

outside light. A lieberkuhn is furnished with the glass which can be screwed on in place of the cap while examining opaque objects. The speaker had not had the glass in his hands long enough to become perfectly acquainted with all its qualities, it certainly is a good one, however. It resolves angulatum very satisfactory, and bears eye-piecing extremely well, working admirably on anatomical structures.

The lieberkuhn seems to be a valuable addition for some sorts of study as it brings out surface workings with unusual clearness, even in transparent objects. Mr. E. B. Stuart exhibited a Hitchcock lamp which he stated commended itself to the use of microscopists. No chimney is required, it being a blast lamp, the flames of which is fanned by a passage of air from the bottom, the top of the lamp driven by a noiseless clockwork. The oil well is entirely separate from the outside part of the lamp, and is kept cool by the cold blast of air constantly surrounding it. It gives a light of about a six-foot gas burner and the flame is steady and more free from flicker than gas or the ordinary carbon burner. He also showed under the microscope specimens of the gelatine-bromide plates for photographic work, that had been submitted by a photographer as imperfect. An inspection under the microscope showed three kinds of spots. One caused by dust particles which had settled on the gelatine while still soft, and as the emulsion hardened, became firmly fixed on the plate. The second kind of spots were caused by, apparently, the solvent action of some substance on the film, as it could be seen to be less dense at those points, while the third were thicker and evidently caused by carelessly spattering the emulsion on partially dried plates.

The meeting was then declared informal.

WM. HOSKINS, *Secretary*.

THE AMERICAN CHEMICAL SOCIETY.

The papers appointed to be read on the evening of the December meeting were, owing to the election of officers, omitted and therefore at the *Conversazione* held on Dec. 16 they were again brought up for consideration.

The first and second papers were "On the Separation and Estimation of Manganese" and "On a Modification of Mohr's Burette; adopting it to use in delivering corrosive solution" by Nelson H. Barton. Both of these papers consisted of descriptions of details of manipulation which the author had been lead to use in his own laboratory resulting from his experience and which under favorable considerations might be desirable to employ.

The third paper was by Mr. Casamajor and titled "Analysis of Soghum Juice" an enumeration of the results obtained by him in his laboratory with comments on them.

"A new Laboratory Filter and Aspirator" was the next paper, also by Mr. Casamajor. The apparatus referred to has recently been patented, and in the above paper it was thoroughly described and a model exhibited. The fifth paper was by Dr. A. R. Leeds, entitled "A Chemical Inquiry into the Self-purifying Power of a Flowing Stream." In this paper the complete results of the work done by Dr. Leeds for the New Jersey Board of Health were presented. It will be recollected that in a previous number a synopsis of this paper was given to the readers of SCIENCE. On the present occasion charts were exhibited showing the exact relations existing between the various estimations which were made. These were peculiarly interesting to chemists although unfortunately the entire subject of water analysis is in such a state of confusion that it is difficult to make much headway in the accumulating and conflicting mass of literature which is current on this subject. The entire paper of Prof. Leeds will be published in the N. J. Board of Health Reports. The final paper of the evening was "A New Method for the Analysis of Mustard" by the same gentleman with the assistance of Mr. Everhart. The ordinary

methods given by Hassall, Blyth and others were so unsatisfactory in their results that an effort was made to produce something more definite. After some little study it was found best to separate the various constituents by different extractions with various reagents, so that an addition to the conventional determinations of moisture, oil and ash (for the mineral adulterants) extractions of alcohol and ether are made for the remaining ingredients. M. B.

SUICIDE, an Essay on Comparative Moral Statistics.

By HENRY MORSELLI, M. D., Professor of Psychological Medicine, Royal University, Turin. Being abridged from the original, as Volume XXXVI of the International Scientific Series. New York. D. Appleton & Co.

The present moment seems peculiarly favorable to the presentation of a work on the subject of suicide. Whether it be the great accumulation of financial and political crises, or the increase of mental derangements, or a fundamental change in the *morale* of the civilized races, it would seem as if a great suicidal wave was sweeping over our social horizon. The labors of Buckle, Wallace and Bagshot have taught the necessity of studying such complicated problems synthetically. The statistics of no one community, the analysis of no one cause, will suffice to explain their phenomena. Professor Morselli, fully recognizing this fact, has undertaken a study of the question of suicide from a statistical point of view, and one involving in its analysis the results of Social Scientific, Anthropological, and Medico-Psychological inquiries.

The first fact demonstrated by a careful study of statistics is the regularity and the increase of suicide in civilized countries, which finds its expression in the painful conclusion, that "in the aggregate of the civilized States of Europe and America, the frequency of suicide shows a growing and uniform increase, so that generally, voluntary death since the beginning of the century has increased and goes on increasing more rapidly than the geometrical augmentation of the population and of the general mortality."

Among individual elements serving to explain this increase of suicide, climate deserves the least prominence as a direct factor. The only ascertained fact in this direction is that in the centre of Europe on an area of about 942,000 square kilometers comprised between 47-57° of latitude and 20-40° of longitude, are found the people who manifest the greatest inclination to suicide. The least amount of suicide is found on the isothermal line of + 17.° 5 C, running through Portugal, Spain, Italy, Corsica and probably Greece. That the mere feature of temperature is not a very important one, is shown by the fact that on the isothermal line of + 10° C, there is the greatest variation. In the United States for example the suicidal rate is 35 per million; in Ireland 16, in England 67, in Belgium 55, the Netherlands 35, Hanover 140, Prussian Saxony 228, Galicia 98. A more direct and constant relation is found with other cosmical influences, thus the regions of the great rivers are most afflicted by suicide *coeteris paribus*, while on the contrary marshy or excessively low lands, like the Landes in France, the low countries about the Zuyder Zee and Jutland, show a lesser proportion. That suicide is most frequent in the warm seasons, is confirmed by Morselli, this observation is a familiar one to New Yorkers. In our city a perfect suicide *furor* occurs in certain summers, and the direct influence of the heat has no doubt much to do with this as with the summer increase in violent crimes similarly the results of insanity or passion, a fact to which, however, no reference is made by the author before us. It is certainly a noteworthy fact, in which he confirms Guerry, that the maximum of suicide falls under the summer solstice, the minimum under the winter solstice.

The most interesting portion of the volume, is the one relating to the influence of race and nationality as determining the suicidal rate. We have always believed that a most important contribution to the elucidation of the problem of suicide could be made from this side of the question. And it is to be regretted that the talented writer before us has not added to the numerous tables, which render his volume, a mine of valuable information, one showing in four columns, the name of the nation, the proportion in same per million, the proportion of each form of insanity, and the suicidal rate. We believe that a noticeable parallelism would be observed in these columns. The Germanic race preponderates over all others, and the German and Scandinavian branches divide the supremacy. The Anglo-Saxon stock has, however, gained by its long separation from the German mother, and its admixture with other races, for its suicidal tendency is much smaller. The Celto-Romans, on the whole, show a small suicidal rate, this increases, however, with the geographical approach to the Germanic borders, and the fact is of startling interest, that as keen an analyst as Morselli, attributes the higher suicidal rate in France and Belgium to the remote, continuous and the in modern times as persistent invasion of German elements sweeping up the valleys of the Scheldt, Seine, Somme, Meuse and even that of the Loire! The lowest suicidal rate is found among the slavonic peoples. Morselli in this part of the work fails to refer to the fact that the Bohemians, isolated from the slavonic parent stocks by an ocean of German States, have lost the relative immunity of suicide, just as the Anglo-Saxons have gained in this respect by separation from the "suicidal" race. The general conclusion, however, would seem to be flattering to the nations having most suicides. Savage peoples commit suicide only under the stress of hunger, but as civilization progresses a thousand new motives arise, with the mental needs. The reflection is not made directly by the author, but it can be read between the lines, that a similar reason accounts for the lesser proportion of suicides among Catholics as compared with Protestants. Judaism has a very favorable influence; but this is an exceptional instance, it being the only religion tied up in a single race. A very interesting fact, is that other conditions duly considered, the votaries of that creed which is in a great minority in a given country, show a lesser number of suicides; the reason given by Legoyt is that the intolerance of the surrounding population exercises a sort of moral coercion, making the dissenters desirous to avoid giving any excuse for harsh criticisms.

As to social influences, it is concluded from the general parallelism of suicide and criminality that a deterioration of morals is favorable to suicide. To this there are however some marked exceptions, especially in southern Italy, where grave crimes are common and suicide is rare, and a revision of the question induces Morselli to modify the conclusion ordinarily held by saying that in those countries "where crimes against property predominate, suicides are more frequent than where crimes of blood are frequent." Remarkably enough it is found, with regard to the influence of economical conditions, that it is not the exact period of economical crisis, but a subsequent one that shows an increase of suicide. The influence of the Austrian crisis of 1858-1859 was shown by an increase of suicides in 1860-1861. The Franco-Prussian war of 1870-71 led to more suicides in 1872-1873.

Without any question the most interesting part of the volume consists in its appended "suicidal" maps. These are maps of Europe and of the individual European countries, exhibiting by the intensity of shading, the proportion of suicides in the population. On glancing over the map of Europe it is seen in a moment, that the highest proportion is found in Saxony; in the neighborhood of Paris and of Vienna. It is not alone race but also the density of the population which exert an important influence here, and as the contest for existence natur-

ally culminates in the destruction of the weak, the only advice the author is able to give as a preventive against suicide, is "to develop in man the power of well-ordering sentiments and ideas by which to reach a certain aim in life; in short, to give force and energy to the moral character."

While we venture to regard this advice as a fruitless one, believing that in view of the author's earlier conclusions expressed in the same volume, all the good advice and training that might be given would not materially change the suicidal ratio. We can only commend the perusal of the work to the reader as alone calculated to furnish an adequate conception of the vast array of useful facts gathered by its author, illustrative of many profitable lessons in sociology and ethnology. That in a treatise dealing with the statistics of so many lands and with authorities who have written in so many tongues, an occasional error should creep in, is not to be marveled at, and it is only where such errors are made the basis of conclusions that the reviewer considers it his duty to call attention to them.

It is stated, in speaking of the influence of religion on suicides, that in Saxony half the population are Catholics. The fact is that Saxony is one of the most intensely Protestant countries in the world, the stronghold of the Reformation, and a land in which the slight vestige of Catholicism (not consisting of one-twentieth of the population among its votaries), is only maintained by the court which is Catholic since the time of the libertine, Augustus the Strong. ED. C. SPITZKA.

THE SUN: by PROFESSOR C. A. YOUNG, with numerous illustrations. International Scientific Series. D. Appleton & Co., New York, 1881, pp. 321, 12mo.

It is an extremely fortunate thing when we have a book on a special subject, written by a man who has himself made capital discoveries in this subject and who, at the same time, has a culture wide enough to appreciate the philosophical relations of his special subject to science in general.

If at the same time the whole exposition is written in a graceful style, perfectly plain and easy to follow, and dignified as well, we have special reason to be grateful. Professor Young is the descendant of a line of professors, and lucid exposition is natural to him, as we find from this work. It is not necessary to say that in the other degrees mentioned Professor Young is precisely the one person to whom we should first look as authority.

There are certain things which an author can best say for himself. In Professor Young's preface we find this: "I have tried to keep distinct the line between the certain and the conjectural, and to indicate as far as possible the degree of confidence to be placed in data and conclusions."

Throughout the work we have found this carried out consistently, not as a task, but as a natural outcome of the author's method of thought.

The work opens with an introduction which treats of the sun's relation to life and activity upon the earth. In this section (page 18) the accepted beliefs with regard to the sun's constitution are laid down. This is a point of departure.

Chapter I. deals with the distance, dimensions and mass of the sun. The low density of the sun is quoted as showing the strong probability that the sun is mainly a mass of vapor or gas, powerfully condensed in the central portions by the superincumbent weight, but prevented from liquefaction by an exceedingly high temperature.

Chapter II. deals with the methods of studying the solar surface.

Chapter III. relates to the Spectroscope and to the solar spectrum in general.

On page 87 we have a table of the twenty-two elements