any little planets or moons. They may be there, though invisible, but after all that's not an important matter.

The parade goes on, and now appear the nebulae, some bright and some dark, the most spectacular part of the pageant. For the bright nebulae are of weird form, of vast dimensions, agglomerations of radiant gases and of meteoric grains of sand and iron. And the dark nebulae are impressive because of the secrets they conceal by hiding great portions of the universe; impressive also because they originate, possibly, from exploded planets and stars or from earlier disrupted universes. Are they the materials from which eventually new stars and galaxies will arise?

In the procession that I have to this point passed before you were, first, the minor bodies, such as the planets and comets of the solar system. Next came a sample of interstellar space and its thin content of radiation and of stellar débris. Then the stars, singly and multiply, and the diffuse nebulosity, bright and dark, which may be star plasma or the wreckage of stars or, in a long-time universe, may be both.

We now rise to a higher order in the pageantry that passes. Here are not stars but great systems of stars which we call galaxies or, if they are remote and therefore hazy and indistinct and unresolved, we misname them nebulae or nebulous stars. Also in great variety the galaxies go by, some gigantic, some so dwarfish that they may contain but a few thousand million ordinary stars; some are spherical, most of them flattened, and more than half show that their population of stars is arranged in spirals.

These common spiral galaxies occur singly, doubly, in close confused triples and multiples, and in clusters and in great clouds and streams, which we term supergalaxies, sometimes millions of light years in extent.

A few of these galaxies have been observed with the spectroscope. There is a startling red shift of their spectral lines. Interpreting that red shift in the normal way as a recession of the galaxies, we are led to the concept of the expanding universe, a scattering of the galaxies, a lowering of the density of matter in space. We are led to the speculation that the origin of the present phase of the universe occurred not much more than three thousand million years ago, disturbingly recent to the orthodox astronomer. We are led to remarkable preliminary speculations connecting the theory of relativity with the recession of galaxies, from which we deduce evidence for a spherical finite world.

Finally, at the end of the procession, we try to exhibit the metagalaxy, the all-inclusive universe of galaxies; but the display is poor because, with a reach of only a hundred million light years, our sample possibly is misleading. We note, however, three conspicuous features:

(1) Exceeding non-uniformity in the distribution of matter.

(2) No evidence that our own galaxy is significantly placed with respect to the millions surrounding.

(3) No suggestion that in our deepest exploration we anywhere approach a boundary to the universe.

The cosmic parade is finished. I now retransmute you from super-cosmic beings to primates on Planet Number Three; and I leave with you the thought that, although in the last twenty years our knowledge of the sidereal world has more than doubled, the list of things we want to know has trebled or quadrupled, leaving us relatively more ignorant than heretofore, but making us also keener than ever to attain that spiritual satisfaction that only the struggle to comprehend can give.

ADDRESS BY PROFESSOR EINSTEIN

LET me first give expression to my delight and gratitude for the wonderful reception which has been given to me in this festive hall by so prominent and distinguished an assemblage. But this honor, at so serious a time, would depress rather than exalt them, if it were not for the redeeming consciousness that, by this visit, I could be of service to two institutions which are very close to my heart—the University in Jerusalem and the Jewish Telegraphic Agency.

Let us fix our eye first upon Palestine. It should fill us with pride and joy that our work of upbuilding is made possible, to a great extent, by liberal gifts, and that those whose hearts and hands have achieved this upbuilding have imposed upon themselves a hard lot in order to serve a high ideal. We may therefore say that this work rests upon the shoulders of the best of our people. It is because of this that it has until now wonderfully withstood all the difficulties of trial and affliction and stands to-day more sound and promising than many settlements in lands more favored by nature. If the speed of growth does not satisfy some of our hot-headed and impatient brethren, let us remember that in social structures as well as in organisms the most worth-while are not those which grow and mature most rapidly.

As old as the plan of the upbuilding work itself is the plan for the establishment of the Jewish University in Jerusalem. This is not to be wondered at in a people who have for nearly two millennia treasured as the highest good the pursuit of the spiritual for its own sake. So it was that soon after the war, on one of the most beautiful spots of the country, the university was founded. Originally, it was not intended primarily as an institution of instruction but as a center of research.

The sympathetic interest which this work, together with the library in Jerusalem, had aroused among intellectual Jewish elements was universal and strong, and there arose great-hearted givers who made possible the realization of the university, in which efficient and devoted scientists were already busy and are still busy. In spite of many diseases of infancy through which such a new institution, exposed to so many varying influences, must pass, the university has to-day already demonstrated its vitality and the Palestine work can not longer be thought of without it.

With gratitude may be mentioned here Mr. Felix Warburg, and not less the American Jewish Physicians' Committee. The Jewish people will never forget their help on behalf of the university.

I am convinced that it is especially fortunate for the university that Mr. Weizmann has decided to put his abilities at its disposal and to found and direct a department for agriculture. His great experiences in the field of chemistry and administration and, last but not least, his rare knowledge of men will be of great usefulness for the university; his fascinating personality will also lend it new attractiveness. I believe in a sound and beautiful development of the institution in the next few years.

The significance of the University in Jerusalem for the Jewish people will be heightened by the fact that the Jews in eastern Europe are being barred from the sciences and the practise of scientific professions. In the course of the years, I have heard and read much that is sad regarding this spiritual misery, and, it is, unfortunately, not easy to say where the western boundary of this eastern Europe is to be sought. In any case, this boundary is indefinite and the psychical misery of the Jews is not lighter than the physical.

Many talented Jews are lost to culture because the way to learning is barred to them. It will be one of the foremost aims of the University in Jerusalem to alleviate this misery. May it contribute to the attainment by the Jewish people of a spiritual and moral height which will be worthy of its past.

The task of the Jerusalem University just referred to leads us to our second chief object, the Jewish Telegraphic Agency. The Jewish people belongs among the most oppressed national minorities; it is a national minority in all places whither its wandering staff has led it. It belongs among those peoples who must suffer to an especially high degree from the prevailing disease of an exaggerated nationalism. This nationalism is a grave danger for the entire western civilization, which at one time had its origin in Greece; behind it are powers inimical to life. To combat it is the inescapable duty of every well-intentioned and perceiving person of our time.

We Jews have to suffer from this scourge not only as one of the oldest branches of our western culture, but also as a people which is scattered over the entire world and is, therefore, regarded as nationally alien everywhere. In order not to be crushed, at this time, by inimical powers in its environment, this people requires living cohesiveness, solidarity.

Such a living cohesiveness is possible only if we are kept objectively informed about the lot of the Jews in all countries. This, the Jewish Telegraphic Agency has been doing for a decade and a half in a graphic and objective manner, and, in so doing, it has performed an important service to the Jewish people. To support this private enterprise in times of economic crisis is a self-evident duty of self-preservation. It is also part of the struggle for justice, whose significance transcends merely Jewish interests themselves. As director of the Jewish Telegraphic Agency, Mr. Jacob Landau has earned commendation which we joyfully acknowledge this day.

As I, myself, am no nationalist, the meaning of a people, in my opinion, lies in this—that it achieves something for humanity. I shall not bring up the question regarding the Jewish people here and now, but will only emphasize that this point of view must always be our guide in everything Jews undertake. The only worthy attitude of an individual as of a nation is this—to serve a greater whole and to strive for improvement and ennoblement.

OBITUARY

OLIVE M. LAMMERT

MARCH 5, 1894–OCTOBER 9, 1932

OLIVE M. LAMMERT, professor of chemistry at Vassar College, graduated from Vassar in 1915. From the time of her graduation until her death, except for two years of graduate work, she was a member of the Vassar department of chemistry. In 1919, as Sutro fellow from Vassar, she began graduate work at Columbia University; she received the doctorate in 1924.

The topics of her series of researches (presented in ten journal articles with J. L. R. Morgan) were a logical consequence of the initial one, the study of the effect of light upon the electrical conductance of solutions of the alkali halides in acetophenone. Professor Lammert's appreciation of the increasing importance in many fields of the determination of hydrogen-ion concentrations led her to organize at Vassar a course on this subject which is probably unique and has become an important unit in the work offered by the department. For the past six years she has been collaborating with J. L. R. Morgan in