and arrangement of facts—*descriptive science.* The second is the reduction of these to formal laws—*formal science.* It is this last change only which necessarily follows the order indicated above. Its effect is always to give great impulse to scientific advance ; for then only does it take on the highest scientific form—then only does it become one of the hierarchy of sciences, and receives the aid of all. Thus to illustrate : Tycho Brahe laboriously gathered and collated a vast number of facts concerning planetary motions —descriptive astronomy. Kepler reduced these to the three great and beautiful laws known by his name—formal astronomy. But it was reserved for Newton, by means of the theory of gravitation, to explain the Keplerian laws by referring them to the more general and more fundamental laws of mechanics as their cause, and thus he became the founder of physical or causal astronomy. In other words, astronomy was first a separate science based on its own facts. Newton connected it with mechanics, and thus made it one of the hierarchy. From that time astronomy advanced with increased rapidity and certainty. Astronomy first rose as a beautiful shaft, unconnected and unsupported, except on its own pediment. In the meantime, however, another more solid and more central shaft had grown up under the busy hands of many builders, viz., mechanics. Newton connected the astronomical shaft with the central column of mechanics, and thus formed a more solid basis for a yet higher shaft.—*Prof. Joseph Le Conte, in Popular Science Monthly for January.*

Where Religion and Science Clash.—As poets the priesthood would have been justified ; their deities, celestial and otherwise, with all their retinue and appliances, being more or less legitimate symbols and personifications of the aspects of Nature and the phases of the human soul. The priests, however, or those among them who were mechanics and not poets, claimed objective validity for their conceptions, and tried to base upon external evidence that which sprang from the innermost need and nature of man. It is against this objective rendering of the emotions—this thrusting into the region of fact and positive knowledge, of conceptions essentially ideal and poetic—that science, consciously or unconsciously, wages war. Religious feeling is as much a verity as any other part of human consciousness ; and against it, on its subjective side, the waves of science beat in vain. But when, manipulated by the constructive imagination, mixed with imperfect or inaccurate historic data, and moulded by misapplied logic, this feeling traverses our knowledge of Nature, Science, as in duty bound, stands as a hostile power in its path. It is against the mythologic scenery, if I may use the term, rather than against the life and substance of religion, that science enters her protest. Sooner or later, among the thinking people, that scenery will be taken for what it is worth—as an effort on the part of man to bring the mystery of life and Nature within the range of his capacities ; as a temporary and essentially fluxional rendering in terms of knowledge of that which transcends all knowledge, and admits only of ideal approach.—*Prof. Tyndall, in Popular Science Monthly for January.*

"Are the Elements Elementary?"—Mr. Norman Lockyer has realized the alchemist's dream, the transmutation of metals. In the presence of a small party of scientific men, Mr. Lockyer, by the aid of a powerful voltaic current, volatilized copper within a glass tube, dissolved the deposit formed within the tube in hydrochloric acid, and then showed, by means of the spectroscope, that the solution contained no longer copper, but another metal, calcium, the base of ordinary lime. The experiment was repeated with other metals, and with corresponding results. Nickel was thus changed into cobalt, and calcium into strontium. All these bodies, as is well known, have ever been regarded as elementary, —that is, as incapable of being resolved into any components, or of being changed one into another. It is on this basis that all modern chemistry is founded, and, should Mr. Lockyer's discovery bear the test of further trial, our entire system of chemistry will require revision. The future possibilities of the discovery it is difficult to limit. The great object of the old alchemists was, of course, to transmute base metals into gold, and so far as our knowledge goes there is no reason why copper should not be changed into gold as well as into calcium. The means at present employed are obviously such as to render the process far more costly than any possible results can be worth ; but this is necessarily the case with most scientific discoveries before they are turned into commercial facts. Mr. Lockyer is one of our best living spectroscopists, and no man with a reputation such as his would risk the publication of so startling a fact as he has just announced to the scientific world without the very surest grounds. He is known by his friends as somewhat sanguine, and he does not pretend to be an accomplished chemist, but he was supported by some of our leading chemists, all of whom admitted that the results of his experiments were inexplicable on any other grounds but those admitting of the change of one element into another, unless indeed our whole system of spectrum analysis is to be upset, the other horn of a very awkward dilemma. Since a hundred years ago Priestly discovered oxygen and founded modern chemistry, there has been—there could be—no discovery made which would have such an effect on modern science as that the so-called elements were no longer considered to be elementary.—*London Daily News.*

PERSONALS.

Mr. Armstrong, of Woodham, has been appointed Principal of Durham School, at a salary of $550.

Geo. Kirk, recently of Campbellford, who obtained the Governor General's bronze medal last July, has been appointed Head Master of Madoc Model School.

Mr. W. R. Treford has been appointed Principal of the Caledonia Model School.

Mr. John Drummond has been re-appointed for the third time to the position of Head Master of Gravenhurst Public School.

Dr. Forrest has been engaged as Head Master of Bradford High School.

Mr. Atkinson, late Principal of Prescott Model School, takes the Head Mastership of Brockville Model School at the beginning of the present year.

Miss J. Anderson, Miss S. E. A. Scobie, and Miss B. M. Wallace have received appointments in Toronto Public Schools.

Rev. Dr. Ryerson, Hon. Adam Crooks, Dr. Hodgins and Dr. May have been honored by the French Government by having the order of the "Palm Leaf," for distinguished literary merit, conferred upon them, on account of their eminent services in the cause of education.

A. L. Parker, B.A., Trinity College, 1st class classical honors (Toronto University standard), and honorary 4th in mathematics, has been appointed Head Master of Alexandria High School ; salary, $850. Mr. Parker was for a time Assistant Master in Trinity College School, Port Hope, and Classical Master in Brampton High School.

Clare Worrell, B.A., Trinity College, has been appointed Head Master of Gananoque High School ; salary, $900.

Mr. A. B. Cook, B.A., of Carleton Place, has been appointed Assistant in Lindsay High School.

Rev. T. D. Phillips, Mathematical Master, Ottawa Collegiate Institute, was presented with a highly complimentary address and a piece of plate at the close of last session.

Mr. Powell, another Master in Ottawa Collegiate Institute, was presented with a writing desk and an address by his pupils.

Mr. J. H. Farmer, Gold Medalist, Toronto University, has been appointed Assistant Master in London High School.

Mr. Peter Perry, Assistant Teacher in the Perth High School, has been appointed Head Master in the Streetville High School.

The salary of Mr. Eckart, Head Master of East London Public School, has been increased. He is worthy of the increase.

Notes and News.

ONTARIO.

The new section of Mount Forest Central School has been formally occupied since Dec. 1st, and the various departments have been re-arranged accordingly.

Two large wings have been added to the Brantford Collegiate Institute. It is now one of the most convenient buildings of the