C [laughing]. *We* call it a cheese, but it isn't really. I don't know.

D [reverently]. The moon is God. ["Is that exactly what you mean?"] No; I mean because God made the moon; I don't know what it is at all.

E. I know it is a big thing, and I think to myself it's something like the sun: it shines just as bright.

F. Don't know, never thought.

2. What is thunder?

A. When clouds meet together and make a great noise; when they bang together.

B. Don't know.

C. Thunder makes a noise, that's what it is.

D. Long pause; then, "Is thunder God? Well, God sends thunder, does not he?" Then followed a long outpour on the folly of standing under a tree during a thunder-storm.

E. A rolling thing that makes a great deal of noise, that's what it is.

F. Nasty little beasts. Further inquiry brought out, "It kills nasty little beasts that eat the cabbages."

3. If you went up in a balloon higher and higher, what would you come to at last?

A. The sky. The sky is heaven. [Very shyly] I forget what heaven is.

B. We should come to the sky: the sky is water.

C. I don't know.

D. I don't know; but I know if you go up high enough you can't breathe [here followed remarks too numerous and rapid to be taken down].

E. Clouds and heaven.

F. Come to the sky. I don't know what the sky is.

4. What age do you think it would be nicest to be, and why?

A. I don't know. I don't want to grow older all of a sudden.

B. Twelve [but she was too shy to tell me why].

C. Seven, because it is a year older, because then I should not have to go to school so long.

D. Nine, because I think then I should know a little more.

E. Well, for myself, I should think about thirty, because you would be of age, and could do nearly what you liked. I should go to theatres and cricket, and play football and run races. ["Shall you do any work?"] Oh, yes! ["What should you do?"] Well, if I had my own choice, I should not mind being a coachman, that's what I like — *horses*. ["Do you like dogs too?"] Well, I haven't had much to do with dogs.

F. Twenty, because I could wear trousers then — and what age would *you* like to be?

5. What do dogs think about? Can they talk to each other? How?

A [much amused]. Oh! I don't know; I don't know if they think or not. They talk in their way, I don't know what they say.

B. Don't know. I don't think they do think. No.

C. They don't think at all, do they? They can bark, not talk properly, but they understand each other.

D. Think about nothing but eating. No, except they can bark.

E. *Some* dogs think about biting people, some about eating things, and some dogs think about being kind to people. They talk in a dog language that people can't understand.

F. Biting and fighting. I don't know any thing else. Yes, they bark.

6. If you could go to the bottom of the sea, what should you expect to see?

A. Sand and stones and fish. I don't think there is any thing else.

B. Animals, fishes, sand, and stones; nothing else.

C. You would not see any thing, because it is so dark when you are under the sea.

D. I have never seen the sea. ["Tell me what you think it is like."] It's blue, and the waves come up higher than this chair. I should see a lot of sand, and a lot of shells, and a lot of fishes, and a lot of crabs. They bite your legs dreadfully, crabs do.

E. Fish and shells, seaweeds, and some boats, perhaps, that had sunk; jelly-fish, I dare say, and I've heard [very mysteriously] that there are mermaids, but I don't think so, do you?

F. Fishes, people which have been drowned.

7. What are fairies? Where do they live?

A. There aren't such things.

B. Don't know. They are fairies; they are just fairies. I don't know where they live.

C. Don't think I ever heard of them.

D. Fairies are spirits: they look rather like an angel. Yes, rather. We can't see angels; there might be an angel in this room, and you and I could not see it. Angels are so light, any one could lift an angel. When Jesus was on earth there were angels. Do you know what wonderful things Jesus could do? [A fluent story of the paralytic man followed.] That was years ago, they don't do such things nowadays. Fairies live under trees; acorns are their teacups.

E. I know there are those, because there was one screamed out to mother. Very little things, I expect, not much larger than this [he measured about an inch and a quarter]. They live in the woods and under toad-stools. I expect they come into our houses at night.

F. There are none.

Sense of Beauty.

1. What flower do you think the prettiest, and why?

A. Oh! they are all so pretty; I don't know. ["Suppose I promised to give you a nosegay of several pretty flowers, which would you choose?"] Forget-me-nots and violets and daisies and may-blossoms; I don't know what else.

B. Gardinias, because they smell so nice.

C. A rose, because it is a very pretty flower; there is nothing else like a rose.

D. A sunflower, I think, don't you? ["I think I like some others better."] Oh! but just you remember how long they last, and those tiny flowers don't last very long. I say [very confidentially], do you like bread-and-butter pudding? ["Not much."] I'll tell you what I like, and I am sure you will too, and that's suet-pudding smoking hot with raisins in it [a long outpour on puddings followed].

E. A rose. It has a lot of sort of little things inside, petals, red and yellow, cream-colored and white.

F. A white rose. I like them because I think them prettier than any other flower. I don't know what it is like. I can't tell you.

2. What is the most beautiful thing you ever saw?

A. Don't know [thought hard, still didn't know. "Have you seen any beautiful thing lately?"] Yes, the sea, when it is calm, and sometimes when it's rough.

B. Roses.

C. Stuffed animals and things.

D [thought a long time, then asked] An animal? ["Just as you think, any thing."] Well, then, I think an air-ball; how difficult they must be to make! [Too rapid a description followed to be taken down.]

E. I like the mountains very much. ["Have you ever seen any?"] Oh! I've been to Italy and France and Paris. I was very little, but I remember the mountains.

F. I don't know. [He thought hard, and then said, almost as if watching them] Fireworks, sky-rockets, lovely!

BOOK-REVIEWS.

Grundzüge der physiologischen Psychologie. Von WILHELM WUNDT. 2 vols. 3d ed. Leipzig, Engelmann. 8°.

PROFESSOR WUNDT of the University of Leipzig has indelibly associated his name with the development of the scientific study of

mind that plays so prominent a *rôle* in the science of this century. Beginning his career as a physiologist, he soon saw in the pursuit of his specialty the opportunity of bridging over the gap between body and mind, or, better, of restoring to its original unity the study of the two as different aspects of one phenomenon. The field of physiological psychology had been simply touched upon here and there. It lacked systematic treatment as well as recognition as a distinct science. Both of these he attempted to supply; and the attempt, considering the inherent difficulty of the subject, has been eminently successful. He published the first systematic text-book in this field in 1874, a second and much enlarged edition appeared in 1880, and the third has just appeared. In these thirteen years the growth of the science has been rapid, and the fact that the validity of this increase is in great part not yet tested makes it necessary to record much that our successors will be able to omit. But independently of this technical aspect of the study, science owes a debt to this movement similar to that it owes to Darwin. The one introduced the same rejuvenating ferment into the discussion of philosophical problems as has the other into that of biological problems. It has given meaning to facts formerly isolated and uninterpreted, has erected a sign-post directing the way for the future, and has prevented much useless and irrelevant speculation. It is to be hoped that the objects and methods of this science are to-day too well known to need more than a mention in this connection.

The question of most natural interest in the notice of this text-book is the extent and nature of the changes that have been made in passing from the second to the third edition. While the author has made alterations in all parts of the work, the topics that have been most altered are the following, and they indicate very well the fields in which recent research has been active. The anatomy and physiology of the central nervous system, and particularly of the parts connected with the highest psychic activities, have been much revised. Next, the experimental study of sensation, both qualitatively and quantitatively, has received valuable additions from many hands. The chapter on auditory perceptions has been rewritten, and that describing the measurement of the times of psychic processes has been made to include the most recent studies, especially those made in Professor Wundt's own laboratory. Whether these changes justify the publication of a new edition is a question upon which opinions will differ. A great deal of what has been added has been already published in the *Philosophische Studien*, edited by Professor Wundt; and, as most of this material is only of technical interest, its incorporation into a text-book is hardly an advisable step. Again, the advance in the knowledge of facts has brought with it an advance in the presentation of theoretical views, and Professor Wundt has hardly undertaken the radical kind of revision that the appreciation of these would justify: in other words, if a text-book in physics were written upon the plan of this work, it would amount to a cyclopædia, and the reader of that cyclopædia would be at a loss to distinguish the important and clearly established from the unessential and provisional. The book has grown thicker where it should have grown deeper. Finally, at the risk of singling out a trivial matter, an American reader is very much struck with the absence of all mention of the studies that have been contributed to this science on this side of the Atlantic within the last few years. These studies to a large extent fall in those chapters that have been most fully revised; and this, together with the fact that they have been noticed in Professor Ladd's 'Psychology,' makes the cause of this omission all the more strange.

Spezial Karte von Afrika. Gotha, Justus Perthes. f°.

THE second edition of this valuable work on African geography is now complete. It consists of ten sheets, and contains all the new discoveries made during the last years. The coloring of the new edition is more delicate than that of the first edition, and the political boundaries have been indicated in colors that do not obscure the physical features of the country. The map is carefully compiled from all the available material, and is indispensable to the student of African geography. Although it is only a year since the first edition was completed, the additions to our knowledge of some parts of Africa are so considerable that the sheets had to be practically redrawn. On the sheet Kongo we find the results of Capello and Ivens's journey, Reichard's journeys west of the Tanganyika, and the numerous explorations on the tributaries of the Kongo. The contour line of 1,000 metres, which was indicated by a heavy buff line in the first edition, has been corrected according to recent observations, and is shown by a broken red line. Another technical improvement of the new edition is the use of a dark green color for indicating oases. On the sheet Western Sudan we find A. Krause's important journey through Mosi indicated, although the details are not yet known. The leading principles in constructing the map are thoroughly scientific. The lettering and the outlines show plainly the parts that are known by exploration, and those which are only known by reports of natives. The scale is 1:4,000,000 (about 60 miles to an inch), large enough to show all important features of the geography of Africa.

The Driftless Area of the Upper Mississippi. By T. C. CHAMBERLIN and R. D. SALISBURY. (A monograph accompanying the Sixth Annual Report of the Director of the United States Geological Survey.) Washington, Government. 4°.

IN no direction is the Geological Survey advancing the science more rapidly than in the department of glaciology. The monograph on the great terminal moraine has done more than any other single research to make the continental ice-cap a reality, and to silence the iceberg theory of the drift; and the present contribution is scarcely less valuable or wide-reaching in its conclusions.

In the midst of the great mantle of drift that overspreads the Upper Mississippi basin, there lies a drift-barren tract of about ten thousand square miles, — the driftless area of Wisconsin and adjoining States. This island in the sea of drift is unique; and, strangely enough, the margin of the drift on almost every hand lies on a slope descending toward the driftless area. Probably no other district on the globe is so favorably situated to serve as a standard of comparison and contrast between glaciated and unglaciated areas, and a means of estimating the results of the drift agencies. All of the formations of that region, with their attendant topographies, sweep curvingly across the driftless area from an ice-ridden region on the one hand, to a like ice-ridden region on the other, displaying in a most striking manner the contrasts that arose from the single factor of glaciation. The driftless region is especially instructive concerning glacial extension and restriction, and it throws important light upon the movements of the ice-sheet over a very large adjacent territory. The great drift-burdened ice-stream, as it moved south-westward from the Canadian heights, was divided and diverted; and the separated currents swept around the area, and mingled their burdens below it.

The facts bearing upon these and many minor aspects of the driftless area are marshalled and discussed in a masterly manner, the more important features being also clearly exhibited in a series of well-executed maps and cuts. Among the subordinate contrasts which this region presents, none are more noticeable than the absence of falls in the driftless area, and their comparative abundance beyond its limits, — falls indicating a youthful, and usually a post-glacial, topography. And certainly there could be no more convincing evidence that the region has never been invaded by glaciers than is to be found in the fragile pinnacles of rock which abound over a large part of its surface.

The residuary earths of the driftless area are compared physically, microscopically, and chemically with the glacial clay or till. Nearly one million measurements of the ultimate particles show that the residuary earths are much finer grained and more homogeneous than the drift clay; and they are also remarkably free from calcareous matter, which forms a large proportion of all the true drift of that region.

In its remarkably sinuous course across the continent, the great terminal moraine impinges upon the eastern side of the driftless area, and affords specially fine contrasts between the characteristics of driftless and drift-bearing regions; while upon the west it is bordered by the loess; and the much-disputed question as to the origin of this interesting formation is settled provisionally in favor of its being essentially an aqueous or lacustrine deposit of glacial clays.

In the concluding chapter, on the history and genesis of the drift-