No. 9. *A Discourse Mathematicall on the Variation of the Magneticall Needle.* Henry Gellibrand. London, 1635. 4to. Pp. 7, 24. Fascimiledrucke, mit Einleitungen. Berlin. A. Asher & Co., 1897.

Three new numbers in Dr. Hellmann's notable series of *Neudrucke* are before us, each number being of great interest and value. Dr. Hellmann certainly deserves, and we do not doubt will receive, the thanks of all men of science for the pains he is taking in preparing this set of publications. No. 7 contains reprints of the letters which passed between Torricelli and Ricci concerning the measurement of atmospheric pressure, and of the description of the thermometer and hygrometer, prepared and published by the Accademia del Cimento. The letters of Torricelli are of very great scientific interest, for they concern the famous experiment, which was carried out by Viviani in Florence in 1643, at the suggestion of Torricelli. The latter left no written statements regarding the barometer, but he sent word of his discovery to his friend Ricci, in Rome, and his two letters, most fortunately preserved, are reprinted in the present volume. They bear dates June 11 and 28, 1644, and show clearly that Torricelli knew that the mercury in the tube changed its height according to the conditions of the surrounding atmosphere, rising or falling as the air became heavier or lighter, and that he made the experiment in order that he might have an instrument for observing atmospheric changes. The report of the Accademia del Cimento concerns the early history of temperature and humidity observations. This reprint, which is a facsimile, gives two chapters of a celebrated work by Lorenzo Magalotti, Secretary of the Academy, entitled '*Saggi di naturali esperienze fatte nell'Accademia del Cimento*' (1667), in which the most important results of the experiments made by the Academy were set forth. These chapters deal with thermometers and hygrometers, and facsimiles of the original drawings of some of these instruments are given.

No. 8 of the *Neudrucke* gives reproductions of six meteorological charts, the original publication of which was in each case epoch-making. The first is the wind chart of Halley (1686), the oldest of all meteorological charts; the second, Humboldt's isothermal chart, 1817, the first one on which isotherms were given; the third is a reproduction of one of the 13 synoptic weather maps published by Loomis in 1846, the fourth and fifth charts are facsimiles of those issued by Le Verrier in September, 1863. These were the first daily weather maps with isobars, based on data sent by telegraph. The sixth chart is a reproduction of one by Renou in 1864, which was the first to give the mean isobars for any country. This gives the mean isobars of France.

No. 9 is a facsimile reprint of a very rare paper by Gellibrand (1635), which contains the first account of the discovery of the secular variation of magnetic declination.

All these reprints, like those which have preceded, contain copious notes by Dr. Hellmann, in addition to the introduction. The series is one which should be in every scientific library.

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Biologia Centrali-Americana. Archæology. The Archaic Maya Inscriptions. By J. T. Goodman. London, R. H. Porter. 1897. 4to. Illustrated. Price, $13.50.

One of the early Spanish missionaries warns his readers against studying the native Mexican calendar system, since it is an invention of the devil and liable to disturb the faith and cloud the reason of those who seek to understand it.

It is a pity that this warning has not been heeded in the present generation by a certain class of writers, as we should then have been spared a rather extensive series of works characterized by a plentiful lack of sound knowledge and an abundance of wild speculation; among them the bulky quarto (which the author fancifully calls 'a little book'!), the title of which is given above.

It is the result, he tells us, of twelve years' labor; but when it was tendered to the California Academy of Sciences that learned body 'could not see its way' to printing the book (prudent Academy!). Mr. Maudslay, however, whose explorations have been so valuable, but who does not pretend to interpret the inscrip-

tions, was impressed by the author's claims and secured its publication in London.

That it should appear as one of the series of the 'Biologia Centrali-Americana' will give it a position liable to credit it to the intelligent public as a scientific work. This it is not in any sense, and no one can be more positive on this point than the author himself. He loses no opportunity to berate all who have attempted to apply scientific methods to the study of the Mayan inscriptions and the ancient calendars. They are 'shoe-string scientists,' 'dilletanti,' 'assumed authorities,' engaged in 'pompous kowtowing to each other.' He, the author, Mr. J. T. Goodman, announces himself as the 'illiterate proletaire' who is to 'push them rudely from their seats.' Like Walt Whitman, he 'flings his barbaric yawp over the roofs of the world.' That was fine in Whitman, but he was a poet; though Mr. Goodman can claim considerable imagination also.

Needless to add that his pages show no trace of this despised learning. The names of such European scholars as Seler, Förstemann, Rosny, do not once appear. This we may excuse, as Mr. Goodman doubtless extends his contempt to a knowledge of French and German; but one would suppose that the interesting computations of Dr. Cyrus Thomas, published by the Bureau of Ethnology, would have been vouchsafed a word. But they are not once mentioned.

He does not consider any knowledge of the Maya language necessary in order to read the inscriptions, nor an acquaintance with the mythology or culture of the tribe, nor an investigation into the origin of the glyphs. All this is beside the mark. To him, each glyph, each face or figure, each day or month sign, is a numeral, simple or complex. He ascertains their meanings by a 'sort of intuition' (p. 78); he 'arrives at a conviction' (p. 144); he has no doubt of his results, though they obstinately 'evade proof' (p. 97); but at any rate he is willing to bet considerable on their accuracy (p. 33); and this certainly ought to be sufficient for anybody except some stupid scientific reader!

Occasionally he betrays a slight but regrettable distrust of this original and excellent method. He acknowledges that this opinion is 'little more than an assumption,' or that identification insufficiently established; but his faith is not in the least shaken that time and the future big volumes he has in view will demonstrate all his positions to the satisfaction of everybody, excepting always 'the incompetent few' (p. v.), by which polite reference he means his *bêtes noirs*, the scientific students of the subject.

His main thesis is that, 'with the exception of the priests and their assistants, all the personages of the codices and inscriptions, ornaments and accessories, are composed of numeral signs' (p. 85). In illustration, he portrays the head of the 'long-nosed god,' so frequent in the Dresden Codex, and finds a numeric value in each of its elements, in the eye, the ear ring, the head dress, and even in the celebrated nose itself, which we learn stands for 13. This has been equalled in Mayan research only by the late Dr. Cresson, who dissected in a similar manner the glyphs and figures, but who found, not numbers, but phonetic elements, in each curve and crook of the work of the aboriginal artist.

The crown and completion of Mayan numeration Mr. Goodman discovers in the bird which surmounts the cross in the well-known tablet at Palenque. This is the sign of the 'grand era' of the Mayas, which he figures out to be 374,400 years. He has not fully dissected the bird, and is not quite prepared to assign the arithmetical value of each of its legs, etc.; but that is merely because he has 'not found time' for it (p. 84); and this does not in the least disturb his 'belief.'

To one unprepared by twelve years of study of hieroglyphs it is at first a little choking to swallow such a large antiquity for the Mayan culture; but Mr. Goodman wisely warns us that, in view of his researches, "we shall have to let out the strap that confines our notion of history," and acquire a 'wider mental range' than we have hitherto enjoyed (p. 149). To go back ten thousand years in the history of the happy Mayan people is to him but a trifle.

It is rather difficult to take this big volume seriously. Even the formidable tables which fill its last hundred pages fail to dispel the feel-

ing of amusement created by the author's curious notions and chosen 'wild and wooly' style, on which latter he especially plumes himself. Only, it is out of place in the 'Biologia.' It should have been issued by Bret Harte's scientific society 'on the Stanislaw,' and reported upon by 'Truthful James.'

Nor, in the hundreds of guesses of the author, has he failed of some worth passing reflection. His theory of the correction for the bissextile year is at least suggestive. His explanation of the *ua katun;* his comments on the Cakchiquel calendar; his reasons for dismissing the cypher in Mayan numeration; his argument that the ancient system of computation was to the end of a period instead of the beginning of a new one—these and some other thoughts may be rescued from the mass of crude assertions as meriting separate consideration. But, as a whole, the conviction will be forced on the enlightened reader that the cause of American archæology has gained practically nothing, and has lost something, by the publication of this heavy tome.

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SCIENTIFIC JOURNALS.

AMERICAN CHEMICAL JOURNAL, APRIL.

On the Butanes and Octanes in American Petroeum: By Chas. F. Mabery and Edward J. Hudson. The authors have studied the very volatile portions of petroleum, obtained by distilling the crude product during the cold winter months, the distillation in some cases proceeding from the heart of the atmosphere and being regulated by cooling the still. In order to identify the different hydrocarbons formed they were converted into their chlorine substitution products by bringing the vapor of the hydrocarbon together with chlorine. The distillations were carried out with great care and ingenuity and a number of derivations of butane were made and studied. The results showed that the petroleum contained no normal butane, but isobutane. In isolating the octane the authors found that a long series of distillations had to be carried on to obtain pure products. They state that these octanes do not begin to accumulate with any degree of purity until the twentieth distillation. They obtain an octane which they studied and also showed that the petroleum contained no octane boiling above 125°.

Naphthalene Tetrabromide: By W. R. Orndorff and C. B. Moyer. Naphthalene tetrachloride has been studied by a number of chemists, but the corresponding bromine compound had not been prepared until the authors of this paper undertook its investigation. They found it could be prepared by treating naphthalene, in sodium hydroxide, with bromine. Cracked ice was put in the flask and also around it to prevent any decomposition taking place from the heat developed. A white cystalline substance was obtained which melted at 111° C. The cystallography of this substance was studied, the angles measured and the more common forms drawn. Many attempts were made to obtain an isomeric substance, but they all failed. The molecular weight could not be determined by the boiling-point method, but some rough determinations of the molecular weight of the tetrachloride were made and the composition of the bromide deduced from this by analogy. By this method and by analysis the composition was shown to be $C_{10}H_8Br_4$.

On Hydrocobaltocobalticyanic Acid and Its Salts: By C. Loring Jackson and A. M. Comey. This work was undertaken in the hope of preparing, from potassium cobalticyanide, compounds analogous to the nitroprussides. When this compound was boiled for some time with strong nitric acid a gelatinous substance was formed, which was found to contain all the cobalt and to have the composition $KH_2CO_3(CN)_{11}H_2O$. This is the monopotassium salt of hydrocobaltocobalticyanic acid. The barium, silver, copper and zinc salts of the acid were also prepared. When the monopotassium salt was treated with potassium hydroxide cobaltic hydrate was precipitated and a substance was isolated from the filtrate which proved to be potassium cobalticyanide. The fact that the substance crystallized in needles instead of in broad, rhombic crystals was probably due to a slight amount of impurity. While some of the properties of these substances are similar to those of the ferrocyanides and ferri-