A SENSIBLE little pamphlet, entitled "Health Notes for the Seaside" (Whitby: Horne and Son), in which some of the salient facts of the science of hygiene are applied practically to every-day life and holiday seeking, has been written by Mr. A. C. Dutt. The "Notes" contain much good advice on how to make the best use of a brief holiday.

MESSRS. G. PHILIP AND SON have sent us a copy of the special map they have had prepared to illustrate the British and Italian operations in the Eastern Soudan and Red Sea littoral. The map shows the entire course of the Nile from the great lakes to the sea, and the approaches to Khartum from the east coast. Another map published by the same firm, shows on a large scale the present scene of operations in Egypt.

THE fifth part of the second volume of the *Proceedings* of the Imperial University College of Agriculture, Tōkyō, is occupied by two papers, both in German, on Japanese trees in the winter state, illustrated by thirteen plates, and on the shrinking (*Klemmen*) of the Japanese timbers which are most useful for practical purposes.

THE "Hand-list of Coniferæ grown in the Royal Gardens, Kew," just issued, comprises 227 species, with 340 varieties. It has been drawn up with the assistance of Dr. M. T. Masters, and is preceded by a very valuable historical sketch of the nomenclature and classification of the *Abietineæ*, from the pen of Sir Joseph D. Hooker.

A KIND of German *Kew Bulletin* is announced, with the title *Notizblatt des königlichen botanischen Gartens und Museums zu Berlin*, under the direction of the staff of the Royal Garden and Museum at Berlin. It is to be devoted to the botanical interests of the German colonies, to the presentation of results which it is desirable to place promptly before those interested, and to the publication of new species.

WITH the view of bringing together the opinions of persons interested in reptiles, and with the laudable intention of educating people to a kinder feeling for these interesting creatures, *The Vivarium* has been started. The first number has been produced by a lithographic process, but the promoters hope to elevate the contributions to the dignity of print in the near future. The periodical is intended to be the organ of the newly-formed Reptilian Society, and copies can be obtained from the Secretary, Rand Rectory, Wragby, Lincolnshire.

A SIXTH revised edition of Prof. C. Gegenbaur's "Lehrbuch der Anatomie des Menschen" has been published by Engelmann, of Leipzig, in two ponderous volumes. The work was originally published in 1883, and took its place in the first rank among reference books of anatomy. The revisions ensure that the new edition will maintain the high position earned by the original. Another new edition, received during the past few days, is the seconds of "Geology and Scenery of Sutherland" (Edinburgh: D. Douglas), by Mr. H. M. Cadell. The book is a worthy example of a guide-book which has nature for its subject, and is a desirable companion for visitors tc the rocky wilds of Sutherland. Would there were similar volumes for every county in the British Isles. Many instructive diagrams and full-page illustrations are distributed through the pages of the book.

THE Royal Agricultural and Commercial Society of British Guiana may not be progressing so much as it deserves, if progress is counted by an increased roil; but its admirable journal, *Timehri*, the December number of which (vol. ix. part 2) has come to hand, testifies to the existence of a healthy spirit of inquiry, which assists in the progress and development of the great colony with the affairs of which it is chiefly concerned. Among the subjects of papers in the present number are: "Food Adulteration," by Mr. L. M. Hill; "The Relation of Boiling Temperatures in Multiple Evaporation," by Mr. F. I. Scard; "Ethnological Notes from Pirari," by Mr. C. A. Lloyd; "The Materials of the Urali Poison," by Mr. J. J. Quelch; "Some Guiana Parrots," by Mr. C. A. Lloyd; and two articles by the editor, Mr. James Rodway—one on the future of the Negro, and the other on the old boundary of Essequibo. In view of the fact that Venezuela lays claim to the whole of Guiana west of the Essequibo, it is well to call attention to this article, in which Mr. Rodway shows the baselessness of such a claim. The London agent of *Timehri* is Mr. E. Stanford.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus*, ♀) from India, presented by Mr. S. C. Fisher; a Silver-backed Fox (*Canis chama*) from South Africa, presented by Mr. C. W. Southey; a Leadbeater's Cockatoo (*Cacatua leadbeateri*) from Australia, presented by Miss E. S. Young; two Crowned Dricker-Boks (*Cophalophus coronatus*, ♂ ♀) from West Africa, received in exchange.

OUR ASTRONOMICAL COLUMN.

NEW VARIABLE STARS.—The *Harvard College Observatory Circular*, No. 6, announces that an examination of the Henry Draper Memorial photographs of stellar spectra by Mrs. Fleming has led to the discovery of fourteen new variable stars of long period, in addition to those previously announced. The spectrum of the fifth star in the following list is of the fourth type. All of the others have spectra of the third type, having also the hydrogen lines bright, and it was this peculiarity which led to their discovery. The variability has been shown by comparison of a large number of photographs, and the variation has been confirmed in each case by Prof. Pickering.

Constellation.	Designation.	R. A. 1900.	Dec. 1900.	Magnitude.		Date of next Maximum.
				Br.	Ft.	
		h. m.	° ′			1896
Sculptor ...	−39° 16	0 3·6	−39 47	8·9	<12·1	May 25
Columba ...	A.G.C. 6135	5 15·6	−33 48	7·6	11·3	June 23
Canis Minor...	...	7 1·5	+ 9 1	10·3	<13·7	Sept, 11
Virgo	+ 5° 2708	12 57·6	+ 5 43	8·8	9·7	...
Apus	...	14 59·3	−71 40	9·0	<11·4	...
Sagittarius ...	−33° 13234	18 21·4	−33 23	8·2	12·3	July 2
Sagittarius ...	−19° 5347	19 8·1	−19 2	9·7	11·1	...
Sagittarius ...	...	19 8·7	−18 59	9·9	<13·3	...
Pavo	...	19 39·5	−72 1	7·6	12·1	Aug. 29
Microscopium	A.G.C. 28038	20 21·8	−28 35	7·4	8·4	...
Pavo	...	20 47·2	−63 5	9·6	<12·3	...
Grus	−38° 15044	22 19·9	−38 4	8·6	11·0	...
Grus	...	22 19·9	−48 57	7·2	12·3	May 10
Aquarius ...	−16° 6379	23 47·1	−16 25	8·2	9·3	...

COMET PERRINE-LAMP.—The following is a continuation of Dr. Lamp's ephemeris of Comet Perrine-Lamp for Berlin midnight (*Ast. Nach.*, 3341):—

	R.A.	Decl.	Brightness.
	h. m. s.	° ′	
April 3 ...	4 19 25 ...	+42 4·7 ...	0·023
6 ...	24 49 ...	41 36	
9 ...	29 45 ...	41 10·6	
12 ...	34 21 ...	40 48·3	
15 ...	38 39 ...	40 28·4 ...	0·012
18 ...	42 45 ...	40 10·8	
21 ...	46 39 ...	39 55·3	
24 ...	50 23 ...	39 41·4	
27 ...	53 59 ...	39 29·0 ...	0·007
30 ...	4 57 28 ...	+39 18·0	

Mr. Joseph Lunt reports that on March 1, 2 and 3, the comet appeared as a circular nebulosity without tail, but with a bright central condensation, which very gradually faded away outwards. It was as bright as the nucleus of the great nebula in Andromeda, which it somewhat resembled, and was easily seen with a telescope of one-inch aperture. On March 9 the aspect of the comet was greatly changed, a bright stellar nucleus having developed; this was not centrally placed, and gave the comet a fan-shaped appearance.

During April the comet passes from near 58 Persei to a little south of η Aurigæ. In the latitude of London it is circumpolar throughout the month.

SEARCH EPHEMERIS FOR COMET 1889 V.—The following search ephemeris for the expected return of Comet 1889 V (Brooks) is given by Dr. Bauschinger (*Ast. Nach.*, 3334):—

	R.A.	Decl.	Brightness.
	h. m. s.	° ′	
April 2 ...	20 40 24 ...	−24 9 ...	0·17
6 ...	47 3 ...	23 50 ...	0·18
10 ...	53 35 ...	23 31 ...	0·19
14 ...	21 0 3 ...	23 12 ...	0·20
18 ...	6 24 ...	22 52 ...	0·22
22 ...	12 39 ...	22 32 ...	0·23
26 ...	18 47 ...	22 12 ...	0·25
30 ...	24 47 ...	21 53 ...	0·27
May 4 ...	30 40 ...	21 33 ...	0·28
8 ...	21 36 25 ...	−21 14 ...	0·29

The ephemeris is for Berlin midnight, and the unit of theoretical brightness is that on 1889 July 8, the date of the first accurate observation. When last seen in January 1891 by Prof. Barnard at the Lick Observatory, the calculated brightness was 0·08, so that the comet should even now be brighter than when it was last observed; it is, however, not very favourably situated for European observers. During April the motion of the comet is a little north of the line from ψ to ζ Capricornii.

INSTITUTION OF NAVAL ARCHITECTS.

THE annual spring meeting of the Institution of Naval Architects was held last week, commencing Wednesday, the 25th ult., and being carried over Thursday and Friday, the two following days. The new President, the Earl of Hopetoun, who has succeeded Lord Brassey, occupied the chair throughout the meeting.

There was a long list of papers to be read, the following being on the agenda:—

(1) "Watertight Doors, and their Danger to modern fighting Ships," by Captain the Right Hon. Lord Charles Beresford, C.B., R.N.

(2) "Watertight Doors," by Colonel Nabor Soliani, Director of Naval Construction, Royal Italian Navy.

(3) "Some Geometry in Connection with the Stability of Ships," by J. G. Bruhn.

(4) "The Causes of Mysterious Fractures in the Steel used by Marine Engineers as revealed by the Microscope," by A. E. Seaton.

(5) "The Measurement of Feed and Circulating Water, &c., by Chemical Means," by C. E. Stromeyer.

(6) "Salvage Appliances," by J. G. Kinghorn.

(7) "Compound Marine Boilers," by Colonel Nabor Soliani, Director of Naval Construction, Royal Italian Navy.

(8) "Water-tube Boilers," by J. Watt.

(9) "Circulation in Water-tube Boilers," by Prof. W. H. Watkinson.

(10) "The Non-uniform Rolling of Ships," by R. E. Froude, F.R.S.

(11) "A New Theory of the Pitching Motion of Ships on Waves, and of the Stresses produced by this Motion," by Captain A. Kriloff, Professor at the Naval Academy of St. Petersburg.

(12) "Notes on the Carriage of Grain Cargoes," by George Herbert Little.

The paper by Lord Charles Beresford set forth the views of a naval officer on the question of watertight doors. It may be said generally that the piercing of bulkheads has been done at the request, or perhaps more correctly speaking, the insistence of naval officers, who have found it difficult to work their ships with partitions in them not allowing means of ingress and egress from one compartment to the other. Lord Charles Beresford, however, differs from the majority of naval captains, and considers that bulkheads are too much pierced. He would do away with a large number of openings in a ship. He tells us that in the *Magnificent* and *Majestic*, which are the most powerful battleships in the service, and, therefore, in the world, there are 150 compartments in each ship, and 208 doors. Many of these of course are not in positions which are of vital importance, so far as flooding of the ship would be concerned in case of accident. He proposes to do away with nineteen of these doors in the most important part of the ship, and twenty-three would be made smaller, or modified so as to give additional safety in accordance with his proposals. This would undoubtedly add to the safety of the ship, and equally without doubt it would detract from the convenience of those inhabiting it. The latter may seem at first a small matter, but, as was pointed out during the discussion which followed the reading of the paper, convenience is to a large extent a measure of efficiency in action. In fighting a ship it is necessary for the men to move from part to part with great rapidity. This naturally means openings in bulkheads; for if a man, say the chief engineer, in order to get from one part of the vessel to another, has to climb up on deck to surmount a bulkhead, and descend on the other side, time will be occupied in the transition. In the rapid handling of ammunition, also, it is absolutely necessary that direct access should be obtained to various compartments; whilst for bringing coal from the bunkers to the stokehole floors, divisions must have openings made in them. It is also necessary to consider the question of habitability. A ship requires ventilation, otherwise it is impossible to live in her; at present a good deal of space is given to steam fans and air conduits, for this purpose. If bulkheads are to be unpierced, the difficulty of ventilation becomes more pronounced. It will be seen, therefore, that the question of openings in bulkheads, whether fitted with water-tight doors or not, is not of so simple a character as might at first appear. In fact in this element of warship design, as in all others, "compromise" must be the watchword. It is necessary not only for naval officers but for naval architects as well to meet and discuss this matter. Up to the present it has been rather that the naval officer has demanded watertight doors, and the ship designer, or naval architect, has opposed the demand. It is evident, from the discussion which followed the reading of Lord Charles Beresford's and Colonel Soliani's papers, that opinions are divided. It is essential that the matter should be threshed out, and the best compromise, according to our lights, should be adopted.

Colonel Soliani's paper dealt with different forms of watertight door. It was very fully illustrated, and will be a valuable source of reference to shipbuilders and naval architects.

In Mr. Bruhn's paper the question of stability of ships was treated, both in an historical and a mathematical manner. This contribution was read in brief abstract, and there was practically no discussion upon it. It is not one that would bear condensation very readily, and in any case could not be understood without the use of the diagrams which accompanied it. It dealt with the problem of constructing geometrically a set of cross curves of stability for inclinations from 90° to 180°, the corresponding curves from zero to 90° being known. Another section dealt with the determination of the direction in which the centre of buoyancy moves when a ship is inclined in a given direction. Lines of curvature and geodetic lines as curves of buoyancy, relations between the surfaces of buoyancy and flotation, and an extension of Leclert's theorem were subjects also dealt with; whilst the paper concluded with a geometrical construction for finding the length n, or the radius of curvature of the curve of flotation, from the usual information given on metacentric diagrams.

Mr. Seaton's paper was an extremely interesting one, and will prove of great practical value to engineers. As is well-known, the author is the managing director of Earle's Shipbuilding and Engineering Works at Hull. Some time ago part of the shafting of a screw steamer with which he had to do suddenly gave way. This shaft was made of steel containing from 0·2 per cent. to 0·25 per cent. of carbon, and its ultimate tensile strength was guaranteed to be not more than 30 tons, with an elongation of 25 per cent. in 5 inches. Mr. Seaton determined to make an inquiry into the composition of this shaft, and for that purpose it was subjected to chemical analysis. We need not repeat this analysis; it will be sufficient to state that it showed a very high proportion of undesirable elements in the steel. The most interesting part of the investigation was that carried out by Prof. J. O. Arnold, of Sheffield, who prepared micro-sections in the usual way. The chief point of the paper consists in the fact that chemical analysis is shown to be insufficient to give the engineer information as to the value of a given steel used for structural purposes. For instance, sulphur which is objectionable under certain conditions may be present to a considerable extent in a steel casting or forging, but though it may be of no serious moment if in one form, will be conducive to most disastrous results in another form. The chemist, as Mr. Seaton pointed out,