

6623473
A

WOODS HOLE OCEANOGRAPHIC INSTITUTION

REFERENCE NO. 65-55

ON THE EXISTENCE OF THE SEAMOUNT
KNOWN AS "AMERICAN SCOUT"

OCTOBER 1965

Richard H. Backus and L. V. Worthington

CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION			
Hardcopy	Microfilm		
\$ —	\$ —	\$ 8.00	u2
ARCHIVE COPY			

WOODS HOLE, MASSACHUSETTS

Copies available
any users

November 9, 1965

ERRATA

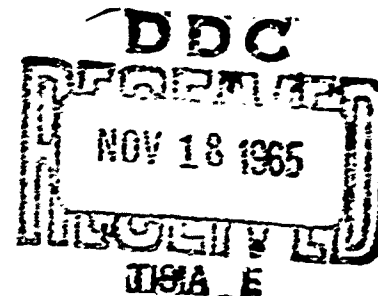
Reference No. 65-55

Correction on Title Page:

Limnology & Oceanography, Vol. 9 No. 3, July 1964 pp. 397-411,

Should be changed to read:

Deep-Sea Research, 1965 Vol. 12 pp. 457-460.



WOODS HOLE OCEANOGRAPHIC INSTITUTION
Woods Hole, Massachusetts

REFERENCE NO. 55-55

**ON THE EXISTENCE OF THE SEAMOUNT
KNOWN AS "AMERICAN SCOUT"**

by

Richard H. Backus and L. V. Worthington

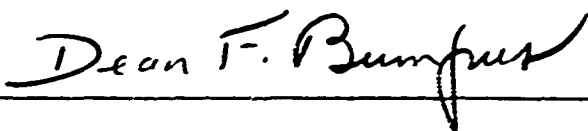
October 1965

TECHNICAL REPORT

*Submitted to the Office of Naval Research
under Contracts Nonr 4029(00) and Nonr
2196(00) and National Science Foundation
Grants GB-543 and GB-361.*

*Reproduction in whole or in part is permitted
for any purpose of the United States Govern-
ment. In citing this report in a bibliography,
the reference given should be to the "Limnology
and Oceanography, Vol. 9, No. 3, July 1964
pp. 397-411".*

Approved for Distribution



Dean F. Bumpus
Acting Chairman, Physical Oceanography

On the existence of the Seamount known as "American Scout"*

RICHARD H. BACKUS and L. V. WORTHINGTON

(Received 6 April 1965)

INTRODUCTION

SINCE about 1950, the principal North Atlantic Ocean charts used by American navigators and oceanographers for bathymetric purposes have shown a large seamount near $46^{\circ} 30'N$, $37^{\circ} 30'W$. Certain charts of the U.S. Navy Oceanographic Office (former U.S. Navy Hydrographic Office) call this seamount "American Scout." The seamount purportedly rises from depths of about 2400 fm (about 4400 m) to within 20 fm (37 m) of the sea surface.

Some Oceanographic Office charts that show this feature are H.O. 6750-5, North Atlantic Bathymetric Chart, Bermuda-Newfoundland, 1st edit., 1950, 2nd edit., 1952 (since discontinued); BC 0409N-L, Contoured Position Plotting Sheet, 1st edit., 1957; and H.O. 5247, North Atlantic Ocean, northern sheet, 2nd edit. revised, 1962. Other charts include Carte Générale Bathymétrique des Océans, Feuille A1, Bureau Hydrographique International, Monaco, 4th edit., 1958; and Atlantic Ocean Physiographic Diagram, HEEZEN and THARP (1959).

The second edition of chart H.O. 5247, 1948, shows a seamount in $47^{\circ} 05'N$, $38^{\circ} 40'W$ called "Laura Ethel" with a minimum sounding of 36 fm (66 m). When the revision of this chart was published in 1962, "Laura Ethel" had been expunged and "American Scout" (though not given this nor any name on this chart) added about 65 sea miles to the southeast in $46^{\circ} 15'N$, $37^{\circ} 30'W$ with soundings of 29 and 20 fm (53 and 37 m) shown on its top.

The most elaborate representation of "American Scout" is found on BC 0409N-L, 1957. Here closely spaced contour lines have been drawn with spurious detail at 100-fathom intervals from 2300 fm (4200 m) to 100 fm (183 m). Minimum soundings of 20, 20 and 35 fm (37, 37 and 64 m) are given. The seamount is shown as irregular in shape and with dimensions of about 10 by 19 sea miles within the 100-fathom contour line. Dimensions within the 2300-fathom contour line are about 30 by 60 sea miles with the long axis of the feature oriented about northeast-southwest.

Because "American Scout" seemed to offer to the zoogeographer a highly interesting combination of minimum depth, annual temperature regimen, and position relative to the nearest land masses, we sought it on Cruise 13 of *Atlantis II* during September 1964 in order to make trawl and dredge collections. No sign of the seamount was found on our echo-soundings. Additional echo-soundings made in the location by *Atlantis II* during Cruise 9 in January-April 1964 likewise show nothing of the seamount. The soundings from these two cruises are the principal ones that have been used by us in preparing this paper, although two other lesser bodies

*Contribution No. 1624 from the Woods Hole Oceanographic Institution, Woods Hole, Massachusetts.

of data have also been employed—a run made across the northwest corner of the area of interest in July 1960 during *Chain* Cruise 15 (PRATT and NALWALK, 1962) and a short track at the eastern extremity made during April 1957 on *Discovery II* I.G.Y. Cruise 1 (WORTHINGTON, 1958).

METHODS

Echo-soundings were made from *Atlantis II* and *Chain* using an EDO Corp. UQN-1b transducer and an Alden Precision Graphic Recorder, which assumes a sound velocity of 4800 ft per sec. Various intermediate electronics were used; on Cruise 13 of *Atlantis II* a Giff transceiver, for instance, performed the pulse-generating and receiving functions. *Discovery II* employed a Kelvin and Hughes 26E sounder.

The original soundings were read in fathoms at scales such that they are judged to be accurate to $\pm$ one fathom. These readings were corrected for depth of transducer, corrected for sound velocity using MATTHEWS'S (1939) tables, and converted to meters. Thus, our soundings are considered to be reported with an accuracy of $\pm$ two meters.

Ship's position was determined at intervals by observation of celestial bodies with intercalated positions deduced. Celestial fixes are considered to be accurate to $\pm$ 0.5 sea miles. Because some of our sounding tracks were made in poor weather, the regular twilight star fixes and the noon fix were sometimes missed. However, interpolated positions are judged to be no worse than about $\pm$ three nautical miles and are better in most cases.

DATA AND CONCLUSION

Our soundings are shown in Fig. 1. The minimum sounding recorded within a circle of 60 sea miles in radius centered on the position of the supposed seamount is in excess of 4300 m. Because of the scale of the roughness observed in the area, it seems to us highly improbable that the seamount simply has been mis-located and lies someplace nearby between our sounding lines. In short, we conclude that "American Scout Seamount" does not exist.

In denying that the seamount exists, it is necessary to consider the original data from which its existence was asserted. The first printed information comes from Notices to Mariners 32, August 7, 1948, the text of which is quoted here in full. "A bank with a depth of 20 fathoms over it has been reported in latitude 46° 20' N., longitude 37° 21' W."

Subsequently, further information was reported in Notice to Mariners 42, October 16, 1948, the text of which is quoted here in full.

"1. On August 22, 1948, the master of the S.S. *American Scientist* reported the following observations made when in the vicinity of the previously reported 20-fathom bank in latitude 46° 20' N., longitude 37° 21' W. :

'At 1150 G.C.T. a sounding of 20 fathoms was recorded on the fathometer in latitude 46° 23' N., longitude 37° 20' W. The vessel proceeded on a course of 69° true, and at 1210 G.C.T. went off soundings. The vessel was then swung about and headed on a reciprocal course. At 1230 G.C.T. bottom was again recorded, this time at 15 fathoms, and the deep-sea lead was dropped. The lead was successively

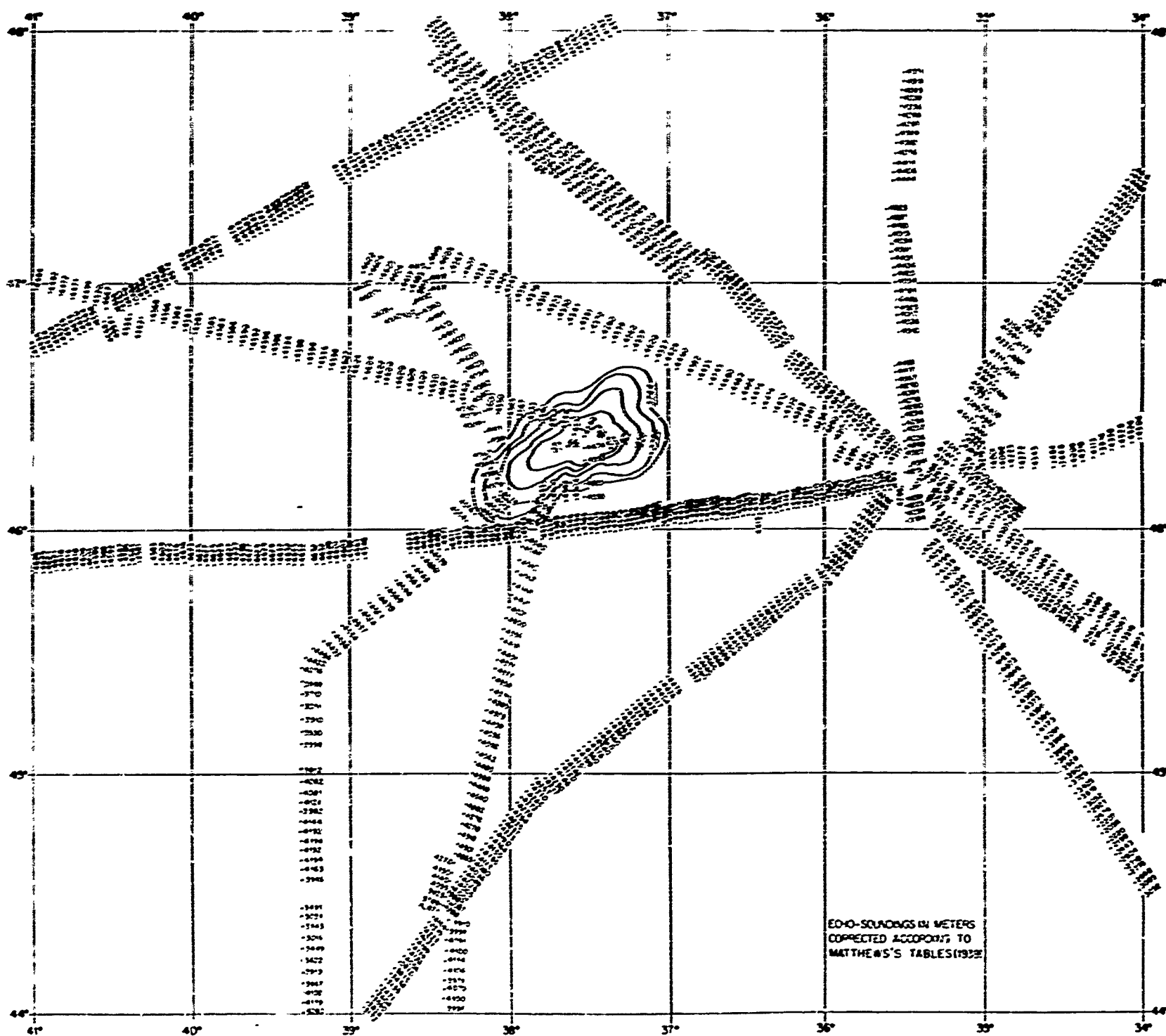


Fig. 1. Echo-soundings in meters corrected according to Matthews's tables (1939) for the area of "American Scout Seamount." The contoured feature with spot soundings (underlined) on its summit is the non-existent seamount as shown on Chart BC 0409 N-L of the U.S.N. Oceanographic Office. The values on the contour lines (underlined) were originally given in fathoms and have been converted to meters and corrected according to Matthews's tables.

dropped 3 times and each time no bottom was observed nor was any sample of the bottom available. The fathometer, however, continued to register bottom ranging from 15 to 35 fathoms. At 1300 G.C.T. the lead was secured. At 1305 the fathometer ceased to register bottom with a sounding of 35 fathoms.⁷

2. On August 24, 1948, the master of the *S.S. Southland* reported the following soundings when in the vicinity of the same reported bank :

- ' Position 1 : Latitude $46^{\circ} 18.5' N.$, longitude $37^{\circ} 45' W.$, 29 fathoms.
- Position 2 : Latitude $46^{\circ} 19' N.$, longitude $37^{\circ} 43' W.$, 29 fathoms.
- Position 3 : Latitude $46^{\circ} 20' N.$, longitude $37^{\circ} 40.5' W.$, 32 fathoms.
- Position 4 : Latitude $46^{\circ} 20.5' N.$, longitude $37^{\circ} 38.5' W.$, 35 fathoms.'

No soundings registered on the fathometer between latitude $46^{\circ} 21' N.$, longitude $37^{\circ} 35' W.$, and latitude $46^{\circ} 26.5' N.$, longitude $37^{\circ} 15' W.$

' Between Position 2 and Position 3 there is a depth of 90 fathoms.' "

A recent report appears to support the earlier findings. The text, from Notices to Mariners 44, 1964, is given in full : "A depth of 19 fathoms Rep. (1964) will be charted in (approximately) $46^{\circ} 06' N.$, $38^{\circ} 01' W.$ "

The question can be asked as to why several observers have repeatedly reported shoal soundings in this area. As we approached the location of the supposed seamount on *Atlantis II* on the morning of September 14, there appeared on the echosounder record a conspicuous feature that theretofore had been lacking. This was the presence of numerous groups of mid-water sound scatterers of high target strength. These groups (presumably fish schools) had their tops distributed in depth from about 20 fathoms down to about 50 fathoms (Fig. 2). After passing over the reported position of the seamount, we proceeded to the south to avoid Hurricane Ethel and the fish schools were lost. Upon returning to the position of the supposed seamount on September 16, the schools were again encountered. It is suggested that they are responsible for the shoal soundings reported and are a permanent or semi-permanent feature of the area.

On our run south from "American Scout" to evade Hurricane Ethel, we explored in the vicinity of "Milne Bank," another seamount that is not there (ULRICH, 1962). We made 70 miles of soundings in the area covered by Ulrich's Plate 11, which supplement nicely his tracks. Our soundings fit his chart extremely well, especially when consider the navigational accuracies achieved by the two ships. Our minimum sounding was about 3100 m in what we took to be $39^{\circ} 47' N.$, $38^{\circ} 41' W.$

DISCUSSION

The depth surveyor has at least two functions. As a navigator he must be concerned with calling attention to potential hazards. As a topographer he must be concerned with describing correctly the shape of the sea bottom. Unhappily, conservative practice in each of these compartments of interest leads to opposite results. The navigator must assume that an indicated hazard exists until the contrary is definitely established. The topographer must assume that a great perturbation in bottom shape does not exist until the contrary is definitely established. How should reporters of ocean depth proceed in the face of such a dilemma ?

Acknowledgements—We are particularly indebted to EMERSON H. HILLER, master of *Atlantis II* for his work in looking for "American Scout Seamount." WILLIAM M. DUNKLE and WILLIAM E. SCHEVILL were helpful in various ways. Messrs. WILLIAM G. WATT and JACOB HOFFMAN of the U.S. Navy Oceanographic Office led us to the information about "American Scout" published in Notices to Mariners. Dr. J. B. HERSEY reviewed the manuscript. This work was supported by National Science Foundation Grants GB-543 and GB-861 and by Office of Naval Research Contracts Nonr 4029(00) and Nonr 2196(00).

REFERENCES

- HEEZEN B. C. and THARP M. (1959) The floors of the oceans, I. The North Atlantic. Pt. 1. Physiographic diagram of the North Atlantic. *Geol. Soc. Am. Spec. Paper* 65.
- MATTHEWS D. J. (1939) *Tables of the velocity of sound in pure water and sea water for use in echo-sounding and sound-ranging*. Second edition, Hydrographic Dept., Admiralty, London, 282, 52 pp.
- PRATT R. M. and NALWALK A. J. (1962) Track charts, bathymetry, and location of observations. CHAIN Cruise 13, etc. *WHOI Ref.* 62-8, 164 pp. (Unpublished manuscript).
- ULRICH J. (1962) Echolotprofile der Forschungsfahrten von F.F.S. "Anton Dohrn" und V.F.S. "Gauss" im Internationale. Geophysikalischen Jahr 1957/1958. *Deutsches Hydrographisches Institut, Ergänzungsheft Reihe B, Nr 6*, 14 pp, 2 tables, 11 plates.
- WORTHINGTON L. V. (1958) Oceanographic data from R.R.S. *Discovery II*. International Geophysical Year Cruises One and Two, 1957. *WHOI Ref. No.* 58-30, 152 pp. (Unpublished manuscript).

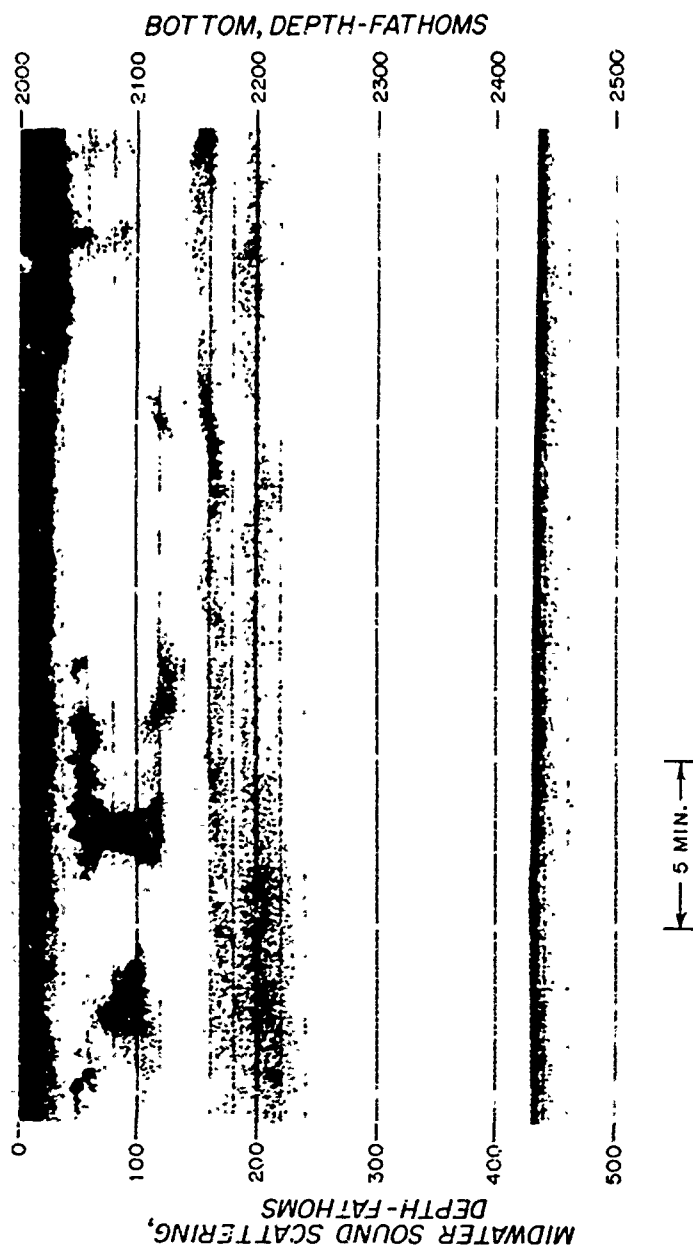


Fig. 2. Echo-sounder record made near "American Scout Seamount." The sounder was operated on the 500-fathom scale so that five 500-fathom increments of information are superimposed on the record. The mid-water sound scatterers are in the first (0-500) increment, the bottom in the last (2000-2500).