Further information may be obtained by anyone who will take the trouble to visit the high school where Professor Wiley performs experiments for the benefit of his pupils. The galvanic battery was manufactured by Bunsen and contains twenty-four large cells. The experiments with these instruments were highly satisfactory, the light being only two or three per cent. less than that of the sun. The gas flame paled to a vapor and the air was filled with flickering waves like those we see in summer when the atmosphere is at white heat. The light itself is a white flame as trying to the eye as the sun. The hue given to surrounding objects is sickly in comparison with the light of day.

The reporter, after all, has given a vivid description of this characteristic phenomenon.

In the *American Journal of Science and Arts*, July, 1879, I published a paper relating to the exhibitions of electric light at Purdue University. I had constructed a special lamp to be used for this purpose. In order to increase the conductivity of the carbons I plated them with copper. I made various other adjudications in regard to the lamp in order to make it more effective and to utilize the carbons more economically. On the publication of this paper I received a letter from Dr. Charles J. Brush informing me that he had taken out a patent on copper-coated electrodes and warning me that if I wished to use them at all I should have to pay a royalty to his company. This was the first intimation that I had that the process which I also invented was covered by letters patent. I wrote to Dr. Brush that I had no expectation nor desire to offer my invention for commercial purposes, and that I should certainly not do so anyway in view of the fact that he had already patented the process. My invention was largely, however, the improvement which I introduced into the copper-coated electrode. This was my first introduction to Dr. Brush, whose wonderfully successful career in electric lighting and in other allied branches of science has reflected such credit upon himself and has facilitated such valuable improvements in all branches of the technical science connected with electric illumination.

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## THE PROPOSED NATIONAL PARK IN THE MAMMOTH CAVE REGION AND THE KENTUCKY GEOLOGICAL SURVEY

THE creation of a national park in the Mammoth Cave region has been pending for several years. Regarding the progress of the movement the director of the Kentucky Geological Survey, W. R. Jillson, writes:

> . . . Over a million dollars have now been raised and subscribed for the purchase of this park, and I am assured by Governor Sampson who is chairman of the organization raising the funds, that there will be no difficulty in securing the entire amount. In other words, Kentucky will do its part and the Mammoth Cave region will become a national park in due course.

It is perhaps premature to congratulate Kentucky on this achievement. But it seems worthwhile to point out the change in sentiment which this large amount of public subscription reflects. Five years ago I made my first visit to the cave area. At that time the subject of a national park was greeted on all sides with annoyance and resentment—even with counter propaganda on governmental invasion of private rights. I soon learned that it was necessary to avoid the subject to save argument. This spring the attitude was patently different. The native residents seem to be ready for the change; many of the employees connected with the cave properties are not averse to the plan; some even have contributed to the public funds.

How much the efforts of the Kentucky Geological Survey and its publications have had to do with this change in sentiment is difficult to evaluate. It seems to me that it may be more than coincidence that during the past five years there have been published the volume on the geology of Edmonson County, in which Mammoth Cave is located, a booklet on Kentucky State Parks, besides the survey and publication by cooperation with the U. S. Geological Survey of several topographic quadrangles in that vicinity. I noted in one hotel the state geologic map displayed in the main lobby. The state seems to be conscious of its geologic survey! In anticipation of the growing interest in the cave area an illustrated guide by A. K. Lobeck is shortly to be published.

In its molding of public sentiment by the dissemination of information the Kentucky survey appears to have made an achievement.

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## QUOTATIONS

### CHEMISTRY IN INDUSTRY

SIXTEEN years ago the Society of Chemical Industry last met in America. Those who recall that meeting remember the spirited controversy between Sir William Perkin and Duisberg over synthetic rubber. No one then dreamed what was impending and what enormous demands the nations would soon make upon applied chemistry. As President Francis H. Carr said in the annual address, the great advance which has occurred is due in part to the fact that whole nations have made united effort to achieve a com-

monly accepted purpose. This is a beneficent by-product of the war.

Of this general result, English experience furnishes specific illustration. From the time when the Prince Consort, in the middle of the last century, imported a German chemist to the Royal College of Chemistry in London (one of whose pupils was this same William H. Perkin, who discovered the first synthetic dye and who, as Sir William Perkin, confronted Professor Duisberg with the evidence of an earlier synthetic process for making rubber), the English government gradually increased its efforts in behalf of science. But it was not until after the war had begun, in 1915, that it made direct financial provision for researches "undertaken with definite utilitarian objects." Out of this came the Department of Scientific and Industrial Research, which maintains a number of stations of its own, but which functions chiefly through associations. In them different firms unite to maintain additional stations, the government making grants in aid.

This procedure has tended to help companies that could not support independent laboratories and has had the wholesome effect of diminishing trade secrecy through the exchange of experience. Chemical "invention" is so different from mechanical invention that it is difficult to give sufficient encouragement through patents without preventing to some extent the general cooperation which these associations seek. Many chemical patents, and this is true not alone in England, hold the key to subsequent discoveries and may be of little value unless those discoveries are made. They tend thus to block the way to other workers. To maintain such a balance as will encourage research effort and yet not discourage further and intensive effort will require serious international consideration and cooperation, and this society should be most helpful in establishing that delicate balance.

It is stated that chemists have added twenty billion dollars to the world's wealth. This is probably not an exaggeration if credit for this vast increase is shared with the industries that have translated to human uses the chemist's formulae. The race would face tomorrow with considerable anxiety if the chemist had come not "to replace Nature's syntheses," but to supplement them. His mind is, after all, the most potent catalyst.—*The New York Times.*

## SCIENTIFIC BOOKS

*Le Plateau Central de la France et sa bordure méditerranée. Etude morphologique.* By HENRI BAULIG. Armand Colin, Paris, 1928. 591 pages, 33 half-tone views, with 11 folded sheets in pocket; 4 of river profiles, one of geological sections, and 6 of contoured maps, 1: 200,000, with volcanic areas, oligocene deposits and chief river names in red, but no names for small streams or towns.

HENRI BAULIG, lecturer in geography at the University of Strasbourg, has produced a studious treatise on the Central Plateau of France, which, in giving a keen and thorough morphogenetic discussion of that interesting region, presents a minute analysis of its geological history and an argumentative demonstration of its progressive development rather than a direct description of its visible forms, such as might be expected from a geography teacher. The introduction explains that the great Hercynian revolution of central Europe was followed by a long period of exceptional stability, when the Hercynian mountains were worn down to a post-Hercynian plain, which in this region extended across large areas of massive and resistant crystalline rocks and several narrowly compressed synclines of stratified rocks, and which in the completeness of its degradation has had no later parallel in Europe. The plain was depressed, invaded by the sea and buried under Mesozoic strata until an early Tertiary upheaval with moderate deformation caused emergence and introduced a second period of erosion, when the crystalline rocks of the central area were again laid bare and worn down, but at a lower level and over a smaller area than before, to an Eogene peneplain or plain of degradation, while the gently slanting Mesozoic strata surviving in the marginal area, where the post-Hercynian plain is still buried, were evenly beveled across. In mid-Tertiary time the Eogene plain was fractured into innumerable blocks and the blocks were diversely displaced, some being moderately upheaved, while others were depressed. Many volcanic eruptions then took place, especially on the uplifted areas, while the more deeply depressed blocks became the seat of fluviatile and lacustrine deposition. It is by the later erosion of this much jostled region, to which a broad upheaval of late date appears to have contributed, that the present topography is developed; the uplifted blocks of resistant crystallines being only narrowly dissected, while the basins of lacustrine deposition—the Limagnes—have been broadly reduced to plains at grade with their rivers. The valleys then excavated show, as was first pointed out by Briquet, the effects of four or more successive revivals of erosion at decreasing intervals, so that in rocks of similar resistance the younger and deeper-cut valleys are nested in the higher and earlier-cut valleys, the most mature forms being preserved in the headwaters of the first excavated, and the younger forms being found in the lower courses of the latest excavated valleys. In illustration of this relation Baulig has constructed with painstaking industry numerous river profiles, in which