colony of the lower Chubut (*Deutsche geogr. Blätt.*, 1887, No. 1).

Australasia.

Admiral von Schleinitz, governor of the German possessions in New Guinea, is continuing his explorations on the coasts of New Guinea and the neighboring islands. In October, 1886, he explored the coasts of Huon Gulf, where he found several navigable rivers. The coast consists of archaic and metamorphic rocks. In November the coast from Iris Point to Cape della Torre was surveyed. The results of these observations have been published in the *Nachrichten aus Kaiser-Wilhelm-Land und dem Bismarck Archipel*, 1887, Nos. 1 and 2.

Mr. Vogan, the curator of the Auckland museum, intends to cross south-eastern New Guinea from Freshwater Bay to Huon Gulf as soon as the rainy season is over (*Proc. Roy. geogr. soc.*, April, 1887).

Oceans.

The methods and results of Lieut. J. E. Pillsbury's researches on deep-sea currents in the Straits of Florida (Appendix 14, *Coast and geod. surv. report for* 1885) are very interesting. They were carried out on the steamer Blake, at five stations between Gun Key and Cape Florida. By an ingenious arrangement, Pillsbury contrived to anchor at a depth of almost five hundred fathoms, and was thus enabled to measure the currents by a revolving meter. For a description of the apparatus we refer to the original paper. As the time allotted to the work was not long enough to make exhaustive researches, and the state of the weather was frequently too bad for anchoring in deep water, the observations are rather irregular. The results are very valuable, and we are glad to learn that the researches will be continued. The strength of the current is influenced by the tides; and the principal maximum, which occurs about four hours before the meridian passage of the moon, is very distinct. The fluctuations of the curve are so irregular, however, that it is hardly possible to plot the observations for determining the axis of the current and its strength in various depths. It appears that the greatest intensity of the surface current is near the west shore, while the current at a depth of a hundred and thirty fathoms is strongest in the middle of the strait.

Lieut. A. de Gueydon has constructed an apparatus similar to that used by Lieutenant Pillsbury, but far more complicated, which he has tested by measuring the currents of the Bosporus. It is described in the *Revue maritime et coloniale*, November, 1886. The results of his observations confirm those obtained by Makarof (*vide Science*, ix. 301). He found during calms and prevailing north-easterly winds a surface current of ninety feet depth setting from the Black Sea to the Sea of Marmora. At Constantinople a smaller arm branches off, which sweeps along the south side of the Golden Horn, and forms an eddy, returning on the north side, and again reaching the Bosporus at Top Hane. This current reaches to the bottom. Sudden changes in its velocity are very frequent. Under the main surface current, Gueydon found the well-known undercurrent running from the Sea of Marmora to the Black Sea.

In the *Annalen der Hydrographie*, 1887, No. 3, G. Karsten discusses the observations on the ice of the harbor of Kiel, the most important station of the German marine in the Baltic. During the thirty-eight years over which the observations extend, the harbor was frozen up seventeen times, the mean duration of the ice-sheet being thirty-four days; the maximum, seventy-one days. The ice forms most frequently in January. In the beginning of winter the warm concentrated water of the German Ocean, which enters the Baltic, delays the formation of ice, though the temperature of the air may be low. As soon as an easterly wind sets in and carries less concentrated cold water of the Baltic into the bay, an ice-sheet is formed.

General.

The publication of the *Zeitschrift für wissenschaftliche Geographie*, which was discontinued some time ago, has been resumed by Dr. J. I. Kettler. The first number for 1887 contains, among other papers, an article by O. Krümmel on surface temperatures of the ocean, and one by H. Reiter on the Antarctic question.

NOTES AND NEWS.

THE chemist of the Massachusetts state board of health has recently analyzed a large number of so-called temperance-drinks, and has found that all of them contain alcohol, one of them containing as much as 44.3 per cent. Several of them contain more than 40 per cent, and a very large proportion more than 20 per cent. One of these is said by its manufacturer to be "a purely vegetable extract, stimulus to the body without intoxicating." "Inebriates struggling to reform will find its tonic and sustaining influence on the nervous system a great help to their efforts." This preparation was found to contain 41.6 per cent of alcohol.

— The Boston *Medical and surgical journal* contains the history of six cases of poisoning from the arsenical wall-paper of a single room, extend-

ing over a period of several years. The removal of the paper was followed by perfect immunity to those who subsequently occupied the room.

— A. H. Smythe, Columbus, O., announces an edition of the 'Preliminary report on petroleum and inflammable gas in Ohio, by Prof. Edward Orton, state geologist. The first edition was issued and distributed by the legislature of Ohio, and no copies were placed on sale.

— Professor Rhys-Davids is at work upon a selection of sacred Pali texts which he expects to publish shortly.

— The English Goethe society now numbers two hundred and fifty members, and has undertaken the publication of its Transactions.

— The *Athenaeum* finds, that, according to the most recent reports, education in the north-western provinces of India amongst males has received a slight check, the number of pupils at the schools having decreased from 249,355 to 244,146. On the other hand, female pupils increased from 10,746 to 11,187. Altogether, 94 boys and 4 girls per thousand of the population of school-going age are under instruction. It is a sign of the very satisfactory progress now being made by Mohammedans in educational matters, that, in proportion to their numbers, they contribute four times as many pupils to the primary schools, and nearly twice as many to the secondary schools, as Hindus.

— No school and college text-books are as handsomely gotten up as those issued by Macmillan & Co., and we are glad that they offer the product of their press to students of mathematics as well as to students of literature. We have recently received their 'Text-book of Euclid's elements, books i and ii.,' by Messrs. Hall and Stevens. The little book is handsomely printed, the original riders and deductions clear and useful, and the use of type in the various demonstrations very judicious. We like especially the way in which the given lines and lines of construction are distinguished in the diagrams. It is a great improvement upon the old-fashioned use of the dotted line.

— A performance of the *Oedipus Tyrannus* is to be given at Cambridge, England, in November next.

— The Rede lecturer at the University of Cambridge for the coming year is J. R. Seeley, regius professor of modern history.

— There were no fewer than 3,635 matriculated students at Edinburgh university last year, which is the largest number on record. Of these, 1,915 were students of medicine; 1,122, of arts; 490, of law; and 108, of divinity. Of the medical students, only forty per cent are Scotchmen.

— St. Andrews university has conferred a large number of honorary degrees recently. Dr. Philip Schaff of the Union theological seminary, New York City, was among those who received the degree of D.D.

— We have received the biennial report of the State school of mines at Golden, Col. It is well gotten up, and contains as an appendix valuable papers by members of the faculty, as follows: 'Notes on iron prospects in northern Colorado,' Regis Chauvenet; 'Mineral resources of Boulder county,' P. H. van Diest; 'Geology of the Aspen mining district,' Arthur Lakes; 'The present mining-law chaos,' Magnus C. Ihlseng; 'Mining notes from Eagle county,' George C. Tilden.

— The 'Elements of English,' by G. H. Reker (Chicago, Interstate publishing co.), is an introduction to English grammar for the use of schools. It is very elementary in character, and consists of a series of lessons treating of the parts of speech and their uses, of the simple sentence in its various forms, fully illustrated by practical exercises composed of common words in daily use, so that pupils are gradually, and almost unconsciously, led on to a knowledge of the correct use of their own language.

— Mr. A. M. Ogilvie recently presented before the Aristotelian society an interesting paper on Lotze's metaphysics, of which the following is an abstract. The most significant aspect of Lotze's teaching is its many-sidedness. An eminent man of science as well as a philosopher, he also had a most delicate appreciation of the aesthetic and moral standards of value which govern human life. He sought in philosophy an answer to the complex of questions arising out of life as a whole, and not merely an hypothesis satisfying the requirements of physical science. No one felt more strongly that only in actual experience have men a living evidence of reality, but he showed that in experience the significance lies in those ideal forms in which it manifests itself to reason. In his ultimate analysis of our experience of nature, Lotze arrived at a conception of a universal absolute working by fixed laws, revealed to us in experience, towards an ideal end. Mental phenomena in the same final analysis give evidence of the existence of finite spirits, not independent of the Infinite Spirit, which in the last resort the aesthetic and moral experience of man realizes not merely as a bare absolute, but as a living personal Deity.

— Sir William Vernon Harcourt has resigned

the professorship of international law at Cambridge.

— Dr. Hall's lectures on education at the Johns Hopkins university are given once weekly before a class of twenty-nine students.

— In the current number of *Scribner's magazine* are two articles that may fairly be classed as educational. The first is by Prof. W. B. Scott of Princeton, on 'American elephant myths,' in which he discusses in an extremely interesting manner the evidence, in tradition and inscription, of the existence of elephants in America in ancient times, and recounts many of the popular fallacies in regard to them. Prof. A. S. Hill of Harvard closes the number with a short but vigorous article on 'English in our colleges,' in which he discusses the question of what branches of English instruction are of greatest importance to college students, and pays particular attention to the methods of teaching English composition.

— Archdeacon Farrar writes from East Africa that the whole district of Magila, with its hundreds of villages and thousands of people, has recently been saved an invasion of small-pox, which has prevailed in surrounding districts, by general vaccination. He adds that this has commended medical science to the people, and they come in numbers to be vaccinated.

— Dr. Gustav Berndt has prepared a monograph on the Swiss Foehn, entitled "Der Foehn, Ein Beitrag zur orographischen Meteorologie und comparativen Klimatologie" (Göttingen, 1886). This is the most considerable work of the kind; and, although devoted especially to the phenomena noted in Switzerland, it has also an introductory chapter giving the history of the theories proposed to account for this wind, and a final chapter describing analogous winds elsewhere. The latter does not include any on this continent, if Greenland be excepted.

— Dr. Davenport, state analyst of Massachusetts, has examined twenty advertised cures for the opium-habit, and found that all but one contained opium. This one was called 'double chloride of gold,' but contained no trace of gold.

— Superintendent Barringer's last report shows that the number of children in Newark (N.J.) of school age — between five and eighteen — is 42,263, an increase over the previous year of 454. 41 school-buildings are in use; and 380 teachers, of whom only 29 are males, are employed. The total enrolment was 24,894, and the average per cent of attendance, 89.2.

— Lord Gifford, one of the judges of the Edinburgh court of session, who died recently, has bequeathed £80,000 to found lectureships on natural theology at the four Scottish universities. Edinburgh gets £25,000; Glasgow and Aberdeen, £20,000 each; and St. Andrews, £15,000.

— The *Athenaeum* states that the report on education in the Bombay presidency for the year 1885–86, recently issued, is of unusual interest as dealing with the important subjects of the transfer of schools to local bodies, and the development of technical education. With regard to the general progress of education, the year's statistics are the most favorable ever presented to the government of Bombay. At the end of the year there were 460,987 children in the schools connected with the education department, the largest number previously recorded having been 438,416. One specially favorable feature of the report is the evidence it supplies of the progress of female education, the number of girl pupils at the schools having increased from 42,230 to 45,037. The government consider that the report affords ample proof of the capacity of private enterprise in respect of the management of higher aided schools.

— The *Medical and surgical reporter* records the observations of Gellé in the relation between sensibility of the tympanum and the direction from which sound comes. When a sound strikes the ear, it is referred to that part of the horizon towards which the organ is directed at the moment of the most intense sensation. The knowledge of the fact that the sound-producing body is outside us, and the notion of the direction in which it lies, are thus acquired at one and the same time. How is the result obtained? As a result of experiments on two patients in Charcot's wards, Gellé concludes that the sensibility of the tympanum plays an important part in the effort to perceive the direction of sound; that the tympanum is sensitive to the vibrating sound-waves, and this sensibility gives us the notion of exteriority and of the direction of the sound. The patients were suffering with general anaesthesia, and it was found that the drum-membrane might be touched and pricked without the patient's having the least sensation of pain or of contact. Although the tick of a watch could be heard with either ear, the patients were unable to say on which side it was placed.

— Mr. George J. Romanes has communicated to the Linnean society the results of some experiments made by him to test the sense of smell in dogs. He finds that not only the feet, but the whole body, of a man exhales a peculiar odor which a dog can recognize as that of his master amidst a crowd of other persons; that the individual quality of this odor can be recognized at great

distances to windward, or in calm weather at great distances in any direction; and that even powerful perfume may not overcome this odor. Yet a single sheet of brown paper, when stepped upon instead of the ground, and afterward removed, was sufficient to prevent his dog from following his trail.

— Some of the features of shorthand-writing, synchronous-multiplex telegraphy, and type-writing, are combined in a system of steno-telegraphy invented by M. G. A. Cassagnes of Paris. In recent experiments over a wire running from Paris to Orleans and back, messages were sent at the rate of two hundred words a minute, that being the highest speed attainable by a nimble-fingered operator. By means of an automatic transmitting apparatus, using a strip of paper previously perforated, as in some of the systems of telegraphy already in vogue, seventeen thousand words per hour were sent over a line 650 kilometres in length, the messages being automatically printed by the receiving instrument.

— The general assembly of German teachers will be held this year at Gotha on May 31 and June 1 and 2.

— The German teachers of modern languages, having doubtless seen how successfully a similar scheme is working in France, asked the chancellor to establish travelling scholarships for advanced students of modern languages. Bismarck replied that the matter was not one for the imperial government to attend to, but should be brought before the educational authorities of the various German states.

— The gymnasial curriculum in Hungary, having proved faulty, is to be altered. A commission appointed to devise means of improvement recommend that Hungarian literature, at present confined to the highest class, be taught in the two highest classes; the teaching of geography, hitherto restricted to the lowest classes, to be carried higher up and preceded by a course of political geography; German to be taught less theoretically, and more with a view to acquiring the language practically. The teachers in the gymnasia are recommended to raise the standard of their teaching, and not to allow the pupils to go into a higher class so easily as at present. This evil prevails chiefly in the confessional schools, where the teachers draw part of their salary from the school fees. The government is recommended, in the report, to alter this system of payment.

— A dinner in behalf of the American school of classical studies at Athens was given April 14 at the Hotel Brunswick. The object of this dinner was to afford to the founders of the school an opportunity of bringing its purposes and methods conspicuously before the public, and to quicken the interest of many who now know of it only by repute.

— The excursion committee of the Appalachian mountain club present the following preliminary announcement, subject to possible changes: April 30, Monk's Hill, Kingston; May 14, May walk, Wissahissick Pond; May 28-30, Mount Grace (Warwick), and Greenfield, Mass.; June 17 and 18, Monadnock and Dublin, N.H.; July 1-9, Crawford House; Aug. 20-30, Ktaadn.

— The following schedule gives the location of the vessels in the coast-survey service and a brief summary of their work: the steamer Gedney (F. H. Crosby commanding) and the schooner Eagre (C. P. Perkins commanding) have begun work in Long Island Sound, and will make an extended and systematic series of current observations in the waters of the sound; the steamer Bache, in command of Lieut. J. F. Moser, is at work on the coast of Florida; the Endeavor, in charge of Lieut. D. D. V. Stuart, is now engaged on current observations off the coast of Louisiana; the Blake, in command of Lieut. J. E. Pillsbury, U.S.N., is taking deep-sea soundings in the Gulf Stream; the Patterson is now at Mare Island navy-yard, California, and will probably start for the working-grounds in south-east Alaska, about the first of May, in command of Lieut.-Com. Charles M. Thomas, who relieves Lieut.-Com. A. S. Snow; the steamer McArthur is at Oakland, Cal., in command of Lieut. J. C. Burnett, preparing for work on the coast of Oregon and Washington Territory; the schooner Earnest, in command of Lieut. Charles T. Forse, is fitting out for work in Puget Sound, Washington Territory.

— U.S. Consul Goodwin of Annaberg, Germany, in a recent report on oyster-culture in Germany, states that the experiments of transporting and breeding American oysters have proved quite unsuccessful in all cases, and entirely so in most instances. Professor Möbius of the University of Kiel, who has made many experiments, expresses the opinion that American oysters would never spawn in German waters. Mr. Fedenser, a citizen of Schleswig, who takes great interest in the subject of oyster-culture, however, has not abandoned the attempt. He is of the opinion that American oysters can be successfully raised in Germany, and he has planted two hundred and fifty barrels of selected breed oysters in the vicinity of Schleimünde.

— Nebraska has just come into the line of states distinguished by having state boards of health.

— It is intended to hold an international congress on cremation in September of the present year in Milan.

— Mr. Thomas Wilson of Washington has just presented to the national museum a fine collection of old coins, chiefly Roman, which will shortly be placed on exhibition. In the collection is a Swedish daler coined in 1736. It is an oblong plate of copper, about four inches long and three inches wide, with four circular die-marks stamped upon it. The coin weighs about a pound and a half. The collection of Roman coins starts with a simple lump of bronze, the *aes rude*, which served as a medium of exchange among the Romans seven hundred years before the Christian era. This was obtained at Palustrina. There are numerous rudely stamped coins of a later day, consular coins of the republic, and later specimens of coins of imperial Rome. These are stamped with the heads or busts of the reigning emperor. The coins are of gold, silver, and bronze. A curious specimen of the collection is a counterfeit coin made by some Roman rogue. It is a copper coin washed with silver.

— It is said that there were in Norway, in 1879, 1,630 cases of leprosy, some five hundred less than in 1856; so that the disease appears to be on the decline. By a recent law the government is empowered to send all lepers to the hospitals, but this power has not yet been exercised.

— The address of Prof. Andrew F. West of Princeton college, on 'How to improve our classical training,' delivered last fall in Philadelphia, has been printed in pamphlet form in response to the request of a number of classical teachers.

— Belgium's recent educational changes show at least one decided departure from German practice. The final examinations of the gymnasia have been abolished, and a matriculation examination at the university substituted for them.

— Professor Kirchhoff's abridged grammar of Volapük, the new universal language, has been adapted to the use of English-speaking people by Karl Dornbusch. This language has been formed after twenty years' laborious research by M. Schleyer of Constance. He has named it Volapük from *pük* ('language') and *vol* ('universe'). It has no artificial genders, a single conjugation, and no irregular verbs. The roots of its words have been borrowed from all the languages of Europe. The adjective, verb, and adverb are regularly formed from the substantive, and have invariably the same termination.

— One of the most important collections of oriental manuscripts ever brought to Europe is the collection which belonged until recently to King Theebaw of Burma, which had been handed down to him as an heirloom by his ancestors or predecessors, and which has now been placed, probably for many centuries to come, on the shelves of the library of the India office in London.

— Lectures on geography are now being delivered at Cambridge university by gentlemen appointed by the Royal geographical society. The university lecturer on that subject assumes his office in 1888, and the contribution of the university toward his salary is only fifty pounds.

— Mr. Gladstone has contributed to the April number of the *English historical review* an article on the last part of the 'Greville memoirs,' which will be of documentary interest for the history of the years 1852 to 1860.

— Prof. William G. Peck of the chair of mathematics and astronomy in Columbia college, whose excellent series of mathematical text-books are in such general use, has recently added to his list a little work on 'Determinants' (A. S. Barnes & Co., New York). The book gives in forty-seven well-printed pages just such an easy introduction to the subject as the beginner wishes to have. The examples are abundant, and the text clear and accurate.

— The *Central-Organ für die Interessen des Realschulwesens* prints on its titlepage, "Die Realschule ist die Schule der Zukunft, weil sie die deutsche Schule ist." The same journal has for its motto,

> "Der Schule zu Ehren
> Die Freunde vermehren,
> Die Zweifler belehren,
> Die Gegner bekehren
> Ist unser Begehren."

— Prof. Friedrich Koldewey is editing a work of great educational interest, entitled 'Monumenta Germaniae pedagogica.' The first volume has already appeared: it contains the 'Braunschweigischen schulordnungen' from the earliest times until 1828.

— Prof. S. S. Laurie, who occupies the chair of pedagogics at the University of Edinburgh, is about to receive the degree of LL.D. from St. Andrews university.

— Dr. Gobat, the head of the education department of Switzerland, is about to introduce some radical reforms. He criticises the present code as having no sound psychological basis. He says that it makes the development of the mind conform to it, instead of itself conforming to the development of the mind. He finds that the reason the classics are losing interest is that they are poorly taught.

— Much progress is being made in Scotland toward the development of a university extension scheme similar to that described in a recent number of *Science* by Mr. Oscar Browning.

— On account of failing health, Professor Tyndall has resigned his position at the Royal institution.

— The article on the French lycée, which appeared in this journal for Feb. 18, was, by an oversight, not credited to the *Canada educational monthly*, as it should have been.

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.

The rudimentary metacarpals of bison.

IN *Science* for Feb. 18 Dr. D. D. Slade notes the fact that the skeleton of aurochs in the Museum of comparative zoölogy has rudiments of the second metacarpals, while the rudimentary fifth metacarpals are wanting. Dr. Slade will, I trust, pardon me for saying that the deduction he would make from this fact is not quite clear to me. If he considers it an *individual* peculiarity, I heartily agree with him; but, if he concludes from the evidence presented by this one skeleton that the arrangement of the rudimentary metacarpals in Bison bonasus differs from that of Bison americanus, I desire to protest most emphatically against any such inference.

Just now, by the efforts of Mr. Hornaday, the U. S. national museum has provided itself with a goodly number of skeletons of Bison americanus. Examination of four or five of these shows that in every case rudiments of the second and fifth metacarpals are present, the second being always the smaller of the two pairs. As these are all *in situ*, there can be no mistake in the matter. Our mounted skeleton of Bison americanus has only the fifth metacarpal present, but this is because the others have (or at least one of them has) been lost. There is a well-defined articular facet present for the second right metacarpal, but none for the left, although this may none the less once have been present.

The skeleton of aurochs in the national museum has, as Dr. Slade notices, the second and fifth metacarpals present. That, as now mounted, the inner metacarpal on one leg is larger than the outer, proves nothing, as a transposition may readily have been made by the preparator; and no one knows better than the writer how easily such a mistake may be made.

Until a far greater number of skeletons of aurochs have been examined, it would seem the safer course to assume that Bison bonasus, in the matter of its metacarpals, makes no departure from the usual order of things found in the Bovinae, and that the Cambridge specimen is merely a case of individual variation.

FREDERIC A. LUCAS.

Washington, D.C., April 10.

The Bellville meteor.

Messrs. A. S. Barnes & Co., publishers of school text-books, have just received the following letter, which is copied *verbatim et literatim*, and published for the public good: —

"April 1 1887
"Bellville ohio
"Gents sir to you

We read & hear a great deal of Meteors what thay are i went To see one that fell last fall In november i saw it the papers That it is found hundreds of People went to see it is a curiosty Thair is no print yet discribed Its facts yet as when you see it With the naket eye that some Astronomy aught to have it For the benifit for his books It is a curious stone it is the oddes Shaped stone that ever was by man Or all that i talked with that seen it i asked Mr Phiel how Far him & his son was from it When it fell he told me about 4 rods he says it made The earth shake and a Trementous scmel of sulpher It shocked him he went to Worke and dug it out and Took it town it raised the Accitement a greate many people Told me that thay would paid him 50 cts for to see but he left it Public for all to see it some said he aught to travil with It and put on exbition but He says that dont suit for he haint got gab enough for That business that will do some One ells he says if he can find out .P. T. Barnums address he Is going to rite to him and Try to sell it to him and Take it with his show for he can make money with it i asked him what he would Take for it he said he might take betwen 2 or 3 hundred dollars Mr Barns That would suit you in your Great store if you Gents would Have that meteors in your store Thair would thousands of people Would stop and see it and Pay 25 or 50 cts to se it i Must clos for it is almost Train time for i going to Kanses if you want to rite about the meteor or get some one ells Address

A. B. Phiel,
Bellville Richland
County ohio

" For he will give the full Particulars of it
" Yours Truly from
WM. H. BEAM."

A sensitive wind-vane.

The importance of the sensitive wind-vane question may justify still further trespass upon the space which you allot to correspondence. I am obliged to Mr. Curtis for calling my attention to Mr. Osborne's sensitive vane, as I did not know of it before.

On reading Mr. Osborne's paper, however, I find that his plan was essentially different from mine, in that he applied a liquid damper to the registering-apparatus, and not to the vane itself. In my opinion, there is a decided advantage in controlling the motion of the vane. If it be allowed an unrestricted motion, as is generally the case at present, the influence of its false movements and positions must be felt in some degree by the registering-apparatus, even when that is damped as suggested by Mr. Osborne. The direct damping of the vane will be cheaper and less complicated. As to the length of the vane, I believe that a vane controlled in this way need not be over five feet in length. A vane is often subjected to severe vertical strains, and it should be proportioned so as to endure these without danger. Mr. H. Helm Clayton seems to have entirely misunderstood the question under considera-