One hog was injected three times for a total of 11 trials. Six trials (55 percent) resulted in immobilization at dosages of 1.14 to 3.23 mg/lb. Two hogs (18 percent of the trials) were killed at dosages of 1.95 and 3.35 mg/lb and, in three trials (27 percent) at dosages of 0.81 to 0.99 mg/lb, the hogs were not completely immobilized. One hog was not immobilized at dosages of 0.81 and 0.97 mg/lb but was immobilized at a dosage of 1.95 mg/lb. Immobilization occurred in 3 to 6 minutes and averaged 4.1 ± 0.6 minutes.

The Semryn ED50 and LD50, with corresponding 95 percent confidence limits for pre-reared hogs were 1.9 (1.3-2.1) and 4.3 (3.6-5.1) mg/lb, respectively. The ED50 with 95 percent confidence limits for wild trapped hogs was 1.1 (1.0-1.2) mg/lb; however, because of the small sample size, the LD50 could not be computed.

The expected effects, i.e., the ED or LD at the 1, 15, 50, and 99 percent levels are found in Table 3. The only complication observed, other than mortality, was diarrhea, which appeared with few. A period characterized by thrashing of the feet usually precedes calmness. A sideways movement of the jaw is also a characteristic effect. The eyes are shut when the hog is immobilized, but eye reflexes are good. Defecation, urination or regurgitation did not occur except in those animals near death.

The hogs that died were necropsied and hemorrhaging was apparent. The fat in five of six hogs was pink in color and hemorrhagic and the renal pelvis was hemorrhagic in one hog. Perichondritis of various parts of the heart was characteristic and blood was found in the peritoneal cavity of one hog. The spleen was enlarged in all hogs examined and was ruptured in one animal.

Table 3. Expected effect, ED or LD, at 1, 15, 50 and 99 percent level.

<table>
<thead>
<tr>
<th>Effect</th>
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<tbody>
<tr>
<td>ED</td>
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<tr>
<td>0.08 mg/lb</td>
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<tr>
<td>LD</td>
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<tr>
<td>2.4 mg/lb</td>
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Discussion and Conclusion

The fairly rapid immobilization time, averaging 11 minutes was a favorable characteristic of this drug over the currently used drug, Cap-Chur-Barb. Two unfavorable characteristics are (1) the long recovery time, averaging approximately 6.8 hours, which is also a characteristic of Cap-Chur-Barb, and (2) the absence of a safety factor. The safety factor (LD50/ED50) was much less than one which indicates that the dose should be held to 99 percent of the pigs is well within the lethal range. Since mortality among trapped wild pigs must be held to a minimum, this drug is not recommended for this species. However, if used on wild hogs, the recommended dosage would be from 2.5 to 3.0 mg/lb.

Literature Cited


Preceding Work and Description of Study Area

In order to test the usefulness of cross-bedding in a point bar deposit to determine ancient stream flow direction, a group from the University of Tennessee at Chattanooga examined an exposure of sandstone, shale, and coal located in a strip mine approximately one mile east of Philippiburg, Pennsylvania. The sandstone exposed in this mine has been described by Beutner, et al. (1967) as an ancient point bar complex. Figure 1 shows the location of the study mine and Figure 2 shows two trenches. One trench (Face A) trends approximately 300 feet long, and the other trench (Face B) trends N 60° E and is 1200 feet in length. The general height of the mine, or trenches, is 60 to 80 feet, but both were exposed to the surface of the mine, or trenches, by a maximum vertical thickness of 45 feet.

Face A intersects Face B at about 60 degrees and they represent a three dimensional view of a point bar complex.

Figure 1. Location of point bar deposit near Philippiburg, Pennsylvania.

Figure 2. Three-dimensional representation of the Pennsylvania Kittanning formation exposed near Philippiburg, Pennsylvania.
The arrangement of sedimentation units within the sandstone complex ranges widely, depending upon shorter and a transgression Facet A to Facet B. On Facet B, stream of the sedimentation units possess a sigmoidal morphology. That is, they resemble a receding, backward "S" (Figure 4). As observed from the stream, slightly westward at no more than 15 degrees west and northward slightly westward than the immediately underlying Facet A. Allen (1963) described similar sedimentation units in the Old Red Sandstone of North Wales.

Further, the transgressive sections of the sigmoidal units of well-defined cross beds. Interestingly enough, a view of Facet A does not yield any substantial indication of the sigmoidal bedding alone does not yield any substantial indication of the sigmoidal bedding orientation, without an appreciation of the relations between the two facies, meaningful interpretation of the three-dimensional cross-bedding structures cannot be achieved.

Finally, in 1969, Dr. E. G. Williams at the Pennsylvania State University examined valuable insights regarding the work of Beuster et al. (1967), much of which was done under his supervision. However, in order to learn more about the nature of the sandstone complexes, the orientation of the cross-bedding units shown on Facet A was determined (Figure 5). According to Dr. Williams, Beuster et al. (1967), utilized a statistical approach to estimate the points at which cross-bedding orientations were measured. In contrast, our measurements were taken at points determined by the intersection of lines in a grid coordinate system superimposed on the sandstone exposures, not as a part of the statistical approach. The readings that obtained at various orientations of the internal cross-bedding. After collecting all data, Beuster et al., evaluated their work and determined that the dip direction of the cross-bedding ranged roughly from 85° W and 65° N.

The basis of their observations, Beuster et al., presented the following arguments regarding the origin of the sandstone complex:

The sandstone body was formed almost completely by lateral accretion of bedload sediment on the inside of a meander bend in a north-flowing stream. The sandstone thickness gradually decreases from channel centerline by the stream as it migrated westward across the area.

The presence of discrete sedimentation units exposed as overlapping sigmoidal units on Facet B and as tabular cross-bedded units on Facet A indicates that the sand was deposited in downstream-sweeping bed forms, i.e., sandbars.

The factor which controls the bedding geometry appears to be the orientation of the downstream face of the bar with respect to the current direction in the channel. If the downstream (sedimentation) edge of a transverse bar is perpendicular to flow direction, the entire edge would arrive at any transverse channel section at a given time. An individual bed deposited during this time might then theoretically extend the full width of the unit in a transverse section (Figure 6A). On Figure 6B, bedding as exposed on Facet B is approximately parallel to unit boundaries and Facet A, forms tabular cross-sections between essentially horizontal unit boundaries. If the shoalward portion of the bar reached a given section before the channelward portion, deposition would occur first near the shore, and subsequent beds in a transverse section would overlap toward the channelward margin. No complete units of channelward cross-beds are present on Facet B, which would indicate the presence of channelward edge of the downstream bar.

Similarly, if the shoalward portion of the bar lagged behind the channelward portion, deposition in a given transverse section would occur well within the channel at the channelward edge of beds would overlap upward and shoreward (Figure 6C). The bar form might thus tend toward a finger-like projection pointing downstream. Several units and numerous small units of units are shown on Figure 6C. The bar is first seen as being upward and overlapping beds are present on Facet B, indicating that the bar morphology shown in Figure 6C occurred frequently but subsidiarily.

**THEORETICAL DISCUSSION ON CROSS-BEDDING**

Harms and Fashbrot (1965) point out that stratification in stream environments is essentially the result of migrating bed forms, and Leopold (1964) asserts that bed forms commonly referred to as "cross-
bedding" are formed by dune migration under the influence of prevailing currents. Subsequent dunes move downwind, creating a series of dunes that form a dune field. The dune field is typically composed of a series of parallel ridges separated by low areas of sand. The dunes move in response to wind direction and are stabilized by vegetation or by the presence of other dunes.

The paper discusses the presence of cross-beds in the deposit, which are important for understanding the history of sedimentation and the paleoenvironment. Cross-beds are features that form when sediment is deposited in a flowing current, such as a river or a stream. They are formed when the current reverses direction, causing the sediment to be deposited in layers that are parallel to the current's direction.

The paper presents a method for analyzing cross-beds, which involves using sedimentological techniques to determine the direction and flow rates of the currents that deposited the sand. The analysis is performed by mapping the orientation of the cross-beds and using this information to infer the direction of the current.

The paper also discusses the role of cross-beds in understanding the history of the depositional environment. The presence of certain types of cross-beds can indicate the presence of specific environments, such as a river or a beach. The paper presents a series of examples where cross-beds have been used to understand the history of the deposition of sand.