want of proper support? There are probably not more than half a dozen subscribers in this whole country. Let those who appreciate the importance of the work encourage it by giving it a place in their private libraries.

LETTERS TO THE EDITOR.

**** *The attention of scientific men is called to the advantages of the correspondence columns of* SCIENCE *for placing promptly on record brief preliminary notices of their investigations. Twenty copies of the number containing his communication will be furnished free to any correspondent on request.*

The editor will be glad to publish any queries consonant with the character of the journal.

Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

Romantic Love and Personal Beauty.

YOUR reviewer has pointed out that the light and flippant character of Mr. Finck's style prevents his book from being taken as a serious contribution to science. He has neglected to show that the unintermitting vulgarity of its tone will cause it to have an exceedingly vicious effect upon society, if it should chance to have any effect at all. Romantic love is one of the few thoroughly beautiful and elevated things that civilization has yet produced. It is such a means of refining and subduing the brute in man, and of bringing him a little nearer to the angels, as is no other emotion which he has yet developed. When a young man and a maiden are in love, they walk in a very heaven, not of happiness only, but of delicacy and purity. The poets and the worthy novelists have invested the subject with a warm glow of high feeling and noble aspiration, and even the unworthy novelists have not dared to drag it wholly in the dust. It has been reserved for a Mr. Finck to write of it in a tone which is not equalled by the commonest and most vulgar of the daily newspapers. It is incomprehensible that a book which is offered to decent people to read should contain such a sentence as this, to take an instance at random: "Has Mr. Spencer ever kissed a girl?" Romantic love is a precious possession which the race has been slow to gain. It is possible that it is like a delicate flower, which cannot be handled by the botanist without losing its beauty and its fragrance. At all events, it is of immense importance, if it is to become the subject of scientific investigation, that it should not be vulgarized and cheapened at the very beginning by such a manner of writing as this.

Mr. Finck's book contains a number of very clever explanations of minor points in biology and psychology. His main theses are not new; and, as Mr. Conn has pointed out, it is premarital courtship, and not love, that he has shown, or that can be shown, to be very modern. His explanations, while they are extremely ingenious, always need to be carefully examined, and are seldom fortified by his reasons. His conception of how delicate a task it is to establish a relation of cause and effect may be gathered from the following passage: "Large numbers of tourists in Switzerland constantly suffer from headache, simply because they fail to have the head at night in the centre of the room, where it ought to be, because the air circulates more freely there than near the walls." His literary style is on no higher level than his taste and his logic. He speaks of "a blue-blooded youth and a ditto maiden," and of "knocking the bottom out of the theory of Alison, Jeffrey and Co." So utterly regardless is he of the common decencies of language, that it is impossible to attribute it to the proof-reader when we find him saying that one thing is the "very antipode" of another.

The second part of Mr. Finck's book is, if possible, worse than the first. His ideal of beauty is as poor and mean as his ideal of romantic love. That kind of beauty which can be heightened by pomades and powders for the complexion, and by surgical appliances for straightening noses, is not the kind which our descendants will strive to perpetuate. There is something peculiarly gross and offensive about all such topics to a right-minded person; and to find them discussed in fullest detail in a book which is expected to influence scientific opinion on a subject of profound importance, is certainly one of the most curious freaks that a non-insane maker of a book has yet been guilty of. Mr. Finck pretends to be an admirer of expression as well as of mere animal beauty. But a fine and noble expression is absolutely incompatible with such absorption in the details of the toilet as he recommends. It is impossible for a girl to practise 'making eyes' before her looking-glass, as he urges her to do, without showing the marks of that vacancy and insipidity by which "the faces of many fair women are utterly spoiled and rendered valueless." He quotes this other fine passage from Ruskin: "There is not any virtue the exercise of which even momentarily will not impress a new fairness upon the features;" but he is of too insensitive a fibre to know that there is also not any vanity or vice that will not in time ruthlessly destroy whatever is admirable in the face of man or woman. H.

[WE think our readers will find the above letter interesting as containing the strongly expressed views of a woman belonging to that class which believe they have discovered worthy substitutes for some of the attractions which have proved successful hitherto in bringing into existence this much-discussed romantic love. — ED.]

Grindelia squarrosa.

A VERY interesting find was made here recently by one of the High School boys, who is making botany a specialty. The 'find' consisted of several specimens of a composite plant unknown here before, but which has been decided by several competent authorities to be *Grindelia squarrosa*, a plant said by Coulter to occur "from the Saskatchewan to Texas, and westward to the Sierra Nevadas."

The three or four specimens were found in a pasture, at some distance from the railroad. How they came there is the question which is puzzling those who have seen them, as their true home is said to be so far to the westward. I have heard that a few specimens were once found in Ottawa in this State, but cannot vouch for the truth of the report. L. N. JOHNSON.

Evanston, Ill., Sept. 14.

The Term 'Topography.'

THE significance of the term 'topography' has undergone a rapid specialization in modern scientific usage that is noteworthy as an indication of the increased attention incidentally given to the study of physical geography. A conspicuous improvement in the methods of geographic teaching in England has been commented on in recent numbers of *Science*, and attributed to a growing recognition of the economic bearing of geographic facts. Mr. Keltie has shown that an entirely novel method of treatment, and a rapid advance, have resulted from this altered attitude. There is, however, tacit admission, to which Mr. Davis calls attention (*Science*, x. No. 240), that the nature of the relations of 'physiography' to human development is but vaguely understood, and that progress is at present retarded by uncertainty of aim. Mr. Davis effectively points out the difficulty: that for teaching-purposes there has not been sufficient inquiry into the principles of geographic evolution, "for topographic development is the key to a real understanding of the forms of the land about us;" that "physiography now is in a low position," and "most immature" as a science in itself. Generalization is as yet difficult, or of questionable profit: "attention should be directed instead to the minute morphology and systematic development of individual topographic forms." Physiography must make the same order of advance that biology has made out of the old natural history, with its aimless catalogues of wonders, and study the "simpler type-forms carefully before attempting to understand the complex associations of forms that make up a country or a continent." Mr. Keltie recognizes that it is "typical aspects of the earth's surface," not "extraordinary features," that will serve the purposes of the new geography; "but," as Mr. Davis points out, "he does not say where we shall find a scientific and sufficient investigation of the forms that are chosen as 'typical aspects.' There is no such investigation. The absence of any thorough and consistent physiographic terminology at once points out the immaturity of this study. . . . 'The Sixth Annual Report of the Geological Survey,' just issued, contains, for example, a number of illustrations that will be seized upon when the proper text-book appears. The choice little woodcuts on p. 229, entitled 'Topographic Old Age' and 'Topographic Youth,' are particularly good, but these terms will certainly be new to most readers." No "scientific and sufficient investigation" of the evolu-

tion of geographic forms has been attempted, and there is no "thorough and consistent physiographic terminology;" but systematic incursions have been made into this field by meteorologists, by engineers, and notably by American geologists. The geologist is not, for example, chemist also, because chemistry aids in geologic investigation, but here, from necessity, the geologist is also physiographer. The effect of this orderly work upon the study of physiography, though in the nature of clearing away outlying obstructions to adjoining interests, is seen in the scientific beginnings of a terminology that may be assembled from the writings of Gilbert, Davis, Chamberlin, and others.

The term 'topography,' it would seem, has, within a few years, been appropriated as a general designation for those superficial forms which have recently received attention as both the product and the promise of so much in geologic evolution. The surveyor made little progress in hill-drawing until it was seen that many obscure geologic facts bore, in surface form, a typical expression that could be readily interpreted. As the director of the Geological Survey said recently, in his testimony before the 'Joint Commission' for the investigation of the scientific bureaus of the government, "the most fundamental connection of geology is with topography, because geology has for its purpose, either directly or remotely, the explanation of topography. . . . All the vigor and energy which are devoted to topography in modern times arise from its geologic relations." To meteorology, and to the broader problems of engineering, surface shape, or surface shaping, also bore complex relations; to engineering it set examples; to meteorology it was a known quantity in an intricate problem; to geology it was the beginning and the end. There were recognized "a topography of the land and a topography of the sea," and, in each, characteristic type-forms, both of erosion and of deposition. The type-forms of erosion were seen to vary with the nature and grouping of materials, so that each class of rocks had its own distinctive topographic expression. The recognition of a 'topography' of coal, and of the allied natural products, in the mining regions of Pennsylvania, is of acknowledged economic importance; and glacial history is traced more successfully through its splendid topographic record than through the composition characteristics of its drift.

Obviously a distinctive term is needed here, in the more discriminative modern geology and allied sciences: from recent inquiry into usage, on this point, I cannot but think that 'topography' has been adopted in this definitely restricted sense, and will hold. For example, in a standard treatise on roads, by Lieutenant-Colonel Gillman of the Engineer Corps, this occurs: "In laying out important roads, and especially in locating streets, in thickly settled districts, it is well to place contour curves upon the map. These curves indicate at once, to the practised eye, the topography of the country which they embrace." Dr. Woeikof, meteorologist and professor of physical geography in the University of St. Petersburg, devotes a chapter in his recent book, 'Die Klimate der Erde,' to the 'Variation of Temperature with Altitude, with Particular Regard to the Effect of Topographic Form on Temperature Changes,' as interpreted in *Science* of the same number with Mr. Davis's letter, cited above. In the newer geological reports abundant instance may be found of this use, for example, here and there: "Change in the character of the rocks produces corresponding change in the topography; the soft mica-schists have been worn by erosion into broad parks and valleys, intervening with rounded peaks and ridges of harder strata;" "the main topographical features of this country are the results of erosion, aided and modified by faults and folds, to which volcanic rocks have added many interesting features, mainly by the resistance which they offer to denudation;" "the contrast of hard and soft has determined the main features of the topography. . . . These have been made to give expression to the main facts of the geologic structure;" "the former [a beach line] crosses the irregularities of the pre-existent topography as a contour, the latter [a fault] as a traverse line . . . a system of shore topography, from which the ancient lake has receded, is immediately exposed to the obliterating influence of land erosion;" "the topography was not too rough on the one hand, nor so low and flat as to be submerged, on the other . . . as the peculiar character of the topography of the moraine varies through a somewhat wide range, and sometimes simulates very closely the surface aspect assumed by other formations, the study of topographical types becomes one of essential importance . . . a topographical species absolutely impossible of formation by drainage agencies." Upon the first appearance of the proof-sheets of the new topographical survey of Massachusetts, a year or more ago, the work was commented on editorially in *Science*, in part as follows: "The curious Hopper of Mount Greylock, with its deep-cut valley, is one of the best marked topographic forms in the State . . . what is now needed is the local examination of minute topographic details so that we may learn to see and appreciate the forms about us at home; and nothing will lead sooner or surer to this long delayed end, than the publication of good topographic maps."

I do not think that the term has acquired this association through exceptional fitness of its own, though small objection can be urged on etymological grounds, but because it was in the field, and out of serious employment. Originally it meant place-description, or, as applied to surveying and maps, simply detail, or the art of portraying it. Early topography was, however, singularly unobservant of surface configuration. When the important bearing of surface expression on geologic problems came to be recognized, related topographic work became more appreciative of this additional feature in place-description. Maps of the novel sort were at once recognized as the only completely topographic maps, and to their distinctive characteristic, finally, the term 'topography' got exclusively to apply.

From this point of view, then, in a map, the expression given to the vertical element, whatever the symbol employed, is 'topography;' the drainage, — stream, pond, or marsh, — the obvious agent, destructive or constructive; and the 'culture,' an incident. The term is still in use in the old sense, among surveyors and engineers; and it may, perhaps, continue so, without confusion, as, in turn, a technical meaning. WILLARD D. JOHNSON.

Templeton, Mass., Sept. 13.

A Living Glacier on Hague's Peak, Colorado.

FOUR years ago, Mr. W. L. Hallett of Colorado Springs, while crossing an ice-field on Hague's Peak, stepped into a crevasse which had been hidden by a thin layer of recent snow, and narrowly escaped a serious accident. The crevasse suggested to him that this snow-field was really a glacier. Since that time the place has been visited by only five or six persons. Among these were Mr. Chapin of Hartford, Conn., a member of the Appalachian Mountain Club, who is said, during last July, to have pronounced the formation to be a true glacier. I have recently examined the region, and the following is a brief statement of the principal facts observed: —

From Long's Peak northward to Hague's Peak is a line of noble mountains thirteen thousand or more feet high. The numerous tributaries of the Big Thompson River take their rise in snow or rather ice fields which are situated in basins or mountain cirques far above timber-line near the summit of the range. The upper parts of the valleys of these streams were all glaciated in ancient times, and are bordered by moraines which in some cases extend down into Estes Park. This region is marked on the maps of Clarence King as having formerly been glaciated, but no moraines are shown on Hayden's large map of Colorado. Several of the ancient glaciers are shown by the moraines to have been more than ten miles long, and some of them were at least fifteen miles. Near the post-office marked Moraine on Hayden's map, the moraines are well developed as ridges having steep slopes on each side. They are from a few feet up to about two hundred feet high, and in places are perched on the mountain-sides five hundred feet or more above the bottom of the valley. Going up these valleys, one sees a succession of terminal moraines, showing that there has been a gradual recession of the ice.

The ice-field on Hague's Peak is in a basin roughly semicircular in shape, situated on the east face of the northern spur of the mountain. The basin is small, — hardly one-fourth of a mile in diameter, — and is at the head of a deep valley which drains east, and then south-east, into the Big Thompson. This valley was once occupied by a large glacier, as shown by moraines, by a number of glacial lakelets in the bottom of the valley, and by moutonned bosses of rock. Just below the ice-field a broad moraine ex-