their existence, if it were not for the atoms, which send us information by means of light. As we now know, each particular kind of light comes from one particular atom behaving in a particular way, each line in the spectrum is due to a special kind of atomic behavior.

As seen with the spectroscope, the white or hottest stars seem to be made of permanent gases, and the red and cooler stars to consist of metallic vapors. The difference in the character of the stars is probably not due so much to differences in constitution as to the character of the radiation given off by the atoms. If an electron is knocked off by an atom we get a new set of spectral lines. If another electron is knocked off, we may get an ultra violet spectrum, which can not be seen or even photographed, since the air is opaque to such short wave lengths. Such gases as oxygen, nitrogen and helium are hard to excite, so they do not show at low temperatures. But in the hot stars they get stirred up and become visible. In this case the metals are so knocked to pieces that they do not make themselves visible at all. All the stars may have similar composition, but, since the physical conditions are different, different elements reveal their presence in the spectra.

The relative degree of ionization of different elements (which determines the appearance of the spectra) depends on an equilibrium under the law of mass action.

I had always supposed that this law was the exclusive property of the chemist; but now it appears to be of fundamental importance in astro-physics. We need the chemist on our team, and we may help in their game too. By comparing the spectroscopic behavior of their lines in the sun, sun-spots and stars, it appears that the ionization potentials of all the elements in the periodic table between calcium and nickel are between 6 and 9 volts, increasing steadily along the series. So here astronomy gives information about properties of atoms, which have not as yet been measured in our laboratories, owing to practical difficulties. There is no limit in sight to the possibilities of team work such as this.

APPEAL ON BEHALF OF THE LEAGUE OF NATIONS FOR AID TO AUSTRIAN INTELLECTUAL WORKERS

No greater danger can threaten a civilization than the successive destruction of its homes of learning. It is beyond dispute that the war and its economic consequences have brought intellectual life in one entire region of Europe into an extremely precarious position. The machinery of intellectual life has been seriously impaired in almost all those nations of eastern Europe, to say nothing of Russia, which extend from the Baltic to the Ægean. One of them—Austria—is suffering from economic distress to a degree which threatens soon to bring all intellectual work to a standstill in the winter of 1922-1923.

The truth of this statement is demonstrated by the report which we attach to this letter. Since the report was drawn up, the situation has been greatly aggravated, and its consequences are: (1) intellectual isolation; (2) a complete lack of all the appliances which are indispensable for intellectual work; (3) the formation of an intellectual proletariat, less favorably situated than the working-class proletariat—for muscle commands better wages than brain; (4) diminishing numbers of students and a dearth of recruits of the cultured classes for the liberal professions and for the teaching staffs.

The committee on intellectual cooperation, constituted by the League of Nations, decided, at its first meeting on August 1, 1922, "expressly to call the attention of the Council of the League of Nations to the desperate situation of intellectual life in certain European countries and the urgent need of intervention." These words had special reference to the case of Austria.

At its meeting of October 4, the Council of the League of Nations requested the committee to launch an urgent appeal to universities, academies and learned societies in all countries in aid of Austrian intellectual workers and intellectual life in Austria. We have accordingly the honor, in the present letter, to invite you to organize measures of relief as soon as possible, with the object of saving one of the most cultured countries in Europe—a country which formerly possessed one of the chief centers of European civilization—from the fate of seeing its higher education and learning disappear from sheer want.

We leave it to your judgment to organize

such relief measures as you may deem most practical and to employ such methods as you may consider most efficacious; we are prepared to supply you, through our secretariat, with any information or explanations which you may require. We merely beg to draw your attention to the following points:

As a result of the depreciation in the Austrian exchange, quite insignificant sums, if converted into crowns, amount to very considerable figures. For instance, we have pointed out in the attached report that, with the aid of 1,000 Swiss francs, the Academy of Science in Vienna could resume its publications, and that a sum of 500 Swiss francs would enable almost any of the great scientific associations—such as the Anthropological Society or the Society for Modern Philology—to recommence their work.

We earnestly invite the universities, academies and learned societies of the whole world to send their publications to the Austrian universities, academies and learned societies, or to organize systems of exchange with them. We urge them to conclude with the *Amba* (the Austrian "office for providing books and instruments") agreements for cooperation similar to that established with England. Such agreements would provide an excellent basis for the organization of intellectual relief and might be extended, with suitable adaptations, to other countries whose needs are similar to those of Austria.

As regards the supply of purely material requirements (such as clothing, boots, articles of primary necessity, etc.) it is suggested that agreements should be concluded with the *Zegam* (the "Central Purchase Organization for Associations of Intellectual Workers").

We further invite universities, academies and learned societies to organize the exchange of professors and lecturers with similar establishments in Austria, and we suggest that men of science should either visit Austria themselves or endeavor by means of personal intercourse to break down the wall of intellectual isolation with which that unfortunate country is surrounded.

In order to relieve the unhappy condition of Austrian professors, men of science, writers and artists, who are suffering increasingly from under-feeding, we would urge you to assist them and their families to spend their holidays abroad.

It might even be possible—and no form of assistance could be more useful or more urgently desirable—to place certain immediately available funds or foundations at the disposal of Austrian men of science and students in order to enable them to continue their researches and studies.

The aim of these suggestions, which are put forward at the beginning of a winter which may well prove decisive for the fate of Austria, is to encourage to the utmost the organization of relief measures from as wide a field and in as uniform a manner as possible.

Much can be accomplished with small means.

In coming to the assistance of Austria, and of other nations whose intellectual life is in danger, you will be strengthening that sense of professional brotherhood which should unite all brain-workers, you will be taking effective and practical action to promote intellectual cooperation, and, above all, you will be helping to support civilization in the struggle against the most serious peril which threatens it. For these reasons we are confident that our appeal will not be launched in vain.

For the committee on intellectual cooperation:

H. BERGSON,
of the "Académie Française,"
President

G. DE REYNOLD,
Professor of Berne University,
Rapporteur

O. DE HALECKI,
Professor of Warsaw University,
Secretary

GENEVA,
NOVEMBER 4, 1922

SCIENTIFIC EVENTS

LONDON BIRD SANCTUARIES[1]

THE committee on the establishment of bird sanctuaries in the royal parks, appointed by

[1] From the London *Times*.