skilfully analyzed to prove that no Europeans, except possibly Spaniards or Portuguese, can be acclimated in the zone lying between the isotherms twenty-five degrees north and south of the equator. Of the French colonies, Algiers and New Caledonia are the only ones not situated within these limits. From every point of view, the French colonial policy is shown to be disastrous. Neither the French race or language can thus hope for expansion. Even commercially it is a failure, for foreign nations can undersell France in her own colonies. French emigration is always fatal when it is perpendicular instead of parallel; and there can be no national advance until an intensive colonial culture be substituted for the extensive system so popular in this day. The work has many interesting points for the ethnologist to consider, such as the relations of European colonists with indigenous races. It is written with much force and even grim humor, as when the author, after analyzing the statistical situation of Algiers, sums it up with the picture of the twenty-five thousand productive colonists, each seated on four graves, and guarded by a brace of soldiers.

These two books are suggestive not only for their political philosophy of freedom, but also as furnishing clear and forcible views of the difficulties which stand in the way of French progress.

STARS IN RAPID MOTION.

THE small value of the parallax of 40 o^2 Eridani (*Science*, vi. 358), combined with its large proper-motion (4″.10), brings it into prominence as the third or fourth of the stars, moving rapidly across our line of sight. Since a list of these stars seldom appears in works on popular astronomy, we give below the proper-motions μ, the parallaxes π, and the resulting velocities v, in miles per second across our line of sight, of the eight stars which head the list in the order of velocities. The method of deriving the velocities is of course very simple. If a star's annual proper-motion equals its parallax, it moves across our line of sight each year a distance equal to the semi-major axis of the earth's orbit. (How much it moves to or from us can only be told by the spectroscope.) Therefore, since this motion increases directly as μ, and inversely as π, we have for the annual motion across the line of sight —

$$v\,t = a\,\frac{\mu}{\pi},$$

or, calling a 92.5 million miles, and t the number of seconds in a year, we have for the velocity in miles per second —

$$v = 2.93\,\frac{\mu}{\pi}.$$

Of course, the proper-motions below are much more accurately known than the parallaxes, and where the latter are small the values of v are correspondingly uncertain. The authorities for the adopted values of π are given in the column following them. In the case of 40 o^2 Eridani, we have weighted Gill and Hall 2 and 1 respectively, as the former determination was made under much the more favorable conditions, and rests upon two comparison-stars. The latest values of Hall and Ball for 61 Cygni are practically identical. The probable errors of all the values of π are generally less than 0″.02.

Star's name.	μ	Parallax.		v
		π	Authority.	
Groombridge 1830....	7″.05	0″.09	Brünnow	230
Lacaille 9352.....	6 .96	0 .285	Gill.....	71
40 o^2 Eridani	4 .10	0 .185	Gill and Hall.....	65
e Eridani	3 .10	0 .14	Elkin.....	65
ϵ Indi.....	4 .68	0 .22	Gill and Elkin.....	62
Lalande 21258.....	4 .40	0 .27	Auwers.....	43
61 Cygni	5 .23	0 .48	Hall and Ball	28
Lalande 21185.....	4 .75	0 .50	Winnecke.....	28

The first will be recognized as Newcomb's 'runaway star,' so graphically described in his 'Popular astronomy;' but it will be seen that the others have velocities which are at least comparable with that of Groombridge 1830, and indicate momenta that represent vast amounts of energy. The discovery of huge suns like our own rushing through space with these great velocities is a matter of more than usual interest just now, from the fact that Mr. Denning's claimed discovery of fixed meteor-radiants has raised the question as to the possible existence of broad swiftly flying streams of meteorites in inter-stellar space, moving with velocities entirely beyond the control of our sun, and so broad that it takes the solar system some years to pass through them. (An annual parallax of 1° in a meteor-radiant corresponds to a velocity of over 1,000 miles per second for the meteor-stream.) The idea of such streams moving with such velocities is a startling one, and, if shown to be true, gives a very vivid idea of the forces acting, or which have acted, in stellar space. It seems at first highly improbable that such can be the case, but with the hard facts of Groombridge 1830, and these other swiftly flying suns staring us in the face, the idea is worth considering, at any rate. If these suns are the products of condensation due to central attraction, so that the luminous energy by which they reveal themselves to us was once energy of translation, it is no violent assumption to suppose that some of their constituent parts were once moving with much greater velocities than that of the present whole. In fact, the man who should claim as a

possibility that space contains broad belts of small particles moving with velocities which are the resultant of all the forces acting on them since primeval chaos, and which have not yet been gathered into the control of any one of the stellar systems among which they are sweeping, would find much to confirm his ideas in these giant swiftly flying suns. The question is certainly of sufficient interest and importance to call for a thorough overhauling of the present methods of determining meteor-radiants, for probably most astronomers would to-day be disposed to deny *in toto* the existence of the greater part of these so-called radiant-points.

H. M. PAUL.

ALPINE CRETINISM.

CRETINISM is a peculiar form of idiocy which Dr. Kratter defines as "an arrest of psychical development, associated with very manifest malformations of the body, and especially of the skeleton." Goitre is frequently, though not invariably, present. Rachitic deformities, deafness and mutism, and that peculiar disease myxoedema, combine with idiocy to characterize the cretin. The cause of cretinism has never been satisfactorily determined. Operations upon human beings for the removal of goitre have shown that cretinism will occasionally follow the extirpation of the thyroid glands, and therefore the disease would seem to be connected, in some measure, with the function of those glands. Moreover, in places where cretins are numerous, goitre is also prevalent, even to a greater degree.

It is a fixed belief among the laity that goitre and cretinism are developed through the drinking-water, and in some places particular wells are designated as being especially endowed in this direction. Such wells are even sought out and used by those who wish to develop goitre, in order to escape military conscription. The noxious element in such waters has been claimed by some to be an excess of chalk, while others say that too much magnesia is the baneful ingredient.

In order to contrast, within a limited area, the frequency of cretinism with the geological formation of the land, Dr. Kratter has carefully studied a district in the Austrian central Alps, where cretinism is so frequent that it amounts to an actual scourge.

In Tyrol there are 112 cretins to every 100,000 of population. Salzburg presents 309, Kärnten 343, and Steiermark 240, cretins for every 100,000. In Muran one per cent of the entire population is tainted with this disease. When we remember, he remarks, that the officially recorded cretins are not nearly the entire number, and that between the healthy people and the fully developed cretins there must exist a broad zone of partially feeble-minded folk; and, still further, when it is known that in the same communities pure goitre is five to ten times more frequent than cretinism, — we have a picture of endemic affliction which may well be called a scourge.

Kratter found that the maximum frequency of goitre followed the gneiss and granite formations which are rich in magnesia, while, on the other hand, the disease was extremely rare over chalky areas. The people in the regions noted were of the same nationality, and exhibited the same habits and customs. Elevation also appears to have a marked influence upon the frequency of cretinism. Cases are not developed higher than 1,000 metres above the sea, and they are extremely rare below 300 metres elevation. The greatest frequency occurs in mountain valleys which are between 400 and 700 metres above sea-level. Many villages in such valleys present the high proportions mentioned above.

Dr. Kratter gives his short paper simply as a summary of his work thus far, but he does not attempt to draw ultimate conclusions from it, because the field in which he labored was limited. He hopes that government interest may be attracted to this disease, and that a wide-spread and systematic investigation of the subject may be undertaken.

Der alpine cretinismus insbesondere in Steiermark. VON DR. JULIUS KRATTER. Graz, *Leuschner & Lubensky*, 1884.

AT a recent meeting of the Paris academy of medicine, M. Roullier, a surgeon attached to the French navy, gave an account of the practice of transfusion of blood in cholera cases at the St. Mandrier hospital, Toulon. The operations were performed during the state of collapse. Of 55 cases, 18 recovered. The transfusion of 1,500 to 2,000 grams 'literally effected a resurrection;' but, unfortunately, in the majority of cases the patients did not permanently recover.

— A manufacturer of Breslau is stated to have built a chimney over fifty feet in height entirely of paper. The blocks used in its construction, instead of being of brick or stone, were made of compressed paper, jointed with silicious cement. The chimney is said to be very elastic, and also fireproof. We may add that picture-frames are now made of paper. Paper-pulp, glue, linseed oil, and carbonate of lime, or whiting, are mixed together, and heated into a thick cream, which, on being allowed to cool, is run into moulds and hardened. The frames are then gilded or bronzed in the usual way.