

the gate in the wall of Aurelian just south of the praetorian camp was closed before the time of the Einsiedeln Itinerant; otherwise the interpolation of the mention of it among gates built up in the sixteenth and later centuries might lead the beginner to infer that it also was open through medieval times. Furthermore, the trumpets from the temple at Jerusalem, figured on the Arch of Titus, were of silver, and not of gold (Numbers 10, 1 ff.).

Such a book as this is one of the most difficult to keep free from typographical errors, especially in the numberless citations of literature; but it seems to be unusually excellent in this respect. We have noticed only a few such errors, and they not of a seriously misleading character. "Above," on page 112, line 14, is doubtless a slip of the pen for "below," since the author surely does not mean that the cliff was scarped above the wall-shelf. Just beneath we notice the frequent, but unjustifiable, use of "perpendicular" for "vertical."

In a book of such complexity of subject we might find much more material for discussion, but none that would impair our gratitude to the author for an extremely laborious, painstaking, and useful piece of work.

*The Heart of the Orient: Saunterings through Georgia, Armenia, Persia, Turkomania, and Turkestan, to the Vale of Paradise.* By Michael Myers Shocmaker. G. P. Putnam's Sons. 1904.

In a gossiping but interesting style the author of this volume takes us from Constantinople through the Black Sea and Transcaucasia along the beaten paths to Baku, and thence over the less familiar way leading to the south end of the Caspian Sea, and to Teheran, the capital of Persia. Returning to Baku, we cross the Caspian Sea, and follow the Transcaspiian road to Andizhan, stopping at the most important places, and thence cross the mountains to the vicinity of Kashgar. Thus little ground is covered that has not repeatedly been gone over by other travelers. Nevertheless, the volume is of special interest at the present time by reason of the many observations of the author bearing upon the relations of Russia to the complicated affairs of Central Asia.

It is now only thirty years since Russia occupied Western Turkestan, but the transformation which has already taken place within that time is marvellous. The older portions of Askabad, Merv, Samarkand, Tashkend, and numerous smaller cities are, indeed, still unkempt and filthy in the extreme; but in every case there has grown up beside them a Russian settlement which is a model of neatness and order, where trees, watered by the irrigating streams, line the carefully laid-out streets, while churches, schools, museums, bathhouses, and tasteful residences combine to make the conditions of life exceedingly attractive. The strictness with which the Russian officials insist on seeing one's passports, instead of causing annoyance, should rather give the traveller a sense of relief, since it is an assurance that all suspicious characters are carefully looked after. Thirty years ago it was at the imminent risk of life that any European visited this region, while now,

thanks to the Russian Government, nowhere is life safer than here.

The typical case of Russian cruelty in warfare occurred in the taking of Geok-Tepe by Skobelev, in 1880. The importance of the occasion is kept in remembrance by means of a military museum close by the railroad station, in which are found many paintings descriptive of the terrible scenes of the capture. From all accounts it would seem that the slaughter was indiscriminate; several thousand of both sexes, including even children, being put to death, both outside and inside the walls. Altogether the scenes were such as to inflict an everlasting stigma upon the Russian name. On the other hand, it is proper to note that Gen. Skobelev, in a remarkable degree, retained the respect of all the tribes of Central Asia, and was indeed the most successful of all Russian generals in governing the people and securing their general good will; so that even these Turkomans who were the object of the slaughter have been the first of the native races to be trusted with arms by the Russians. Preeminently in an irrigated country, a strong and just government is necessary to protect the rights of the various classes of people dependent upon the limited supply of water. Merv was ruined by the Khivans by the diversion of the water of the Murgab from the oasis which supported the city; tens of thousands of Persians, held in slavery, were liberated by the advance of the Russians when Khiva was taken. The Tekke Turkomans were ruthless in their disregard of the rights of others, and fanatical in their opposition to everything which would interfere with their despotic sway. Skobelev's method of dealing with them was certainly effective, and all the people have rejoiced ever since; for the Russians, when their enemies are once subdued, do not rule with a specially heavy hand.

*The Collected Mathematical Papers of James Joseph Sylvester.* Volume I. Cambridge (Eng.) University Press; New York: Macmillan.

We receive with delight this first instalment, a beautiful and comfortable volume closely matching in outward appearance Forsyth's 'Theory of Functions.' It contains Sylvester's work from 1837 to 1853. At this moment, when the chill of senility begins to be perceptible over the very formalistic mathematics that has been and still is in vogue, the virile genius of Sylvester needs to be more fully appreciated. Doubtless there are many memoirs more significant than his and of broader conceptions; but we doubt if there be any whose thought has the peculiar mathematical quality in a higher degree. There are more flawless gems of mathematical workmanship, there are papers of more perfect polish in their execution; but we are strongly inclined to think that there are none quite so instructive in the heuristic art, partly for the very reason that these have not been so finished as to conceal the brush-marks, partly because of the personal originality and singularity with which they are stamped, and partly because Sylvester's garrulity led him almost constantly to tell how he came by his ideas. It would be well worth the while of a student of methodical

logic to take up the theory of invariants, just for the sake of comparing the ways of thinking of Cayley and Sylvester as exhibited nowhere so well as in this volume, with those of Clebsch, Gordan, etc.

Sylvester's habit of throwing his whole being—or only sparing to poetry and sentiment their strictly necessary allotment—for long year after year into the development of a single system of ideas, while recording his progress every two or three months (every month, in his most active years), renders this collection instructive beyond measure. Nor is the interest exclusively mathematical. Logical remarks of value are constantly occurring, and other philosophical suggestions are not rare. In one place we read, "Universal geometry brings home to the mind with an irresistible conviction the truth of the Kantian doctrine of locality." Verily, metaphysics is the Paris of the intellect; no sooner do the most scrupulously severe reasoners find their feet on this ground than they give the loosest reins of license to their logic. Universal geometry can testify concerning no other Space than its own, which is a space, not of three, but of an indefinite number of dimensions; and nothing is more striking in this generalized geometry than that it is decidedly easier for the human mind to comprehend a space of four dimensions than one of three. Give a higher geometer sixty days to accustom himself to a four-dimensional space, and he would be ever so much more at home there than he ever can be in this perverse world. Meantime, the dynamics of rotations asserts downright that the rotational part of motion, at least, is not relative; and as for the body alpha, the epistemological difficulties of this disguise of the reality of space are too serious; and if the fixed stars, or the whole universe, be identified with the body alpha, the difficulties become downright absurdities. The only body alpha that epistemology can admit is the body of space itself. Meantime, even if one were to prove that three-dimensional Euclidean space is native to the mind, that would be no argument in favor of Kant's position that it is merely an affair of the mind. On the contrary, the proper presumption would be that, in view of the unity of the universe, if such space is native to the mind, probably it is native to the outer world of reality also.

The volume is not without glimpses of human nature. Lagrange's so-called demonstration of the principle of virtual velocities "is contrary alike to sense and honesty"—yes, that is the color of it, "albeit sanctioned by the powerful oral authority of an ex-Cambridge professor." One wonders how its case would have gone without that orally powerful sanction. As for Lagrange's proof, it appears to us that cavillers mistake the purpose of it. At any rate, it does convince all reasonable living doubters, for the reason that every man's experience has given him an instinctive and virtual knowledge that work always has to be paid for, which the proof of Lagrange either tacitly takes for granted, or, as we interpret it, supposes to have been expressly admitted for the case of one pair of blocks and tackle. But we must confess to not having looked into the immortal book for many a year.

In every way this publication is a precious benefaction to mathematical students,

P 1059

especially to those who have been treading too exclusively the boulevard of dominant ideas. The four earliest papers relate to the mathematics of physics. Then, for five years, from 1839 to 1844, Sylvester was occupied with elimination and multiple roots. Between 1844 and 1847 the editor, Mr. H. F. Baker, has found nothing. Has he searched Adrain's Diary? Three papers of 1847 relate to the integer equation—

$$x^2 + y^2 + z^2 = Dzxyz$$

The two following years are blank; but from 1850 to the end of the volume (1853) papers follow one another at an average rate of one every month. Here we find the Essay on Canonical Forms, well-known discoveries in Determinants, the "law of inertia," and the great memoir on syzygetic relations and Sturm's theorem, which last was the first of Sylvester's papers to be ushered in with a poetical motto. It is those lines, "How charming is divine philosophy," in which the Lord Chancellor so successfully disguised his detestation and disgust of all the philosophy of his day.

We shall endeavor to keep our readers apprised of the appearance of future volumes, and we hope to find fewer clerical errors in the next. A chronology of Sylvester's changes of place, travels, and, if possible, of his forming of mathematical acquaintances, would be of advantage.

*The Religion of the Universe.* By J. Allanson Picton, M.A. Macmillan & Co. 1904.

It is now more than thirty years since Mr. Picton published *The Mystery of Matter*, a book of very great ability, for which many readers were profoundly grateful because it seemed to show them a way through materialism in company with Science, never letting go her hand. Mr. Picton was then an independent clergyman. Since then he has written a life of Cromwell, has been a member of Parliament, and has seemed to detach himself from his original ecclesiastical associations and religious interests; but it would appear from his present work that these are as vital for him as ever, and the voice which he obeys at eve is that which he "obeyed at prime," the voice of Herbert Spencer, as audible in that part of his writings which has been subjected to more adverse criticism than any other, the "Reconciliation of Religion and Science," introductory to his *First Principles*. It gives a spice of special interest to Mr. Picton's book that it is based so confidently and cordially upon that part of Spencer's system which has been most generally derided, and about equally by those who have found his Unknowable Absolute a too negative denial, and those who have found it a too positive affirmation. For Mr. Picton it is a positive affirmation of a Reality whose finite phases may be known to both science and religion, but whose absolute totality is beyond the conception of either. He regrets, as many others have regretted, that Spencer took over from the orthodoxy of Hamilton and Mansel a term—the Unknowable—that was sure to subject him to wide misconception and abuse, and wishes that he had anticipated or adopted Matthew Arnold's favorite designation of "the Power, not ourselves that makes for righteousness," which was "the Eternal."

Whatever the importance of Mr. Picton's *Religion of the Universe* as expounded in the middle and later portions of his book, he has certainly in one of the earlier chapters wrought an effective protest against those incubations of Messrs. Balfour and Mallock which, from the watery coldness of a universal skepticism, confidently extract the sunshine of comfortable acquiescence in the traditional creeds. In his rejection of these Mr. Picton is perfectly frank, while at the same time he contends that the ideal and spiritual implications of those creeds are not dissipated by a construction which is opposed to supernaturalism in every form and manner and degree.

His tone is not without occasional severity, when he is characterizing those who retain "the form of sound doctrine" from which the substance has been wholly taken away; but it is conceivable that certain critics of more sternly scientific temper than his own may find his difference from those whose honesty he questions one of degree only, and inconsiderable at that. Though denying personally to the Unknowable (which may, as Spencer said, be "more than personal"), he still prefers to name it God, to name his religion Christianity, and to find values corresponding to revelation, inspiration, etc., and properly so called, in the actual or possible conditions of the spiritual life. He writes pertinently of "that hereditary habit which provides a mould into which all our interpretations of the Bible run," a habit which "becomes set in early life"; and it is impossible to avoid a grave suspicion that some habit of this kind is illustrated by the conduct of his own mental processes. Is not the real energy of these more bent on saving from the wreck of opinion as much traditional sentiment as possible, rather than on freely working out the religion of the universe from the data of scientific acquisition?

What this religion means for Mr. Picton is more generally exhibited in three chapters, "The Unknowable or God," "Revelation," and "What may be Known of God," and more particularly in others, "Evil" as suffering and sin, "The Everlasting Gospel," "Christianity," "Experimental Religion," "Eternal Life," "Worship and the Church." "That being whom we name God," he says, "is not a greatest person separate from the universe, but the Universe itself." The obvious defect of this definition is that it is a roundabout way of saying nothing in particular; like Omar Khayyam, he comes out "at the same door wherein he went." The universe, by being deified, is merely named, not known; and its qualities remain, for distrust or admiration, exactly what they were before. In the chapter "What may be Known of God," he—that is, the universe—appears such that he might be described "as unknown though well known," and to be worshipped as known, not as unknown or unknowable. Mr. Picton's procedure here is more rational than his main contention, for it is only what we know of the universe or of God that justifies us in extending to either, as unknown, the favorable or unfavorable sentiments of our hearts. It is true that Mr. Picton insists that his God is not the Unknown or the unexplored, but the Unknowable, the illimitable atmosphere of ignorance which invests everything that is,

or can possibly be, known. But this Unknowable, as well as the Unknown, must take all the color of its significance from the soil of that field of cultivable knowledge in which we are appointed to work our whole lives long.

Particularly in the chapter on "Experimental Religion," but in many other places, Mr. Picton contends for the reality of a "cosmic emotion" of no paler hue than that excited by the traditional conceptions of the evangelical pietist. But while his own fervor is beyond question, it is hard to understand. The mere word "unknowable" seems to act upon him as a kind of charm, and to stir him to an exalted pitch of emotional satisfaction. In a yet more questionable shape appear his efforts to resolve the tragic side of life into agreement with an optimistic apprehension of God's "everything and more." He does not make the mistake so common with the pantheist and rhapsodist, and treat as negligible every painful aspect of the world, while recognising every sweet and pleasant thing. But his disposition to think well of "things as they are" makes for too much complacency in his view of animal and human suffering. His special pleading, his minimizing of the tragic element, if more religious than the passionate revolt of others against this, is less human, and at certain points less moral. He does not compare favorably with Mill insisting, "I will call no being good who is not what I mean when I apply that term to my fellow-creatures," or with Whittier crying plaintively,

"The wrong which pains my soul below,  
I dare not throne above."

Apart from his optimistic pantheism Mr. Picton is evidently a man of generous sympathies and admirations, setting his face against the arrogant and selfish imperialism of the time. But he conceives that in such things mortal man may be more just than God without prejudice to God. "Against civilized races and their rulers the Tasmanians had certainly a claim for consideration, which was, we fear, too often cruelly ignored. But that does not in the least imply any injustice or cruelty in the laws of the universe which permitted their extermination, for as towards the Infinite they could have no claim," etc. Surely here is another theophany of that convenient *deus ex machina* which, under the name of Destiny, has been so often invoked of late by bland apologists for public wrong.

*Theodore Roosevelt the Citizen.* By Jacob A. Riis. Illustrated. The Outlook Company. 1904.

The reception which a campaign biography such as this meets with is a fair gauge of the reading public to which it is addressed. It is as different from the old typical campaign biography of the ante-Bellum *Hispanicus* period as Mr. Roosevelt himself is from the typical candidate of that time. It is strenuous, it is loud, it is fervid, it is unmeasured, it is not logical. It is hoarsely enthusiastic, and is all pitched in one high, monotonous key of laudation, which, were there anything in literary or rhetorical tradition applicable to such an effort (and Mr. Riis clearly thinks that there is not), would be a rhetorical blunder. It seems sometimes as if the megaphone rather than the pen were being used. Granting everything

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