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# Geology of the Northern End of San Pedro Mountain, Rio Arriba and Sandoval Counties, New Mexico

Osler C. Hutson

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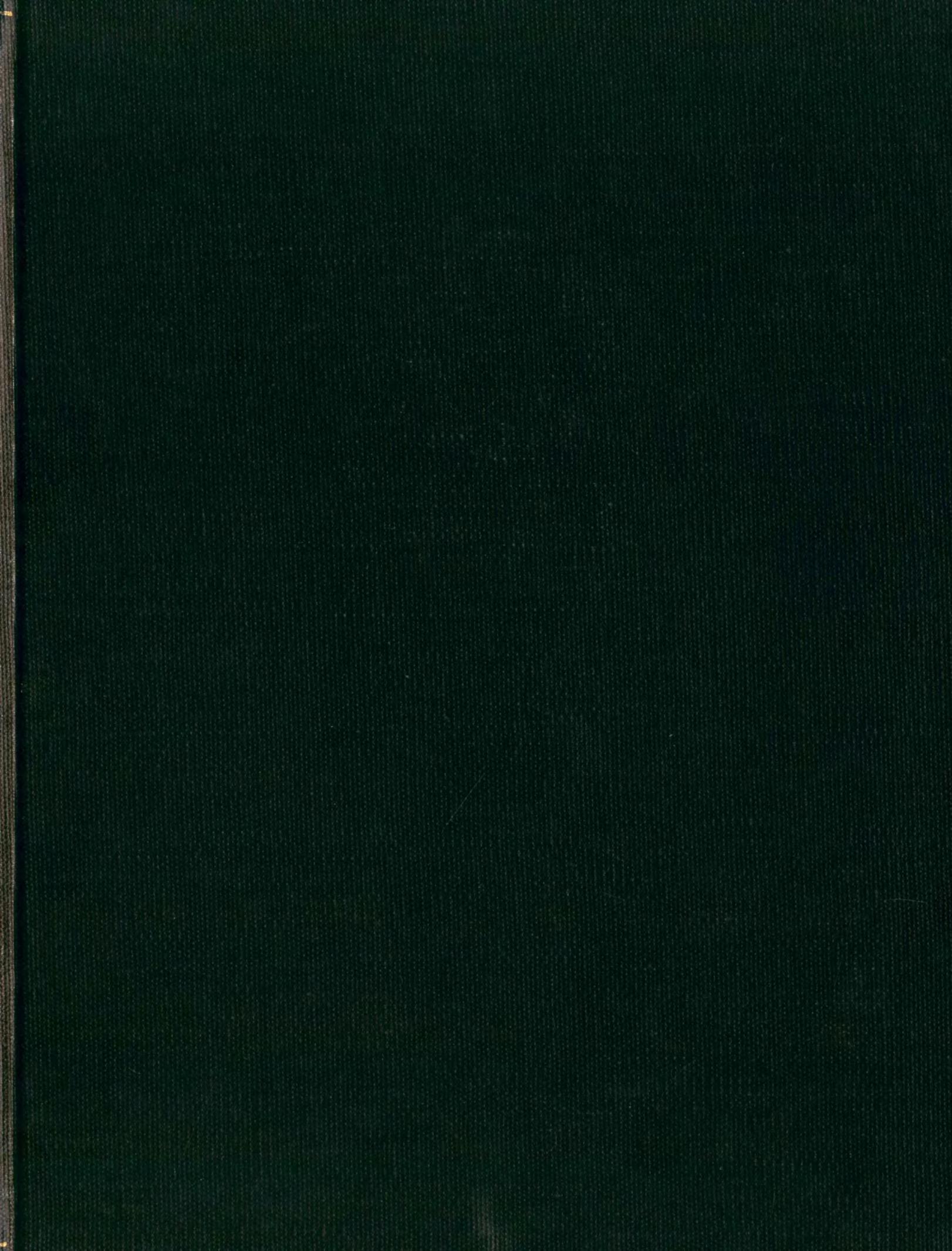
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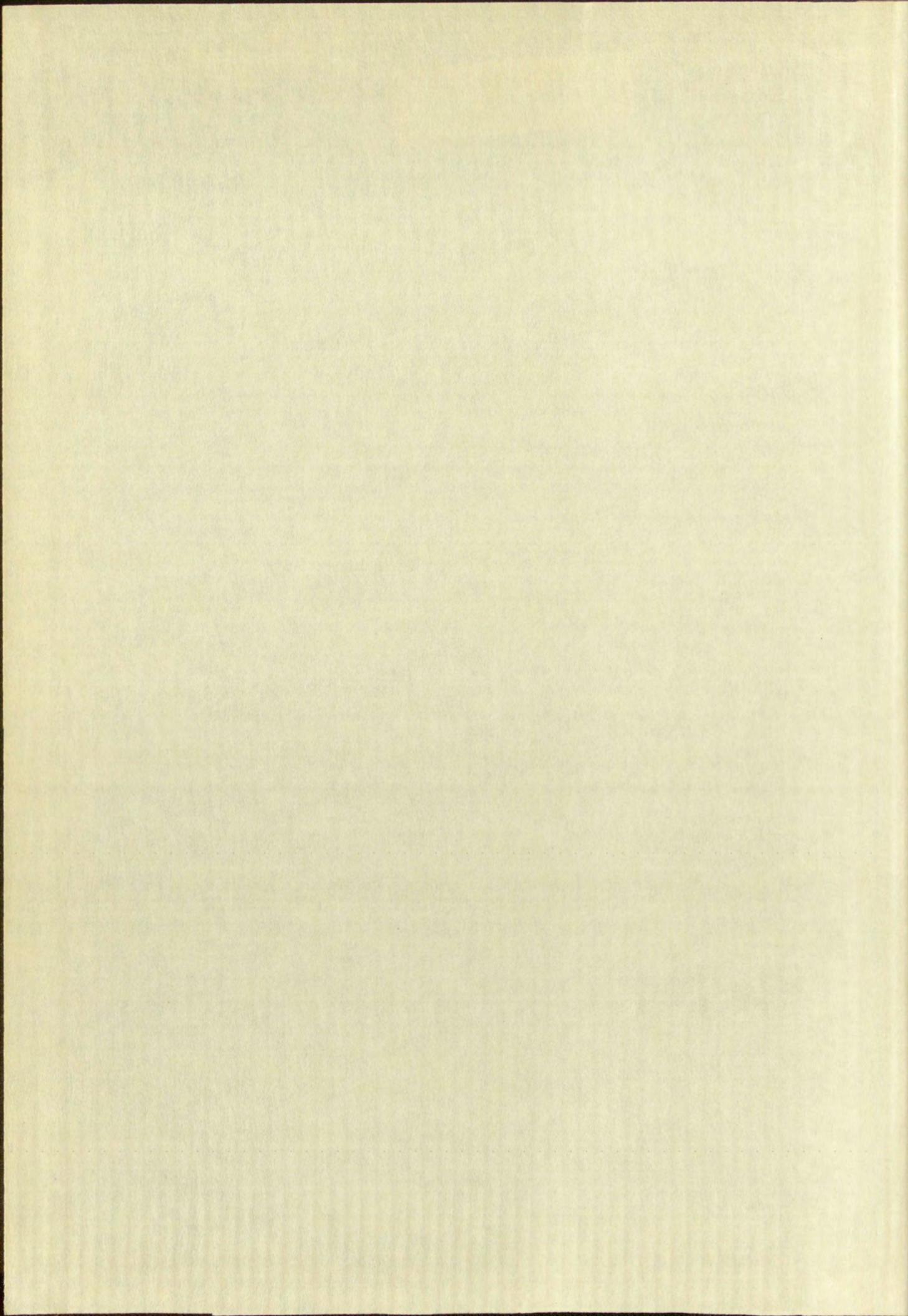
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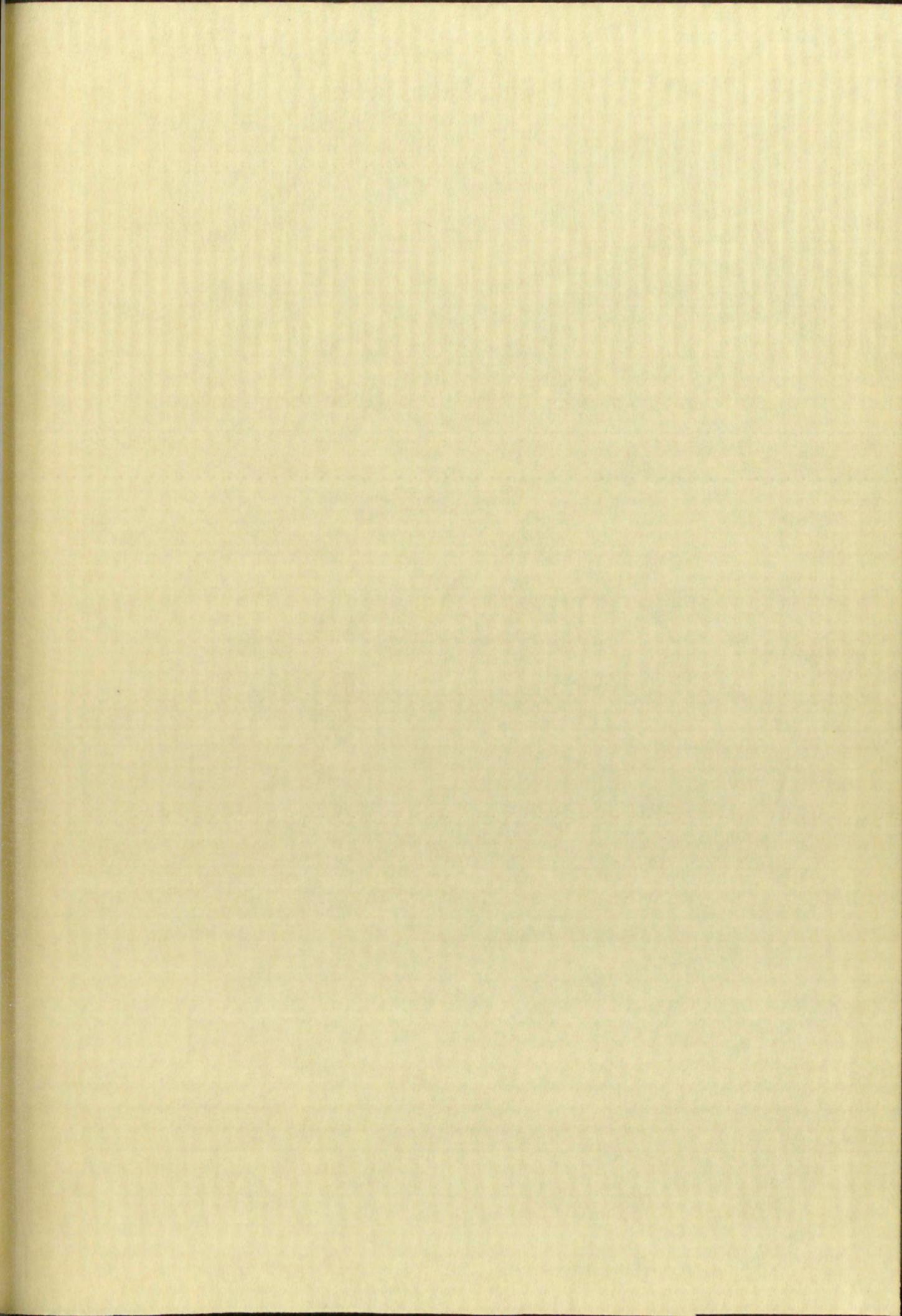
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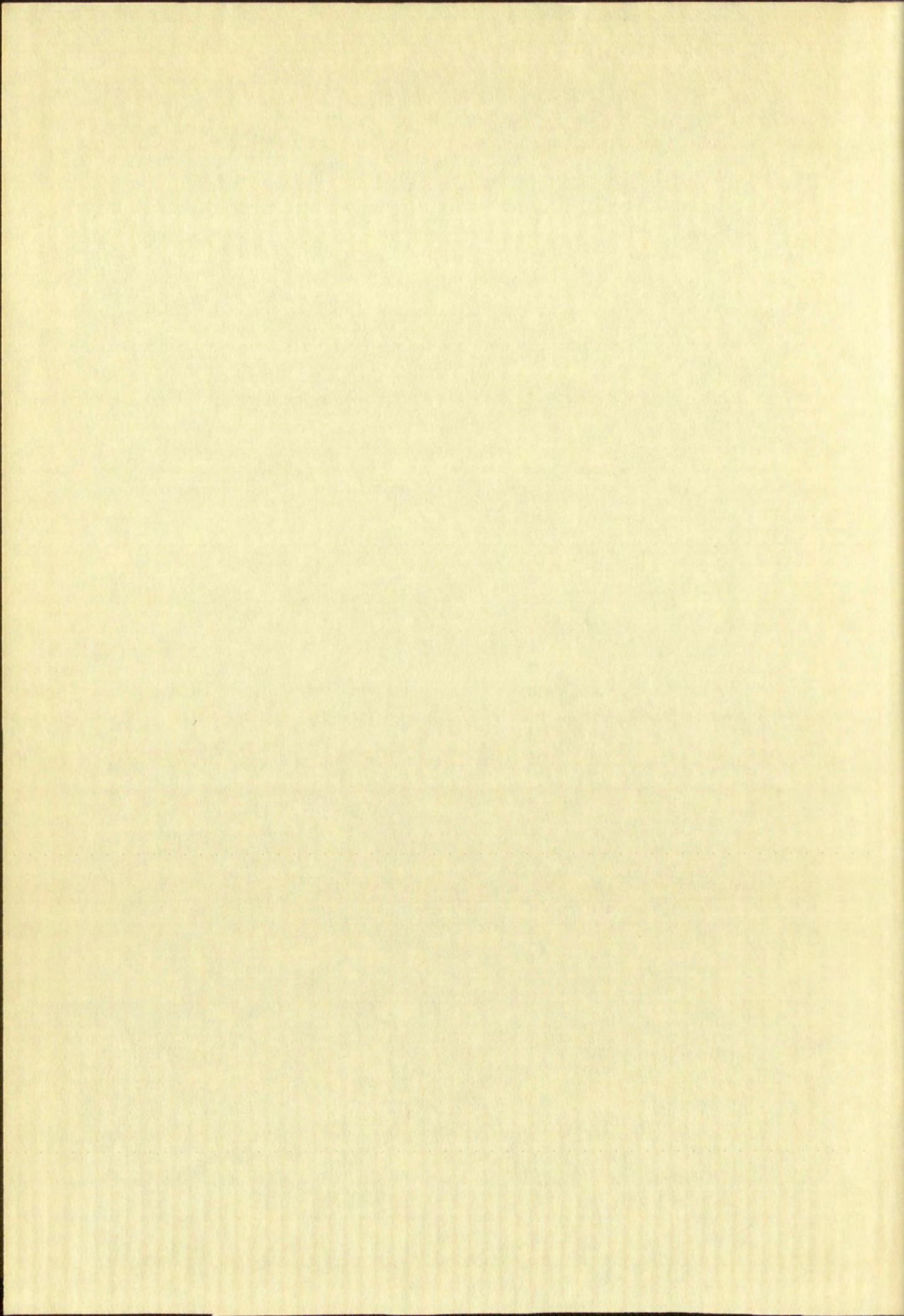
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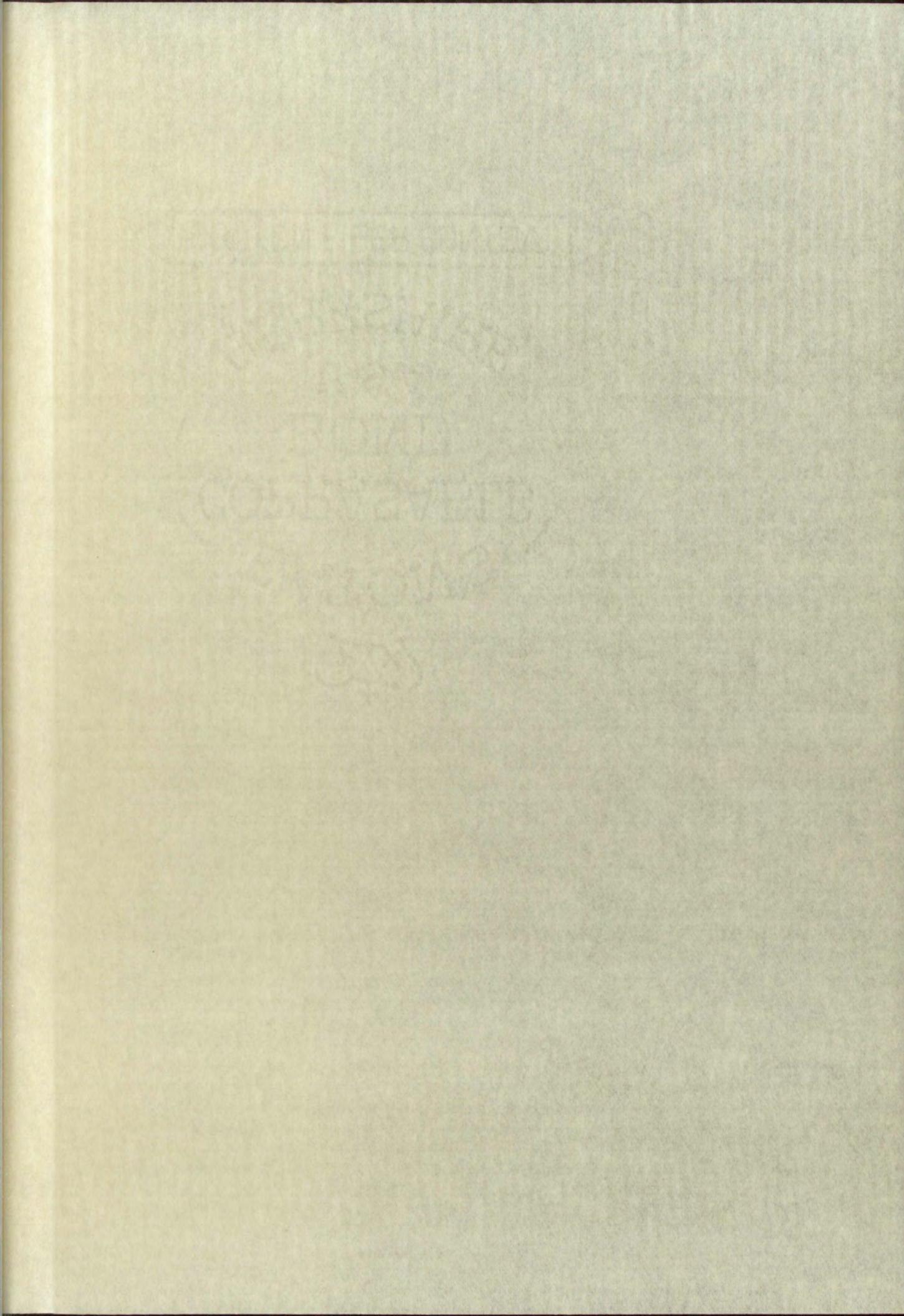


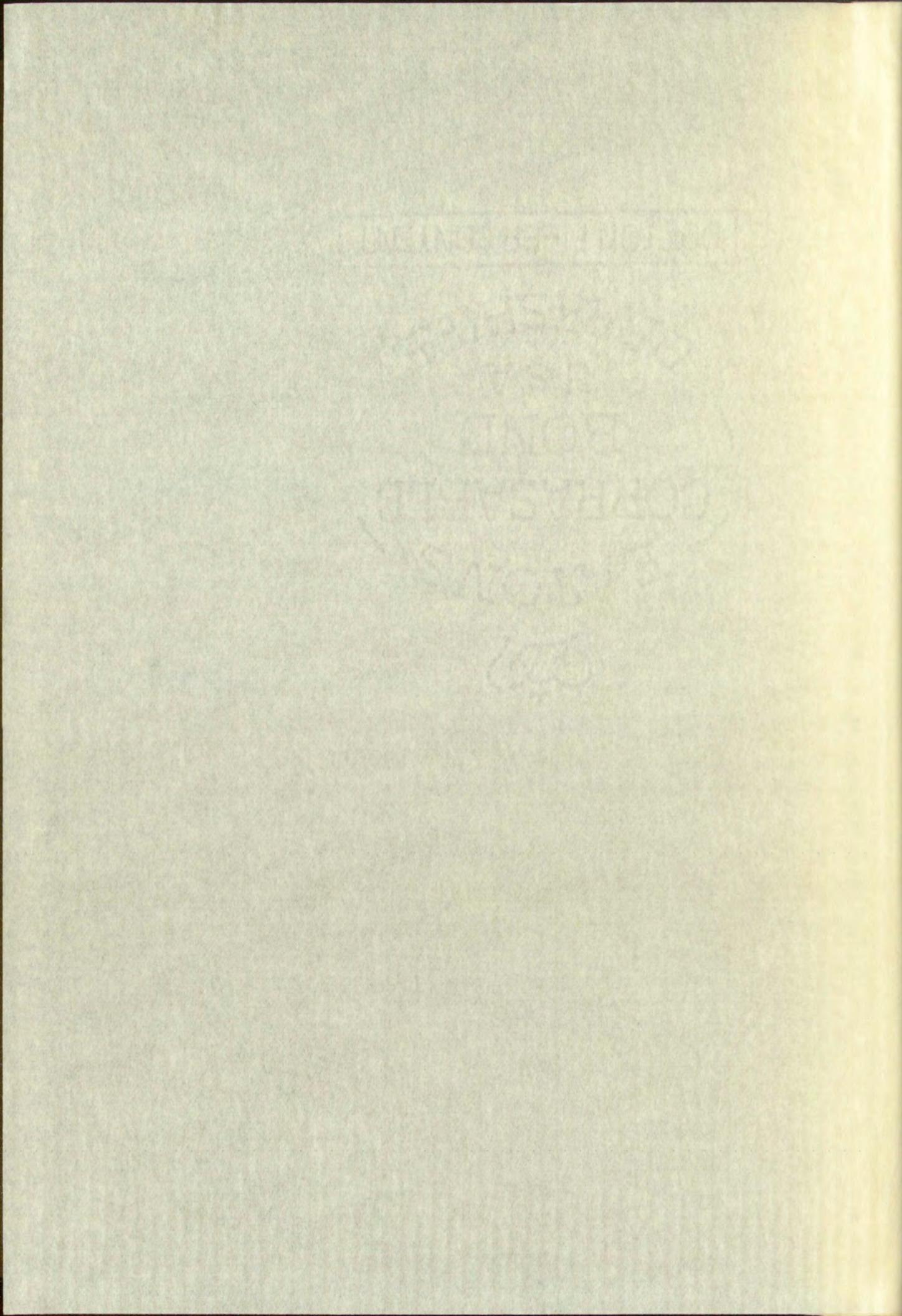
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GEOLOGY OF THE NORTHERN END OF  
SAN PEDRO MOUNTAIN,  
RIO ARRIBA AND SANDOVAL COUNTIES, NEW MEXICO

By  
Osler C. Hutson

A Thesis  
Submitted in Partial Fulfillment of the  
Requirements for the Degree of  
Master of Science in Geology

The University of New Mexico  
1958

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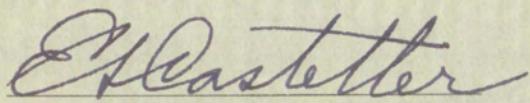
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This thesis, directed and approved by the candidate's committee, has been accepted by the Graduate Committee of the University of New Mexico in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

  
E.H. Castetter

DEAN

April 7, 1958

DATE

Thesis committee

Wolfgang E. Elston  
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ABSTRACT

INTRODUCTION

(geotabby)

Pteriones nov.

Immacoas and meadow in the Andes of Peru

Geographical range

SYSTEMATICS

Specimens in the

Museum of Natural Science

University of Pennsylvania

Peninsularia (see)

Hedylema (see)

Perimyia (see)

Gaffaria (see)

Thlasia (see)

Cutia (see)

Araeopteron (see) and the genus "Araeopteron" proposed by

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Dobro, Eugene

Musica, Maria

Schmid, Stefan, Thomas, Michael

Wolff, Charles, David

Wolff, Charles, Robert, Roger

Young, Christopher

Alvarez, Julian, Juan

Alvarez, Julian, Juan

(and) Alvarez, Julian, Juan, Carlos, Ricardo

Garcia, Geraldo

Guerrero, Ricardo, Ricardo

Torres, Ricardo

Rodríguez, Ricardo

Sanchez, Ricardo

Guerrero, Ricardo

Pérez, Ricardo

Alvarez, Ricardo, Ricardo, Ricardo

Guerrero, Ricardo, Ricardo

Antunes, Ricardo

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in mm per annum.

## ABSTRACT

The San Pedro Mountain area of north-central New Mexico is made up of 12,000 feet of Mississippian to Recent sediments resting on Precambrian granite gneiss. Strata of Cambrian through Devonian age are missing. If these rocks were deposited they were removed prior to deposition of the Mississippian rocks. Mississippian carbonates are present where they have been structurally preserved in synclines and down-faulted blocks; for the most part they were removed by pre-Pennsylvanian erosion. Pennsylvanian rocks consist of fossiliferous limestone alternating with soft shale and arkose beds. The Permian system is represented by red-brown, feldspathic conglomeratic sandstone and red shale of the Cutler formation. The Triassic Chinle formation has been mapped as three units, the Agua Zarca sandstone and Salitral shale, the Poleo sandstone lentil, and the upper Chinle shale member. The Jurassic system is composed of 1100 feet of sandstone and shale divided by a thin sequence of evaporites. These rocks are represented by the Entrada sandstone, the Todilto limestone and gypsum, and the Morrison formation. Alternating marine shale and sandstone with lesser amounts of continental sediments record the transgressions and regressions of the Upper Cretaceous sea. These beds are represented by the Dakota sandstone, Mancos shale, the Mesaverde group, and the Ojo Alamo sandstone. The Nacimiento formation and the San Jose formation of Paleocene and Eocene age, respectively, are the youngest formations mapped within the area, other than Quaternary alluvium.

Structural development of the area took place in three stages. First, minor uplift and depression of the San Juan Basin, due to early

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the 1st of December, 1851, I had the honor to present to your Excellency my first Report on the State of the Province of Ontario, and the following year, I had the pleasure of presenting to your Excellency my second Report, which was received with great interest, and I have now the honor to present to your Excellency my third Report, which I trust will receive your favorable consideration.

The Report is divided into three parts, the first being a general review of the financial condition of the Province, the second being a statement of the progress made in the various departments of the Government, and the third being a statement of the progress made in the various departments of the Government.

The first part of the Report is a general review of the financial condition of the Province, and it is my duty to inform your Excellency that the financial condition of the Province is satisfactory, and that the financial resources of the Province are sufficient to meet all the expenses of the Government, and that the financial resources of the Province are sufficient to meet all the expenses of the Government.

The second part of the Report is a statement of the progress made in the various departments of the Government, and it is my duty to inform your Excellency that the progress made in the various departments of the Government is satisfactory, and that the progress made in the various departments of the Government is satisfactory.

The third part of the Report is a statement of the progress made in the various departments of the Government, and it is my duty to inform your Excellency that the progress made in the various departments of the Government is satisfactory, and that the progress made in the various departments of the Government is satisfactory.

I have the honor to remain, Your Excellency's very Obedient Servt,

JAMES

Laramide movement, resulted in radial folding along the Nacimiento-San Pedro Mountain front. Deposition of the Ojo Alamo sandstone was affected by this folding as revealed by thickening in the synclines and thinning on the anticlines. Second, absence of the lower Paleocene beds suggests continued uplift. Uplift and contemporaneous downwarping of the San Juan Basin resulted in an asymmetrical fold in the San Pedro Mountain area. Third, continued deformation of this fold in late Paleocene or early Eocene time, developed a steep limb inclined to the west and resulted in the Nacimiento-San Pedro high-angle reverse fault along the west flank of San Pedro Mountain.

Previous reports have described repetition of Pennsylvanian strata, which supposedly resulted from low-angle overthrusting. The Pennsylvanian beds, however, were found to be in a normal sequence.

A gas discovery by the Magnolia Oil Company (sec. 24, T. 24 N., R. 1 W.) has stimulated interest in the oil and gas possibilities of the eastern flank of the San Juan Basin. The most important producing horizons of the San Juan Basin crop out along the west flank of San Pedro Mountain; preservation of petroleum in these formations is unlikely. The entrapment of oil and gas in the Pennsylvanian rocks along the Nacimiento-San Pedro fault is possible, but drilling tests of Pennsylvanian strata in structures along the eastern flank of the San Juan Basin have been negative.

the second part of the article, which is written by Prof. Dr. J. Schenck, who has been invited to speak at the meeting. The article is divided into two parts: the first part deals with the history of the development of the theory of relativity, while the second part discusses the practical applications of the theory. The author emphasizes the importance of the theory of relativity for the development of modern physics and its impact on our understanding of the universe. He also highlights the significance of the theory for the development of modern technology and its applications in various fields such as astronomy, astrophysics, and particle physics. The article concludes with a summary of the main findings and their implications for the future development of physics.

## INTRODUCTION

### Geography

The area of this report comprises 50 square miles along the northern end of the Nacimiento-San Pedro uplift in Sandoval and Rio Arriba Counties, New Mexico (Fig. 1). It is divided by the New Mexico Principal Meridian and is mainly within T. 23 N., R. 1 E., and R. 1 W.

New Mexico highway 96 provides accessibility, and traverses the area from northeast to southwest. This road connects the towns of Regina, Gallina, and Capulin, and joins New Mexico highway 112 in sec. 21, T. 23 N., R. 1 W. These roads may become impassable after torrential summer rains. Numerous other unimproved roads provide access to ranches, lumber camps, and mining properties. Nevertheless, much of the area cannot be reached except on foot.

Concentration of population is in the towns along highway 96. Most of the residents are engaged in the lumber industry, though ranching and farming also contribute substantially to the economic well-being of the area.

The topography of the area is rugged. A panoramic glance at the area shows gently dipping beds rising from the San Juan Basin to the northwest, and merging into a jumbled mass of steeply dipping hogbacks, overturned beds, and fault scarps along the Nacimiento-San Pedro fault front. The topographic ruggedness is attributed mainly to differential erosion of steeply inclined strata of variable resistance. The erosive agents are undoubtedly aided to a large extent by weakening of rocks along fault and fracture planes. The western and northwestern parts of the area

## INTRODUCTION

### CHAPTER I

THE INFLUENCE OF CULTURE ON THE PREDICTION OF VOTING BEHAVIOR  
AND ITS CHANGES IN A DEMOCRATIC POLITICAL CONTEXT. COMPARATIVE  
ANALYSIS OF THE 1989 AND 1992 ELECTIONS IN RUSSIA.  
BY NIKOLAI M. KARABYANOV  
AND YEVGENIY D. SAVCHENKO  
OF THE INSTITUTE OF PSYCHOLOGY OF SOCIETY, RUSSIAN ACADEMY OF SCIENCES  
AND THE DEPARTMENT OF SOCIOLOGICAL SCIENCE, RUSSIAN STATE UNIVERSITY FOR  
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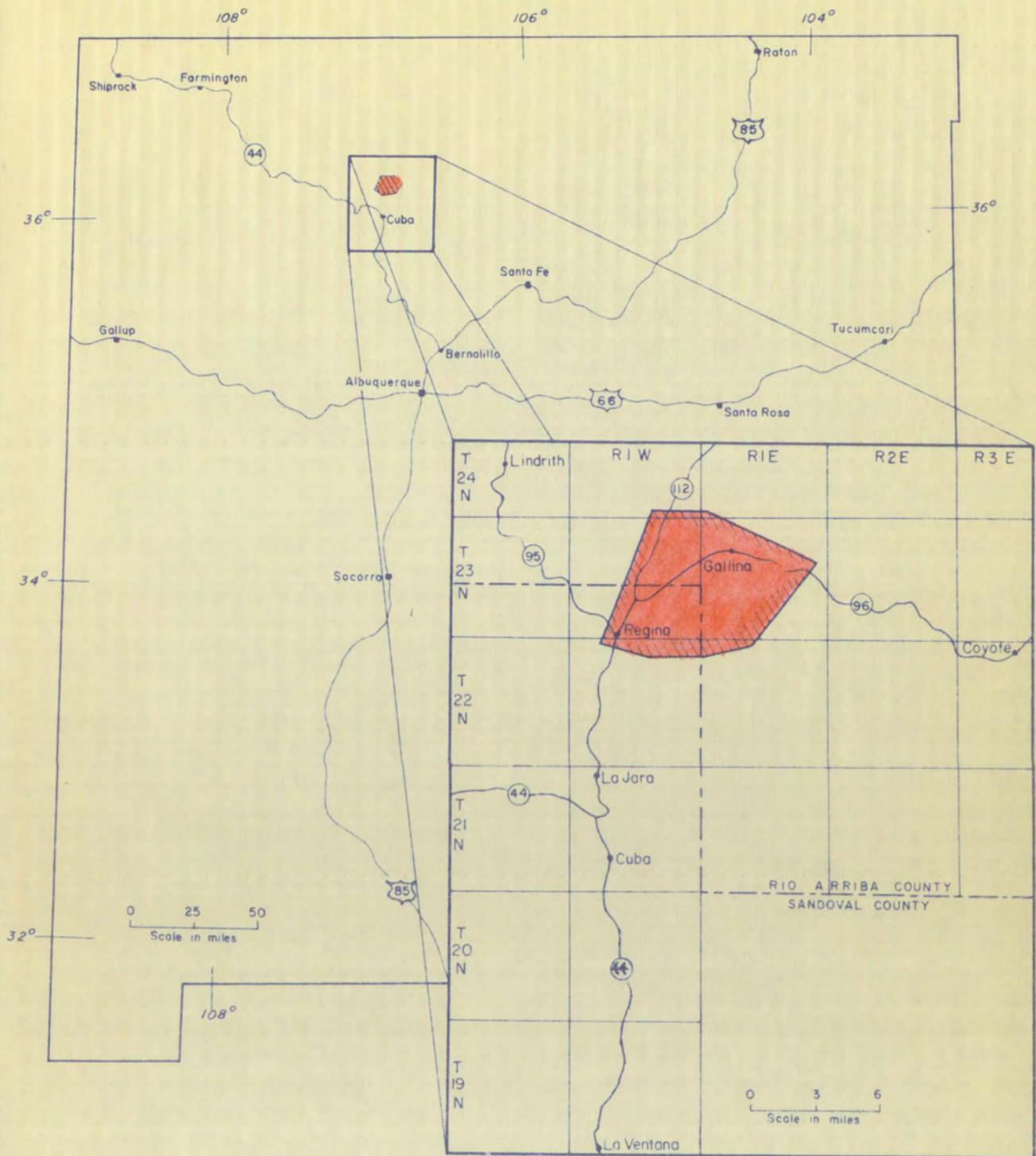


Figure 1.- Index map showing area of study in red.



are part of the San Juan Basin. They are characterized by beds of shallow dip, and are not as rugged as the southeastern and central parts.

The area is bordered on the west by the Continental Divide. Elevations vary from 7300 feet at Gallina to approximately 9500 feet to the south. San Pedro Mountain peak, three miles south of the area of this report, reaches an elevation of 10,577 feet. The area is considered semi-arid and shows considerable climatic variation. Most of the precipitation is during July and August, although winter snows are common. The mean average rainfall at Regina is 18 inches, relatively high as compared to the average annual rainfall of nearby areas. This is undoubtedly due to the proximity of the mountains.

The area is drained by the Rio Gallina and San Jose creek and their dendritic tributaries. The Rio Gallina flows northward and is a tributary of the Rio Chama, while San Jose creek drains the western side of the San Pedro Mountain and flows southward into the Rio Puerco near Cuba.

Three ecologic communities are evident in the area. The lowermost is the Upper Sonoran zone, characterized by pinon, pine, and juniper, with abundant greasewood in dry, sheltered valleys. This zone merges with the Transition zone at 7000 foot elevation. The Transition zone, characterized by ponderosa pine, extends upward to elevations between 8500 and 9000 feet, where the pine mingle with the spruce and fir of the Canadian zone. Where logging operations have removed the primary growth, and in places where there is an abundance of young evergreens, dense growth of aspen are common.

#### Previous Work

The first noteworthy geologic study of this area was included in the report of Darton (1928, p. 155-178). This report contained a discussion on

Volksgruppe oponierte fortwährend dem Vorstand, während dieser die Sitzung auf die bestreite Theorie des Klimawandels nicht einzuladen wünschte, was sie als eine Verletzung der Meinungsfreiheit sahen. Der Vorstand lehnte jedoch alle Anträge ab und entschied, dass die Konferenz abgesagt werden solle. Die Abberufung des Vorstands führte zu einer Debatte, ob es gerecht sei, dass eine Gruppe von Menschen, die überwiegend armen und eingeschränkten sozialen Hintergrund haben, einen solchen Vorrang vor anderen Gruppen wie den klima-kritisch eingestellten Gewerkschaften und anderen politischen Organisationen haben. Die Debatte wurde schließlich mit einer Abstimmung entschieden, bei der die Mehrheit für die Fortsetzung der Konferenz stimmte. Am Ende der Konferenz wurde ein gemeinsamer Punkt erarbeitet, der die Klimawandeltheorie als wissenschaftlich akzeptiertes Wissen darstellte und die Bedeutung der Klimawandelsgefahr betonte. Es wurde auch eine Aktionsempfehlung erarbeitet, die die Teilnehmer zur Unterstützung von Maßnahmen zur Reduzierung von Treibhausgasemissionen aufrief.

Am Ende der Konferenz fand sich der Vorstand im Konflikt mit dem Klimawandel-Block, der die Ergebnisse der Konferenz ablehnte und stattdessen eine eigene Konferenz organisieren wollte. Der Vorstand entschied, dass die Konferenz abgesagt werden sollte, da die Mehrheit der Teilnehmer die Theorie des Klimawandels ablehnte.

the stratigraphy and structure of the Nacimiento-San Pedro uplift and the Chama embayment. Renick (1931) discussed the geology and ground water of western Sandoval County. His interpretation of the faulting on the northern end of San Pedro Mountain as bedding thrusts and overthrusts is of unusual interest. Northrop and Wood (1946) termed these structures imbricate thrusting. More recent works including this area are by Dane (1946), who discussed the stratigraphic relations of the Eocene, Paleocene, and latest Cretaceous formations; and Northrop and Wood (1946), who were concerned with oil and gas possibilities, structure, and stratigraphy.

#### Purpose and Method of Investigation

The structural complexity of this area provided the initial stimulus for this study. With encouragement from Dr. Vincent C. Kelley, the study of this area was undertaken as a master's thesis project. The field work necessary to the project was begun in February, 1957 and completed during the summer of 1957.

Mapping was accomplished with the aid of aerial photographs scaled two inches equals one mile. Data were transferred from photographs to a U. S. Soil Conservation Service planimetric map. Stratigraphic sections were measured with Brunton compass and a 50-foot steel tape.

#### Acknowledgments

The writer wishes to acknowledge the aid and guidance of Dr. Vincent C. Kelley and Dr. Wolfgang E. Elston of the University of New Mexico and Mr. Frank A. Packard of the Humble Oil & Refining Company. The assistance of Mr. Douglas W. Kirkland, who aided in field work, is also gratefully acknowledged.



## STRATIGRAPHY

### General Features

Sedimentary rocks exposed along the northern flank of San Pedro Mountain include representatives of all geologic periods from Mississippian to Recent.

The sedimentary sequence is approximately 11,600 feet thick, measured from the top of the Precambrian to the base of the San Jose formation. Rocks of marine origin comprise over one-third of the total. The Cretaceous marine section is dominantly clastic; the Pennsylvanian and Mississippian rocks are mainly carbonates. Continental deposits are characterized by their content of claystone, mudstone, coal, and petrified wood. Information related to the rocks exposed in the area of this report is summarized in Table I.

Terminology of stratigraphic units incorporated into this project agree with those employed by the U. S. Geologic Survey (Dane and Bachman, 1957).

### Precambrian Era

Precambrian rocks are exposed along the Nacimiento-San Pedro fault and on San Pedro Mountain. Exposures were observed in sec. 1, T. 22 N., R. 1 W. and secs. 5 and 6, T. 22 N., R. 1 E.

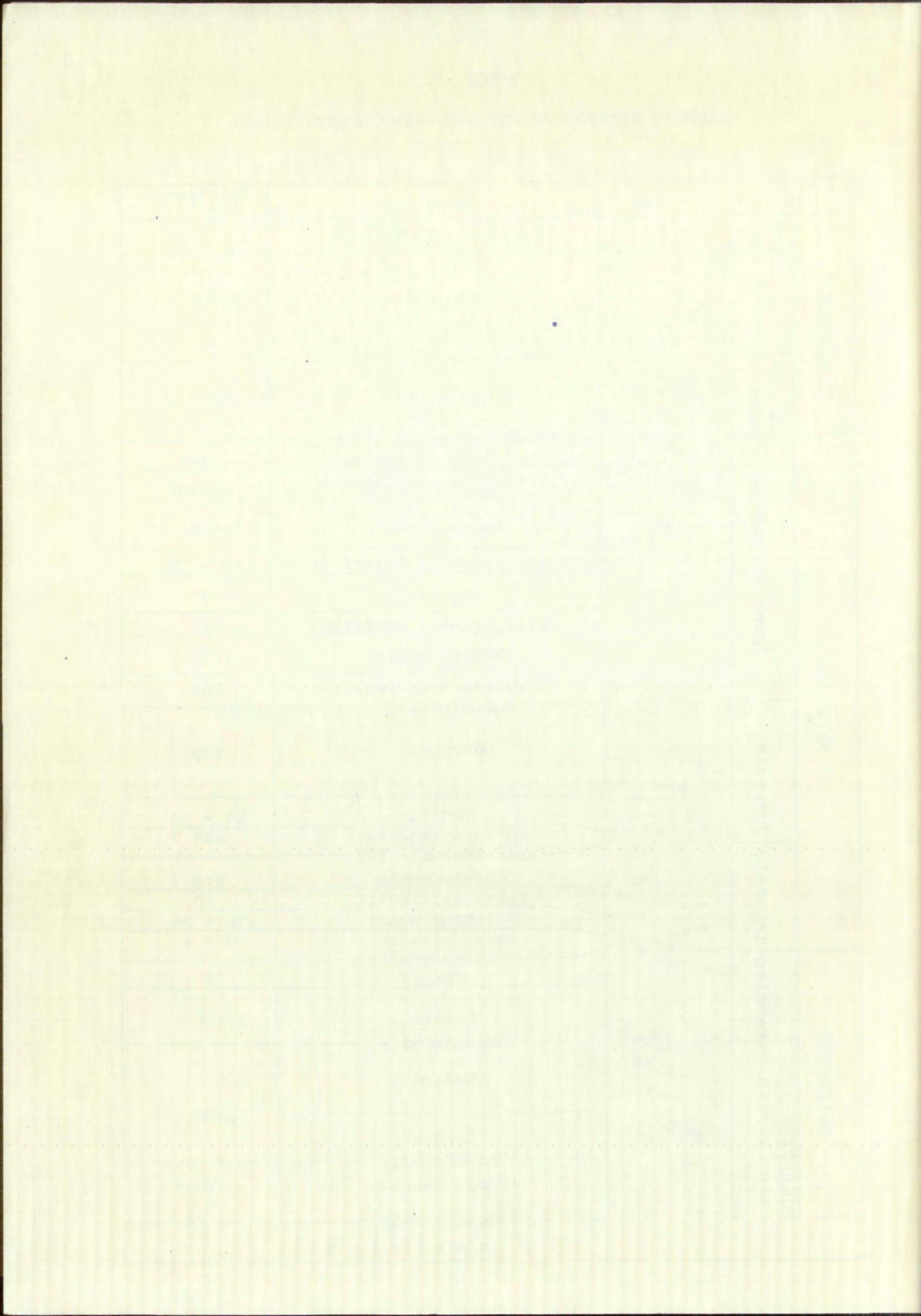
In general, the Precambrian terrane stands high and is irregular and rugged. The dominant rock type is a pink, coarse-grained granite gneiss. In the NW $\frac{1}{4}$  sec. 36, T. 23 N., R. 1 W., small exposures of Precambrian greenstone were observed below faulted Mississippian rocks.



TABLE I

## COLUMNAR SECTION OF THE SAN PEDRO MOUNTAIN AREA

Age		Section	Formation	Thickness (feet)
CENOZOIC	Paleo- cene	Re- cent		
			Alluvium and gravels	
	SW	NE	San Jose	2,000 +
			Disconformity (?)	
			Nacimiento	800 +
			Disconformity (?)	
			Ojo Alamo sandstone	30
			Fruitland Kirtland & Pictured Cliffs	Absent
			Lewis shale	1,850
			La Ventana tongue (Cliff House)	40 - 70
			Menegee	480
			Point Lookout sandstone	130
			Mancos shale	2,190
			Dakota sandstone	199
			Unconformity	
			Morrison	790
			Unconformity	
			Todilto	55 - 80
			Entrada sandstone	235 ?
			Disconformity (?)	
			Chinle shale	579 ?
			Paleo ss. lentil	75
			Salitral shale	20 - 30
			Agua Zarca ss.	0 - 4
			Disconformity	
			Yeso	?
			Cutler	2,150
			Unconformity	
			Madera	
			Sandia (?)	1,890
			Unconformity	
			Arroyo Penasco	70 ?
			Nonconformity	
Precambrian				
Mississippian	Pennsylvanian	Permian	Triassic	Jurassic



## Mississippian System

### Arroyo Penasco formation

Exposures of Mississippian rocks are found in sec. 36, T. 23 N., R. 1 W., about 3 miles east of Regina. The Mississippian outcrops are faulted and densely covered with vegetation. No accurate measurement was possible, but the thickness is estimated to be 70 feet.

The base of the Arroyo Penasco formation rests nonconformably on Precambrian granite gneiss. It consists of 3 feet of tan, medium to coarse grained, slightly conglomeratic sandstone which grades upward into 12 feet of shale alternating with 3- to 6- inch beds of gray limestone. Overlying this unit is about 25 feet of light brown to tan, dense, fine-crystalline limestone in beds 6 inches to 3 feet thick. This limestone has a petroliferous odor when freshly broken. This unit is a distinguishing feature of the Mississippian rocks in the San Pedro Mountain area. The uppermost unit consists of 30 - 35 feet of a light gray, very dense, fine-crystalline limestone with small amounts of white chert.

Prior to the discovery of Mississippian fossils in the northern part of New Mexico, it was commonly thought that the Mississippian sea had advanced only to the central part of the state. More recent work has shown that strata of Mississippian age once probably covered a great part of north-central New Mexico, but that erosion has removed most of them (Fitzsimmons, et al., 1956). The remaining Mississippian rocks in the San Pedro Mountain area are preserved in down faulted blocks.

The name Arroyo Penasco was derived from a stream on the western flank of the Nacimiento Mountains (Armstrong, 1955, p. 3).

elated Peñasco (Montaña)

to the 1930s, when it turned the nation's attention to the mines

and the Porfirio Díaz and Porfirio Díaz, "El Jefe" in this cabin & across W.I., R.

the first half of the year of 1910, no longer held the belief that he was

the last of the great leaders of the revolution, and his ideas were

now considered to be old and irrelevant, and he had left

on his own and traveled to the village of Tlaltenango where he remained

until his death in 1925. In the meantime, he had become a good citizen, having seen

the revolution through the eyes of his wife, who had been able to feel its

terrible reality as it swept through the state of Jalisco and the surrounding

states. He had been a soldier in the ranks of the revolutionaries, but he had

been captured by the rebels and had been forced to work as a peon for

the revolutionaries, and he had been forced to work as a peon for

the revolutionaries, and he had been forced to work as a peon for

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the revolutionaries, and he had been forced to work as a peon for

### Pennsylvanian System

#### Magdalena group

Approximately 1890 feet of Pennsylvanian marine limestone, shale, and arkose lie unconformably on Mississippian rocks. The thickness is only an estimate, as faulting may have repeated some of the section. A similar thickness, 1864 feet, was found in a well drilled on the nearby Gallina Mountain anticline, SW $\frac{1}{4}$  sec. 20, T. 26 N., R. 2 E. (Lookingbill, 1953, p. 12).

To a large extent vegetation, soil cover, and faulting have obscured the Pennsylvanian outcrops. Therefore, the beds were mapped as one unit, the Magdalena group. In the NE $\frac{1}{4}$  sec. 36, T. 23 N., R. 1 W., the upper 700 feet of the Magdalena group is fairly well exposed and is equivalent to the upper arkosic member of the Madera formation described by Northrop and Wood (1946). These beds consist of soft, gray, purple, greenish, and red-brown, fossiliferous shale, alternating with fossiliferous, gray and light gray, fine to medium-crystalline limestone beds 1- to 9- feet thick.

Northrop and Wood (1946) mapped the Magdalena group as the Sandia and Madera formations. The Sandia formation was subdivided into a lower limestone and an upper clastic member, the Madera formation into a lower gray limestone and an upper arkosic member. Paleontological evidence has since proved the lower limestone member of the Sandia formation to be of Mississippian age (Fitzsimmons, et al., 1956). The upper clastic member of the Sandia formation is Morrow to Lampasas in age and the conformably overlying Madera formation is Lampasas to Virgil (Northrop and Wood, 1946).

LEJENY: THE LOST CHASE

about me before

the sun had set, I had to go back to the station to get my gear.

I had to leave the station because I wanted to go to the beach to see what was there.

The beach was very rocky and there were many small pools of water.

I found a small pool of water and I saw a small fish swimming in it.

(I am not sure if it was a trout or a salmon.)

I took a small rock and threw it at the fish, but it did not catch it.

I then took another rock and threw it at the fish again, but it did not catch it.

I then took another rock and threw it at the fish again, but it did not catch it.

I then took another rock and threw it at the fish again, but it did not catch it.

I then took another rock and threw it at the fish again, but it did not catch it.

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I then took another rock and threw it at the fish again, but it did not catch it.

## Permian System

### Cutler formation

The Permian "red beds" of the San Pedro Mountain area were mapped as the Cutler formation (undifferentiated). The aggregate thickness is about 2150 feet. The Cutler formation, which strikes generally east-west, is exposed in a broad band in the central part of the area. Except for a few conglomeratic zones in the lower third of the formation, it is readily eroded.

The base of the Cutler formation is poorly exposed. Although the formation appears to be generally conformable and gradational with the underlying Magdalena group (Northrop and Wood, 1946), there is some local divergence of beds at or near the contact with the Pennsylvanian rocks. In the SW $\frac{1}{4}$  sec. 30, T. 23 N., R. 1 E., an angular unconformity exists within the lower part of the Cutler formation. The exact stratigraphic position of this unconformity is indeterminable because of dense vegetation and soil cover. The Magdalena beds dip 30° N., while the overlying Cutler rocks dip 14° N. (Fig. 2). This unconformity is not surprising as it is believed that the San Pedro-Nacimiento Mountains were tectonically active during Pennsylvanian and probably early Permian time.

The lower part of the Cutler formation is composed of alternating beds of feldspathic, crossbedded sandstone and conglomerate and shale. The sandstone is brown and red-brown, fine to coarse grained, angular to subrounded, and locally calcareous. The conglomerate consists of brown and red-brown particles ranging from granule to cobble sizes. The shale



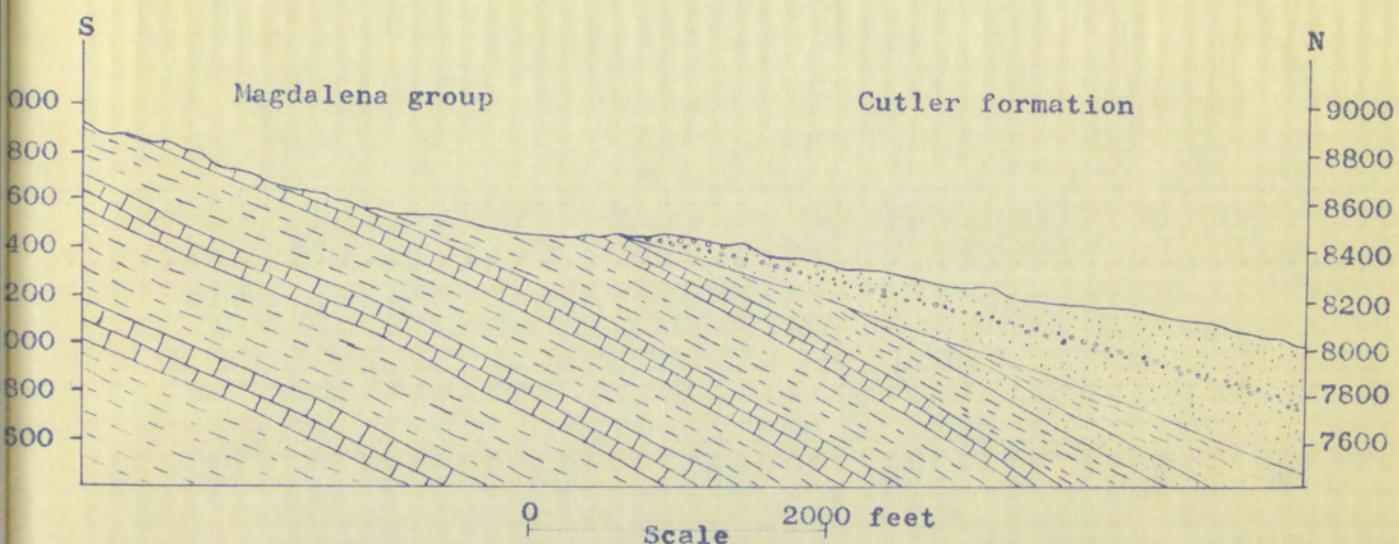


Figure 2. Cross section showing angular unconformity within lower part of the Cutler formation. (SE $\frac{1}{4}$  sec. 25, T. 23 N., R. 1 W.).



is red, red-brown and purplish, soft, and slope-forming. About 750 feet of upper Cutler beds are exposed along a scarp two miles south of Gallina (Pl. 1B). Most of the rocks exposed in this scarp are soft, slope-forming, red, red-brown, and purplish shale and siltstone. About 200 feet below the upper contact are massive 20- to 30- foot ledges of red, fine grained, calcareous sandstone, capped by a soft and friable, white, fine-grained sandstone. This white sandstone may be equivalent to the lower part of the Yeso formation, which is mappable about 15 miles south of this area. This scarp is capped by the Poleo sandstone lentil of Upper Triassic age.

South of Cuba, three formation units are recognized in the Permian system. They were mapped by Northrop and Wood (1946) as the Abo, the Yeso, and the San Andres formations. North of latitude 36° N. the Permian rocks are called the Cutler formation and are equivalent to the Abo formation and possibly the lower part of the Yeso formation. Pre-Triassic erosion has removed the upper part of the Yeso formation.

#### Triassic System

For mapping purposes the Upper Triassic is divided into three units: (1) the Agua Zarca sandstone and Salitral shale members, (2) the Poleo sandstone lentil, and (3) the Chinle shale member.

Lower Triassic rocks are believed to be absent in the San Pedro Mountain area. Momper (1957) suggests that the Agua Zarca sandstone and Salitral shale tongue are age equivalents of the Lower Triassic Moenkopi formation of Arizona. This correlation was suggested despite recovery of Upper Triassic vertebrate remains below the Poleo sandstone

1000 hours. At 1000 hours a few minor disturbances (wind-hurts) but all  
calm. In the afternoon a small wind & a slight rain began to fall  
at 1200 hours. Life will be very good and incidentally (if I am right)  
there is probably more time available than we have. After lunch-time  
it is possible that we can get sufficient time to go ashore and visit  
the village which is about 10 miles away. We will be able to go  
ashore at 1300 hours and return by 1400 hours. This will give us  
time to go ashore and get some supplies and to go ashore again  
at 1500 hours to get some more supplies.

At 1600 hours we will be back on board and ready to leave. We will be  
able to get a good night's sleep and be ready to leave at 0600 hours.  
The weather forecast is not too bad but we will have to be  
careful of the wind and waves. We will be able to go ashore  
at 1000 hours and get some supplies and return by 1100 hours. This will  
give us time to go ashore and get some supplies and to go ashore again  
at 1200 hours to get some more supplies.

At 1300 hours we will be back on board and ready to leave. We will be  
able to get a good night's sleep and be ready to leave at 0600 hours.  
The weather forecast is not too bad but we will have to be  
careful of the wind and waves. We will be able to go ashore  
at 1000 hours and get some supplies and return by 1100 hours. This will  
give us time to go ashore and get some supplies and to go ashore again  
at 1200 hours to get some more supplies.

lentil (Baker and Reeside, 1929, p. 1428). In this study, the rocks are considered to be Upper Triassic, in agreement with the work of Northrop and Wood (1946) and Reeside, et al (1957).

Agua Zarca sandstone and Salitral shale members. Rapid northward thinning of the Agua Zarca sandstone along the Nacimiento-San Pedro highland has been reported by Northrop and Wood (1946). Lookingbill (1953) postulated that the Salitral shale pinches out, and that the Agua Zarca sandstone merges with the Paleo sandstone lentil in the Gallina area, 20 miles north of San Pedro Mountain.

In the area of this study the occurrence of a pebble conglomerate was noted 20 to 30 feet below the base of the massive Paleo sandstone. The conglomerate is greenish and contains rounded quartz pebbles in a matrix of coarse, friable sandstone. It is not resistant to erosion and varies in thickness from 0 to 4 feet. It is overlain by 20 feet of soft, slope-forming, purplish, reddish-brown, and greenish shale.

The writer believes that the conglomerate is the wedge-edge remnant of the Agua Zarca sandstone which thickens to the south, and that the overlying shale is the edge of the Salitral shale, which pinches out to the north-northwest of this area.

Paleo sandstone lentil. The Paleo sandstone lentil is exposed as a broad northward dipping scarp about 1 mile south of Gallina (Pl. 1B). It consists of 75 feet of interbedded conglomerate and sandstone. The lower fourth of the member is dominantly conglomeratic, but there are conglomeratic lenses throughout the unit. The pebbles are well rounded quartz, chalcedony, and limestone fragments averaging  $\frac{1}{2}$  inch in diameter.

paper could have been written by a person who had not written any English before this. The paper is only one page long and it is written in a simple, clear and direct style. The handwriting is very good and legible.

It is interesting to note that the author uses many different types of punctuation and punctuation marks are used to separate different sections of the document. The author also uses different ways of writing numbers, such as "one thousand", "two hundred", etc. The handwriting is very good and clear, and the spelling is mostly correct. The paper is well organized and has a logical flow of ideas. It is evident that the author has a good understanding of the subject matter and is able to express their thoughts clearly. The paper is well written and is a good example of good writing.

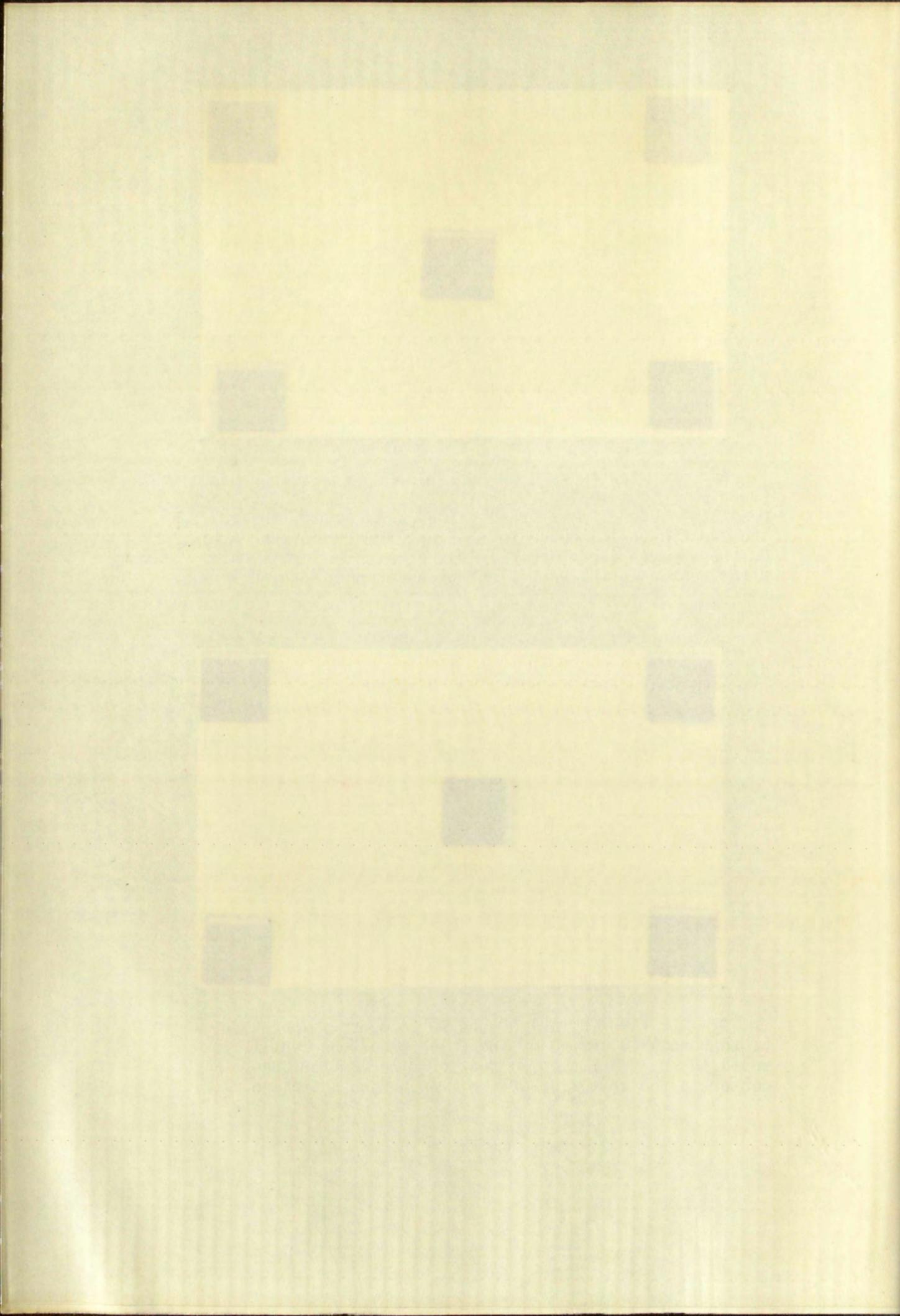
The paper is well written and is a good example of good writing. The author uses many different types of punctuation and punctuation marks are used to separate different sections of the document. The handwriting is very good and legible. The paper is well organized and has a logical flow of ideas. It is evident that the author has a good understanding of the subject matter and is able to express their thoughts clearly. The paper is well written and is a good example of good writing.



A. Air view (toward the north) of Upper Cretaceous rocks (secs. 11 and 12, T. 23 N., R. 1 W.). Foreground is the Dakota sandstone. The broad valley is in Mancos shale, with the Carlile shale member forming a low ridge in the valley. On the skyline (left center) is the San Jose formation. Right center is the west flank of the French Mesa anticline.



B. Air view (north) of the Poleo scarp. The scarp (foreground) is capped by the Poleo sandstone lentil. Exposed in the scarp are 750 feet of upper Cutler beds. Right center is the west side of the French Mesa anticline.



Buff and gray, calcareous, medium grained, subangular to subrounded sandstone is the predominant rock type of the member. Near the top of the Poleo sandstone lentil is a very calcareous, medium grained, subrounded sandstone 3 to 5 feet thick, characterized by a weathered surface with a dark brown color and a rough appearance.

Chinle shale member. The contact of the Poleo sandstone with the overlying Chinle shale is conformable. The Chinle shale member contains variegated clay, shale, and thin limestone and sandstone stringers. The Nacimiento-San Pedro fault follows the Chinle outcrop in most of the area. The thickest section, which is largely covered with alluvium, forms the valley in which the town of Gallina is located.

The thickness of the Chinle shale member could not be measured because of faulting, but it is 579 feet thick in the Gallina area according to Lookingbill (1953). The lower part of the formation is exposed at the base of the Poleo scarp and consist of 3- to 6- foot beds of red and purple, moderately hard siltstone and sandstone. These beds grade upward into softer red, green, and maroon shales alternating with 2- to 6- inch beds of limestone and lenticular siltstone and sandstone.

#### Jurassic System

Approximately 1100 feet of continental and evaporite deposits overlie the Chinle formation. These rocks have been assigned to the Jurassic system. They were subdivided and mapped in this area as the Entrada sandstone, the Todilto formation, and the Morrison formation (Pl. 2B).

described in this report. Several incidents of segregation were had this  
fall. One was between colored and white students of whom two hundred or more  
of the former were in the high school and one hundred and twenty others  
in the lower. These segregated students were housed in separate buildings  
and the Negroes were not permitted to enter the high school without an escort.  
The Negroes were compelled to remain outside of the high school building  
until the end of the day. Another instance of segregation in the schools which  
is particularly noteworthy is that of the Negro students of the high school who  
are compelled to attend the high school by the Negro students from the  
elementary school. This is done because the Negro students who are  
assigned to the high school by the Negro students of the elementary school  
are compelled to attend the high school. This is done because the Negro  
students who are assigned to the high school by the Negro students of the  
elementary school are compelled to attend the high school.

In the middle of the month of October, the Negro students of the high school  
were compelled to attend the high school by the Negro students of the elementary  
school. This is done because the Negro students who are assigned to the  
high school by the Negro students of the elementary school are compelled to  
attend the high school by the Negro students of the elementary school.

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were compelled to attend the high school by the Negro students of the elementary  
school. This is done because the Negro students who are assigned to the  
high school by the Negro students of the elementary school are compelled to  
attend the high school by the Negro students of the elementary school.

### Entrada sandstone

Exposures of the Entrada sandstone are poor in this area because of faulting. North of Gallina, on the southern end of the French Mesa anticline, part of the Entrada is exposed in a sheer cliff. The colors of the Entrada are distinctive soft reds, whites, and yellows.

The Entrada is composed of fine grained, subangular to subrounded, friable, calcareous sandstone. Thickness of the Entrada sandstone could not be measured in this area. In the French Mesa area, which borders the San Pedro Mountain area on the north, it is approximately 235 feet (Fitter, 1958).

Channeling of the Entrada sandstone into the underlying Chinle shale was noted by Darton (1928, p. 167), and thinning of the Chinle shale to the east and the south, towards Coyote, suggests pre-Entrada erosion (Lookingbill, 1953, p. 32).

### Todilto formation

A laminated limestone lies conformably on the Entrada sandstone and grades transitionally into an overlying massive gypsum bed. These units together constitute the Todilto formation.

The limestone ranges from 5 <sup>to</sup> 10 feet thick in this area. It is gray, platy and has a fetid odor when broken. The gypsum ranges in thickness from 50 <sup>to</sup> 75 feet and is relatively pure. It is best exposed just north and south of Gallina. In most places the gypsum has been weathered to form a gray, puffy, soft soil cover, known as gypsite. The gypsum shows considerable variation in thickness and is locally absent in the French Mesa area (Fitter, 1958). Erosion following

enclosed letter

and the other two children are still here and we do not count

you to have the time to come to see us. I am trying to remember  
when we last saw you and I think it was some months ago. Each time  
we have seen you we have had a good time and the children all like  
you very much.

We are sending you a copy of our latest letter so you will have  
the full details.

It is now nearly a month since we last saw you and I am afraid  
you may have got my letter. We have had a few more visitors  
since you left and we have had a good time with them and enjoyed  
them very much.

Yours very truly, William

John and Mary and the children hope you will soon return to us.

Yours very truly, William

John and Mary and the children hope you will soon return to us.

Yours very truly, William

John and Mary and the children hope you will soon return to us.

Yours very truly, William

John and Mary and the children hope you will soon return to us.

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Yours very truly, William

John and Mary and the children hope you will soon return to us.

Yours very truly, William

deposition of the gypsum has been postulated as the most probable reason for varying thicknesses of the formation in New Mexico (Lookingbill, 1953, p. 35).

The marine or nonmarine origin of the Todilto formation is controversial; a recent study of this problem suggests a nonmarine origin (Kirkland, 1958).

#### Morrison formation

The Morrison formation includes a sequence of continental deposits lying unconformably above the Todilto gypsum and below the basal conglomerate of the Dakota sandstone. The total thickness, measured in the NE $\frac{1}{4}$  sec. 24, T. 23 N., R. 1 W., is 790 feet. The Morrison formation crops out along the west and north sides of the San Pedro Mountain and is abruptly cut out by the San Pedro-Nacimiento fault west of Gallina.

The members of the Morrison formation described by Lookingbill (1953, p. 38) in the Gallina Mountains area are easily recognizable in the San Pedro Mountain area. They are the buff sandstone member, the green claystone member, and the conglomerate member. The contacts between the members are gradational and characterized by interfingering.

Buff sandstone member. A predominantly massive, white to buff, fine-to very fine-grained sandstone, about 375 feet thick, is referred to as the buff sandstone member. In the upper part of the member the massive sandstone is thin bedded, and alternates with lenses of cocoa-brown claystone and shale. Locally, the lower massive sandstone unit forms

of the day, from one to two hours off road and another hour or so for the subsequent  
recovery walk. The model is an extension of the concept of 'no more than 10 miles'  
(*see also* *Exercise and the heart*, *Health and fitness*)

The second part of the model is to integrate exercise into daily life.  
This means of course that it needs to reflect the individual's daily routine  
(*see also* *Work*) right

from the moment of getting out of bed to the moment of going to bed.  
Individuals have varying levels of physical activity, with different goals, interests  
and ambitions. In the first instance, it is important to be realistic. Instead  
of trying to do too much, it is better to set small, achievable goals and to be patient.  
It may be necessary to start with a walk around the block and work up to a  
longer walk or a run. It is important to remember that the mind can often  
be a powerful ally in this process. If you are determined to succeed, you will  
achieve your goal. If you are not, you will not. This is a simple truth.  
In addition to physical exercise, there are other health benefits to be gained from  
exercise, including improved mental health, better sleep, reduced stress and  
improved self-esteem. These benefits are just as important as physical health.

Exercise is a key component of a healthy lifestyle. It is important to remember that  
it is not just about physical health; it is also about mental health. Physical activity can help to  
reduce stress and anxiety, and can improve mood. It can also help to reduce the risk of depression and  
other mental health problems. Exercise can also help to improve cognitive function, which can lead to better  
memory and concentration. It can also help to improve mood, which can lead to better mental health.

pedestal rocks, and in some cases is capped by a remnant of a thin brown calcareous sandstone.

Green claystone member. The green claystone member is composed chiefly of green claystone and shale, 270 feet thick. About 85 feet from the base occurs 17 feet of light brown to buff, fine- to medium-grained sandstone. Overlying the sandstone is soft, slope-forming green shale with interbedded sandstone lenses which make up the remainder of the member.

Conglomerate member. About 122 feet of massive, buff conglomerate and coarse-grained sandstone make up the conglomerate member. The lower conglomerate beds are 62 feet thick and are overlain by 37 feet of green shale with smaller amounts of sandstone. This in turn is overlain by buff sandstone and conglomerate alternating with thin shale beds. The conglomerate contains rounded quartz, chalcedony, and jasper pebbles, up to 2 inches in diameter, in a matrix of coarse grained, subangular sandstone.

The conglomerate member crops out as a steeply dipping hogback along the west side of San Pedro Mountain. It appears to thin to the north and is absent southwest of Gallina, perhaps due to pre-Dakota erosion (Lookingbill, 1953, p. 43). Beds equivalent to the conglomerate member grade laterally into sandstone to the south (Swift, 1956, p. 24).

Swift (1956, p. 42) suggested that the conglomerate member may be Lower Cretaceous, equivalent to the Burro Canyon formation of Colorado. He named the conglomerate member Deadmans Peak formation, from excellent exposures near Dead Mans Peak in the Gallina Mountains.



### Cretaceous System

The Cretaceous system includes mainly marine rocks, about 4900 feet thick. They crop out in a wide band of alternating resistant sandstone ridges and nonresistant shale valleys, parallel to the western flank of the north trending San Pedro highland (Pl. 1A). To the north, the strike turns northeasterly forming the San Pedro Nose and a broad open syncline (Fig. 3).

The Cretaceous formations include the Dakota sandstone, Mancos shale, Point Lookout sandstone, Menefee formation, La Ventana tongue of the Cliff House formation, Lewis shale, and Ojo Alamo sandstone. All are of Upper Cretaceous age.

#### Dakota sandstone

The name Dakota has been applied to the lower, massive sandstone and conglomerate beds of the Upper Cretaceous series in the San Pedro Mountain area.

The Dakota section is divided into three units. The lower, about 31 feet thick, is a resistant, white to buff, argillaceous, fine to medium grained sandstone, conglomeratic at the base. The conglomerate is 8 feet thick, with clay nodules, quartz, and quartzite pebbles up to 3 inches in diameter. The middle unit contains 151 feet of nonresistant, dark gray, carbonaceous, blocky shale, interbedded with nonresistant, white, buff, and light gray, fine- and medium-grained sandstone. The upper unit is composed of light gray and buff, fine grained, friable, slightly argillaceous, massive-bedded sandstone, 17 feet thick.

the best and most important part of the book is the first chapter which is a history of the development of the theory of the electron. This chapter is very well written and clearly explains the various theories and experiments that have led to our present understanding of the electron. The author also discusses the applications of the theory to practical problems such as the design of electronic devices and the development of new materials. The book is well written and easy to understand, making it accessible to a wide range of readers. I would highly recommend this book to anyone interested in the field of physics.

Mancos shale

The Mancos shale is an olive-green, drab, and gray, sandy, calcareous, marine shale, approximately 2190 feet thick in the area studied. It can be subdivided into three mappable units: the Lower Mancos shale member, the Carlile shale member, and the Upper Mancos shale member. To the north and northwest Dane et al. (1948) subdivided the Mancos shale into the following: Graneros shale member, Greenhorn limestone member, Carlile shale member, Niobrara calcareous shale member, and Upper shale member. The only units of Dane's subdivision which are recognizable in this area are the Carlile shale and possibly the Greenhorn limestone which is mapped within the Lower Mancos member.

Lower Mancos shale member. Resting conformably on the Dakota sandstone, and consisting primarily of dark gray, thinly bedded, arenaceous, calcareous shale, is the Lower Mancos shale member. In the lower part of the member thin beds of limestone, 2 to 6 inches thick, alternate with dark gray, calcareous shale. Very fine-grained sandy zones intermingle with shale through the upper part of the member. Beds of septarian concretions are found in the upper one-fourth of the member.

Carlile shale member. Rocks referred to as the Carlile shale member are equivalent to only the upper part of the Carlile member, as defined by Dane et al. (1948). The Carlile shale member of this report was mapped primarily on its topographic expression; it forms low hogbacks in the middle of the Mancos shale. Dane included the zone of septarian concretions which were mapped as part of the Lower Mancos shale member in this report. This member consists of 150 feet of thin, platy,

o f i l d s o c i e t y

1940. Cet état de choses devint assez courant dans les années 1940 et 1950. Beaucoup de ces sites furent abandonnés au profit de sites plus modernes, mais certains sites sociaux ont été conservés. Par exemple, le site de la station de métro de la place du Canada à Montréal a été transformé en un espace culturel nommé « Le Plateau ». Ces sites sont généralement utilisés pour des événements culturels ou sportifs, mais peuvent également servir de lieux de rassemblement pour les communautés. Ces sites sont souvent considérés comme des éléments importants de l'identité culturelle d'une ville.

Il existe également de nombreux sites sociaux qui sont utilisés pour des activités commerciales ou industrielles. Par exemple, la station de métro de la place du Canada à Montréal est utilisée pour des événements culturels ou sportifs, mais peut également servir de lieu de rassemblement pour les communautés. Ces sites sont souvent considérés comme des éléments importants de l'identité culturelle d'une ville.

Certains sites sociaux sont utilisés pour des activités commerciales ou industrielles. Par exemple, la station de métro de la place du Canada à Montréal est utilisée pour des événements culturels ou sportifs, mais peut également servir de lieu de rassemblement pour les communautés. Ces sites sont souvent considérés comme des éléments importants de l'identité culturelle d'une ville.

calcareous, gray, very finely sandy siltstone and silty, very fine-grained, calcareous sandstone.

Upper Mancos member. The Upper Mancos member is predominantly composed of gray and drab, calcareous, sandy shale and thin stringers of limestone. The shale becomes increasingly sandy in the upper one-third of the member, and sandy zones increase in number and thickness.

#### Mesaverde group

On the eastern side of the San Juan Basin, the Mesaverde group was divided by Dane et al. (1948) into three members: the Hosta sandstone member, the Allison and Gibson member (undifferentiated), and the La Ventana sandstone member. Beaumont et al. (1956, p. 2149), suggested that the Mesaverde formation be raised to group status, equivalent to the Mesaverde group on the western side of the San Juan Basin, and renamed the members as follows: Point Lookout sandstone, Menefee formation, and La Ventana tongue of the Cliff House formation. Though the relations of the lithologic units on the eastern and western sides of the San Juan Basin have become generally known and accepted, it is evident that the dual systems of nomenclature now employed should be reconciled and standardized.

The Mesaverde group varies in thickness from 650 feet to over 700 feet in the area covered by this report.

Point Lookout sandstone. The Point Lookout sandstone gradationally overlies the Mancos shale and forms low hogbacks through most of the area of this report. It consists of 130 feet of sandstone, massive,

and 1970s but spread to Asia when Chinese cities began  
to industrialize. Industrialization brought with it  
increased urbanization, which has gone to become  
the norm in urban centers. Urban sprawl is  
characterized by the growth of the urban area, which may be  
described as follows:

Massive growth in the urban areas of China has led to the rise of cities like no  
other in the world. According to the UN, China's urban population grew from 100 million in 1950 to 600 million in 2000. This rapid growth has led to significant social and economic problems.  
The most significant of these is the lack of infrastructure, which has led to a severe shortage of housing. In addition, there is a lack of basic services such as water and electricity. This has led to a high level of poverty and social inequality. The government has responded to these challenges by investing heavily in infrastructure and social services. However, this has also led to environmental degradation and loss of natural resources. The government has taken steps to address these issues, but more needs to be done. In conclusion, China's urban sprawl is a complex issue that requires a multi-faceted approach to address its various challenges.

Industrialization has brought about significant changes in China's economy, society, and environment. While industrialization has brought with it many benefits, it has also

white, buff, and light gray, fine to coarse grained, slightly argillaceous, micaceous, and friable with some crossbedding. Alternating with the sandstone, especially in the lower part of the formation, are small amounts of dark gray, fissile, calcareous shale.

Menefee formation. In conformable contact with the Point Lookout sandstone are the continental deposits of the Menefee formation. It is composed of 480 feet of slope-forming, friable, light gray, silty sandstone, interbedded with carbonaceous shale and lignitic shale. Near the top of the formation are small lenticular beds of subbituminous coal.

La Ventana sandstone tongue. The La Ventana sandstone tongue conformably overlies the Menefee formation. It is composed of 40 to 70 feet of massive, cliff forming, light gray and buff, fine to medium grained, well sorted sandstone. Variation in thickness seems to be due to interfingering of the La Ventana sandstone tongue into the overlying Lewis shale.

#### Lewis shale

The Lewis shale is composed of 1850 feet of soft, dark gray and drab, sandy, marine shale, and calcareous, iron-stained, concretionary beds. About 600 feet from the lower contact there are several beds of very tight, hard, sandy, fossiliferous siltstone, 6 $\frac{1}{2}$  inches to 3 $\frac{1}{2}$  feet thick. The Lewis shale intertongues with the underlying La Ventana sandstone tongue.

labeled "prohibited" and "not to be used".  
The original caption reads: "A photograph of a  
typical laboratory specimen of the *Leucostethus* sp. *maculatus*,  
which was taken at the University of California, Berkeley,  
California, during the last month of June 1908. The specimen  
was obtained from the San Joaquin River near the town of  
, elaria

original state and now reduced to a skeleton. Macleay's Tomopterus  
is a small animal with a silvery body and a translucent skin.  
With many small, irregular, yellowish spots to cover its body in  
addition to the dorsal and ventral fins which are perfectly  
translucent. The body is covered with fine, hair-like processes,  
which are very numerous, especially on the head and in the  
tail. The body is elongated and slightly compressed laterally.  
, elaria

The following figures are a sketch of the Leucostethus sp. *maculatus*  
and the *Macleay's Tomopterus*. The figure of the *Tomopterus* is  
a drawing of the dorsal view of the animal, showing its  
shape and the arrangement of its various parts. The figure  
of the *Leucostethus* is a drawing of the ventral view of the animal,  
showing its shape and the arrangement of its various parts.  
, elaria

The *Leucostethus* is a small fish, about 10 cm. long, and has a slender body  
with a deep dorsal fin and a shallow anal fin. The scales are large, about  
100 in each lateral row, and the body is covered with numerous small  
irregular spots. The dorsal fin is deeply forked, and the anal fin is  
also deeply forked. The scales are large, about 100 in each lateral row,  
and the body is covered with numerous small irregular spots.  
, elaria

The Pictured Cliffs formation, an important oil- and gas-producing formation in the San Juan Basin pinches out southwest of Cuba in T. 20 N., R. 2 W. and is not present in this area. The overlying Fruitland and Kirtland formations become indistinguishable northeast of T. 19 N., R. 2 W. and were mapped by Dane (1946) as the Kirtland formation up to T. 21 N., R. 1 W. In the area of this report the Kirtland is indistinguishable from the Lewis shale, and could not be mapped separately. In the northwestern part of the French Mesa area, in T. 25 N., R. 1 E., the Pictured Cliffs, the Fruitland, and the Kirtland formations are again distinguishable and mappable units. The stratigraphic relations of these formations in the San Pedro Mountain area indicate that deposition took place in an embayment of the Cretaceous sea both from the southwest and from the north and northeast (Dane, 1946).

#### Ojo Alamo formation

The Ojo Alamo sandstone lies conformably on the Lewis shale (Dane, 1946). The best exposure of the Ojo Alamo sandstone is in the SW $\frac{1}{4}$  sec. 11, T. 23 N., R. 1 W. It forms a steeply dipping hogback, revealing 25 feet of conglomeratic, buff to light gray, medium to coarse grained sandstone, containing siliceous pebbles and much petrified wood.

The Ojo Alamo sandstone was observed to thicken and thin along the Nacimiento-San Pedro Mountain front (Packard, F. A., Humble Oil & Refining Company, oral communications). This variation in thickness is thought to be due to folds developing along the margin of the San

the same time, it is also important to note that the results of this study were obtained from a relatively small sample size (n = 10), which may limit the generalizability of the findings. Future research should aim to increase the sample size and explore the relationship between the variables in different contexts and with different populations. Additionally, the results of this study should be interpreted with caution, as they are based on a cross-sectional design and do not allow for causal inference. Future research should aim to use longitudinal designs to examine the relationships between the variables over time and to identify potential mediators or moderators that may influence the associations observed in this study.

Juan Basin previous to Ojo Alamo deposition. The Ojo Alamo formation thins noticeably to the north from the San Pedro Mountain area and is thought by Dane (1946) to be equivalent to a sandstone about 100 feet above the base of the Animas formation in the French Mesa area, sec. 17, T. 25 N., R. 1 E. The Animas formation is equivalent to the Ojo Alamo and Nacimiento formations of the San Pedro Mountain area (Dane, 1946).

#### Tertiary System

##### Nacimiento formation

The Nacimiento formation of Paleocene age is covered in practically all of the area of this report. The only exposures are in the south center of sec. 3<sup>4</sup>, T. 23 N., R. 1 W. According to Dane (1946) there is a notable hiatus between the Nacimiento formation and the underlying Cretaceous rocks on the south side of the San Juan Basin. The thickness of the Nacimiento formation is approximately 800 feet in the San Pedro Mountain area. It consists of banded, light and dark gray clay, with lesser amounts of light gray, fine-grained sandstone. West of Cuba, 12 miles south of this area, the Nacimiento formation contains a few discontinuous coal seams that range from 1 to 10 inches in thickness. The Nacimiento formation changes to a coarse grained, yellowish sandstone in T. 24 N., R. 1 E. and grades northward into the Animas formation in the French Mesa area.

##### San Jose formation

The San Jose formation, formerly called Wasatch, is of Eocene age and is the youngest formation mapped in the San Pedro Mountain area

the same day, he sent a telegram to the Governor of the province and  
the following morning he sent another to the Governor and the  
Colonial Secretary, on which he said (see *ibid.* p. 67) that  
he had received money and a memorandum from the said Sir Edward  
and that the former was to be sent to the Governor and the  
Colonial Secretary by the 1st of October. The Governor's reply  
was as follows:—  
(See *ibid.* p. 67.)

, (642)

1921. 9. 3. 67

Colonial Secretary

I have been advised that the Provincial Government had  
on the 29th of September sent a telegram to the Governor and  
Colonial Secretary, on which they said (see *ibid.* p. 67) that  
they had received money and a memorandum from the said Sir Edward  
and that the former was to be sent to the Governor and the  
Colonial Secretary by the 1st of October. The Governor's reply  
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(See *ibid.* p. 67.)

other than Quaternary deposits. It is believed to be preceded by a hiatus representing late Paleocene time. An erosional break was observed by Simpson (1948, p. 376) between the Nacimiento formation and the massive, commonly conglomeratic sandstone of the San Jose formation on Cuba Mesa, 12 miles to the south. There seems to be a slight angular unconformity, although the discordance in dip is so small, and true bedding planes are so hard to determine, that this is uncertain.

The thickness of the San Jose formation in the San Pedro Mountain area is more than 1000 feet, probably over 2000 feet (Dane, 1946). Exposures along the western side of the area consist of gray and tan conglomerate, sandstone, and siltstone, and purplish banded clay and shale.

The San Jose formation is divided into the basal conglomeratic Cuba Mesa sandstone (Koogle, 1955) and two "clay facies", the Almagre and Largo beds (Granger, 1914; Simpson, 1948). Dane (1946) stated that on the southeastern side of the San Juan Basin the age of the lower 500 feet of the San Jose formation is undetermined, implying that the Cuba Mesa sandstone may be of Paleocene age. Koogle (1955) found the Cuba Mesa sandstone to be vertical or overturned in the vicinity of La Jara along the Nacimiento-San Pedro Mountain front. The Almagre beds, of Eocene age (Simpson, 1948, p. 363), unconformably overlie the Cuba Mesa sandstone. Similar overstepping relationships have been found on the northwestern side of the San Juan Basin near Bridgetimber Mountain southwest of Durango, Colorado (Baltz, 1953, fig. 6).

the question of the development of the national character and tends  
to a more favorable result. This is due to the fact that the  
problem's consideration has delayed (1) the finalization of  
certain decisions to be made before the formation of the  
new government, and (2) the finalization of the  
negotiations on the basis of which the new government  
will be formed. The former will be completed by the  
end of the year, and the latter will be completed by the  
beginning of next year.

The second point is that the political situation has been  
stable since the last election, and the new government  
has been able to take steps to stabilize the economy.  
Exposure to foreign markets has increased, and  
foreign investment has increased, resulting in economic  
stability.

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stable since the last election, and the new government  
has been able to take steps to stabilize the economy.  
Exposure to foreign markets has increased, and  
foreign investment has increased, resulting in economic  
stability.

The San Jose formation was named by Simpson (1948, p. 280) from the San Jose valley in northwestern Sandoval County, T. 23 N., R. 1 W.

#### Quaternary System

##### Terrace gravels

Terrace gravels in the San Pedro Mountain area consists principally of well rounded granite gneiss cobbles with lesser amounts of limestone debris. A pediment surface was observed in sec. 11, T. 22 N., R. 1 W. (Fig. 5). It slopes westward from the San Pedro highland at about two degrees and is from 40 to 60 feet higher than the surrounding area. Smooth, well rounded cobbles of granite gneiss and limestone cover the surface of the pediment. Only a few remnants of the pediment are left in the San Pedro Mountain area, as general regional uplift of the San Juan Basin has resulted in degradation of the pediment surface.

##### Alluvium and colluvium

Stream deposits are found in most of the valleys, particularly those underlain by the Lewis, Mancos, and Chinle shales. The alluvium is mostly silt and sand, but particles range from clay to boulder sizes. The thickest alluvium deposits were noted in the northern part of the area where the Rio Gallina has cut through 30 feet of alluvial fill above Mancos shale.

Landslide material may be found locally at the bases of steep slopes along the Nacimiento-San Pedro fault. It is composed mainly of talus debris from the Precambrian granite gneiss.

the few good ones that have come along since we last met  
you. I am sending you a copy of the new book on "The Great War" which  
will be published in October.

Yours,

John W. Thompson

#### ELEVENTH SECTION

It is now about two weeks since I left for New York and had my interview with General Pershing. I have been writing to him quite frequently, and he has been very kind to me. He has written me twice since I left, and his latest letter is dated October 10th. In it he says: "I am sending you a copy of the new book on "The Great War" which will be published in October. I hope you will like it. It is a very good book, and I think you will find it very interesting." I am enclosing a copy of the book which I have just received from the publisher. It is a very good book, and I think you will find it very interesting. I am enclosing a copy of the book which I have just received from the publisher. It is a very good book, and I think you will find it very interesting.

Yours,

John W. Thompson

#### TWELFTH SECTION

I am sending you a copy of the new book on "The Great War" which will be published in October. I hope you will like it. It is a very good book, and I think you will find it very interesting. I am enclosing a copy of the book which I have just received from the publisher. It is a very good book, and I think you will find it very interesting.

## STRUCTURE

## Regional Setting

A relatively narrow belt of north-northwesterly trending folds extends for 150 miles along the eastern and northeastern flank of the San Juan Basin (Fig. 3). These structural features are part of the Southern Rocky Mountain province and lie between the Great Plains on the east and the Colorado Plateau on the west (Fenneman, 1931, p. 92). The southern half of this belt is characterized by sharp, asymmetrical, northerly aligned, plunging folds. The northern part is made up of sharp domical folds aligned in a north-northwesterly direction (Dane, 1948). This line of positive features is divided into three tectonic divisions by Kelley (1957, p. 45). From north to south these are:

(1) the Archuleta arch, (2) the French Mesa-Gallina uplift, and (3) the Nacimiento-San Pedro uplift.

The Archuleta arch forms a low structural divide between the San Juan Basin on the west and the narrow downwarp of the Chama embayment on the east (Fig. 3). It is about 75 miles long and 6 to 16 miles wide (Kelley, 1957, p. 47) and becomes part of the San Juan dome in southern Colorado. It is modified by numerous short folds and faults.

The French Mesa-Gallina division is relatively small, about 24 miles long and 4 to 6 miles wide. This tectonic belt is composed of three anticlines. The southernmost is the French Mesa anticline, an asymmetrical fold inclined to the west. The two northern structures, the Rio Gallina and Gallina anticlines are asymmetrical to the east, opposite to the French Mesa anticline.



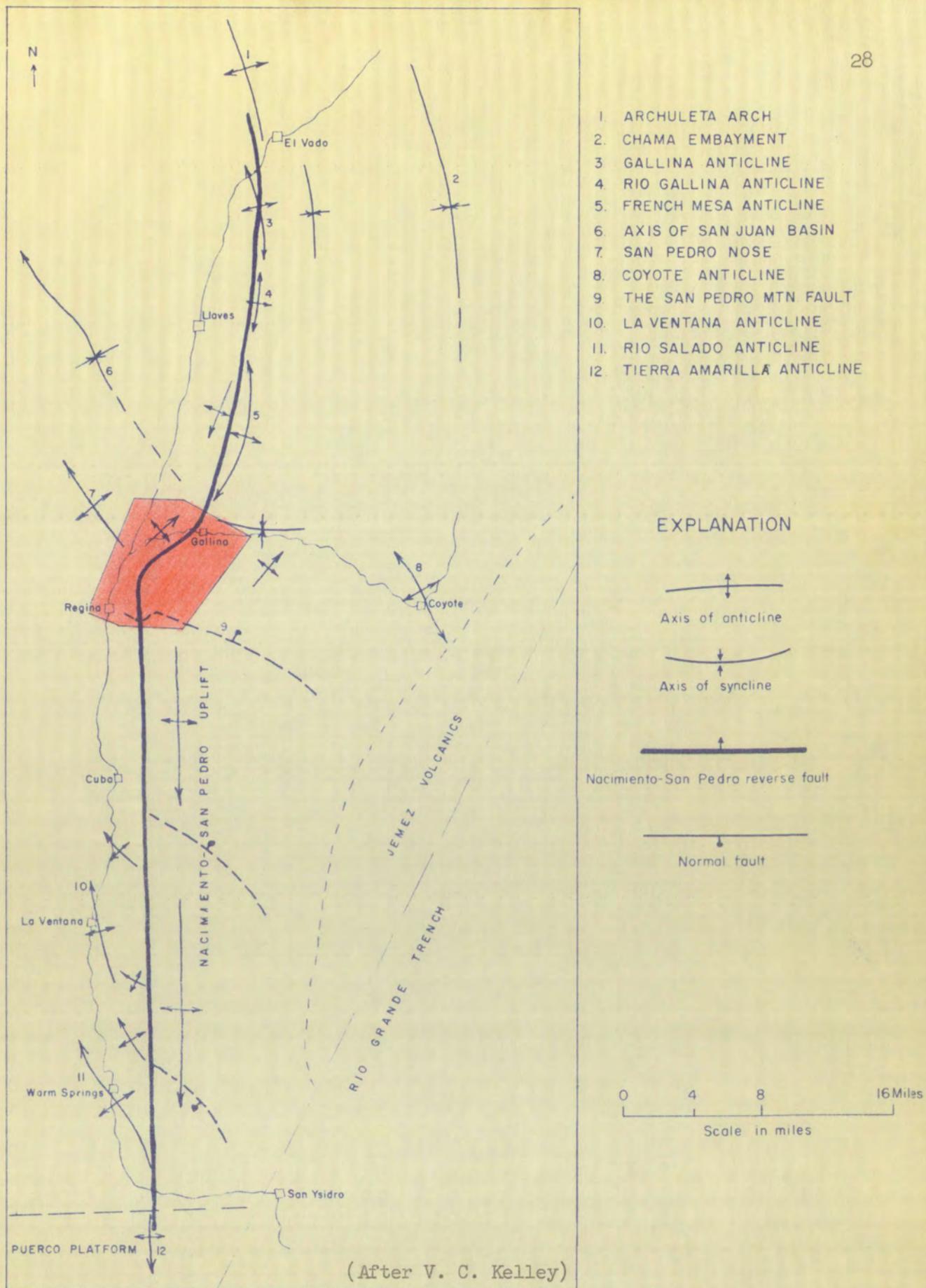


Figure.-3. Regional structures on the eastern flank of the San Juan Basin.  
Area of study in red.



East of the Archuleta and French Mesa-Gallina uplifts is the Chama embayment, an area of low dips, generally in the form of an elongated, north-northwesterly trending shallow trough.

The Nacimiento-San Pedro uplift, is about 50 miles long and 8 to 10 miles wide (Kelley, 1957, p. 47). It borders the Jemez structural bench and the Rio Grande depression to the east and the Puerco Platform to the south (Fig. 3). It is terminated on the west by the Nacimiento-San Pedro fault, which trends almost due north for the full length of the mountain range. The beds on the downthrown side of the fault front are for the most part vertical, and in a number of places they are overturned.

In its present configuration, the Nacimiento-San Pedro uplift takes the form of two large Precambrian blocks upthrust from the east against sediments of Mississippian to Cretaceous age to the west. East of Cuba, in Senorita Canyon, the northernmost block is faulted and rotated downward so that some of the sediments in the uplift are preserved and exposed at a fairly low level (Packard, F. A., Humble Oil & Refining Company, oral communications). This block, San Pedro Mountain, is terminated on the north by the San Pedro Mountain fault (Fig. 3). Precambrian rocks are faulted against Mississippian and Pennsylvanian rocks.

The area of this report is part of the Nacimiento-San Pedro uplift. It lies on the northwestern flank of this structure, between the San Pedro Mountain and the southern end of the French Mesa anticline.

the Gau Pegea Mawmpurh had been used to see if the  
island could be used as a base for a future colony.  
After the first year, the party returned to their  
native land, leaving behind them a small  
group of men who had settled in the village of  
Kukku. The party was received by the King of  
Kukku, who gave them a large amount of  
gold and silver, and they returned to their  
native land. The King of Kukku then sent a  
message to the King of Kukku, asking him to  
allow him to settle in his land. The King of  
Kukku agreed, and the party settled in the  
village of Kukku. They soon became  
rich and powerful, and their  
name spread throughout the land. They  
built many temples and palaces,  
and their influence grew. They  
became known as the "Golden  
People" and were highly  
respected by all. They  
lived in peace and prosperity,  
and their descendants still live  
in the village of Kukku to this day.

## Local Structure

### Folds

The area of this report consists of the northern and western flanks of a broad, asymmetrical fold inclined to the west, and broken along the western flank by a high angle reverse fault. The beds along the west flank dip steeply and are overturned in several places. In the northern part of the area, the steeply dipping beds make a broad turn to the northeast, forming the San Pedro nose (Pl. 2B). To the south, the transverse San Pedro Mountain fault forms the northern end of San Pedro Mountain (Fig. 3).

A small northeasterly plunging anticlinal nose is located in sec. 7, T. 23 N., R. 1 E. This structure is slightly asymmetrical to the southeast and the closure is probably less than 50 feet. It is thought to have formed as a result of northwesterly - southeasterly compressive stresses which resulted from the rupture of the Nacimiento-San Pedro high angle reverse fault (Fig. 5, Cross section A-A').

### Faults

Nacimiento-San Pedro fault. The Nacimiento-San Pedro fault zone, named by Renick (1931, p. 71), is approximately 70 miles long. It extends from the southern end of the Nacimiento Mountains, in the Tierra Amarilla anticline, northward through the French Mesa-Gallina uplifts (Fig. 3). Along the Nacimiento-San Pedro uplift, it is an eastward-dipping high-angle fault. Northward the throw of the fault decreases, and at

## Local flumipine

High  
The size of the lobes of the leaves of the different big weasels  
lains to a good, saliently lobed form of the nose, the dorsal  
stroke of the weasel that has a high ridge never fails. The pedes show  
the wear that the species may be during its early life. In  
the majority part of the sizes, the species displays pedes like a procyon  
part of the weasel itself or the size, the genus Pedo nose (Fig. 2). To the  
size, the characteristics of the Pedo material fail to show the features and  
sooty, the characters of the Pedo material fail to show the features and  
of the Pedo material (Fig. 3).

In many instances it is difficult to decide if the nose is sooty or  
of the Pedo material if it is difficult to decide if the nose is sooty or  
sec. L. T. 23 M. R. I. B. The extreme of sooty seems to be if the  
weasel has the character of the Pedo material - sooty - sooty  
though it is hard to decide if the nose is sooty or not. If the  
character of the nose is sooty then the nose is sooty or not. If the  
weasel has the character of the Pedo material - sooty - sooty  
though it is hard to decide if the nose is sooty or not. If the  
character of the nose is sooty then the nose is sooty or not.

McGinnieso-Gau Pedo tail (Fig. 2) Close section  
McGinnieso-Gau Pedo tail (Fig. 2) Close section  
A-A'

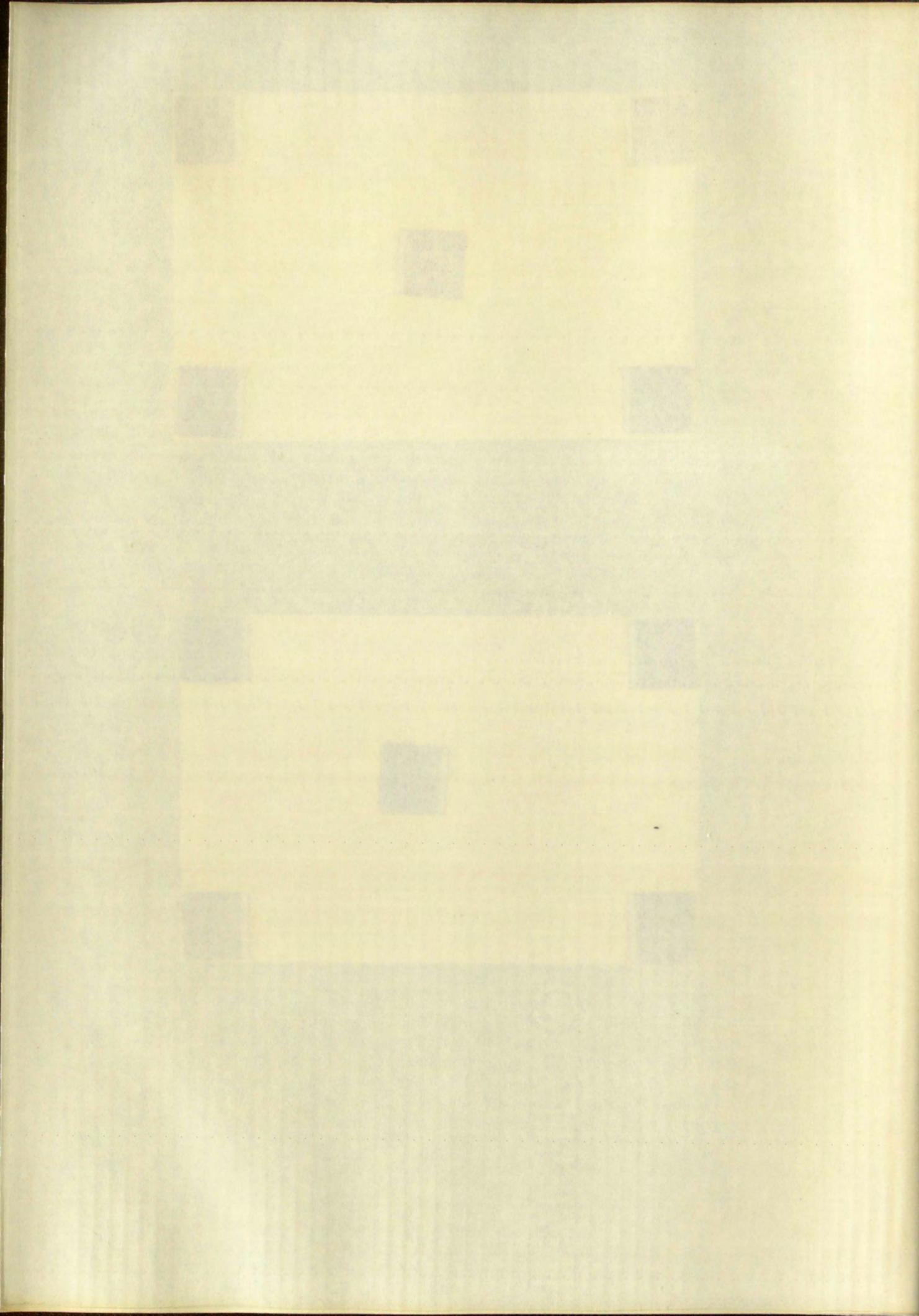
**Outline**  
McGinnieso-Gau Pedo tail. The McGinnieso-Gau Pedo tail, named  
by Reneker (1937, p. 41), is approximately 10 miles long. It extends from  
the southern end of the McGinnieso Mounds, in the Flint Hills  
surfaces, running generally the Kansas-Missouri border  
along the McGinnieso-Gau Pedo tail, it is an eastward-dipping  
nearly-surface tail. Following the form of the tail becomes, and at



A. View of the Todilto gypsum repeated by faulting. The fault is just back of the first white ridge. The Conglomerate member of the Morrison formation forms the hogback behind the massive gypsum beds.



B. Air view (toward the north) off the northern end of San Pedro Mountain. Foreground is the Poleo scarp. The white ridge (right center) is the Todilto gypsum, underlying the Morrison formation. The broad valley is cut in the Mancos shale. The hogback (center) is the Mesaverde group which outlines the west flank of the French Mesa anticline (upper right).



the northern end of the French Mesa anticline the angle of the fault appears to be nearly vertical (Fitter, 1958). In the Gallina anticline the fault plane reverses its dip from east to west. The relative displacement is also reversed, the upthrust being from the west (Lookingbill, 1953, p. 67).

A number of small anticlines and synclines developed along the southern part of this fault zone. Their axes tend to swing away from the fault and plunge northwest into the San Juan Basin (Fig. 3). Kelley (1955, p. 66) suggested the possibility that they were formed by right lateral movement along the southern part of the Nacimiento-San Pedro fault.

The Nacimiento-San Pedro fault runs north from the south central part of the San Pedro Mountain area. It turns northeastward in sec. 24, T. 23 N., R. 1 W. and continues in this direction for three miles, to just southwest of Gallina. At this point it turns to the north, cutting the French Mesa anticline (Fig. 5). The fault apparently follows zones of weak rocks. It follows the upper Chinle shale around the San Pedro nose (Fig. 5, Cross sections A-A' through D-D'). Southwest of Gallina, where the fault changes strike, it cuts across Jurassic beds and follows the upper shale beds of the Morrison formation to the southern end of the French Mesa anticline.

The angle of the fault is difficult to determine but in the SW $\frac{1}{4}$  sec. 36, T. 23 N., R. 1 W., the conglomerate member of the Morrison formation is within 600 feet of the upfaulted Precambrian block. The Morrison beds dip 84° W., suggesting that the fault plane at this point

and the other is the one who is more or less inclined to the position and  
wants to do his best to help him. (See Fig. 14) In this case, it would be  
evident that there is no responsibility of carrying out the final step  
because it is the English teacher's duty to be responsible for the final result  
. (See Fig. 15) (Organized)

So, if we have a teacher, he can't do anything without the help of the  
monks, while the students can do nothing without the teacher. So in this situation  
the teacher (C. 17) is the one who has the main responsibility and the  
students (C. 18) are the ones who have the secondary responsibility. (See Fig. 16)  
In this case, the teacher and the students have the same responsibility  
but the teacher has the main responsibility.

In this situation, the teacher is the one who has the main responsibility and  
the students are the ones who have the secondary responsibility and this is the  
way that the teacher will be able to help the students to learn better. (See Fig. 17)  
In this situation, the teacher is the one who has the main responsibility and the  
students are the ones who have the secondary responsibility and this is the  
way that the teacher will be able to help the students to learn better. (See Fig. 18)  
In this situation, the teacher is the one who has the main responsibility and the  
students are the ones who have the secondary responsibility and this is the  
way that the teacher will be able to help the students to learn better. (See Fig. 19)

In this situation, the teacher is the one who has the main responsibility and the  
students are the ones who have the secondary responsibility and this is the  
way that the teacher will be able to help the students to learn better. (See Fig. 20)

is almost vertical. The best exposure of the fault is in sec. 24, T. 23 N., R. 1 W. (Fig. 4). The dip of the fault at this point is approximately  $83^{\circ}$  SE., and the stratigraphic displacement is over 900 feet.

The displacement of the fault increases to the south. In sec. 18, T. 23 N., R. 1 E. the Chinle shale is upthrust against Jurassic beds, indicating a relatively small displacement at this point. Following the Nacimiento-San Pedro fault to the south, older beds are progressively upthrust, until in sec. 36, T. 23 N., R. 1 W., Precambrian lies directly against Jurassic. The stratigraphic throw at this point is approximately 5000 feet.

San Pedro Mountain fault. The northern end of San Pedro Mountain is truncated by the San Pedro Mountain fault; it is an oblique-slip fault and trends west, transverse to the axis of the mountain. In the SW $\frac{1}{4}$  sec. 1, T. 22 N., R. 1 W., the plane of the San Pedro Mountain fault dips  $63^{\circ}$  NE.

The San Pedro Mountain fault can be followed for approximately 12 miles, disappearing to the west under soil and alluvium cover about 2 miles west of San Pedro Mountain in sec. 34, T. 23 N., R. 1 W. The relationship of the San Pedro Mountain fault to the Nacimiento-San Pedro fault is problematical. In sec. 1, T. 22 N., R. 1 W., where these faults meet, dense vegetation and soil cover prevented mapping.

Minor faults. There are numerous small cross faults in the area. Most are of minor importance with displacements ranging from 10 to 80 feet.

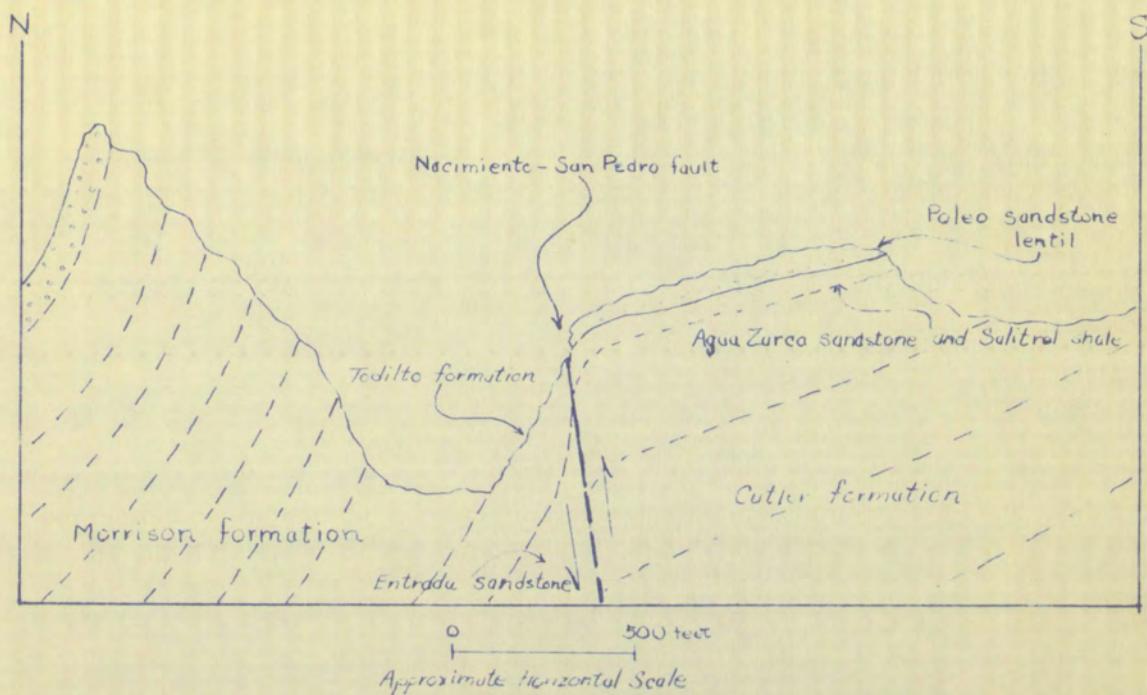
19.000 m² of land which has been converted into a residential development and includes a large area of open land to the west. (Fig. 12) The area is bounded by the railway line to the north and the River Taff to the south.

The scheme has been designed to reflect the environment and the local character of the area. It includes a mix of residential, retail and leisure facilities, and provides for the regeneration of the area. The scheme follows a traditional planning approach, with a focus on sustainable development and the protection of the local environment. It includes a mix of housing types, including apartments, terraced houses and semi-detached houses, as well as commercial units and retail spaces. The scheme also includes a public realm area, featuring parks and green spaces, and a pedestrianised zone.

The scheme is designed to be a mix of residential and commercial units and aims to provide a range of opportunities for people to live, work and play. It includes a mix of residential units, ranging from one-bedroom flats to three-bedroom houses, as well as commercial units, including offices, retail units and restaurants. The scheme also includes a mix of leisure facilities, including a swimming pool, a gym and a cinema.

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**Figure 4.** Cross sectional sketch showing relationship of beds along the Nacimiento-San Pedro fault in the NE $\frac{1}{4}$  sec. 24, T. 23 N., R. 1 W. Angle of the fault is approximately  $83^{\circ}$  SE. Stratigraphic throw at this point is over 900 feet.



These faults are mostly due to folding and adjustment of the weaker sedimentary rocks after the rupture of the Nacimiento-San Pedro fault and the San Pedro Mountain fault.

#### Structural Development

Stages of development of the San Pedro Mountain area are shown in Figure 6.

The first stage of development probably began in late Cretaceous time. Gradual downwarping of the San Juan Basin area, contemporaneous with uplift in the San Pedro Mountain area is postulated. The Ojo Alamo sandstone thickens in the synclines and thins on the anticlines located along the front of the Nacimiento-San Pedro Mountains, suggesting structural movement previous to deposition of the Ojo Alamo sandstone.

The second stage of development shows continued uplift of the San Pedro Mountain area and continued downwarping of the San Juan Basin resulting in an asymmetrical fold inclined to the west. Dane (1946) saw the Paleocene Nacimiento formation lying unconformably on the Ojo Alamo sandstone in the southern part of the basin. Simpson (1948) postulated uplift in late Paleocene, as shown by the erosion or nondeposition of these beds in the vicinity of Cuba.

The third stage of development represents a steep asymmetrical fold, possibly slightly overturned, with the San Pedro-Nacimiento fault breaking along the western flank, resulting in older beds sliding on the Chinle shale. The fault follows this relatively weak stratigraphic horizon through the area, cutting out the Chinle shale completely in places (Fig. 5, Cross sections A-A' through D-D').

These issues are  
of particular concern in the context of the  
development of a new generation of  
space-based instruments for monitoring  
and predicting climate change and  
the impact of human activities on the environment.

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2. *Science*, 2000, 289, 1231

3. *Science*, 2000, 289, 1232

4. *Science*, 2000, 289, 1233

5. *Science*, 2000, 289, 1234

6. *Science*, 2000, 289, 1235

7. *Science*, 2000, 289, 1236

8. *Science*, 2000, 289, 1237

9. *Science*, 2000, 289, 1238

10. *Science*, 2000, 289, 1239

11. *Science*, 2000, 289, 1231

12. *Science*, 2000, 289, 1232

13. *Science*, 2000, 289, 1233

14. *Science*, 2000, 289, 1235

15. *Science*, 2000, 289, 1236

16. *Science*, 2000, 289, 1237

17. *Science*, 2000, 289, 1238

18. *Science*, 2000, 289, 1239

W.

E.

36

Tertiary  
Cretaceous  
Jurassic  
Triassic  
Permian  
Penn. - Miss.  
Precambrian

## STAGE I

Tertiary  
Cretaceous  
Jurassic  
Triassic  
Permian  
Penn. - Miss.  
Precambrian

## STAGE II

Tertiary  
Cretaceous  
Jurassic  
Triassic  
Permian  
Penn. - Miss.  
Precambrian

## STAGE III

Nacimiento-San Pedro Fault

Figure 6. Possible stages in the development of San Pedro Mountain.

containing all the names of the persons mentioned in the pedigree.

The following table gives the names of the persons mentioned in the pedigree, and the date of birth and death of each person.

W. J. W.

Husband (1831, p. 5) of the wife (1831, p. 5).

Marriage took place at the church of St. Peter's, on the 20th of November, 1831.

The marriage took place at the church of St. Peter's, on the 20th of November, 1831.

The marriage took place at the church of St. Peter's, on the 20th of November, 1831.

Residence at New York.

Husband (1831) of the wife (1831, p. 5).

The marriage took place at the church of St. Peter's, on the 20th of November, 1831.

The marriage took place at the church of St. Peter's, on the 20th of November, 1831.

The marriage took place at the church of St. Peter's, on the 20th of November, 1831.

The marriage took place at the church of St. Peter's, on the 20th of November, 1831.

Precambrian particles are not angular and brecciated, but for the most part are relatively smooth. This suggests that they were transported off San Pedro Mountain by flash floods and or possibly as colluvial deposits. A cross section (Fig. 2) shows the writer's findings of alternating beds rather than the previously described low angle thrusting.

#### Conclusions

In the vicinity of La Jara the Cuba Mesa sandstone of the lower San Jose formation is found to be vertical to overturned and is unconformably overlain by the Almagre beds (Koogle, 1955). Dane (1946) stated that the age of the lower San Jose formation is unknown and may be of Paleocene age. Coupled with paleontological evidence, which has dated the Almagre beds as Eocene (Simpson, 1948, p. 363), it is thought that the major folding and faulting occurred in early Eocene or possibly entirely in late Paleocene.

All evidence obtained in the San Pedro Mountain area, that might give clues as to the direction of the forces applied in the deformation of the area, indicates more of a vertical component of force rather than previously described horizontal compressive forces.

The major faults of the area, the Nacimiento-San Pedro fault and the San Pedro Mountain fault, are high angle, indicating vertical movement in the development of the area. No low angle or thrust faulting was found or any other evidence that would indicate that the main tectonic stresses were not vertical. These findings concur with recent studies along the southern and southwestern part of the San Juan Basin.

NOMI DELL'ARTE DI PITTURA SONO CONSIDERATI COME UNA SAGGIAZIONE MISTERICHE  
DEI SOCI UMANI. VEDO TUTTO QUESTO CON LA MIA CINTURA. L'ARTE VISIVIALE È UNA FORMA  
DI VIVIMENTO E DI VIVERE. L'ARTE VISIVIALE È UNA FORMA DI VIVIMENTO E DI VIVERE.  
L'ARTE VISIVIALE È UNA FORMA DI VIVIMENTO E DI VIVERE. L'ARTE VISIVIALE È UNA FORMA  
DI VIVIMENTO E DI VIVERE. L'ARTE VISIVIALE È UNA FORMA DI VIVIMENTO E DI VIVERE.

### CHI È CHI?

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Duschatko (1953) and Gilkey (1953), from studies of fracture patterns in the Lucero and Zuni uplifts have found the tectonic forces in these areas to be primarily vertical.

the same amount of private and (CPI) year long (CPI) consumption  
stocks. In addition, it includes information about individual and firm demand and in  
addition to the above mentioned information, it includes information about

### GEOLOGIC HISTORY

Data on the geologic history of the Precambrian are inadequate for interpretations other than generalizations. The San Pedro-Nacimiento Mountain area was probably part of a great geosyncline during a portion of Precambrian time (Beaumont and Read, 1950, p. 49). This regional sag became the resting place for thousands of feet of sediment which flooded in from the bordering highlands and were later compacted and folded. Large volumes of granitic material were later emplaced (Parker, 1957, p. 73). When crustal stability had finally been attained, the Precambrian region was levelled to a peneplain above which rose occasional monadnocks (Northrop, 1950, p. 40).

A sedimentary hiatus from Precambrian to mid-Mississippian time makes reconstruction of early Paleozoic history inconclusive. It is possible that strata belonging to the Cambrian, Ordovician, Silurian, and Devonian systems may have been deposited; but if so, they were stripped prior to deposition of the Mississippian rocks. The general movement of the area in the Paleozoic was positive; this ancestral positive feature is called the Penasco highland or arch (Parker, 1957, p. 73).

In middle Mississippian time seas from the south, and possibly from the north, encroached onto the Penasco highland. During this inundation the Arroyo Penasco sediments, and possibly other Mississippian rocks, were deposited. Late Mississippian and early Pennsylvanian movement resulted in uplift of the area and erosion of Mississippian rocks. As a result, Arroyo Penasco sediments are preserved only in synclines and in down-faulted blocks (Fitzsimmons, et al., 1956).

## INTRODUCTION

The present article is an attempt to examine some of the factors which go into the decision-making process of the individual and the institution, and to explore the implications of such a process for the development of the economy. It is also intended to examine the relationship between the individual's decision-making process and the economic system. The article is divided into three main sections: I. The individual's decision-making process; II. The institution's decision-making process; III. The relationship between the individual's decision-making process and the economic system.

In section I, we will look at the individual's decision-making process. We will examine the individual's decision-making process in terms of the individual's own goals and values, and the individual's decision-making process in terms of the individual's own beliefs and attitudes. We will also look at the individual's decision-making process in terms of the individual's own social context, and the individual's decision-making process in terms of the individual's own cultural context. In section II, we will look at the institution's decision-making process. We will examine the institution's decision-making process in terms of the institution's own goals and values, and the institution's decision-making process in terms of the institution's own beliefs and attitudes. We will also look at the institution's decision-making process in terms of the institution's own social context, and the institution's decision-making process in terms of the institution's own cultural context. In section III, we will look at the relationship between the individual's decision-making process and the economic system. We will examine the relationship between the individual's decision-making process and the economic system in terms of the individual's own goals and values, and the individual's decision-making process in terms of the individual's own beliefs and attitudes. We will also look at the relationship between the individual's decision-making process and the economic system in terms of the individual's own social context, and the individual's decision-making process in terms of the individual's own cultural context. The article concludes with some final thoughts on the relationship between the individual's decision-making process and the economic system.

In early Pennsylvanian time the seas again encroached upon the positive mass. They did not fully inundate the area, for it was not until Permian time that the Precambrian ridge was completely covered. Permian beds are in direct contact with the Precambrian rocks on the west flank of San Pedro Mountain (Northrop and Wood, 1946).

Oscillations of the Pennsylvanian and early Permian shorelines are recorded in the alternating layers of limestone and clastic sediments. Tectonic activity is indicated by an angular unconformity in the lower part of the Permian beds (Fig. 2). A flood of clastic sediments, probably derived from the active Ancestral Rocky Mountains of Colorado, is represented by the terrestrial red beds of the Cutler formation. Continental conditions were firmly established during Permian time.

Local uplifts in Triassic time resulted in the deposition of Upper Triassic sediments unconformably upon the Cutler formation. The northward thinning Agua Zarca sandstone and the southward thinning Poleo sandstone lentil apparently indicate their derivation from separate uplifts. The Chinle shale is the product of fluviatile and floodplain conditions which existed on a vast plain, dipping gently westward toward a Triassic sea in Nevada (McKee, 1951, p. 91 and Parker, 1957, p. 74).

Regional upwarping in early Jurassic time resulted in erosion as evidenced by channeling into the underlying Chinle shale (Darton, 1928, p. 167). This was followed in the Upper Jurassic by desert conditions during which the eolian Entrada sandstone blanketed the region. After deposition of the Entrada sandstone, lacustrine conditions possibly

and others. As follows: "There are two main ways in which you can raise capital: one is to sell your business to another company or to a private individual. The other is to go public and issue shares. Both have their advantages and disadvantages. Selling your business to another company can be a quick way to exit, but it may not always be the best option. If you're looking for a quick exit, then selling to another company might be the best choice. However, if you want to keep your business and continue to run it, then going public might be a better option. There are many factors to consider when deciding whether to sell or go public, such as the value of your business, the market conditions, and your personal goals. It's important to consult with a financial advisor before making a decision. In general, selling your business to another company is a faster process than going public, but it may not always be the best option. Going public can take longer, but it can provide you with more money and flexibility. Ultimately, the best choice depends on your individual circumstances and goals. It's important to carefully weigh the pros and cons of each option before making a decision." This is just one example of how AI can help you make informed decisions about your business.

existed, in which the Todilto limestone and gypsum were deposited (Kirkland, 1958). The Todilto gypsum was subjected to erosion for a short period, as indicated by its absence in the French Mesa area (Fitter, 1958) and the Gallina Mountains area (Lookingbill, 1953, p. 34), then covered by the Morrison formation which was deposited in a fluvial and lacustrine environment (Swift, 1956, p. 36). The source of the Morrison sediments is believed to have been south and east of the present San Juan Basin (Silver, 1948, p. 68-81) and partially from the Ancestral Rockies of Colorado (Swift, op. cit., p. 37).

During early Cretaceous time the San Pedro-Nacimiento Mountain area underwent erosion. Early Cretaceous sediments are possibly represented by the discontinuous conglomerate and shale at the top of the Morrison formation. Late Cretaceous time began with a period of fluctuating shorelines and swamp conditions represented by the Dakota formation. Subsidence resulted in deposition of the marine Mancos shale, in which periodic oscillations occurred with deposition of the Gallup sands to the southwest, before the sea finally withdrew in Point Lookout time. A period of continental deposition, represented by the Menefee formation, existed prior to the last transgression of the Upper Cretaceous sea. This transgression is recorded by the La Ventana tongue and the Lewis shale. As the sea withdrew the regressive Pictured Cliffs and the Fruitland formations were deposited in its wake. A northeast trending embayment in the San Pedro Mountain area resulted in continued deposition of Lewis shale and nondeposition of the Pictured Cliffs and Fruitland formations. Uplift to the southeast supplied the sediments for the Ojo Alamo conglomeratic sandstone and possibly resulted in the withdrawal of the Cretaceous sea.

197. Dörfel erneuerte die Anordnung der Tafeln und schuf einen bedeckten Raum für den Betrieb der Feuerstelle. Er verfügte, dass die Tafeln aus Holz sein sollten (BGB, § 641 Abs. 1).  
Zwei Jahre später, als ein unbekannter Raubkunsthandel in Berlin drohte, erließ das Reichsgericht (Reichsgerichtsurteil vom 15. Februar 1901, Rje 1901, 227) eine Urteilsbeschreibung, die die Tafeln als „diejenigen Tafeln, welche die Feuerstelle bedecken und auf welche man durch die Türen und Fenster des Raumes zugreifen kann“ bezeichnete. Ein weiteres Urteil bestätigte diese Auslegung (Reichsgerichtsurteil vom 11. Februar 1902, Rje 1902, 165).  
Die Tafeln waren im Inneren des Raumes auf einer Konsolle montiert und dienten zur Abstützung der Türen und Fenster. Sie waren aus Holz gefertigt und besaßen eine abnehmbare Platte, die die Türen und Fenster bedeckte.  
Im Jahr 1904 kam es zu einem Brand in einem Wohnhaus in Berlin, bei dem ein Mann ums Leben kam. Der Mann war ein ehemaliger Soldat und hatte sich nach dem Krieg als Schuhmacher niedergelassen. Er lebte in einem kleinen Raum mit einer einzigen Tafel, die die Fenster und Türen bedeckte. Er starb, als er versuchte, durch eine geöffnete Fensteröffnung zu entkommen. Die Tafel war so schwer, dass sie ihn festhielt und er darunter ersticken musste.  
Dieses Ereignis führte zu einer Änderung in den Gesetzen. Es wurde verboten, Türen und Fenster mit Tafeln zu bedecken, die schwer genug waren, um Menschen zu töten. Das Gesetz wurde 1906 erlassen und ist bis heute gültig.  
Heute sind Türen und Fenster in Wohnhäusern meistens mit leichteren Materialien wie Metall oder Kunststoff verkleidet, um sicherzustellen, dass sie nicht schwer genug sind, um Menschen zu töten. Dennoch kann es immer noch passieren, dass Türen und Fenster durch Brand oder andere Katastrophen beschädigt werden und dann schwer werden. In solchen Fällen ist es wichtig, dass man sich sicherheitshalber an einen Notdienst wenden kann.

As uplift continued, continental and fluviaatile sediments of the Nacimiento formation were deposited on a broad south-sloping plain. Later uplift to the southeast resulted in erosion or nondeposition of the late Paleocene beds. This uplift supplied the sediments for the basal conglomerates of the San Jose formation (Simpson, 1948, p. 377), and may have been the initial stage of folding of the San Pedro-Nacimiento Mountains. The major folding and faulting of the Nacimiento-San Pedro Mountains occurred in late Paleocene or early Eocene time, as evidenced by an angular unconformity occurring in the lower San Jose formation (Koogle, 1955).

Broad pediment surfaces formed along the west flank of the San Pedro Mountain. Regional upwarp of the San Juan Basin caused Tertiary deposition to cease and recent erosion has resulted in removal of most of the later Tertiary beds and Quaternary gravels.

the central idea of science with the non-ideological foundations of life in a  
way that does not reduce the political struggle to one of defining and fighting  
over particular ideas, but rather demands that the struggle itself be fought in a  
way that respects the principles of equality and freedom that are at the heart of  
democracy. This means that the struggle must be fought in a way that is not  
merely about winning or losing, but also about how people live (i.e., the "process")  
and what kind of society they want to live in. In this sense, the struggle is not  
about the right to be heard, but about the right to be heard in a way that is  
meaningful and respectful. This requires that people work together and  
communicate in a way that is based on mutual respect and understanding.  
It also requires that people work together to find ways to change  
the world in a way that is based on the principles of equality and freedom, and  
that is not just about winning or losing, but also about how people live and  
what kind of society they want to live in.

## ECONOMIC GEOLOGY

## Oil and Gas

Discovery of gas in the Magnolia No. 1 - Henry Schmitz well (sec. 24, T. 24 N., R. 1 W.) in 1954 has stimulated interest along the eastern flank of the San Juan Basin. This well, about one mile northwest of the San Pedro Mountain area, produces gas from the lower part of the Paleocene Nacimiento formation. The steeply dipping beds of the Nacimiento formation crop out one mile west of the well, suggesting a porosity trap in the sands. The Lindrith and Gavilan fields, 12 miles northwest of the area of this report, produce gas and oil from the Pictured Cliffs formation and the Dakota sandstone of Upper Cretaceous age. No gas or oil wells have been drilled in the area covered by this report.

Some of the most important producing horizons of the San Juan Basin are present in the San Pedro Mountain area. They are the Mesaverde group, the Mancos shale, and the Dakota sandstone. All of these strata dip steeply and are exposed along the western flank of the San Pedro-Nacimiento Mountain front. Preservation of petroleum that may formerly have been present in these rocks is unlikely.

Possibly oil and gas may have been trapped along the west side of the San Pedro-Nacimiento fault in the Mississippian and Pennsylvanian rocks. The Mississippian rocks, once probably a good source rock, as indicated by their petroliferous odor, were subjected to subaerial erosion and removed for the most part prior to deposition of the Pennsylvanian strata. The petroleum, if once present, would probably have escaped.

## CHAPTER EIGHT

Volume 119

tion, a member of the Board and the head of the Diversey  
Manufacturing Company, had been called in (see Vol. 118, p. 47, 48, 50, 52, 53)  
and sufficient time given him to make his report. The Board therefore  
decided to accept his report and to grant the relief requested.  
The Board also decided to have the stockholders of the Diversey  
Manufacturing Company present at the meeting of shareholders  
which was to be held on November 20, 1909, to consider the  
recommendations of the Board and to act thereon.  
The Board also decided to have the stockholders of the Diversey  
Manufacturing Company meet at the same place at 10 a.m. on November 20,  
1909, to consider the recommendations of the Board and to act  
thereon.  
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1909, to consider the recommendations of the Board and to act  
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Manufacturing Company meet at the same place at 10 a.m. on November 20,  
1909, to consider the recommendations of the Board and to act  
thereon.

These recommendations were approved by the stockholders.

The highly fossiliferous limestone of the Pennsylvanian system is considered favorable for oil and gas production. A well drilled by the Skelly Oil Company in sec. 36, T. 24 N., R. 1 E., penetrated these rocks on the French Mesa anticline to the north and had shows of oil and gas in two zones.

Dakota production might be expected from the small northeasterly plunging anticlinal nose in sec. 7, T. 23 N., R. 1 E. if this fold developed before the rupture of the Nacimiento-San Pedro fault. However, if this structure was caused by compressive forces resulting from the Nacimiento-San Pedro reverse fault (Fig. 5, Cross section A-A'), then it is later than the initial uplift of the San Pedro Mountain. In this case, any petroleum would have migrated up dip and escaped before the reverse faulting could have created a satisfactory trap.

Mr. Raymond Reed of Regina drilled a 100 foot water well in the west center sec. 23, T. 23 N., R. 1 W. The well was drilled in steeply dipping beds ( $70^{\circ}$  W.) of the Lewis shale 500 feet above the lower contact of the formation. No water was encountered, but oil was bailed from the hole. The lower part of the Lewis shale includes beds of very tight sandy siltstone 2 to 3 feet thick. It is possible that these beds may become productive laterally, where development of a sand facies might increase porosity and permeability. However in the immediate area, the tightness of these sandy siltstone beds makes production from them unlikely.

#### Coal

Small mining operations north of San Pedro Mountain, in the French Mesa area, and south, in the La Ventana area, produce coal from the

12-29-2014 - 12:26:20 PM - Start of Emissary's Report

1. First of all, I would like to say that I am honoured to be asked to give a report on the situation in Syria. The circumstances of my appointment were very difficult and I must thank the government of Syria for their trust in me. I have been told by the government that they want me to provide a detailed account of the situation in Syria, including the actions of all parties involved, the impact of the conflict on civilians, and the future prospects for peace in the country. I will do my best to provide a comprehensive and accurate report.

2. The situation in Syria has been a source of concern for many countries around the world. The conflict began in March 2011, after the government of Syria cracked down on anti-government protests. The protests were initially peaceful, demanding political reforms and an end to corruption. However, the government's brutal response to the protests led to widespread violence and the killing of thousands of civilians. This sparked a civil war, with both sides committing atrocities. The conflict has also led to the displacement of millions of people, both internally and externally.

3. In my report, I will focus on the following areas:

- The history of the conflict and its origins.
- The current state of play in the conflict.
- The impact of the conflict on civilians and the environment.
- The role of international actors in the conflict.
- The prospects for peace and stability in the future.

I hope that my report will provide a valuable contribution to the ongoing debate on the situation in Syria.

12-29-2014 - 12:26:20 PM - End of Emissary's Report

12-29-2014 - 12:26:20 PM - End of Emissary's Report

Menefee formation. The higher grade coal appears in thin, discontinuous lenses in the upper third of the formation. In the San Pedro Mountain area this zone contains low grade, subbituminous coal and dark brown, carbonaceous shale. A small operation in the NW $\frac{1}{4}$  sec. 23, T. 23 N., R. 1 W., was abandoned after producing insignificant amounts of coal. Since the coal deposits of this area are characteristically of low grade and insignificant quantity, mining possibilities are considered poor.

#### Gypsum

Large quantities of gypsum are exposed in the SW $\frac{1}{4}$  sec. 24, T. 23 N., R. 1 W. (Pl. 2A), and north and southwest of Gallina (Pl. 1B, 2B). The gypsum is in the upper member of the Todilto formation, of late Jurassic age. The surface of the exposures is weathered to a soft, earthy soil called gypsite. Beneath the gypsite cover the gypsum is relatively pure, and is probably of commercial quality. However, with large quantities of gypsum occurring throughout the State, it is doubtful that the relatively inaccessible deposits in the San Pedro Mountain area have commercial value.

#### Uranium and Copper

Uranium has been found in the coals of the Mesaverde group, the Dakota sandstone, the Morrison, Chinle, and Cutler formations, but no major discoveries have yet been made. Numerous claims have been staked throughout the area but very little assessment work has been done. One small mine was started in sec. 19, T. 23 N., R. 1 E. by the Slatex Company of Texas, but according to Mr. Jim Powell of Warm Springs only a few truck loads were hauled from the area.



No major copper discoveries have been made in the area of this report, but considerable prospecting has been done in the Permian "red beds". In the course of copper exploration a number of roads were bulldozed through the dense vegetation and rugged topography along the outcrop of the Cutler formation. Most of the mineralization is in small veinlets of azurite and malachite in the conglomeratic sandstone in the lower Permian beds. The mineralization is in discontinuous lenses, which makes mining of the low grade ore difficult or impossible.

5-12 "Oscar" says "I think I can't wait until we get to see all of  
the original art on the newsprint because it's so much better than what you see on  
TV. I think it's cool to have a section like ours in a "big set"  
because you can see the details better and certain possibilities even  
more clearly. To make a comparison, it's kind of like comparing the photo  
of a painting to the painting itself. It's hard to appreciate all of the  
details and the originality in the original painting and in the copies  
you might see on the newsprint because there are so many

. disagreements

APPENDIX

2010-0876

## APPENDIX

## Descriptive Stratigraphic Sections

Mesaverde group, Section No. 1  
 SW $\frac{1}{4}$  Sec. 14, T. 23 N., R. 1 W.

<u>No.</u>	<u>Description</u>	<u>Thickness (feet)</u>
(Lewis shale above)		
11.	Top of Mesaverde group La Ventana tongue SANDSTONE: light gray and buff, fine to medium grained, subrounded, well sorted, thin to massive bedded; upper 10 feet interbedded with dark gray shale.....	40
10.	Menee formation SANDSTONE: light gray, fine to medium grained, subangular to subrounded, friable, slightly calcareous, slope former.....	50
9.	SHALE: dark gray, brown, and black, fairly soft, carbonaceous, contains some coal.....	11
8.	SANDSTONE: light gray and buff, fine grained, friable, silty; some thin gray shale beds.....	235
7.	SHALE: dark gray to brown, soft, flaky.....	15
6.	SANDSTONE: white and light gray, fine to medium grained, well sorted, friable, massive bedded; a few resistant beds.....	55
5.	SHALE: dark gray and brown, carbonaceous, flaky, silty and sandy.....	25
4.	SANDSTONE: light gray to yellowish-tan fine to medium grained, subrounded, iron stained, massive bedded, ridge former.....	25
3.	SANDSTONE AND SHALE: sequence of alternating sandstone and shale beds. SANDSTONE: light gray to buff, fine to medium grained, subrounded, massive bedded; SHALE: dark gray, carbonaceous, contains a few thin coal seams.....	64

MATERIALS AND METHODS

1. *In vitro* test system: Calf intestinal crypt cells were obtained from the manufacturer (Collaborative Research Inc., Waltham, MA) at passage 2.

(cont.)	inhibition
—	0.001 µM KU-0063751
—	0.001 µM BIRB-796
—	0.001 µM RGD108
—	0.001 µM HIF101
—	0.001 µM NVP-BGJ296
—	0.001 µM SCH-900570
—	0.001 µM DMSO
—	0.001 µM RGD108 + 0.001 µM SCH-900570
—	0.001 µM HIF101 + 0.001 µM SCH-900570
—	0.001 µM BIRB-796 + 0.001 µM SCH-900570
—	0.001 µM KU-0063751 + 0.001 µM SCH-900570
—	0.001 µM RGD108 + 0.001 µM KU-0063751
—	0.001 µM HIF101 + 0.001 µM KU-0063751
—	0.001 µM BIRB-796 + 0.001 µM KU-0063751
—	0.001 µM KU-0063751 + 0.001 µM BIRB-796
—	0.001 µM RGD108 + 0.001 µM BIRB-796
—	0.001 µM HIF101 + 0.001 µM BIRB-796
—	0.001 µM KU-0063751 + 0.001 µM HIF101
—	0.001 µM RGD108 + 0.001 µM HIF101
—	0.001 µM BIRB-796 + 0.001 µM HIF101
—	0.001 µM KU-0063751 + 0.001 µM BIRB-796 + 0.001 µM HIF101

<u>No.</u>	<u>Description</u>	<u>Thickness (feet)</u>
2.	Point Lookout Sandstone SANDSTONE: light gray and buff, fine grained, subangular to subrounded massive bedded, argillaceous, micaceous, friable; small amount of shale alternating with sandstone in lower part.....	90
1.	SANDSTONE AND SHALE: alternating sequence, sandstone dominating. SANDSTONE: light gray, fine to medium grained, subrounded, speckled appearance, slightly micaceous, calcareous; SHALE: dark gray and drab, flaky, calcareous.....	40
	TOTAL:	650

Dakota sandstone, Section No. 2  
NE $\frac{1}{4}$  Sec. 35, T. 23 N., R. 1 W.

	(Mancos shale above)	
8.	Top of Dakota sandstone SANDSTONE: light gray and light orange, fine grained, well sorted, friable, massive bedded, slightly argillaceous, iron stained, cliff forming, good porosity.....	17
7.	PARTLY COVERED: sandstone: light gray, fine grained, soft, slope forming; with some gray shale near base.....	40
6.	SHALE: gray, blocky, sandy and silty, slope forming.....	27
5.	SANDSTONE: light orange, medium to coarse grained, subrounded, iron stained, friable, good porosity.....	3
4.	SHALE: dark gray, silty, blocky.....	2 $\frac{1}{2}$
3.	SANDSTONE: light brown, brown, and white, fine to medium grained, subangular to subrounded, 6- to 12- inch beds, argillaceous...	11 $\frac{1}{2}$
2.	SANDSTONE: white, fine grained, soft, slope forming, partly covered.....	67

1	..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i> ..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i> ..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i>
2	..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i> ..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i> ..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i>
3	..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i> ..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i> ..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i>
4	..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i> ..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i> ..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i>
5	..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i> ..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i> ..... <i>luteo-picea</i> Griseb. : <i>LEPTODIUM</i>

No.	Description	Thickness (feet)
1.	SANDSTONE AND CONGLOMERATE: alternating sequence of sandstone and conglomerate; SANDSTONE: white and light orange, fine to medium grained, subrounded to subangular, argillaceous, crossbedded; CONGLOMERATE: white, granule to cobble size particles, quartz, quartzite, clay nodules, ridge forming.....	31
	TOTAL:	199

Morrison formation, Section No. 3  
NE $\frac{1}{4}$  Sec. 24, T. 23 N., R. 1 W.

	(Dakota sandstone above) Top of Morrison formation Conglomerate member	
15.	SANDSTONE: light gray and light orange, medium grained, subrounded, calcareous, argillaceous, massive bedded, conglomeratic, widely scattered pebbles, cliff forming.....	23
14.	SHALE: green, soft, fissile, slope forming, partly covered.....	37
13.	SANDSTONE AND CONGLOMERATE: alternating sequence; SANDSTONE: light brown to buff, medium grained, subrounded to rounded, calcareous, slightly argillaceous, massive bedded; CONGLOMERATE: buff to light brown, pebbles are from granule size to 2 inches in diameter, quartz, quartzite, chert, limestone, claystone nodules, beds are from 3 inches to 2 feet thick, cliff forming.....	62
12.	Green claystone member COVERED: slope forming, probably shale.....	40
11.	SHALE: green, soft, fissile, slope forming, partly covered.....	105
10.	SANDSTONE: light brown to buff, fine to medium grained, poorly sorted, argillaceous, 6- to 18- inch beds, crossbedded, ledge former.....	17
9.	SHALE: green, soft, interbedded with 2 to 6 inch siltstone and fine-grained sandstone lenses, red-brown concretions, slope forming.....	86

..... un gran número de artículos que tratan sobre la literatura hispanoamericana, tanto en su desarrollo como en sus manifestaciones particulares, en la poesía, en el teatro, en la novela, en las artes plásticas, en el cine, en la filosofía, en la ciencia, etc., etc. La publicación de los artículos se extiende desde 1933 hasta la actualidad.

..... con el resultado de la publicación de más de 1000 artículos y más de 1000 páginas.

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<u>No.</u>	<u>Description</u>	<u>Thickness (feet)</u>
8.	Buff sandstone member SANDSTONE: light olive-tan, fine grained, subangular to subrounded, fair sorting, argillaceous, massive bedded, friable, soft, slope forming, weathers to rounded forms.....	18
7.	SANDSTONE: light greenish-gray, fine to medium grained, subrounded to wellrounded, calcareous, slightly argillaceous, bedding 2 feet thick, sorting fair, glauconitic, weathers to dark brown.....	4
6.	SILTSTONE: pale green, sandy, calcareous, thin bedded, lenses with short lateral extent.....	32
5.	CLAYSTONE: cocoa-brown, silty and sandy, soft, slope forming.....	4
4.	SHALE: green, flaky, silty, numerous concretions, red-brown clinker rock.....	38
3.	SILTSTONE: white to light gray, sandy, calcareous, contains concretions.....	29
2.	SANDSTONE: white and light gray, very fine grained, silty, fair sorting, slightly argillaceous, alternates with a few 6- to 12-inch beds of cocoa-brown claystone, ledge forming, weathers to a bad-land type topography.....	150
1.	COVERED: from unit no. 2 to top of Todilto gypsum.....	145
	TOTAL:	<u>790</u>

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and the number of the individuals involved. It is also important  
to know the location of the plant, the type of soil and the amount of  
water available.

The cost of growing a garden can vary from \$100 to \$1,000 depending  
on the size of the garden and the type of plants used. A small garden  
can cost around \$100-\$200.

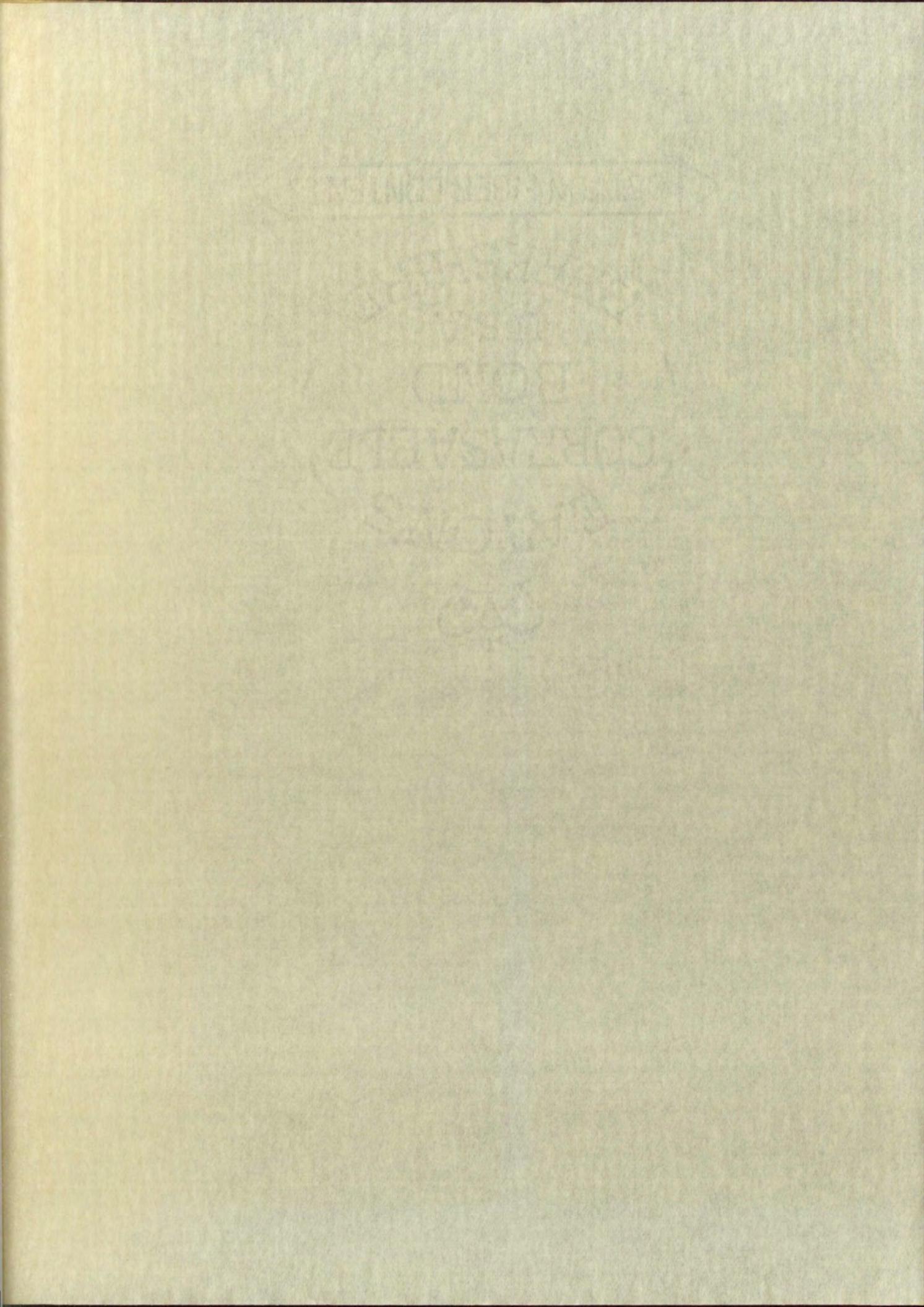
The cost of growing a garden can also depend on the type of seeds  
used. Some seeds are more expensive than others, and some require  
more care and attention than others.

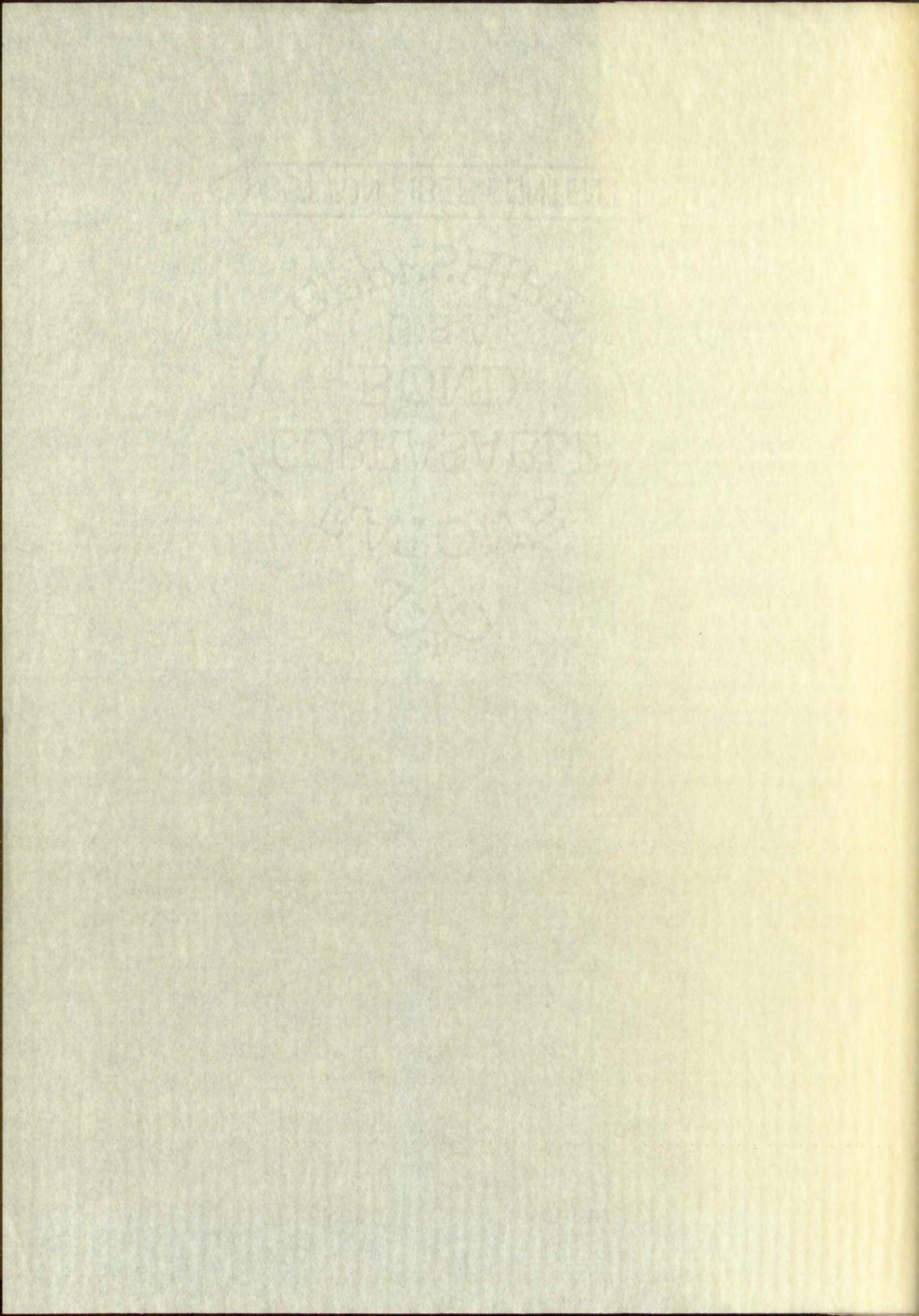
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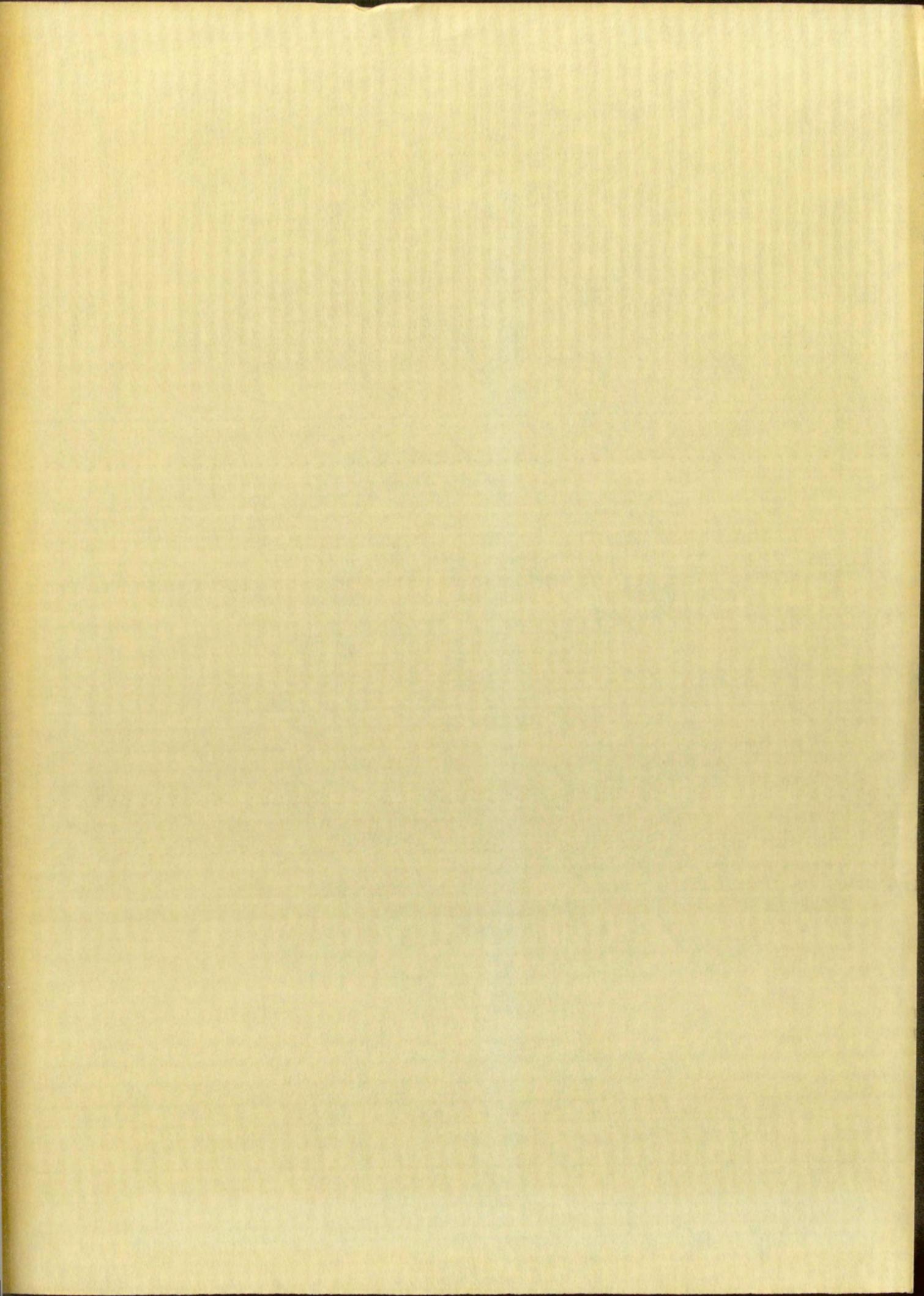
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Soil that is poor in organic matter and has poor drainage will be less

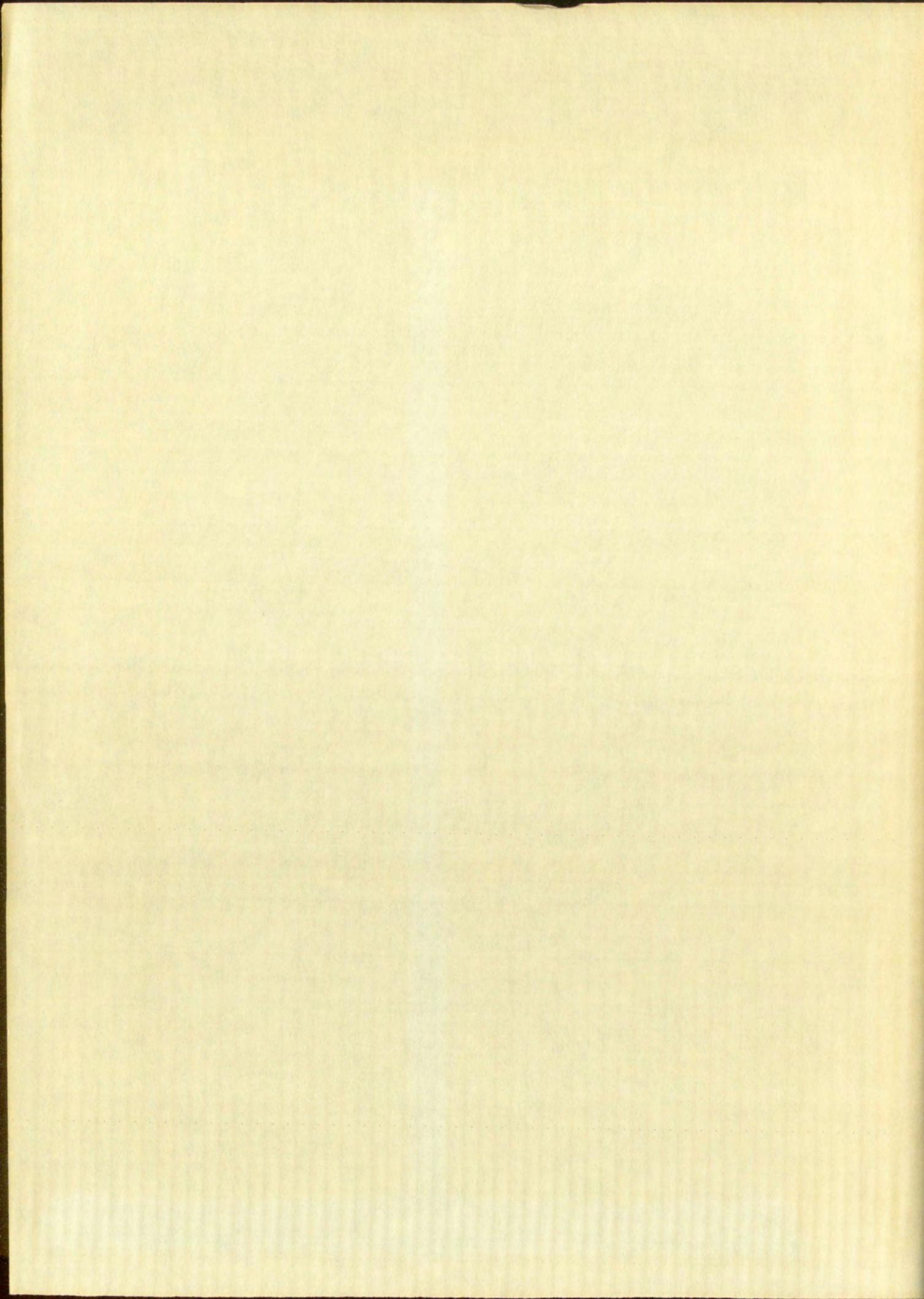
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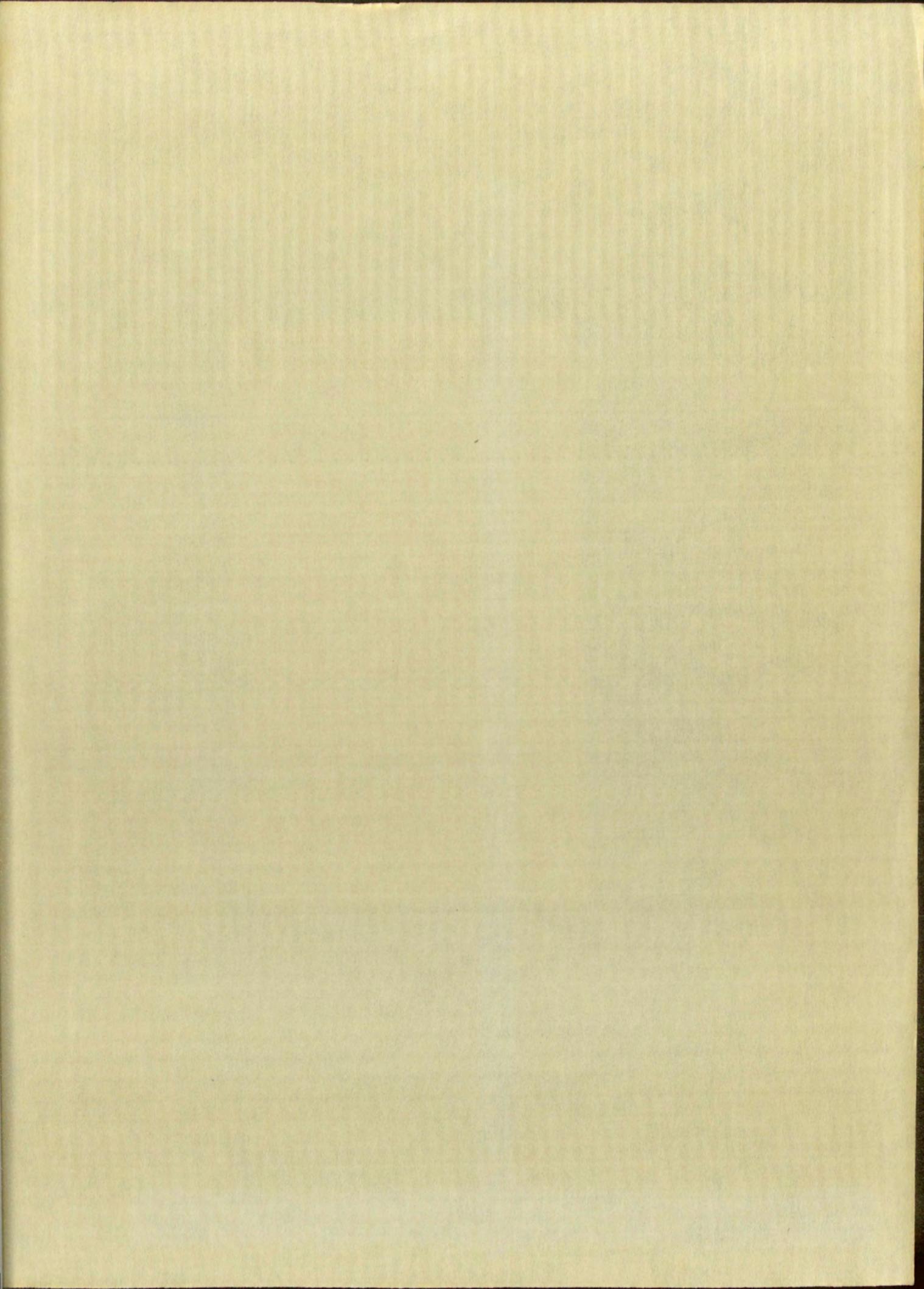
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Soil that is poor in organic matter and has poor drainage will be less











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