pamphlets on 'The State Map as an aid to the study of Geography in Grammar and High Schools,' published for distribution to all public school teachers by the Boards of Education of Connecticut and Rhode Island.

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CURRENT NOTES ON ANTHROPOLOGY.

ORIGIN OF THE ANCIENT INDIAN ALPHABETS.

In the 'Mélanges Charles de Harlez', Prof. Friedrich Müller has an instructive article on the origin of the alphabets of ancient India. These may be traced to two early forms, one known as the Brahmi, the other as the Kharosthi writing. The latter is limited in area to a portion of northwest India, while the former extended in remote times over a much larger territory.

The paper makes it clear that the Karosthi alphabet was introduced under the Achæmenides from Ariana, and hence is comparatively modern; while the Brahmi at some very remote age was derived from the southern Semitic alphabets, and adapted to the needs of the Aryan tongue by the addition of characters for the vowels.

These views are confirmed by the presentation of a comparative table of the Indian with two north Semitic and two south Semitic alphabets. The analogies are well marked, and render it probable that the route of extension was by way of southern Arabia. The early connection of the region with India is also proved by the close relationship of the arts in photo-historic times.

EXPLORATIONS IN YUCATAN.

In number 10 of the current volume of 'Globus,' the experienced traveler Theobert Maler describes briefly the explorations he has made this year in southern Yucatan and along the upper Usumacinta river. They have been unusually productive in bringing to light ruined cities hitherto unknown. He crossed the boundary of Guatemala at Chuntuki, and reached Lake Peten at San Andres. Thence he made an expedition to Tikal, near which he discovered an important site, Motul de San José. Near Saiyanche, he came upon a series of ruins with enormous carved pillars. After visiting several less conspicuous localities he passed a few days in 'Lorillard city,' where he made some interesting finds.

In going by land from there to Tenosique he reached a massive series of pyramids and walls hidden in the forest, known to the hunters as Piedras Negras, but wholly unvisited by Europeans. This site presents an 'acropolis' of stately proportions with many surrounding lesser structures. In front of the temple were seven beautifully carved steles in good preservation. They were carefully cleaned and photographed. The inscriptions were numerous, showing close analogies to those at Palenque. On some the colors were yet distinct. There is a marked difference between the architectural details of this and the ruins on the river above, probably indicating contrast of secondary culture centers. Maler expects to spend the present autumn and winter in continuing these researches.

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ASTRONOMICAL NOTES.

The report of Dr. David Gill, Director of the Cape of Good Hope Observatory, upon the Geodetic Survey of South Africa, has been presented to the Cape Parliament. The Survey was executed by Colonel Morris, under the general direction of Dr. Gill. The volume contains about 450 pages, folio, and it will be of the greatest interest to astronomers and geodesists. Especially noteworthy is the great amount of work which has been accomplished in a comparatively short time. Such a record of speed, com-

bined with equal precision, has probably never before been made.

Two theodolites were employed: An eighteen-inch by Troughton & Simms, and a ten-inch by Repsold. Dr. Gill reaches the following conclusions with regard to these two instruments:

1. That the employment of instruments larger and heavier than the Repsold ten-inch is attended with no advantage.

2. That observations should be made at each station equally in the morning and afternoon; if possible, also, in opposite directions of the wind.

3. That hardened steel pivots are essential.

4. That a watch telescope attached to the arms of the circle microscopes not only increases very materially the accuracy of the observations (even when the most rigid stand is employed), but it permits the use of a form of stand which is easy to erect and light and convenient for transport, without risk of diminished accuracy.

Many American geodesists will be surprised by conclusions 3 and 4.

Dr. Gill gives an interesting table of the probable error of a single angle, as obtained in various series of geodetic operations. Some of the values given are as follows:

	No. of Triangles.	Prob. Error.
South Africa, verification of Natal base,	5	±.″14
South Africa, prolongation of Port Elizabeth base,	24	.23
U. S. Coast Survey, San Francisco and Salt Lake,	31	.25
U. S. Coast Survey, flat country,	198	.79
Ordnance Survey of Great Britain,	476	1.19

It is interesting to note that the poorest work was done on the Ordnance Survey of Great Britain, according to Dr. Gill's table.

In Colonel Morris's report we find the following interesting statement concerning transport:

"The equipment of the observing part of the detachment consisted of:

1. A military ambulance wagon, drawn by 16 oxen.

2. An 18-foot buck-wagon, drawn by 16 oxen.

3. A Scotch cart, drawn by six oxen.

4. A water cart, drawn sometimes by two oxen, sometimes by four.

5. The four out-parties were each provided with a Scotch cart drawn by six oxen.

The minimum number of oxen was therefore 66. A few additional animals were, however, always kept to supply the place of those which tired or fell sick, or which died from one cause or another."

We strongly recommend anyone interested in geodesy to procure a copy of Dr. Gill's interesting and important work.

THE *Astronomische Nachrichten* of September 8th contains an article by Dr. J. Repsold, in which he describes the newest micrometer devised by his firm. It is an instrument intended to combine the new form of transit micrometer, in which an effort was made to avoid the effects of personal equation, with a new kind of registering declination micrometer. Dr. Repsold points out that it is very desirable to increase the precision with which declination bisections can be made in the field of view, so as to bring the bisection to the same order of accuracy attainable in the reading of the circle microscopes. H. J.

NOTES ON INORGANIC CHEMISTRY.

IN the current *Comptes Rendus* P. Villard describes a crystallized hydrate of argon with water. Argon is compressed to 150 atmospheres in the presence of water cooled to nearly zero. On chilling the tube at a small point crystallization begins proceeding out from the point cooled. Or crystallization may be induced by introducing a crystal of the hydrate previously formed. Crystallization does not take place, however, by merely compressing argon in the pres-