them are connected with diffuse nebulæ located in their vicinities.

The same is also the case in respect to associations of T Tauri type stars, connected with diffuse nebulæ (either with gaseous, or dust nebulæ). And at last, direct connection of individual T Tauri type stars with cometary nebulæ is quite evident.

The fact that all mentioned young stars are located in diffuse nebulæ, or in their vicinity, is, as it seems, a direct proof in favour of the origin of stars from diffuse matter.

If we add to the said above that the Herbig-Haro objects contained in the Orion association and apparently representing the earliest stage of evolution of the T Tauri type stars, are embedded in small nebulæ of irregular form, the connection between the origin of stars and the processes going on in the diffuse nebulæ becomes quite evident.

However, recent studies of the physics of the diffuse nebulæ have shown that these objects are unstable formations. They must rapidly disintegrate. The life-time of a diffuse nebula must be of the order of 10^6, and no more then 10^7 years. In this case it may, naturally, be suggested that diffuse nebulæ are but phenomena of short duration, accompanying the process of stellar formation. In other words, it may be admitted that stars and nebulæ are originating simultaneously, in groups, but the life-time of stars is large—of the order of 10^{10} years, while nebulæ dissipate rapidly. The older stars are therefore, as a rule, not connected with nebulæ.

Only one class of cosmic objects, in which the connection between a star and a nebula is of a simple and clear character, is known to us. These are the planetary nebulæ. The fact of the expansion of planetary nebulæ suggests that in this case the relation between the central star and the nebula is of such a kind that the nebula was ejected by the star. Thus, in this case, not the star has condensed from the nebula, but the nebula has originated from the star. There are, indeed, some facts in favour of the youth of the nuclei of planetary nebulæ. The suggestion about a simultaneous formation of the star and the nebula from some other matter is, therefore, not excluded, but it is out of question that the star has originated from the nebula. The age of the planetary nebulæ must be in this case of the order of 10^4 years.

Recent observations of the Herbig-Haro objects carried out by Herbig favour the suggestion that stars originate in them in the course of quite short intervals of time, literally in our sight. There are full grounds to suggest that nebulæ surrounding these stars are also very young, their age being of the order of 10^4–10^5 years.

It is interesting, however, that between the nebulæ in the Herbig-Haro's objects and the planetary nebulæ there is a similarity, namely that their diameters are of the same order (from 0·01 to 0, I parsec).

We see that though these two types of objects belong to totally different stellar populations, their extreme youth is in both cases connected with the rather small volume of the nebula.

The long age of the majority of stars, located for instance in O-associations (of the order of 10^6–10^7 years) corresponds to the presence of diffuse nebulæ of several ps. in diameter.

If, along with this, the fact of the expansion of individual diffuse nebulæ of peripheral form contained in stellar associations is taken into account, the following conclusion follows directly:—

To the earliest stages of stellar evolution correspond small volumes of nebulæ connected with such stars. Nebulæ of extremely large volumes correspond to later stages of stellar evolution.

Thus, the evolution does not proceed in the direction of a condensation of the nebulæ (in result of which the stars are originating), but in the direction of the expansion and dissipation of the nebulæ, which originated in the process of formation of stars and stellar groups.

There are no doubts, however, that the evolution of nebulæ is not restricted with their simple expansion. In so far as stars originate in groups, the nebulæ, the origin of which is connected with the origin of individual stars, may in the course of their expansion interact with one another. It is quite probable that the large diffuse nebulæ, like, for example, the Orion nebula, have originated in such a way.

It must also be taken into account that for a formation of a star as a radiating body from a prestellar matter, a certain interval of time is needed. Meanwhile the diffuse matter, which originated around the future star, may already begin to expand. In this case the radiation of the diffuse matter will start only at a certain stage, when this matter has already expanded to a certain volume and the star (or stars) had time enough to transform into a radiating body. Thus, in spite of the simultaneous origin of the star and the nebula, an impression may be created outwardly that a star originates in some already existing nebula and starts to illuminate it.

We did not pay attention to a most interesting question: what matter do the stars and nebulæ originate from? This most essential question of modern stellar cosmogony must be answered for the meantime rather indefinitely: the protostars must be *dense bodies* of yet unknown nature. They must not emit any appreciable radiation, at least in the visual spectral region.

Several years ago, when the hypothesis of the existence of dense protostars was suggested by us in order to explain the phenomena observed in stellar associations, it was met with scepticism by the majority of astronomers.

t must be admitted that the suggestions in favour of this hypothesis were rather uncertain at that time. Now we possess numerous data in favour of this hypothesis.

To-day, when we celebrate the Silver Jubileum of the Indian Academy of Sciences, we must admit that the astronomers of the great Indian people have made an essential contribution into the problem of investigation of the internal structure of the stars. Let us hope that the solution of the fundamental problems dealing with the origin of stars and nebulæ will be approached in the course of the nearest years.