

SCIENCE NEWS

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GALACTIC CLUSTERS

DYNAMICAL friction is largely responsible for the continued existence of galactic clusters like the Pleiades. Dr. S. Chandrasekhar, of the Yerkes Observatory, points out that it also furnishes a strong support for the short life of these clusters, a life of only about 3,000,000,000 years. This period of 3,000,000,000 years is about the age of the earth, and therefore this theory has a bearing on the time scale for the universe.

Dr. Chandrasekhar believes that the force acting on a star varies because of the relative motions between the stars. The period of such fluctuation would be roughly equal to the time required for an average star to cross the average distance between the stars, which is estimated to be approximately 10,000 years. While it would be practically impossible to predict what would happen to a given star, its probable course can be followed.

If a period much longer than the estimated 10,000 years is considered, the change in velocity of a star would be the result of the addition of a large number of such fluctuations. The simultaneous influence of numerous fluctuations acts as a brake and has a decelerating effect in the direction of motion. This effect which causes each star to hold back all the other stars is dynamical friction. "It is friction because it has a decelerating effect on the motion of the star, and dynamical because it ceases to operate when the star is at rest and acts again only when it is in motion."

On account of the fluctuations, stars may be expected to be accelerated beyond the velocity of escape and the rate at which this happens gives a clue to the life of the cluster. Dr. Chandrasekhar believes that if dynamical friction is ignored, the cluster will disintegrate within 100,000,000 years. But if the frictional term is included, he finds that galactic clusters have lives averaging from 3,000,000,000 to 5,000,000,000 years.

This study into the dynamics of star clusters was presented by Dr. Chandrasekhar at the First National Conference on Physics held in May in Puebla. A number of American investigators attended the meeting at the invitation of the Mexican President Manuel Avila Camacho and the Governor of the state of Puebla, Dr. Gonzola Bautista.

SULFA DRUGS

Two new sulfa drug triumphs, a new chemical from liver that promises to save shock-threatened lives of burn victims, and studies showing vitamin B complex pills increase work output under certain conditions are the major medical advances reported in the *Journal* of the American Medical Association.

A relatively new sulfa drug, called sodium sulfathiazole desoxyephedrine, originally developed for nasal infections, greatly speeds recovery in the first, acute stage of shipyard eye (epidemic keratoconjunctivitis), according to the report of Dr. Harry S. Gradle, of Chicago, and Dr. G. H. Harrison, of Waukegan, Ill. Instead of lasting

from 14 to 18 days, as it does in untreated cases, with the new treatment the first stage of this disease was reduced to from three to seven days.

Small daily doses of sulfadiazine effectively controlled an outbreak of scarlet fever at a U. S. naval station is stated by Lieut. Robert F. Watson, Lieut. Comdr. Francis F. Schwentker, Comdr. J. E. Fetherston and Dr. Sidney Rothbard, of the U. S. Navy Research Unit at the Hospital of the Rockefeller Institute, New York. They state that there is now enough evidence to justify the use of this drug in controlling epidemics not just of scarlet fever but "of streptococci infections of the respiratory tract."

A substance in liver, and in some commercial liver extracts used for treatment of pernicious anemia, is effective in fighting shock due to burns, was discovered by Dr. Myron Prinzmetal, Dr. Oscar Hechter, Dr. Clara Margoles and George Feigen, of the Cedars of Lebanon Hospital and the University of Southern California, in experiments with rats. The antishock substance in liver is not the same as the anti-anemia principle. Efforts are now being made to isolate it.

War workers whose jobs require "difficult muscular effort" and who can not because of local food and eating-place conditions obtain adequate diets should be given doses of the vitamin B complex to keep up their strength and work output, it appears from the report of studies at the Northwestern University Medical School by Dr. Clifford J. Barborka, Dr. Eliot E. Foltz and Dr. Andrew C. Ivy, who is now on leave serving as scientific director of the Naval Medical Research Institute, Bethesda, Md.

Decreased work output, tired feeling, lack of pep and appetite, and leg pains occurred when university students were put on a B deficient diet such as large numbers of workers may be eating. Adding the B complex to the diet restored work output to efficient levels and banished the other symptoms.

GERMAN MEASLES

GERMAN measles, a mild and rarely fatal childhood ailment, is giving health authorities a new puzzle. City health officers report to the U. S. Public Health Service that in certain cities a much larger proportion of this type of measles than of true measles has been occurring. Health authorities are wondering whether the increase means the disease is also becoming more serious.

In New York, for example, there were 1,000 more cases of German measles than of true measles during the first three months of the year. Never before have New York City's health department records shown a larger proportion of German measles than of the other kind. For more than 20 years, German measles cases have averaged less than 15 per cent. of the total number of cases.

Los Angeles reports a similar situation. Last year there were 1,323 cases of German measles and 10,343 cases of true measles in that city. This year the figures were

almost the same for the two diseases: 2,163 cases of German measles, 2,607 cases of true measles.

The puzzling situation is worrisome because a similar increase in German measles cases in England recently was accompanied by alarming complications of this ordinarily harmless sickness. Encephalitis, the serious brain inflammation, popularly called sleeping sickness, was one of the complications.

No such complications have been reported so far, in New York City at least, but if the disease is becoming more prevalent, health officers naturally wonder why and whether the increase means that the causative germ has grown more virulent and may cause a more serious kind of sickness as well as more cases.

THE UNITY OF MIND AND BODY

IF every labor leader as well as every manager of industry realized that the hands that do the work and the minds that also work and plan are parts of the human body that depend upon each other, present labor difficulties would come closer to solution in the opinion of Dr. William E. Ritter, emeritus professor of biology of the University of California and honorary president of Science Service.

"The present serious outbreak of labor troubles must depend in part for its remedy on education, regardless of what may be undertaken by legislation and other political means," Dr. Ritter said. "As the discussion of the ideals of unity have been carried on, these refer to social, national and international unity. But from the educational point of view, perhaps the most important thing is the unity of the individual himself. No aspect of this is more crucial than that of the age-old disruptive duality of mind and body. So far as philosophy and theology are concerned, the individual is a house divided against itself. Psycho-biology calls attention, however, to the fact that mind and body, with hands as a climatic aspect of the body, form a unity of such a nature that the attempt to separate them can result in nothing less than intellectual and spiritual disintegration.

"If every person who should become a leader in industrial labor were to be adequately conscious of what he and every one of those whom he leads really is—a unit—his attitude would be quite different from what is now being manifested in labor troubles. This would be equally true of owners and managers of the industries. It appears that there would be a basis for the leaders of the two aspects to get together for considering their mutual interests and their disagreements. The meliorating conditions would not be applicable only to economic problems, but to all political organization and effort so far as government has to do with economic and industrial matters."

Dr. Ritter explained that recent investigation in psycho-biology has shown that the cooperative activity of all the most important parts of the organism, head and hands with the rest, has a scientific basis. If we had not human brains and mind, we would not have human hands and if we had not human hands we would not have human brains and mind.

The skilled surgeon using his head and hands in combination is just as much a laborer as the man or woman

who works as a mechanic in the production lines of bombers and tanks and other machines. Dr. Ritter pointed out that both of them would be unable to do their tasks in life if it were not for the fact that they use their heads and hands in combination.

ITEMS

WHEAT harvesting has moved up the map to the middle of the great grain belt, and is now in progress as far north as Nebraska and central Illinois, the regular weekly survey of the U. S. Weather Bureau indicates. The crop looks good—better than early estimates would have warranted. Farther north, the grain is ripening in Minnesota and Washington, and heading up well even along the Canadian boundary. At the opposite end of the country, cotton is doing well on the whole, though balanced growth is hampered by too much rain in Georgia and South Carolina, and in Oklahoma chopping is behind schedule because of labor shortage. Of the major crops, corn is the only one not justifying at least moderate optimism. Too much rain made planting too late over large areas in the central states, so that everywhere the unusual spectacle presents itself, of cornfields just sprouting side by side with other cornfields already in tassel.

SIGNS that an epidemic of infantile paralysis may be brewing for this summer appear in reports from Southwestern states especially to the U. S. Public Health Service. For the week ending July 3, latest for which figures are available, the total number of cases reported from all states and the District of Columbia was 190. The increase over the previous week's total of 136 cases is made up of increases reported from Texas, where the cases jumped from 39 the week of June 26 to 80 the week of July 3, and Oklahoma, which had an increase from 8 cases to 23. Infantile paralysis cases are expected to increase at this season, but the total number of cases reported since the first of the year was larger, on June 26, than for the same period of any year since 1934. The total for the first six months was 894, of which more than half were reported from California and Texas. In California the cases seemed to be concentrated in Los Angeles County and other southern counties. For the week ending July 3, however, this state reported 57 cases, which is one less than for the previous week. No other state reported more than five cases for the week of July 3.

MECHANIZED mass transplanting of tree seedlings has been successfully carried out at Muskegon, Mich., by using a machine originally designed for setting out celery seedlings slightly modified to accommodate the differently shaped and rooted young trees. During the past season nearly a million and a quarter pine seedlings were set out by the new method, at an over-all cost of 46.8 cents a thousand. Machine transplanting promises to do a great deal toward keeping up the necessary propagation of new forest stock in spite of lack of labor needed for setting out the seedlings by the old hand method. Each machine is operated by a crew of three, one man and two women. Details on the new machine and its operation will be presented in the forthcoming issue of the *Journal of Forestry*.