Ellison and Lottie Hildreth Papers

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Report request:

Service Board to send out such gross appro. for 25-6 as we have been sent for the old plan. & allow our Ref. to meet w/ our Free of Comm. & ch. in each district in Sept. of apportion funds, turning over to them full control of all funds as rapidly as they are prepared to assume such control. We met some however that the Board might think it best to instruct us to retain control for the year or at least the remainder. In exp

Baker: At 1st session a vote to set up a Comm. in charge of our Med. & wholly balanced & policy of all Med. & treatment free. (w/ out M. even knowing it was considered) Further due was looking to action putting all Ref. on self & Comm. Matter of joint admin. reported to Comm. & in a way that kept it as standing for equal share in adm. & mis for self in control. We had kept quiet until now. This was the limit for we had repeatedly assumed our fellow Comm. men that we agreed to
Page trip to Kayapi

Staff reported that he
had already consented to resign
of this to whom K. had
attended & study of both
as a text book. Staff did not approve, but felt that
to revoke it would matter
more than staff. Recommend
that this be given to the most
reliable and able to do this also that there be at least
5 classes. Agreed that
mock choopie continue w/compensation

Next pt when comm met
& submit 3rd pt of prime,
This threw out both primer
as a declaration of indep
of 1760. Staff had understood
a marked change in the night
met on their feet on solid ground.
So this was agreed
as statement of whole prime.
2 if reported to bow x
adopted. For this time on the
affair was fine. The few acts
referred to above were dis
abused of fellowship was cordial
Bow's compost of
delegates & etc; new body
of 50 mems. 65 Chinese
Elected by Bow & 15 m's
named by Bow & elected by bow.
This is divided into 5 groups.
The 50 elect the 5 Charrmin
of m's to - Bow Bow.
Ch is indep m's as advisors.
5 Comm's are 1. 2. 3. 4. 5. Charitable (well)
4. Social serv. 5. Financial
Rural grant of problem
Too much till the regime of
do-nothing Comm's would not like
the rest of year to plan only minor
matters were mentioned. Most
of leaders probably out of reach
with country ch/l life.

The role of Indians involves
the abrogation of their rights and
the treaty guarantees of protection in their right of
worship. 2. Unenforcement of the
right to work under the former
life.

3. The country unless
endorse some action. In case
of treaty it is agreed, how
many of the Chis & Indians are
ready to go as far I hope they
all are. But their situation
esp. in places subject to the
violation of the military... is
entirely differ fr. that of
enthusiastic leaders who
largely live in S.W. & N.B.
Proper letter Act 6.

they wish to begin administering the funds furnished by the Board on the 1st of Jan. The proportion for November will be paid to the missionaries as usual. and we hope the Board's permission to follow the new plan will come by January.
Sept. meet Ref. 6. 27

- JS. speech. We don't distrust Chinese. But thing must be done at 1 step at a time. Don't take one.
- Corp not self-appointed but subordinate to Board. Must report to follow rules. Sometimes take rebuke or reto f. them.
- Problem of their work chief on ours. No word to Board. If heavy changes, sure to be trouble; better to keep blank for a year status quo. If jet up anything needs change high official. In a few months we shall ask them to help plan for some we consider all work better than Koi Kito in our shop.

Siau Kii: Want to transfer our 1st class together. We have so much for Corp expenses, they have none; will we give them some? Also, we have heavy travel. When they are back up, will we give them some of it?

Sam Goh:

Kuei chiong Kang chih Lin
Tan Kii Gieh Sun Fang Kin 69 & Kii Suen
Sii KHOI Siong PHK inc.
On Friday last, soldiers quartered at Chaochowfu went to the three houses of the English Presbyterian Mission outside the South Gate, broke into two of them, the third being opened by the caretaker, posted up notices that the houses and the adjoining schools were commandeered as barracks, and ordered the contents of the houses to be removed at once. They themselves removed the caretakers' property. The houses were unoccupied, because since the boycott because sever the missionaries have been living in Suster and Formosa; the schools were closed, because it was vacation time.

Without waiting to see what would happen, the troops moved in, sold off all the bedding, furniture, etc., that the neighbors would buy at ridiculously low prices, smashed up a lot more, and tore up most of the books.

Saturday evening, the missionaries, thru the help of the British Consul, secured a letter from the Commissioner of Foreign Affairs, in which he said that he had telegraphed the military authorities at Chaochowfu to investigate the matter and clear out the troops. This telegram apparently was never sent. The next noon, three members of the mission, bearing the above-mentioned letter, went to the Chaochowfu district magistrate's office, where they were most courteously treated, and given an escort to the home to the commander of the First. The people here gave them a courteous reception, they were allowed to inspect the houses, and received a promise that the soldiers would evacuate the next day. Evidently they had no intention of keeping this promise, for that evening, soldiers were putting up matches on the lawn, and the next day the military applied to the Mission Hospital next door, for permission to use its chapel two hours a day for speech-making.

No satisfactory explanation of the motive for this act has been found; several have been offered, but still apparently not held water. The troops are under the command of Ho Ying-chin, who is now the highest military official in the Chaochowfu-Suster region, since the retirement of Chang. He is supposed to be the leader of the kuo-mintang right wing. His wife presided recently at the meeting at the

and is said to be a Christian. The military and students turned out in large numbers at this, whereas at the Lenin anniversary shortly afterwards, the soldiers and students were conspicuously absent. Furthermore these troops have been noticeably on their good behavior ever since they came in under Hsu and Chang in early November, and although the boom is not sweeping so clean now, it is still true that in the large they are giving Chaochowfu the best administration it ever has had. Under these circumstances, to explain it as a provocative act of red soldiers, doesn't seem to fill the bill. Other explanations appear no better. There is no news yet as to what action the British Consul took upon hearing of these latest developments.
The oil monopoly has taken effect here, but it is very difficult to get any facts about it. The poorer grades of oil are being sold in at 93.50 per ton, which is eighty cents above normal; the better grades are hoarded. The Standard Oil hang at Swatow is closed, and the coolies are on strike. The management generously offered to continue their wages while the hang was closed, on condition that they merely report for duty half the day, with nothing to do. The coolies demanded that the hang secure them employment for ten months, regardless of what happened, and when this was refused they struck. Each man gets eighty cents a day for striking plus picketing; and, as long as this lasts, it is more than their wages would come to, so it is more profitable to strike than to work.

The same thing seems to be true of the shipping strike, at least at Swatow. Every ship that clears for Singapore has to pay 32000 grift to the strikers, and similarly for one or more other ports. This of course comes out of the emigrants, in the last analysis, and as long as it lasts, it would appear to be more profitable for the Seamen's Union to strike than to work, as well as much pleasanter. It is peculiarly difficult for the emigrants to unite and resist this grift; they hope to be able to make enough in foreign parts to pay for this added expense; and the worse the local economic conditions get, the greater is the pressure to emigrate. So it would seem that the prospect of the drying up of this source of tribute was rather remote. One Britisher says he thinks the strike will end in 1920; another, more pessimistic, says it will never end.

The Swatow police and labor are having a private feud of their own. According to one version, the striking carpenters caught three men doing such labor and turned them over to the police for seduction; keeping the police took bribes from two of them and let them go. And when the strikers went to get the scales to load them into the street to be boxed up by the mob (the Chinese version of riding on a rail, and fully as humiliating), the police gave them only one man, and claimed there never were three. According to another version, there was only one man, and the police found on investigation that he was a master carpenter doing his own work, and so not a scab, and let him go. There seems to be no question whether it should be considered part of the duties of the police to guard scales for the union; the only question is as to whether in this case they faithfully performed this duty or not.

The appeal was made to the magistrate, who decided in favor of the union. The police retaliated by wrecking the union headquarters. It would have been bad enough if they had attacked the Carpenters' Union; but instead they wrecked the Central Labor Union, which brings all the labor down on them. The laborers made a violent demonstration against the police headquarters, and there was a very tense situation for a while. The police were in strike for a while, and the carpenters still are, to the great distress of those who want to get their houses finished before Chinese New Year, and instead face the prospect that the spring rains will find the houses still unfinished. The #12345678 carpenters are picketing very rigidly, and there is no prospect of a settlement.
There has been practically no rain since summer, which is very unusual. Many farmers were unable to sow their wheat, which is supposed to be planted as soon as the fall rice harvest is over, and harvested in time to plant rice again at Ching Ming. The sugar crop is a partial failure, and the little sugar that is produced brings a very low price. The Swatow government is putting a stamp tax on all checks, receipts, etc., and making a capital levy of one per cent. There are rumors of war in the distance, and the people are looking toward a hard winter. Normally the first of February should indicate almost the end of winter, but so far we have had very very few cold days. What is that sun spot story a false alarm?

After being practically the supreme power in Chuehchoufu-Swatow and (as we suppose) in Canton, he has now resumed his former title of principal of the Whampoa Military Academy. He came into power with a rush, following the assassination of the reasons for his retirement are not clear. Ho Ying-Chin and Cheo En-lai have recently received their titles of by concurrent appointment from Canton.

The present administration still seems to be securely seated in the saddle, but it is hard for a foreigner to know. And the amazingly sudden collapse of Chen Chiang-ming in November prevents one from rashly prophesying the persistence of any regime. On a Sunday noon, there was yet no rumor of his being defeated, and on Monday at daylight his defeated soldiers began pouring into the city from two or more directions; and ordinarily these defeats take place several tens of miles away. We can't figure out how the collapse could have come so suddenly with no forewarning; and if it happened then, it might happen now. But one should not forget that Chen's soldiers are cowardly, ragamuffins, and thugs, unpaid and undisciplined, while the men here are paid regularly and well, and consistently send money home to their families; they are also usually well-dressed, and drilled not only in marching, but in fighting and shooting; and they have to some extent the benefit of Russian drillmasters and equipment.

The plan of paying the soldiers is an innovation of the present government, the like has never seen before; and the local post office is equipped with the money order business. It is also a novelty for the soldiers to carry their own baggage or hire coolies and pay for them. Other novelties are shooting soldiers for loafing (the I fear this practice has now gone into decadence,) and the giving of office for something approximating merit, instead of selling the office, and letting the official get the price back by graft. Official receive salaries, and grafting is strictly forbidden. I asked a young fellow from a yamen recently how things were going, and he said "oh, so-so. Since Ching turned over a new leaf, there is no money to be made in official life; in the old days there was plenty of money to earn." One regrets the encouragement the present government has given to the anti-Christian propaganda, but one should be fair to them and admit, that, at least in Chuehchoufu, they have made a definite effort to give an honest and efficient government, and have had an amazing degree of success.
These troops, who conquered our country 2 months ago, belong to the Red Party. Part of them are the common garden variety of soldiers (that is, thinly disguised bandits). But the rest, who are distinguished by their red neckties, are cadets in a military school, which is heavily financed by the Russian government and has several Russian instructors. They are out to force communism on the local Chinese, who welcome with the same enthusiasm with which the Belgians welcomed the German army. And in the meantime Karaman, the Soviet ambassador in China, is making an awful fuss, because in one of the Chinese army's recent operations there were some white Russians—in violation of an agreement between Russia and China, by which China agreed not to employ any whites and Russia agreed to do certain things at once—which they hadn't done yet. But Karaman wants to hold China to the spirit of the agreement, and he doesn't think the fact of his government signing this aid to a rebellion by a man who's of any importance to the Chinese Bolshevism isn't hard to drive Sun Yat-sen, who was not able to get any of the western powers to recognize him as the government of China, which...
It is not strange as he had not been consistently able to control the whole of his own province even; and the longer he failed the more he became annoyed at all foreign powers. So in Soviet Russia, and that was naturally precipitated together the Soviets inaugurated a movement called "hands off Bohemia" which became very popular in certain sections of Bohemia. The program, roughly speaking, involves cancelling extraterritoriality and foreign concessions thus making the foreigners in Bohemia subject to the misperceptibly corrupt Chinese courts; cancelling the treaties by which China is bound (some of them ought to be cancelled); but it would be a disaster to cancel them all; and in the minds of some it involves repressing China's debt, which of course is good Soviet doctrine. For various reasons Sun found it desirable to woo the labor unions, and this also carried him in the same direction. And now that he is dead, the party of which he was the head is carrying on a campaign which is communist anti-foreign and anti-Slavist.
It seems to be strictly in accordance with Soviet principles which hold that religious are to be ignored—all except Christianity, which is to be exterminated because it is counter-revolutionary. Some of those who are carrying on this campaign are conscientious Bolsheviks but most of them are a lot of battle-headed students who have simply climbed on the band wagon.

The present government has been in power here for over 2 months now. I wonder how much longer it is likely to be. The course of events seems to be working out quite logically. Sun's bolt was shot into Canton, about the time he went up to Peking to dominate the reorganization of China—and the day of cancer. His successor has not been able to hold on and I understand has been driven out of Canton. The Red head quarters are now at Shantung, and the Red forces are surrounded by enemies on all sides. Chen Zhuhu Ming held on here for years against attacks from Canton, but his rear was held by allied forces for goodness knows how far; we here have no rear—it's all 'the front.' There is no place
to run away. So they'll have to fight, and according to the best information available it will be against superior numbers. They can fight, and it is not certain that their opponents can. But they have lost the arsenal at Canton, and as we have no way of getting any more ammunition, and even the Americans at Bunker Hill and Fort Sumter had to quit when the ammunition gave out. Further, I have just heard that the cadets have refused to serve under the present official any longer on the ground that their motto was not to lose his pocket but to lighten the burdens of China, and under his regime the burdens are heavier than under his predecessor. If this report is true, the present government will not last long for the cadets are its best fighters; and even with them it is not certain that they could win. We should all be glad to see the end of this government, because in addition to its anti-foreign and anti-Christian work, it has had a disastrous effect on the economic life of the district, already before it has fairly got started on its
Of course this readiness represented a rebellion against the
weary influence of the capitalist system, and were trying to win
over by an appeal to reason, or even to passion and prejudice.
Then fighting it would do no good, for the experience of Russia shows
that Bolshevism thrives on opposition.

But these people are trying to force communism on an unwilling people,
and if they are driven out, not by anti-communists, but by personal
enemies, it merely renews the

quagmire, and leaves the way open
for Bolshevism to win converts by
the appeal to reason—of it can.

I very much doubt whether it can.
The Chinese normally are very
strong for ownership. The

chief danger is that if this constant
fighting continues long, it may
reduce all the people to such poverty
and distress that they will think
they have nothing to lose, and go in
for Bolshevism on the chance of
 gaining something.
Before Sun Yat-sen died he was making wild speeches about repudiating China's debt, cancelling the treaties etc., and it looked as though he was almost certain to be President of China for a while. It might not be for long; but it wouldn't take long to do some of these things, and it would take a long while to undo them. Plenty of people would be quick to endorse such a quick and easy way of getting rid of an unpleasant situation, and slow to see how much the remedy is worse than the disease.

I thought that if Sun's disease proved fatal—as in fact it did—this would prevent him from making things up in this way. But the Chinese told me that Sun's death would not improve the situation—it would only make the confusion worse compounded. They were right; the confusion is much greater than it was; but that fact is an improvement in the situation. Sun's followers are quarrelling over who shall succeed to his place as head of the party; the party is splitting into a radical wing and a conservative wing, and the two are preparing to fight each other there. It's the fate of Russia.
Spiritual Power. What is involved in receiving it?

There is a level of spiritual power above that on which most of us live. Psychology shows this. Postponing question of whether this is due to supernatural aid or not, it is a fact that everyone is capable under certain circumstances of rising to heights in the energized self that he cannot commonly achieve. Usually in times of special stress, can we live in these under normal conditions?

What do we mean by spiritual power? Not adding some thing to us as real to humanity, but an increase of the realm. The spirit isn't part of us, but our freedom.

Source of Spiritual Power. God is not, just may be dangerous to over-emphasize the difference between the human and the divine. Jesus was a whole personality, not a divided, but a united personality, and now the church sees perfect humanity and divinity, absolutely unified. God blending his personality with ours is the source of spiritual power.

Not a metal container into which the oil is to be poured like a liquid, but a living combination of personality human and divine, so blended that the more spiritual power, the more absolute unity and perfect spiritual life world = absolute unity (any mixing of 2 personalities affects both). Power with me in God, and God in me, and my personality progressively changing. Phil 2:12-13, labor earnestly to make sure of your own salvation first, it is God himself whose firm determination in the desire to do his perfect will, and also bump about the accomplishment of his desire. Work at it. Because it is God that is working with you, put yourself in it. That I may put himself in you, I have put the spiritual power into you.
In general C.T. emphasizes God in contrast to the natural world: His power in human relationships. Jesus overcomes His enemies by love, and victory is defeated only by being made into a saint. God's power is not to crush the enemy but to change the enemy. The full expression of the power of God is in the cross—the supreme appeal of the heart of God to change man and to make possible this union of human and divine in one personality. (But to the author it seems to be the vindication of the power of church, of state, of public opinion—a most noble.)

Jesus devoted His life to bring about the wholeness of body, mind and soul; expression of God's power to bring human personality to the perfection for which it was created. We are incorrect if we declare spiritual power in order to do things that we all others think we should desire power to be what God intended me to be—our lives as God intended them. Your life is hid with Christ in God. This power is not reserved for the few; intended for everyone.

In it we see the kind of power & triumph to bear on human life. Power of everlasting patience; power of gentleness; power of a joy that nothing can suffocate; power to keep oneself unostentatious from the world; and yet to inspire the world with hope. Power to go on trusting those who have betrayed our trust (Judas), to have and save to face (Peter) who is tempestuous and unmanageable. Power to hope for the hopeless, to be braver in the night, goodness in the Ville. God in all. In the death of Jesus God reveals Himself. The power that attracts the perfect and good allegiance of the fell (God wins us, while respecting their personalities).
People have divided personality because in the depths of their personality there are some things they won't face. Some are trying to get more power thru psychoanalysis. God! But the great psychoanalyst is God who is trying to force us to give up phantasms and set our feet on reality.
1. Not your... 
2. Power that I work, 
   to attain unlimited... 
3. Power to... 

He can give more than... 
Already has potential...
The democratic spirit which abolished the doctrine of total depravity from the creed also abolished the doctrine of endless torment. The change did not take place without a struggle. In the long denominational quarrels to the Andover controversy (a chapter in the history of Andover Newton) and the New Board controversy, which centered about Rev. E. A. Allen, one of the ABF 1 M. who ministered that candidates for reappointment should affirm their belief in the endless punishment of all who had not accepted yet as their Saviour. He would not recommend anyone for appointment who did not hold this doctrine and the Board would not appoint anyone without his recommendations.

It was settled by dropping a liberal from the Prudential Board and condemning the doctrine of future probation but recommending that Prudentials consider the advisability of referring the doctrine of reprobation of all candidates for appointment to a local council. A new rule was issued away from the Board.
3 years later Mr. Allen resigned. A Lyman Pitot was elected a corporate member. While no formal action of the board was ever taken reversing the resolution condemning the Holzower theory, it is quite safe to say that since Mr. Allen's resignation no candidate has been rejected. The refusal to affiliate with all the sects that have been condemned with everlasting punishment (and the fear that liberty of faith would "cut the wave of missions") has not been realized. The cost of the effort on the part of the company was represented both by the contributions and the time that was commissioned. The number of the large 1892-1840, 000 last of old regime 1914 and only the more has been expanded.
luxury of missionary homes our shock for more comfortable both in summer and winter large house individual bathroom for each bedroom, eat in bowl wooden tub slightly larger than tubs my @ used on wash day Mission celebrated both anniversary a little while after we moved into we had just real talk this M.W

servants plus alone cost about the same as rent (budget) book shops can buy cheaper than sweep & mop wife full time job church & secure a terrific responsibility even no servants to supervise wife rather busy but many short time to give to household which they could not If blessed relief to have own home & no servants to keep straight general don't know about cars. In my day lucky to have bicycles
carry out the routine assignment of their boards.

A Sampson Page took at academy Bulley & Sanderson at girls' school Ashmore & Watert at T.S.
Sullman & Travers shut oh

We need educated laity trained ministry have to have schools. Well run

Most admired = few so most of read study see XNR

How do they stand now under stream?

B. doctors & nurses now at job capture audience

An influence

Health propo ganda population explosion

B. preach in new villages encourage & guide chs

Help partly reversed numbers to see more XN.
noticed difference in salary scale. Missy $1,000 plus had to economize. Native $600 live in what natives we call luxury $400 and save $200 to pay it. $1,000 that's not small. Treatment. It's pampering native at expense of missionary gives at home.

Early mission ones said salvation eternal hell. One doesn't like it and I don't. What do we try to give the natives? Good and right teaching? This some form of moralism? Most of m's smoked so and it hasn't did not taught. It not to. Those that did claim pole.

Myth make X to soil not man.
Once upon a time they say that Shaoshan was inaccessible to the gospel. Within a couple of hours of the time I landed at Swatow, I was given an "honour list" of places where you can't do a thing" to win them to Christ (How the others have fared) and Cefa was given a very high place on the list. It must have been true for my information came from a person who was well informed and has a high reputation for peril alone. That is, it must have been true at one time. But I have no experience by which to confirm the fact. For if there is anyone in the City who is anti-foreign I have failed to meet him. And I remember, too, I will indeed a certain noted Chinese doctor whose business must be seriously interfered by the Peking Hoop at the Soo, like by the Red Cross Hoop, a purely Chinese organization just practicing foreign med. and in charge of a Presbyterian doctor, by the Kong ni-i, and the various leaping all but one of which are named by Christians, and by the kong ni-i ii in which some of them join in maintaining. Yet this doctor gave us a most courteous reception, when we called on him, and treated us most very nicely whenever we happened to meet him.
What does it take to constitute a challenge to our work? First the need. Let take that for granted. All China needs the gospel and every square mile of it needs the gospel, except those portions that are uninhabited on the one hand and on the other hand those communities of Christians that sometimes cluster around mission compounds, and force us to recognize that whether we think such grouping of ours is desirable or not, we are forced to recognize that such communities are in communities and while they need evangelistic work they do not need to be evangelized. With these exceptions all China needs to be evangelized. And this is not one of those who think that a comparatively high degree of culture - well-ordered economic structure, polished manners, ability and energy will solve the problem. It is a question of whether the community needs to be saved; in the country he feels it to be, especially in the large cities, where the members of such a community are the sort of men we need to lead the Chinese in the work of evangilizing all China first. And that leads up to the second point.

Assuming that all places not evangelized need the gospel, what other features of a given locality constitute a special challenge or cause us to raise a special challenge to that area? As the writer sees it, the second factor is the value of the results achieved by successful evangelism. To borrow an example, military examples are worn threadbare but as the writer believes that the missionary body is here in China to wage war, not to carry on a
propaganda. He ventures to say that when two detachments of troops fight their way a mile toward the rear of the enemy's forces, whereas the first one advances from one peak in a mountain range to the next peak, while the second one, by gaining this mile, captures a city which is the junction point of half a dozen railways. The second one has made a larger contribution toward winning the war than the first; and that is, in spite of the fact that the first may have had to work harder for it mile than the second did. On the roll book of Korea each one counts one, and the humble farmer, who is truly converted and who earns his life may be just as worthy a man as any one of the outstanding men leaders whose names occur to us at once when we think of the leaders at all. But I suppose no one would venture to say he was doing as much for the progress of the peoples in China, and in a city where there is not only culture but education a man must have a higher degree or mental a discipline than can be found in the country. A given among you have a chance to win men in whom are the possibilities of some amazing results. The front line out ranks the foremost men and more important than even the military leaders and such men count more. Converts will be found to be such that they can be developed more into spiritual leaders and that cannot not one, but many times.

And the third factor is accessibility. In the past the work has prospered in the villages because the humble farmer was not too proud to learn. While the city man that he knew it all, and for that reason the city was passed by. And our evangelistic work was done in the country.
it be due to the necessities of the case it seems to be the usual course of events, that converts often come usually from the lower walks of life first beginning with the days of Jesus & Paul. But what we heard of the early church had respected its efforts & such a made no attempt to win the educated class.

Compare the two outstanding figures in the early ch. Peter the humble, comparatively ignorant fisherman and Paul the university graduate. In spite of the great advantage Peter had from his 3 yrs of intimate association with his Lord, and the wonderful increase in stability & force of character that took place in him, his betw.

There can be no doubt that it was Paul and not Peter, who chiefly guided & controlled the work of the early ch. Indeed some go so far as to say that Paul had a greater influence in the matter than Jesus himself and that we may disagree with this opinion we see in it testimony to the great power exercised by this member of the upper classes. However, speaking what we have from the progress of the ch. of the religion Paul had not been applied to it.
It is a matter of observation that from the days of Js. until now, when our religion entered a new country its converts first were found among the poor humble farmers. But what would have been the result if the early church had restricted its efforts to such and made no attempt to win the educated, prosperous and wealthy?

1. All alike need the gospel, whether be the cultured, highly organized life of the city, or the simple life of the ignorant farmer.

2. All are equal before the law, in heaven, still as agents in evangelizing China, the man of education and ability is a greater asset than the man with neither.

3. It is still true that mission work can best be done where the people are teachable.

4. When you find a place where the people have education and ability, and also are willing to learn by, that is the place to put in your efforts.

After writing several hundred words in a laborious effort to prove these 4 points, the writer decided that they are axiomatic in all regions of the Near East, and he would let it go at that. How far does Begin fulfill these conditions? In answering these questions we shall see what a challenge to civic work is presented by this great city.

1. The city is far from unorganized. The R.B. claims less than 1000 adherents. Many of the merely nominal. The Bishop has a membership of about 200. His society has a membership of mostly extracted from the S.D.'s.
dissatisfied or disciplined members of other sins. They make few converts among the heathen. The B.P.'s have a membership of about. The Bapts have a membership of

A careful census of these families, of inquirers, and families, shows about brought under the rule of the Baptist Ch. Besides these there are persons who have been inquirers but have lost interest, from backsliders and persons under discipline a few tens of men. To these add for good measure, the size of the average audience at the union or meeting held to allow for people who have heard enough of the doctrine to understand it, and yet have not been discovered by the organization an exceedingly generous allowance, probably wholly uncalled for by the facts of the case. And you shall have only who have to any extent been brought under its influence. The estimate of the city's population vary widely. The table on the following gives from 250 to 350 m as the average, which may be taken as a conservative estimate. We have then less than 70 who are under its influence at all, and some 70 affiliated with any religious body which includes all these B.'s.

2. Whether the seat of power is not also located at Canton at 50 m. the fact that from the days of Wang Hsin-hong till now the Chinese tradition is that when Wang Hsin-hong offended the emperor by opposing his leaning toward Buddhism he was punished by exile. In other words he was appointed governor of the Chaochowfu district 359. One local story is that when he arrived here he found the people barbarous and uneducated. During this term of office he
educated & correlated them. Considering that his term was only
5 months, this seems a remarkable achievement
and the present state of our Ed. suggest that he did not
quite complete the process. The famous incident in which he
expelled the crocodiles from the river by reading them what is
often described as an essay, but probably was a threat to
take some measure against them if they did not depart forthwith.
The place is commonly called 藥, but the educated
will tell you that the correct characters are 禮 之 and it
was so called because of the crocodiles that named formerly
infested it. The temple to
cur 99969 is on the side of a hill
across the river and customarily it is a Buddhist temple
(an example of the way Chinese relics are mixed up). The local
normal school is called 資, and the memory of this man.
The respect in which the man's memory is held, testifies to
the nature of the work he did here, in his short term of service.
From his day till now, the seat of government for the fu has
been at Shekfu. This consideration is the more important
from the fact that the Sin'chui people all speak one
dialect (commonly known to foreigners as the Tanka) and have
a strong sense of community. The Cantonese have this
feeling and (I suppose) group everything around Canton the
same way. We nominally belong to Canton province by are
cut off by difficulty of access to Canton, and by the dialect
differences. The dialect boundary is a sort of watershed
like Khachki, and this is so. Canton. Our people are
bound by these intangible ties not to the sea city but
to the fu city Shekfu. The common name why not the
large majority of people call Shekfu is fu city or the city
One thinks of universally thought No Bacal 57 is referred to as the city and what a small wife in compar
is exerted by San, the nominal capital. The society people have. a somewhat similar attitude toward the city and the capital. And the same considera's which make it imperative to capture Bombay for it in order to dominate the Bantonee dialect, make it equally unjust to capture Bombay for it may not dominate this people historically.

Before it is not only the seat of government for the people but also the seat of education. In this respect also, conditions are changing. And the use of Swatow, the port, is having a profound effect. Many of the ephemeral goods that afflict us are located at Swatow from which it is easy to get by boat when it is easy to start of export and also easy to depart by boat in case of emergency. It is quite possible probable that the seat of local sort when it is permanently located will be located at Swatow. But my that case while realizing that the magistrate lives at Swatow, the people will still continue to speak of the far city, and to look to it with the respect inspired in a Chinese mind by a city solidly established with traditions, walls, and a magistrate. And if that city can be made predominantly so it will have an incalculable nife on the people.

A similar development is taking place in the world. Swatow is becoming very important as a center.

Faced but mostly in the way of boarding schools in schools managed by outside orgs such as missionaries the Bantonee guild. The BNP! And of course the boarding papers are...
drawn from everywhere. But Beijing is still the city where the boys go to school. The political conditions of late have greatly disturbed the old system of the city. But a careful census made some time ago when conditions were more normal showed top schools of primary or grammar grade not filled. And although it has many schools bearing the name of middle school, the best middle school in Beijing had under normal conditions a student body more numerous than all the small middle schools put together.

The amount of study done in these schools has combined the effect of these schools, and the effect of the presence of the officials, who in old days were always Chinese scholars. One should note that as Chinese history goes, it is only a short time since the degree examinations were held in Beijing, and that, 200 years periodically, but to the city crowds of candidates mingle with the people, and whose conversation helped to impart a literary flavor. One is quite surprised at the high-sounding phrases one hears from quite ordinary people, and at the readiness with which unpromising-looking people will read a piece of writing. And the rest of the city's people know all this and respect Beijing as the seat of learning most. If we can capture Beijing for Xi it will go a long way toward removing the reproach that Xi is a religion of rookies. Recognize, as we may, that the common people heard him gladly and that Dr. Moody was a man of small education. We yet know that it was the educated man, Paul, who carried Xi to Europe; and that Moody was not contented to remain uneducated and that he established 3 schools that have probably had a
The uneducated may be the easiest to win. But it is the educated who do the most for man. (82) Omit this. Let us omit mention of the organization of the city of its commanding position where a mighty river bursts from the hills, and begins to divide into a delta which is its own creation, so that all commerce between the world plus the delta, and the extensive hull region must pass by the city, ignoring the wealth of the city and the crops it offers for gaining wealth. While we cannot neglect to mention the ability which the inhabitants have as a result of the commanding position of the city and their contact with its commerce and culture, officialdom and scholarship. Minds are awake. The daily paper is a vital thing in their lives (what a pity it is not a more useful force) and events are discussed the face of both 3rd class makes a trip to see a comparatively easy matter. And there they see the foreign things, the custom house, the steamboat, all giving evidence of the world outside, a mighty stimulus to the imagination. When you have captured the begun man who has felt these impulses you have a man of potential power as a force. And when you have found a place where that sort of men are, the man are accessible. Why that is the place to put forth your strength. We begin such a place? The workers had been in China only a few hours before he was given an "honors list" of places where "you can't do anything because the people are so proud, conservative or anti-foreign. He's occupied a high
place on this list. Such may have been the case to 1913. But the writer has no experience whereby to prove it. Counting treatment everywhere received does not prove accessibility to ty. But it does prove the absence of active anti-foreign spirit such as some missionaries have had to contend with. The political troubles of the day have been very unfortunate. But they have during the military troubles of the last few years. The missionary body has had the opportunity to mediate between the warring factions and keep the city from bombardment.

Our position on the direct route between Tok Poro and Bonton puts us somewhat in the position of Palestine north or east—a good place for the warring factions to fight it out, but rather bright for the inhabitants. I write during the last few years. One of the forces has been besieged in the city and a bombardment was threatened; and each time the missionary body has called on to mediate and the city has been saved from disaster. Fortunately the nature of Xy has been well understood so that we haven't had to contend with a flood of people who want to become Xyo at once. But fortunately also, the hearts of the people have been opened, so that they are glad to learn about Xy. Our schools have helped in this, and the city people have not failed to note that when all other school buildings were commandeered for barracks, the Xy schools kept going, which fact has helped to extend the life of our schools.

Ph Rev article.
offended the emperor by opposing his leanings toward Buddhism, he was punished by exile; in other words he was appointed governor of the district of Chaochow. Local tradition tells us that when he arrived here he found the people barbarous and uneducated. During his term of office, he educated and civilized them. Considering that his term was only a few years, this seems a remarkable achievement, and the present state of civilization and education suggest that he did not quite complete the process. The famous incident in which he expelled the crocodiles from the river by reading them what is often described as an essay, but probably was a threat to take severe measures against them if they did not depart forthwith and immediately, took place just outside the north gate of the city. A village near there is commonly called narrow creek, but the educated will tell you that the correct character is , and it was called bad creek because of the crocodiles that formerly infested it. The temple to Han Yu is on the side of a hill across the river from the city, and curiously enough is a Buddhist temple (an example of the way in which Chinese religious matters are mixed up) close to it is the local normal school, called Han Shan, in his honor. The respect in which this man's memory is held testifies to the nature of the work he did here, even in his short term of service. From his day until now, the seat of government for the fu has been at Chaochowfu. This consideration is the more important because the Chaochow people all speak a separate dialect of their own (commonly known to foreigners as the Samtow dialect) and have a strong "race consciousness". The Cantonese have a similar feeling, and (I suppose) group everything around Canton, the provincial city. We nominally belong to Kwangtung province, but are cut off by the difficulty of access to Canton, and by the dialect differences. The dialect boundary is a sort of watershed, like Tehachapi, which divides Northern and Southern California. But people do not feel that they live in Kwangtung province, but in their own fu. These intangible ties bind them not to the provincial city, but to the fu city. The In spite of the fact that the term fu has been abolished, the name by which Chaochowfu is ordinarily called is "fu city"; or "the city". One remembers how universally throughout Northern California, San Francisco is referred to as "the city", and what a small influence in comparison is exerted by Sacramento the nominal capital. The Chaochow people have a somewhat similar attitude toward "the city" in comparison with the provincial capital. And the same considerations which make it imperative to capture Canton for Christ, make it equally
in order to dominate the people who speak the Cantonese dialect, make it equally imperative to capture Chaochowfu for Christ, in order to dominate the people who speak the Chaochow dialect.

In this connection one should not fail to note the rise of the port, Swatow, formerly a fishing village, now one of the important ports of China. This is having a profound effect on Chaochowfu. Many if not all of the ephemeral governments that afflict us are located at Swatow, where it is easy to start a government, operating from a warship as a base, and also easy to depart by boat in case of emergency. It is quite probable that the seat of local government for the Chaochow people, when it is permanently located, will be located at Swatow; and better reasons than those stated above can be given for such a course. But in that case, while recognizing that the magistrate lives at Swatow, the people will still continue to speak of the fu city and to look at it with the respect inspired in a Chinese mind by a city solidly established, with traditions, walls, and a magistrate. And if that city can be made predominantly Christian, it will have an incalculable influence on the people.

III. Chaochowfu

III. Chaochowfu as the educational center. A similar development is taking place in the educational world. Swatow-Kakchieh is becoming very important as a center for education, but mostly in the way of boarding schools or schools managed by outside organizations, such as the missions, the Cantonese guild, the Y.M.C.A. And of course the boarding pupils come from everywhere in the district. But Chaochowfu is still the city where the boys go to school.

The political conditions of late have greatly disturbed the educational system of the city, but a careful census made some time ago when conditions were more normal showed 3627 boys' schools of primary or grammar grade. And although Swatow-Kakchieh has several schools bearing, most of them worthily, the name of middle school, the government middle school at Chaochowfu has ordinarily about as many students as all of them put together.
Besides the effect of these schools, and the effect of the presence of the officials, who in old days were always Chinese scholars, one should note that as Chinese history goes it is only a short time since the degree examinations were held at Chaochowfu, and the periodically brought to the city crowds of candidates and scholars who mingled with the people, and whose conversation helped to impart a literary flavor to the local speech. One is quite surprised at the high-sounding phrases which one hears from quite ordinary people; and at the readiness with which unpromising-looking people will read a piece of writing. The rest of the Chaochow people know all this, and respect Chaochowfu as the seat of learning and culture. If we can capture Chaochowfu for Christ it will go a long way toward removing the impression that Christianity is a religion of coolies.

IV. The Character of the City people. Let us omit mention of the organization of the city; of its commanding position at the point where a mighty river bursts from the hills, and begins to divide into a delta which is its own creation, so that all commerce between the World and the Delta, and the extensive Hill region must pass by the city; ignore the wealth of the city and its opportunities for gaining wealth. Still we cannot neglect to mention the ability which the inhabitants have developed as a result of their contact with its commerce and culture, officialdom and scholarship. Minds are awake. The daily paper is a vital thing in their lives (what a pity it is not a more useful force!) world events are discussed with interest and understanding. The fare of sixty cents makes a trip to Swatow an easy matter, and there they are in direct contact with the world, with its steamers, custom houses, and all that they stand for, capturing the imagination, and highly stimulating the intellect. Then you have captured for Christ a Chaochowfu man who has felt all these influences, you have a man of potential power as a Christian force.

V. Accessibility to Christian influences. Now when you have found a place where that sort of men are, and those men are accessible to Christianity, that is the place to put forth your strength. Is Chaochowfu such a place? The writer had been in China only a few hours before he was given an "honor list" of places where "you can't do a thing" because the people were so proud or conservative, or anti-foreign. Chaochowfu occupied a high place on the list.

Such may have been the case, previous to 1913. But the writer has since then had no experience to confirm it. Courteous treatment everywhere received does not prove accessibility to Christianity, but it does prove the absence of a bitter anti-foreign spirit, such
as some missionaries have had to contend with. That is negative; in addition to this we now have something positive. Our position on the direct route between Canton and Fukien province, puts us somewhat in the position of Palestine or Belgium, a good place for the warring factions to fight it out in, but a rather poor place to live in during the process. Twice during the last few years one of the forces has been besieged in the city and a bombardment was threatened; each time the missionary body has been called on to mediate, and the city has been saved from disaster. Fortunately the nature of Christianity has been well enough understood so that we haven't had to contend with a flood of people who wanted to "become Christians" at once. But fortunately also, the hearts of the people have been opened, so that they are glad to learn about Christianity. Our schools have helped in this, and the city people have not failed to note that when all other school buildings were commandeered for barracks, the Christian schools kept going, which fact has helped to extend the influence of our schools.

That is the situation. The city has barely been touched, in evangelistic work; it occupies a strategic position, on account of its prominence as the political and educational center of this people; its inhabitants are men of education and ability; and they are willing to hear the gospel. There is the challenge. Are we ready to take it up?
File New East article on Bonin
At a village in the Sower fields two men were great friends till they had a quarrel about some money. Then for revenge, one of them, who is considered by the Chinese to be a magician bewitched the house of the other, who began to hear queer noises and a mysterious hand with no body which disturbed the furniture, smashed the crockery, etc. To get relief he went to the magistrate and brought a formal accusation against his one time friend charging him with bewitching the house. The magistrate sent the police to make an arrest, but the "magician" fled in haste to foreign parts, without calling off his bale. Never mind; according to Chinese justice, one of his family will do about as well. So the Mandarin had one of the relatives of one of the relatives put in prison, and the smell of justice commenced then maximum, for I am sure of getting money out of the defendant. Then both sides were in a pickle; one side was troubled
by the devil the other by the
mandarin. If they could only
exercise the devil then they
would settle the lawsuit. But
the devil obeyed no one but no
master and she was beyond the
sea. So someone had a bright
idea to ask the Christians to
exercise the devil.

A happened that there were
missy and several Chinese
preachers in the village holding
evangelistic meetings in the chapel.
Mr. Waters took the lead, and the
whole crowd went over to the
home of the victim, who gathered
the whole family together. There
were hymns, prayers, scripture, two
sermons and more prayer, followed by the presentation
of a Bible to the head of the
house, who promised to read it.

That night, he thought the
devil came again. But the next
morning Mr. Waters and a Chinese
preacher went to see him again,
and since then the hallucinations
have entirely ceased. And one of
his relatives was baptized a few
months afterwards while
another comes to chapel constantly.
and announces himself to be a lxm.

Later that morning, Mr. Waters and the Chinese preacher were about to cross a wide river. But the ferry boat was crowded and deadly, and the boatman was not bothering to haul it out. So on the preacher's advice they waited for the next boat, which was not crowded, and made a quick trip passing in midstream the overcrowded one, which sank a few minutes later and a large number were drowned. Mr. Waters and the preacher had been on that boat. The superstitious Chinese would surely have said, "That's what you get for bothering the devil." And no power could persuade them that it wasn't so. Surely these people need just as clear their minds of ignorance and superstition as well as our gospel to cleanse them. Robt. from Springfield.
recently died. Is perhaps the most conspicuous example of this, tho I am not sure whether he was excluded for taking a new wife or whether he took her after he was excluded from the church. One chapel in the Beth Shalom two men had to be excluded for this offence, within a very short time.

*9* In a large city in the SW field, this is especially customary. I visited one man who makes his living by selling matches, bananas etc in a little two-by-two store on a secluded street. and he has 2 wives. I am told that some people even worse off than they have done financially.

I saw a wealthy miller in the Beth Shalom, the wealthiest man of all. He is the son of a man who had grown wealthy trading in foreign ports. He had 10 wives but only one child. And recently his extravagance of men, gambling etc. he has lost all
he had, and is now immersed for debt (go back to X).

At the opposite end of the spectrum from Sunyata is an aged and poverty-stricken brother in one of the churches of the See. He had been unable to feed his wife, so he asked the church to help him bury his first wife, but not very long after it was found. He had taken a second wife on his suggestion. Shortly after she became a secondary wife. One of those who were excluded for bigamy was without explanation, but the other thereof the god...
Here in America would undoubtedly have seemed a divorce. But there are no proper ways of splitting divorce here in China. Only the beaten way of selling off your wife if you don't want her—and the church hardly wants to take the God in arranging for divorce when it purpose is to change marriage into Christian marriage. But there is a case like this certainly appeals to one's sympathies. He has most lived with his first wife since long before he took the 2nd; she still worships God, and does far more for this chapel than the average member does. But he can't take the communion that is the sample of the problems that arise from the impact of the 2nd gospel on a highly organized monolithic church.
Whether or not the practice of throwing away girl babies is as widespread as is sometimes claimed, it certainly does happen. One of the women in a village in the Szechwan valley told me that she herself knows, but one which had an unusual sequel; for she found the baby which was still alive, and was able to persuade the parents to take it back and raise it. The child had been cut down to her last shilling that it is a wonder she was still alive; let us hope that when she grows up she will become a worshipper of the Lord whose influence she owes her life.

According to Chinese ethics there is nothing wrong in a man’s marrying several wives at the same time, and concubines, too, if he can afford them, and they do not consider that the last wife has any grievance against her husband if he does this. Sometimes the Christians denounce this and have to be disciplined for it. Sun Yat-sen, who has
Under a Lucky Star.

I always intended to be an explorer from the time I can remember anything. Also, to work in a natural history museum and to live out of doors — born in Beloit, Wis. P.15. How he reached his small and stayed in college.

P.16. During his junior year in college, he became very intimate with his instructor in English. When they went out duck shooting they in a canoe — his instructor dropped his paddle and when he reached for it they both fell into icy water. He was an excellent swimmer, but he sank like lead in only six feet of water, only 10 feet from shore. Crampe caused his death. In the mean time Roy Chapman Andrews was
fighting for his life. He could not swim, and the racing flood was whirling him along like a chip, and he was becoming numb with cold. The current pulled him in toward shore where there was a half submerged line of willows and he just barely got caught with his chin above a branch a few inches above the surface of the water or with his body pressed against the branch. There he hung, beating his hands until there was some feeling so that he could draw air from the water. He worked down for the next line of willows to the meadow where water was only a foot deep. Being too weak to stand, he crawled on hands and knees for half a mile, when he plunged into a submerged ravine and was over his head in water.
2. He was just feeling like going to delicious sleep when he felt a sharp pain and that pain saved his life. He had been pushed against a barbed wire fence, and his leg was badly gashed. He thought, "After all this, I'm not going to quit now," or he flopped over to the other side. A farmer or his wife saw him crawling at the house, carried him to the side, washed him in hot blankets, and telephoned for his parents. He had been in icy water more than 3 hrs. and was nearly dead with cold and exhaustion. The instructor's body was found so strange that he, the good swimmer died, although within reach of safety. P. C. Andrews survived against all night impossible odds."
as a graduate present from college.
His parents arranged for a fishing and camping trip
in northern Wisconsin. But
when he had taken a look at
himself and decided that he
had wasted much time in
college, he said to his mother,

"I just don't want to go, mother. It will be more of the same thing I've been doing - just wasting time. I didn't enjoy it now. I want to go to my
and try to get into the Nat. Hist. Museum at once. Next
week."

"All right, son," said his
mother. She was very wise.
July 5 he went to N.Y. and to the museum. They told him that no position was open, but when he offered to clean floors, they took him at $40.00 a month, later $45.00.

He had been in the museum only a short time when he was asked to be assistant to Dr. Richardson, who was going to build a lifelike model of a whale for the museum. 76 feet long. The paper with it was to be covered sandbags, ribs, and the whale looked emaciated and starved.

26. The director, in despair, called Roy and his friend Jim Clark into the office. “This whale is getting very nervous. What shall we do?”

“Scrap the paper or let us finish it with wire paper mache.”
It was amazing what a well-regulated diet of paper-mâché did for the whale. The loss of that pitiful, starved look. His sides felled out so became as smooth as a rubber boot. It took 8 men to finish the job, and the whale being high as good as new after 35 years.

Lucky stars, after 7 mons. of work in midsummer, a real whale was washed up on the coast of Amagansett. R. J. and Jim and Roy were sent to get the skeleton.

Instructions were "get the whole thing" - photographs, measurements, skeleton - every bone. He never believed they could do it.

1st. they fed the whale - 3200. They threw in the skeleton - carcass reached at edge of low tide. Some 50 tons of flesh! Bones archive.
Thermometer 20° Fahr. & bitter wind.

Even fisherman did not want to work. Finally 6 men persuaded to hack flesh off.

Storm came after head was separated and ribs of upper side were visible.

Storm lasted 3 days - in fourth week at 12° at noon. They went to beach and the whale had disappeared - only smooth sand. Frantically they searched - finally found the anchor rope & located the skeleton.

As soon as they dug out a shovelful of sand to get at bone, the depression filled with water. "We had to grope blindly with small tongs, our arms with freezing water up to the elbows, to disarticulate each vertebra. 3 days they worked in the cold, warming their hands over a dip and tea every few minutes."
Hopeless, suffering great but they must get every bone. At least 6 fishermen helped - they finally got all the bones.

This whale became the beginning for eight years of “blubber brine” that carried him twice around the world - starting in 1908 on his 1st real expedition to get a collection of whales and study their habits off W. Vancouver’s Alaska with field glasses from masthead, he watched love making of a pair of humpback whales 50 ft long.

“I suppose I am the only naturalist who has ever been present at the birth of a baby whale. It was 2-2 feet long and weighed about 45 tons - mother was 65 ft. In a few months 170 whales of 3 species were measured, photographed and described - one skeleton was cleaned and prepared for shipment - period of study at Columbia autumn 1908.”
XXI. Results of 1st expedition P.188-189

XXI-1 P. 210
2nd expedition: Dinosaur eggs
220 teeth

1925 largest expedition
50 men
5 motors
150 camels.

P. 239. Little skull
7 mesozoic mammals
Not larger than a rat.
Plague of snakes.

P. 242
Motoring thru a war.
P. 248 excitement.

P. 251
Chinese interference
258 importance of Central Asia

P. 261-262 Chapter XXXI
1932 Key was a regular
Communicator between US, China
Trustees asked him to fill in if he became acting director.
P. 270—just as he was planning another exhibition.
"Under a Lucky Star"

seemed logical — since it did supplement the report of last year and tell more of the author Roy Chapman A.

Last year’s report was amusing and somewhat instructive.

But the chief interest in this book report is in the archaeological finds which fit in with another club program. (A book furnished by Mr. Stevens) charmed life in the hairsbreadth escapes of the author, 3 in his personality and in the travel he took around the globe.
I do not approve of everything in this book any more than I did in everything in last year's acetate at Pondwood Farm but I cannot remember a more interesting set of adventures in auto-biography, nor a personality more versatile in getting out of tight squeezes and in being able to get along with many sorts of people. His courage is high and unquestioned - better he never breaks.
Do you want to go to Borneo and the Dutch East Indies?

Phil. - after Shanghai and Hong Kong -
Robinson Crusoe isle for 5 days trip. 2 companions.
They were there for 2 weeks and had to live like castaways.
Caught a shark, eaten fish, evaporated seawater and salt.
Capt. had had a damaged propeller, so had to

Typhoon from Phil. led to Borneo.

Borneo.

20 ft. snake. P. 70
Heat stroke. P. 71
Malay truck. P. 75
Crocodile hunt. P. 76.
Near Frontenac typhoon P. 77

P. 79. Japan stop for whales.
His health P. 81
His work P. 84. Photographs, measurements, descriptions.

Skeletons sent home.

The next year - many more.
P. 93. Personal explorations.
Japan, Feich.
return by Suez or Mediterranean
opium to P. 98.
Singapore
Ceylon.
Suez.
Port Said, Arab mob.
Hurry - They will kill you.
Return to Orient.
He himself raised money for a collection of mammals that.
P. 104. The gray whale extinct in California.
6 weeks examining 1 gray
While a expedition into northern forest.
P. 108. The Long White Mt.
Hunting tiger in a cave.
112 difficulties of Koreans.
Dr. Gale asked him what boat he intended to return on and Roy replied that there was a great boat completed about the time he left N.Y. She was called the Titanic. I'd like to go on her, if I can get passage.

When he got to Seattle, he read his own obituary for men that he had died in the forest.

Instead of going home to USA, he went to China and home via Russia, Finland, Sweden, Norway and Denmark. Home.

For once I did not have plans for a new expedition but after he had worked on writing a thesis about the grey whale or those getting a degree, he was invited to join a whaling expedition to Alaska. But it turned out
to be a big game hunt.

P. 120  His adventure with brown bears—

Then he took motion pictures of the seal herd on St. Paul's Island in the Bering Sea. Such interesting descriptions of habits of seals. P. 124.

P. 131  The Blue Tiger of Toochow. They couldn't get them.

1916 From region of Toochow they went south and then approached the high land of Yunnan. From the summit of a pass, they looked down and saw a party of several hundred men and women being robbed of several packages of jade.

Wherever they went they searched for animals, big mammals, rats, small "mee shew," birds, frogs, reptiles and fish.

Here he almost died with an infection of the hand. (Today from a doctor.)
They went on to the Salween P.-7 although they had to pass thru a part where malignant malaria was very prevalent. Roy was the only one who contracted the fever because he had gloved his mosquito net as the men also had while waiting for peacocks on the river's edge. Climbed 5,000 feet to safety. Then for 3 days he shook with chills & burned wi fever, but he had plenty of quinine & pulled thru.

A few weeks later hunting the black gibbons (smallest of anthropoid apes) he slept and was just saved from getting over a precipice because the rifle slung on his back caught on a tiny rugged ledge & held me glutted against the cliff. O'55 o'clock I managed to get...
Hearing that the U.S. was at war, he tried to get back to U.S. very difficult. The Army wanted him for Intelligence but Navy "in China," that was more to his liking. From Peking where he had his headquarters, he drove into Outer Mongolia and had an exciting time when his steering wheel was shot just as he was lucky enough to lean back to get his rifle. It was a narrow description, vivid, terrible highlights in the war. Another trip was made in dead of winter with the temp 50 below zero. They went 650 miles without stopping—didn’t dare to stop—afraid the car would freeze.
again in Mongolia.

Zoological expedition in 1919.

Here he was just barely saved from man-eating dogs.

When his companion suddenly realized the dogs circling around them, his scream made Roy jerk as they dashed in.

He was lucky as his 1st shot struck the leader. He got 2 more.

The summer's work had brought a collection of 1500 mammals and a region virtually new to science.

Then as soon as he got to museum, he began planning his Central Asia expedition— the biggest land expedition ever to leave the U.S.

Plans, p. 164.

Then money-raising on a vast scale from great financiers.

Boyds letter asking for part in expedition, p. 176.
By 1921 we were ready to sail for China—an agreat dust storm as he entered Peking—to make headquarters for expedition. A Peking Palace became his.

On April 17, 1922 he left Peking for the 1st expedition to Mongolia.

P. 187 188 finding of 1st fossils.

P. 193-194

“Baluchitherium”

“I shall always remember the day we found the first fossils. Before we went to Mongolia only 1 fragment of a rhinoceros jaw had been discovered on the whole Central Asia plateau. —“Stephen, I have a look.” Roy said. Granger’s eyes were shining when he
ret'd. He pulled out a 9
handful of bone fragments.
Out of his shirt came a
titanother's tooth (show pie t)
ganger said,
"Well Roy, we've done it.
The stuff is here. We picked up
50 lbs. of bones in an hour.
Then we all laughed so should
and pounded one another on the
back.

Very carefully we handled that
heap of fossil bones. Some we
knew were rhinoceroses so we
felt sure that others were titan
others. That was the exciting
part, for no titanotherpes
had ever before been discovered
outside America.

The next A.M. Dr. Berkey came
to.
For a distinguished Prof. of Col-
umbia Univ., he was acting very
quietly. "Come with me," he
said.
all he said was.

"Take a look at that, and see what you make of it." Pict.

I saw a great bone, well preserved, outlined in the rock. It was a dinosaur.

"It means," said Dr. Berley, "that we are standing on Cretaceous strata of the Age of Reptiles—the 1st. Cretaceous strata and the 1st dinosaurs ever discovered in Asia north of the Himalaya Mts."

Unless one is a scientist, it is difficult to appreciate the importance of that discovery with the finding of the huge teeth and huge leg bone, we felt sure that the theory upon which we had
organized the expedition &
promised to be true: - that
is the mother of the life of
Europe r America.
Later the scientists, after
battling a terrific sandstorm
found parts of the skeleton of
a Baluch-i-thereens! 
\textit{Pict}?
The largest mammal
ever known to have lived
upon the earth.
Before this, a neck vertebra and
foot bones had been found
in India,
Even tho we realized the Baluch
was a colossal beast, the size
of the bones left us astounded.
It reached a height of 17 feet
at the shoulder, and was
24 feet in body length. Had a
long neck, r fed on tree branches
like a giraffe, lived about 1850 a.D.
500,000
On the way back the first day or so, they went out of their way to get water, and then they found fossils of animals unknown to any of them, also fossilized eggshell which he thought was from some long extinct bird. No one suspected then that these were the first dinosaur eggs (fifty) ever to be discovered by modern men or to be identified. Neither did no dream that the great basin with wild honey most important locality in the world from the standpoint of studying the geological history of the world from fossils.
When they ret'd to Kalgan, the men used to roughing it, couldn't sleep on a soft bed, and finally stole outside with their sleeping bags to drop into a dreamless sleep.

Scientific results had surpassed our greatest hopes, yet we knew that while only scratched the surface. Expedition had travelled from Urga to the Altai Mts. We obtained complete skeletons of small dinosaurs & parts of large dinosaurs, skull of dinosaur 6 ft. hundreds of pieces. We had mapped 100 sq. miles in the type region of Mongalia.
Our photographer had obtained 20,000 feet of film of all details of the work of the expedition & feature films of every phase of Mongol life. Also 500 still photographs etc. P. 199-200

The 1st expedition was only a reconnaissance. They prepared a 2nd larger expedition which started exactly 1 yr. later both of which found even more startling fossils. Andrews discovered the ancestors of the Ceratopsians agouti of great horned dinosaurs. This species was named in Ross's honor. Proceeratops Andreevi very soon they found the
eggs of the dinosaurs, which became so widely known in U.S.A. for 60 & yes more.

R.C.A. made expedition into the desert until 1932. Troubles times made the Chinese suspicious and they put so many restrictions on that it was not worth while.

There is a great deal more of interest which I hope many of you will find when you read the book.
Questions

Introduction - conscious of lack of knowledge.

1. Wonder - amazement
   at time - succession of animal life
   volcanic upheavals
   short time that man has been
   future ice ages.

3. How clock - importance of teeth!

Before we study the early Amer.

In must glance at the earth before he came.

Map. Ice cap. Thousands of years. to advance

Ice ages: 1 Nebraska
   2 Kansas - interglacial
   3 Illinois
   4 Wisconsin

Ice ages

Pic.: Glacial remains helps to date these

Hills.

Marks of glaciers near Rockport

Pigeon Hill. Uphurst Hill.

Glacial morain (Lambsridge

Boat town common

Boulders.

We are still in that Ice Age!

Marvelous that man has learned to date

How - Layers of clay -

Radioactive elements in minerals.
Ice cap retreated from Hartford to St. Johnsbury
Received from or shipped to

In their early days,
Earth teemed with animals
Before their early days,
Earth teemed with many forms of
life—especially in age of reptile
when dinosaurs lived (cold blooded—"

not one kind animal like a cow—
but many different kinds
only pictures will give you any idea
No man ever saw a dinosaur.
How do we know they lived?

{skeletons
tracks
eggs

How did scientists learn to date their

Layers of soil in Sweden.
Migration of animals, Stockholm
Many animals native to N. & S.A
totally extinct. Rhacodon — elephant. Strayed west
Great migration from Asia by being
58 miles down Yukon Valley
Mam. Wooly mammoth curved tusks
giant bison teeth like breadbox
musk ox
giant elk
beairs misshapen goats.
already in 9 a.m. were
great ground sloth. tapir
mastodon camel
horse. beaver wolf.
some flesh eating animals also there
saber tooth tiger
dire wolf. cave bear.
african animals are truly ice age animals
not survived somehow to present day-

the earliest americans also (prof
heeben says) crossed bering strait
and wandered along valley of yukon
about 30,000 years ago.
what became of these animals
man survived
most animals died a terrorist death.
gold diggers to alaska
found mangled bodies tree limbs
great mystery sudden death (stomach
volcanic ashes in 2. 5 a.m.
toxic cloud of gas hurricane
Tolson points (ms. Num p. 31), found wi animals in alaska, but no human skeletons. However - men did live at this time. Prof. Heeben tells us how he worked it.

Boy scout
Student
Prof. Heeben party

Carved deer antlers, sandals, pottery.

Up to this time it was that Tollem man was oldest inhabitant. No cave men.

Boy scout
Student
Prof. Heeben party, bats, giants, scotch.

Digging drilling
Layers of care.

It was like opening a gigantic sardine can, where one gets evidence of early history of last glacial period.

Tollem layer - horse, rein camel, mamoht.

Yellow ochre.
<table>
<thead>
<tr>
<th>Date</th>
<th>Ex. Charges</th>
<th>Expressman</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Paid Collect</td>
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</tr>
</tbody>
</table>

What were these early hunters like? Have we found any bones of men yet found in Alaska or in Sandia Cave? There was not even a human footprint. Exasperating and mysterious that we have not found any skeletons yet we have a little information about how Amer., Indian is descendant of earliest immigrants. Considerable evidence that man survived the catastrophe which killed the 40,000,000 beasts.

Sandia or Folsom men represent 2 waves of immigration from N.E. Asia into the New World by way of Bering Strait. So men who studied Indians found 2 types of heads - P. 189 longest narrow headed Indians were earliest and had been driven to edge of continents by round headed Indians.
Sandia layer
Charcoal, fire places
Weapn points P. 35, P. 135
Scrapers for dressing skins
Knives chipped from flint
Teeth & bones of animals
including mastodon, mammoth, camel, bison, horse
No remains of man.
What were the early hunters like?
<table>
<thead>
<tr>
<th>Date</th>
<th>Ex. Charges</th>
<th>Expressman</th>
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<td></td>
<td>Collect</td>
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</tbody>
</table>

Minneapolis, Minnesota.

Found in a great glacial lake; fell through a hole in ice revealed when lake had dried up; a road crew accidentally dug across her casual grave.

Her head long and narrow; teeth of tremendous size.

Author hopes to find a human skeleton with flint points which will identify the time—either in Alaska or in Eastern Siberia.

So we have modern man in this last 25,000-30,000 years.

The study of man before that makes an interesting story in "Meet Your Ancestors" by Roy Ch. Andrews, 1945 in our Bible.
Sandia Man, as anthropologists think he may have appeared, with some of his animal contemporaries. In upper panel: bison, camel, horse, mammoth. Lower panel: mastodon

Archaeologists Stumble Upon the Campfires of Prehistoric Huntsmen of 25,000 Years Ago

By ALDEN P. ARMAGNAC

DISCOVERY of the earliest known American has just been reported to the Smithsonian Institution by Dr. Frank C. Hibben, University of New Mexico anthropologist. Sensational finds of weapons and tools, by a party led to Sandia Cave, N. M., prove the existence there of prehistoric huntsmen more than 25,000 years ago.

Until now, our "oldest inhabitants" have been believed to be another hunting race, called Folsom Man, whose relics date from a few thousand years later. In fact, it was a quest for "missing links" between Folsom Man and his agricultural and pottery-making descendants that brought Dr. Hibben to Sandia Cave. He found nothing of the sort. Instead, he came upon handiwork of an older-than-Folsom people, now called Sandia Man after the name of the site where the startling discovery was made.

Originally discovered by Boy Scouts, the cavern opens high on a cliff. Wind-blown dust completely blocking the entrance, and piled high within, would have proved a heart-breaking obstacle but for a novelty in the Hibben party's equipment. They set up
a gasoline-powered suction blower built especially for cave exploration by Dr. Victor J. Smith, museum director at Sul Ross College in Alpine, Tex. Dust melted away from its intake nozzle in the cave, to be spewed harmlessly from a discharge hose down the cliff. Now to explore, systematically, the sandwiched deposits beneath the thin limestone crust of the cave floor. The top layer would contain the latest material; the next one, earlier; and so on down, as trained archaeologists know. With horror they might have watched the Hibben party go at the first layer with miners' picks, geologists' picks, and even sledge hammers! Delicate methods were out of the question, for dis-

Machinery helps uncover the past: A suction blower that removes dust, saving explorers untold labor
solved limestone had penetrated the layer and hardened it to the consistency of crumbling concrete. Little damage, though, if some of the remains in the broken and screened lumps were shattered. They clearly were Folsom weapon points and other familiar articles of his making.

Deeper went the explorers’ test holes and trenches. They struck a relatively soft layer of yellow ochre, evidently laid down before Folsom Man arrived on the scene. No human remnants turned up. The party might well have stopped there and gone home. But they kept on digging. At least the “sterile” bed of ochre proved they had traveled backward, in time, long before the period in which Folsom Man is known to have flourished.

Then, to their amazement, a still deeper layer of man-made remains! Stones ringed a small bed of charcoal—once a fireplace. A weapon point, illustrated on page 128, rested against one of the boulders. Dozens more were found scattered through the debris. There were scrapers, for dressing hides; and knives, chipped from single pieces of flint. All differed markedly from corresponding Folsom objects. Sandia points, for example, bore a characteristic notch at one side; while Folsom points were broadly indented at the base, as shown in the illustration on the following page.

Teeth and bones of animals included mastodons, mammoths, camels, bison, and horses, all of species long since extinct, but contemporary with this Sandia Man. In vain hopes of finding his skeleton, the party excavated underlying clay to bed rock. It was the only thing missing from this treasure trove.

What Sandia Man looked like, however, can reasonably be guessed at, Dr. Hibben informs POPULAR SCIENCE MONTHLY. Compared with early types of the Old World, where mankind had its origin, his physical features were essentially modern. Probably his head was long and narrow, and he had a Mongoloid face. He used his Sandia points on light javelins or spears—many centuries were to pass before some primitive genius

![Image of excavation site](image)

Expedition members bring up loose material from a test hole, to be examined later for ancient relics.

![Image of Sandia Cave](image)

Cut-away view of Sandia Cave shows blower at work, and layers explored. "Sandia" layer contained tools and weapons of Sandia Man, two of his fireplaces, and the bones of many prehistoric animals.
invented the bow and arrow. Nevertheless, there is every indication that Sandia Man successfully hunted the larger animals, probably by trapping them in pits or by catching them at a disadvantage on ledges of cliffs. Evidently the cave containing his relics was not his home, but a hunting lodge. Upper Paleolithic style, which he used for short periods of time during forays for food.

How did this remarkable individual get here? Experts consider it extremely probable that the first New World colonists came from Asia, by way of the Bering Strait and the Canadian Great Plains. Until lately, it was held that this crossing must have awaited the final retreat of glacial ice sheets, about 15,000 years ago. Newer evidence, as pointed out by Prof. Kirk Bryan, Harvard University geologist, indicates that there were previous intervals of mild temperature during which the migration could have occurred.

One of these periods coincides with the age of Sandia Man. Thus there exists the strong possibility that he was the original migrant. If so, he was not only the first known American, but the first American in fact!

Folsom Man may have migrated later to the New World; or he may have been a direct descendant of Sandia Man. The same alternatives could account for the remarkable discovery, a few years ago, of the skeleton of a young Indian girl in glacial silts 18,000 to 20,000 years old. That date would allow plenty of time for Sandia civilization to spread and develop into a variety of cultures. And to speed the future tasks of scientists in settling questions like these, machine methods like the blower system used with such success at Sandia cave are now available.

FOLSOM POINT, below, was found in upper layer of cave. Compare it with SANDIA POINT, right, made by the earlier man. Latter is larger, notched at side instead of bottom

Cross section of cave layers: The man's hand rests on the vein of yellow ocher that separates Folsom deposits above from Sandia remains below. Above his shoulder is the cave floor, a limestone crust
Earliest Life—Spineless Underwater Creatures of 500,000,000 Years Ago

Some forms, like jellyfish, sponges, and marine worms, survive today. This series on prehistoric life was painted especially for the National Geographic Magazine by Charles R. Knight, noted authority on paleontological art.
Fantastic, Scorpionlike Eurypterids, Some Eight Feet Long, Spent Most of Their Time Half Buried in Mud

The clumsy creatures lived under water and crawled sluggishly about in search of food. Their skins were covered with a horny substance dotted with scalelike markings. Eurypterids lived in the remote Age of Fishes. Much like them today is the familiar king, or horseshoe crab, with a stinglike spine at the end of its body.
With Its Powerful Jaws, the Armored Dinichthys (Terrible Fish) Crushed Luckless Prey

Resembling overgrown catfish, some of the giants were 25 feet long. Thick bony plates protected the immense head. Edges of the jaws were so sawlike and sharp that they resembled teeth. Eluding capture are three stiff-bodied, agile little sharks (Cladoselache), which do not differ greatly from the shark family of today. These creatures lived in the Devonian Period, named after Devon, England, where fossils of the epoch were discovered.
Ungainly Eryops Lived in Slimy Pools When Earth's Coal Beds Were Forming

This five-toed, small-brained amphibian was the highest type of living creature of the Carboniferous Period. In the mild, moist climate, giant trees and rushes sank deep into the muck when they died, and gradually turned into coal.
Time Marches On—Huge Warm-blooded Mammals Replace the Vanishing Dinosaurs

These six-horned Uintatheres flourished in Uinta County, Wyoming, 60 million years ago. At the river edge are Eohippi, or dawn horses. Fossils of some other ancestors of the horse were found in July, 1940, by the National Geographic Society-South Dakota State School of Mines expedition to the South Dakota Badlands.
Long Before the Pyramids Were Built, Mighty Arsinoitherium Fought Prehistoric Hyaenodons in Egypt

The beast is named for the Egyptian Queen Arsinoë because its bones were discovered near the ruins of her palace. Although the animal resembled a rhinoceros, the two large horns on the nose were not true horns. They were bony growths from the skull, and enabled the animal to ward off the attacks of Hyaenodons (long-toothed hyenalike creatures). These savage but slow marauders also existed in North America.
Titanotherium, Last of the Horned Giants, Once Roamed North America Like the Buffalo

Tough, thick skin covered the bony growths protruding from the saddle-shaped skull. Why so capable a fighter disappeared from the earth remains a mystery. Many skeletons have been found buried beneath large deposits of volcanic ash, suggesting that some, at least, were victims of violent eruptions. Their record has been preserved in the Badlands of South Dakota, where numerous fossils have been excavated.
Prehistoric Denizens of South America

Toxodon, clumsy brute at left, used its long and heavy teeth to cut off marsh plants for food. Glyptodon, forerunner of the armadillo, could not curl up in a ball like its modern counterpart, because its bony armor was a fixed sheath. Llamalike creatures in background are Macrauchenias, long-necked plant eaters.
No Match for the Saber-toothed Tiger Was the Stupid Giant Ground Sloth

Too slow to run, the Megatherium stood at bay, vainly trying to seize the agile cat in its powerful arms. Nine-inch fangs, used only for stabbing because of their unwieldy length, sank deep into the monster’s flesh.
When the Age of Man Began, the Mastodon Still Inhabited the United States

The creature's name, meaning "nipple-tooth," comes from the queer conical projections on its molars. Bones and teeth of hundreds of American mastodons have been unearthed. Best skeletons come from New York State. In colonial days many credulous persons thought they were evidence of a vanished race of human giants.
Six Feet of Head, Horns, Spines, and Collar Look Ferocious, But on the Mild-mannered Crowned Lizard It Was All Bluff

Even the formidable beak of the Styracosaurus was used only to cut foliage. The beast was a vegetarian and a landlubber. Safer was the upright Parasaurolophus (pair at right). When danger threatened on land, this dinosaur could take to the water, wading or swimming to safety. The bony growth from the back of its head was a singular feature. For food this reptile gathered soft, moist marsh plants in its ducklike bill.
Mosasaurus Ruled the Waves When They Rolled Over Western Kansas

Hundreds of specimens of this giant swimming lizard have been taken from the chalk bluffs of that State, which was submerged in a remote past. The 30-foot reptile had a powerful tail, four paddles, and sharp-toothed jaws. Here it tries to seize a low-flying Pteranodon, most highly developed of the Pterodactyls (Plate VIII).
Early American Hunters, Folsom Men, Attack a Giant Bison with Darts and Arrows

A peculiar type of arrow or spear point was found embedded in the skeleton of an extinct species of bison at Folsom, New Mexico, 15 years ago. This led to discoveries which have pushed back knowledge of man on the American Continent by several thousand years. No longer do scientists believe that the early Basket Makers of the Southwest were the first Americans. Some think such a hunting scene as this may have occurred 15,000 years ago. The use of the bow at that early date is not established.
With Flint-tipped Spear, Stone Ax, and Rocks, Neanderthal Men Repel an Invader

Their women and a child cower in the cave behind them. The race is named after Neanderthal, a valley in northwest Germany, where fossils of these human beings who lived in the Ice Age were first discovered. These primitive men had low foreheads, thick necks, short legs, and big hands and feet.
Ten Thousand Years Ago, Cro-Magnon Men Drew Pictures on the Walls of Their Caves

Principal subjects were bison, mammoths, horses, reindeer, and other animals. Cro-Magnons were as tall as most modern men; their name comes from the caves in the Department of Dordogne, France, where paintings and fossils were found. See "Discovering the Oldest Statues in the World," in THE GEOGRAPHIC for August, 1924.
Lake Dwellers of the Early Bronze Age Relentlessly Pursue an Irish Elk

Standing in the bow of his dugout, the hunter aims his bronze-tipped spear at the giant stag (Megaceros), now extinct. No one knows when men learned to fuse tin and copper into bronze, but about 1500 B.C. the metal was in wide use. Homes were built on piles above the waters of many European lakes.
These titanic footprints, made in mud that later hardened into rock, were left by seven monstrous sauropod dinosaurs that passed this way some 120 million years ago. To reach these markings, a number of sediment layers, which undoubtedly aided in preserving the tracks through the ages, first had to be removed. The absence of trailing marks indicates that at the time of the dinosaurs' passing the area was covered with water deep enough to float the reptiles' tails off the muddy bottom, as pictured in the sketch at right.

**Could the Brontosaurus Walk on Land?**

**DINOSAUR** footprints found in Bandera County, Texas, offer a clue to a mystery that has long baffled paleontologists: Could the prehistoric Brontosaurus walk on land? This 27-ton sauropod, largest reptile ever to inhabit the earth, was known to have been a good swimmer; but could his legs support his great weight? The 120,000-000-year-old tracks shown on these pages lead experts to believe that Brontosaurus was at home on terra firma.
"Trunkload. Thirty-five-year-old "Kieri" doesn't seem to feel "down in the mouth" about hauling this wreckful of wreckage.

Elephants long have been used for many useful purposes, and here's a good example. These lumbering circus leviathans are helping to clean up war rubble in Hamburg, Germany. "Kieri," and "Many," former citizens of Ceylon, don't seem to mind doing their bit to relieve the city of the hills of debris.

Pushover. "Kieri" seems to be taking steps on the ladder of success here. By using his head, he'll get the battered fire escape out of the way.

Ramblin' Wreck. A 3,000 pound burden is easy. Here, "Kieri" totes a slightly used car on to a wagon.

Headway. Teamwork by 25-year-old "Many" and his senior partner shows they're really making headway.
Cold Weather Friends

Everyone has, at one time or other, built a snow man and then stepped back to admire the creation. But D. L. Christopher of Minneapolis made an art of his snow hobby, decorating his yard with beautifully sculptured figures. A few of his cold-weather friends, who leave home at the first thaw, are shown on this page.

Famed Trade Mark. The Sinclair dinosaur stands his ground on the Christopher lawn to welcome visitors.

Ice House. This miniature house of worship was carved out of ice by Mr. Christopher on the lawn of a neighborhood church.

Cold Reception. This long-legged fellow, too big to be asked into the house, turned to ice on the front lawn.

King Size. Looking as regal in ice as in the flesh, this lion, authentic in every detail, gives out with a cold stare.
Sinclair H-C Gasoline

Stop at this Sign for Service

WINTER VISION. Cold weather driving conditions demand clear vision at all times. We feature complete windshield and wiper service as part of our courtesy program.

Sinclair H-C Gasoline

NOW POWER-PACKED

with 100-Octane Components

100-octane gasoline is the fuel that drove fighter planes at more than 400 miles per hour...the fuel that powered the world’s mightiest bombers across thousands of miles of ocean.

And now these same components are blended into NEW Sinclair “H-C” and Ethyl Gasoline...for your car. Stop in for a tankful today.

Sinclair H-C

From Skyway To Highway

Danielson Oil Company, Inc.

Sinclair Products

7 Railroad St., Danielson, Conn.

Phone: 700

Sinclair’s Program...Better Products...Better Service
Parachute Bombs
Block Air Raids

Creating an aerial mine field of bombs attached to parachutes is the novel plan of an English inventor for protecting large cities, naval fleets, and other vital spots from wartime enemy air raids. Rocket shells would zoom up to a height of 30,000 feet, where they would release a mass of bombs. Clusters of these aerial mines, dangling from parachutes on steel wires, would drift slowly earthward to entangle and destroy aircraft invading the area. Each parachute bomb would be equipped with an automatic safety mechanism to prevent its explosion if not detonated before reaching ground. The rocket shell itself would be fitted with a parachute so that it could be recovered on landing. Loaded again with bombs and rocket fuel, it could be used over and over as the hostile aircraft were within range. Rocket-sending stations at increasing distances around cities would provide several defense lines.

Our artist’s conception of an air raid on a naval fleet, with an aerial mine field of parachute bombs scattered by rocket projectiles to entrap the attacking planes. This method of antiaircraft defense also would protect cities and strategic centers.

DECEMBER, 1937
Hobbyist Makes Tools Like Primitive Man

FASHIONING ancient tools and weapons just as it was done by primitive man is the unusual hobby of ninety-one-year-old H. L. Skavlem of Wisconsin. Using only animal bones for tools, a tree stump for a workbench, and a stone for an anvil, he has made thousands of spear points, stone fish hooks, and stone axes. Mr. Skavlem is said to be one of the few modern white men who have ever mastered the difficult art of working flint. Two stone axes he made are shown above.

Camera Catches Plane at Moment of Crash

SNAPPED the instant before the crash, the remarkable photograph at the right shows a British airplane pilot being catapulted from the cockpit as his craft plunged to destruction. The pilot somersaulted down the side of a cliff and through the roof of a building. Contesting in an air race, he had swooped low to be identified, when his plane was caught in whirling air currents.

President's Profile Seen in Odd Shadow

OFFICE workers in the financial district in New York City were startled recently by a giant shadow resembling a man's face, which was cast on the side of a Wall Street skyscraper by adjacent buildings that blocked out some of the sun's rays. About twelve feet in height, the odd shadow pattern, shown in the photograph above, bears a striking resemblance to the familiar profile of President Roosevelt.
Parade of Life Through the Ages
Records in Rocks Reveal a Strange Procession of Prehistoric Creatures, from Jellyfish to Dinosaurs, Giant Sloths, Saber-toothed Tigers, and Primitive Man

BY CHARLES R. KNIGHT

NATURE'S most fascinating continued story is the record of life on our globe and of the strange creatures which at one time or another have inherited the earth.

This venerable earth, on which through countless ages so many animate things have existed and then passed away, seems to have been at first merely a vast bulk of formless matter. Great clots or whirls of more or less gaseous elements, detached from the sun by the attraction of a passing star, gradually assumed a whirling or rotating motion which tended to compress the tenuous mass into ever more solid form.

Spherical in shape and possibly a third the diameter of our present planet, that little world was able to attract and hold an atmosphere of watery vapor augmented from time to time by outpourings of gases through violent volcanic action.

Water fell in the form of rain or snow. Accumulating in holes or depressions, it made our first seas and finally oceans. These bodies of water were not salty in their earliest phases, but later became so from the constant leaching of salts from the dry lands through which the streams and rivers flowed.

Seas Cradled the Miracle of Life

Meanwhile a constant rain of falling bodies—scattered remnants of the primordial explosion which had created our planet—continued to enlarge the original bulk of the earth until it assumed practically the size and shape which we know today.

Naturally the now briny ocean depths were shifted more or less in their positions upon the surface of the planet, but this did not preclude the development, in course of time, of tiny living organisms. They found a congenial home in the warm and constant temperature of the seas that occupied so large a portion of that ancient world.

These minute objects, microscopic in size and simple in form, grew definitely larger as the ages passed. Cells were added to cells, while species developed and disappeared, giving place to new and more complicated forms in constantly increasing numbers.

By this time the great life experiment was fully established upon the baby earth, but the profound conundrum of its existence is still as much of a mystery as ever. We know, however, that once the living stream had fairly begun it has never ceased to function through all these millions of years.

Under the microscope we may see that life principle beautifully expressed in the lowly amoeba as it marches—or, rather, flows—in search of food. How efficiently it envelops the precious substance, extracting nourishment without which even an amoeba must cease to exist. For it seems that to maintain the elusive state of being which we call life, some help must be brought in from the outside, as no living thing is truly self-supporting. It cannot live upon itself indefinitely, but must bolster up its constantly failing powers by the ingestion of food in some form or other.

By a study of this shapeless little object,
Dinosaurs Left Their Footprints in the Sands of Utah

Here at Kanab this trail of a small one is still clearly visible, for the soft sand has turned to stone which has preserved the tracks. In one section of the State, imprints of eight varieties of dinosaurs have been discovered. Some of the huge beasts took strides 15 feet long.

then, we may see, as in a glass, the unfolding of the great story brought upward through the ages in a long succession of life expressions, some large, some small. All have been activated by the same impelling force, which forever urges them forward and which ceases only when that life becomes extinct.

Creatures Dead Millions of Years Reconstructed

We shall never know, of course, more than a mere fraction of the thousands of types of animal life which have peopled this world through its long and ever-changing history.

The remarkable fact is that we are able, by intensive research and skillful deduction, to unearth and reconstruct forms of life which have been extinct for millions and millions of years.

Man's interest in such things began, no doubt, while he was still in a very primitive state, both mentally and physically. As his intellect improved, so did his innate curiosity, an attribute highly characteristic of the human mind.

Naturally our grubby and much harassed ancestors did not regard the finding of a fossil shell or piece of bone with much scientific interest. On the contrary, they were merely poking about in caves or wandering along streams and strands in the necessary but scarcely intellectual task of finding something to eat.

Even their practical minds and stomachs could make nothing of such highly mineralized objects, except as ornaments for their ugly persons, or, if the find was a good solid thigh bone, a club or persuader to be used in war or the chase—or during domestic fireside chats.

Consequently, it was not until a much later period of man's existence that he became self-conscious enough to seek out these mute reminders of a vanished past merely to satisfy his curiosity, and not as a possible filler for a usually empty interior. At length, no doubt, he even began to see a possible connection between the living things by which he was surrounded and the stony but now familiar treasures which he was able to unearth.

With man at this interesting point on the highroad of his upward career, it was but another long step to a time when with fully
With a Few Teeth as a Basis, and a Lively Imagination to Draw On, Waterhouse Hawkins Created These Fantastic Iguanodons

Eighty-eight years old, the figures stand in the grounds of the famous Crystal Palace in London. Scientists who first discovered scattered remains of this dinosaur in Sussex, England, noted that the teeth resembled those of an iguana. The restorer jumped to conclusions, and made his animals look like giant iguanas. Today we know the iguanodon was a kangaroo-like dinosaur with short front feet which it seldom used in walking.
reminders of days and eras long passed away.
Life of 500,000,000 years ago is shown in
Color Plate I, a Cambrian underwater scene.
The name “Cambrian” was given to these
deposits because they were first described from
Wales, which the Romans called Cambria.
One can hardly conceive of the tremendous
changes that have taken place in the world
since that remote time. Yet a study of the
lowly invertebrate creatures in the picture will
disclose types not very different from those
found in our present-day seas.
It is true that some of the forms have be-
come extinct, but the wonder is that any of
the original models have persisted through the
ages. The glass sponges, seaweeds, jellyfishes,
marine worms, and even the shrimplike crea-
tures are not unlike those of today, but trilobi-
tes and others have long since passed away.
All this extraordinary aggregation, and
many more besides, were discovered about
1910 by Charles D. Walcott, Secretary of the
Smithsonian Institution in Washington,
D. C. The fossilized remains were found at
an elevation of about 7,000 feet near Burgess
Pass in the Canadian Rockies.*
Until this wonderful series came to light,
our knowledge of the Cambrian fauna was
comparatively limited and fragmentary, but
some strange good fortune had preserved these
delicate specimens so that in many cases even
the soft parts of the anatomy can be studied.
The scientific world rejoiced with Dr. Walcott
over his lucky find and the material is now in
the National Museum at Washington.
Discovery of these lowly sea creatures at
such a lofty elevation is readily understood
when one realizes that the land where they
now lie embedded was once the bottom of the
sea.
Since that distant day vast transformations
have occurred in all the continents. Huge
mountain ranges have risen, only to be worn
away and washed into the waters. Snow-clad
peaks now stand thousands of feet above the
floor of those ancient Cambrian seas, so rich—
even in that far-off time—with living organ-
isms of many kinds.

Scorpionlike Creatures Crawl on Sea Floor
Old Father Neptune himself, in one of his
worst moments, could hardly have conceived
a more fantastic set of beings than the large
scorpionlike creatures which bear the name
Eurypterid (Plate II).
First discovered in fossils found in New
York State, they vanished millions of years
ago, leaving no actual descendants. Our mod-
ern horseshoe crab and the present land-living
scorpions suggest in a way these dreadfully
ugly creatures, but they do not attain the size
of the ancient types. Some of them, such as
Pterygotus, were as much as eight feet in
length and proportionately hideous.
Eurypterids were all aquatic bottom-living
animals, presumably carnivorous but very slow
and clumsy. It is possible that they lived in
fresh water, but nothing is definitely known on
this point. They were characteristic animals
of the Silurian Period, at a time when the
fishes, except for a few small sharks, were
still in a more or less undeveloped state of
evolution.

The “Terrible Fish” Could Have
Snapped up a Man
The Devonian Period—named from the
county of Devon in England—was a time
when large numbers of primitive fishes
swarmed the seas and oceans of the world
(Plate III).
Some were heavily armored and curious in
structure but foreshadowed later and more
highly developed types. Others, such as the
huge and sinister Dinichthys (terrible fish),
rising from the bottom, had immense heads
and gaping jaws with which they engulfed
their prey.
The Terrible Fish had no true teeth, but the
edges of the jaws had cutting points that per-
formed much the same function. A full-
grown man—if any had lived at the time—
could have been snapped up by the mighty
fish and swallowed with the greatest ease.
The stiff-bodied little shark (Cladoselache),
just escaping sudden death by its superior agil-
ity, belongs to a very early type of the shark
family, a race of fishes which have well proved
their staying qualities in the struggle for exist-
ence. The man-eating sharks of our own day
have a long heritage of strength, speed, and
ferocity and constitute the world’s most dan-
gerous class of sea-living creatures.
Life in the Carboniferous Period had pretty
well advanced, both on land and in the water.
Vast tracts of country were in a semi-swampy
condition and the climate was moist and warm.
In such a favorable environment the flora
developed amazingly. Huge trees of many
kinds rose majestically from the surrounding
ooze, their straplike roots spread wide for sup-
port in the moist soil.
Insects, including dragonflies and cock-
roaches, some of them very large, flew through
the forest shades or crawled about among the
leaves and branches.
There were no true reptiles, but many types
of salamanderlike animals existed. Some of
Bones of a Prehistoric Mammoth Tie Up a Los Angeles Excavation Crew

When workmen ran across the giant skeleton in Eagle Rock, digging stopped. The California Institute of Technology was notified, and the fossil remains, including skull and tusks, were carefully removed (Plate XIX). The fence was erected to ward off souvenir hunters and curious spectators.

des, such as Eryops, were large (eight or ten feet in length), with huge heads, long, powerful jaws, and small, soft feet (Plate IV). Our modern newts and salamanders are not unlike these ungainly beasts except in size.

They were all flesh eaters, snapping up anything which came their way, either of their own kind or some other species. Slow, ponderous creatures, shunning the sunlight, they swam or crawled about in dark, slimy pools under the masses of heavy foliage.

In these pools grew gigantic rushes, except for size not unlike our modern Equisetum, or horsetails. Such plants, with the vast masses of dead trees, leaves, and branches, sank gradually into the all-pervading muck, there to change through countless ages into what we now call "coal."

The warm and very moist climate of the Coal Age was followed by a much more arid and sterile period called the Permian, from the Province of Perm in Russia. Large areas of dry land were now exposed. The fauna changed from a soft-skinned race of creatures like Eryops to the scaly-skinned, hard-bodied true reptiles.

In the Permian Period True Reptiles Appeared

These early members of a mighty race were exceedingly varied both in size and in form. They numbered among their ranks some of the most grotesque creatures imaginable.

In Dimetrodon (double-measure tooth) we see an excellent example (Plate V). The long finlike decoration along the back is not a fin at all but the upward prolongation of the spines of the vertebrae. These delicate spines, no thicker than one's finger, are four feet in height and must have been connected, as shown, by a tough skin or membrane. The creature was carnivorous, some ten feet in length, and probably lived near water, where it could easily obtain its food.
The equally curious monster at the top of the picture is Naosaurus, a small-headed animal, herbivorous in habit but carrying on its back the same erect fin plus a number of short cross-bars like spars on the mast of a ship.

The two creatures shown are from the Permian of Texas. Many other species have been found in the same area and also in such widely separated regions as Siberia and South Africa. In those countries most of the types were large, heavy-bodied animals with interesting potentialities, since a study of their skeletons suggests a possible ancestry to the true mammals, which were finally to supersede them completely in the struggle for existence.

**Diplodocus Was Gigantic But Harmless**

Among all the strange and sinister creatures fashioned by Mother Nature, none can surpass the great family of dinosaurs, of which the 75-foot Diplodocus is a conspicuous example (Plate VI and pages 168, 169).

Dinosaurs first appeared in the time known as the Triassic Era, but their earlier ancestry is still a mystery. They were true reptiles, but fashioned along three or four general lines of development as to habits, structure, and the like.

Diplodocus, Brontosaurus, and several other long-necked and long-tailed species, all gigantic, were aquatic or at least spent most of their time in the water. All were harmless monsters, feeding and moving quietly about in the midst of large masses of floating vegetation and leading a placid and peaceful existence. Occasionally the great brutes must have come out of the water, either to deposit their eggs or to bask in the warm sun on some convenient sandbank.

The various land-living species arouse our curiosity by their strange and unusual attitudes and forms. Two main types are evident—those which walked upright on their hind legs and the races which progressed on all four legs.

Some of the erect species were the vegetable feeders and others were flesh eaters. Those that crawled about on all fours branched out into some bizarre and heavily armored monsters, spiny and terrific in appearance but in reality harmless.

As a class, the dinosaurs were distinctly lacking in brain power, yet they existed over a large part of the earth's surface for millions of years. Despite their feeble mentalities, they apparently succeeded in dominating the animal life of their time.

In Color Plate VII two characteristic types of Jurassic dinosaurs have met to settle an old score. The grotesque monster Stegosaurus (roofed lizard) is bidding defiance to the smooth but ferocious Ceratosaurus (nose-horned lizard). The latter rears above him with wide, tooth-filled jaws and looks for some vulnerable opening in that wonderful array of plates and horns which presents such a formidable defense.

Stegosaurus is without doubt one of the strangest of all the dinosaur family, with its tiny head and very small brain cavity, its long legs and small feet, and—crowning touch—the thin-edged plates set diagonally on either side of the spinal column. Despite this elaborate protection, the creature was harmless, a feeder on plants which it cut off with its beaked jaws.

How such a small mouth could have secured enough food to sustain the 25-foot animal is a decided mystery; yet, being a reptile, it could no doubt sustain life for a long period without food of any kind.

Ceratosaurus, in contrast, consumed quantities of meat, even carrion, whenever it had the chance. The long, heavy jaws, armed with rows of sharp-edged cutting teeth, could seize and hold its prey in a viselike grip or tear off huge pieces of flesh to be swallowed at one gulp by the ravenous creature.

In Ceratosaurus we have an example of the upright two-legged dinosaurs. They habitually walked on the hind legs, leaving the smaller front limbs free for grasping the prey or for fighting. All of the numerous flesh eaters were of this type, from the little fellows no longer than a chicken to the great Tyrannosaurus, monarch of a later day in dinosaur history (Plate IX and page 165).

**An Early Bird and a Flying Reptile**

Both the little animals in Plate VIII demonstrate vividly two of Nature's early attempts at flying. The upper birdlike creature, Archaeopteryx (ancient wing), is on its way to becoming a true bird, while the lower figure is that of a flying reptile, or Pterodactyl (wing-fingered).

In Archaeopteryx we have one of those spectacular specimens which scientists are fortunate enough to discover only at rare intervals, a link, apparently, between the scaly, cold-blooded reptiles and the warm-blooded, feather-covered birds.

This interesting creature (it is about the size of a pigeon) is known to us from two unique and deeply instructive skeletons discovered in 1861 and 1877 in the Solnhofen slates of Bavaria. These celebrated deposits have long supplied lithographers with lithographic stones, in which a fine and peculiar texture is necessary. This same velvety
surface is also responsible for the almost perfect preservation of the delicate skeleton of the bird-reptile and also the imprint of the actual wing and tail feathers.

Without these precious imprints we should hardly dare to guess that the wings were almost like those of a modern bird or that a pair of feathers sprang from each of the long tail vertebrae. There are teeth in the tiny jaws, and clawed fingers on the wings—certainly an unusual set of characters to be in the possession of one diminutive creature, but significant for students of evolution.

Beneath this unique feathered being a long-jawed, goggle-eyed reptile hangs suspended by the sharp claws of the wings and hind feet. No feathers grace its ugly naked form, but the long-projected little finger of each hand carries a delicate membrane which is also connected to the knee and ankle joints of this little flying nightmare. The slim tail is tipped by a kitelike membrane undoubtedly used as a rudder to guide the gliding wing-fingered Pterodactyl through the air.

**King-tyrant Lizard Was a Terrible Killer**

King-tyrant lizard—so we translate the name of the huge and terrible flesh eater *Tyrannosaurus rex*, the greatest and last, apparently, of the carnivorous dinosaurs (Color Plate IX).

The sinister appearance of this dreadful killer can hardly be appreciated unless one comes face to face with the actual mounted skeleton. Some twenty feet in height, long-legged and long-tailed, the reptile towers upward in most menacing fashion even though no flesh or skin now covers its mighty frame. A huge and terrible head, the jaws filled with long sharp teeth, is a fitting crown to the whole spectacular impression of the world’s most formidable flesh eater, which once roamed the Hell Creek region of Montana.

An upright fast-walking dinosaur, *Tyrannosaurus rex* had long hind legs and strangely birdlike feet, which gave the reptile an immense stride. But the little front legs and feet seem out of place on so huge a body. Indeed, they are so small that they could have been of little use and appear to be merely degenerate remnants of much more powerful limbs in the earlier types.

To the lesser dinosaur species which roamed the region inhabited by *Tyrannosaurus*, the sight of the enormous form of this rapacious beast must have been a signal for instant flight or certain annihilation.

Undoubtedly two males of the species would sometimes indulge in a Gargantuan tussle for supremacy, but such a battle probably ended in quick retreat by the weaker animal. A combat between two such vast brutes must have been a sight worth witnessing, as the contestants whirled and threshed about, their fearful mouths agape and the long tails and massive legs entangled in a maze of swift evolutions.

The sword of a coming doom, however, hung over the heads of all this mighty race, so soon to give place to the tiny warm-blooded mammals of a later day. Changing conditions to which they could not adapt themselves resulted in their complete extinction at the close of the Cretaceous era.

**Epoch-making Eggs Found in Mongolia**

When in 1921-2 the American Museum of Natural History, in New York, sent out an expedition to collect fossils in Mongolia, it little expected to stumble upon what proved to be an epoch-making discovery in this field.*

For many years scientists had considered the probability of the egg-laying habit among the various species of dinosaurs, but they were not prepared to discover in that far distant country so complete a confirmation of all their theories. Not only did this intrepid band (Roy Chapman Andrews, Walter Granger, George Olsen, and others) unearth one or two of these much sought and hitherto practically unknown rarities. They actually came upon whole nests in which the eggs, about the size of a large pear, were disposed just as the female dinosaur had deposited them millions of years before (page 143).

Not all were perfect, of course, since many showed evidences of crushing by the weight of sand above them; but a surprisingly large number—except that they were now turned to stone—might well have been laid only yesterday.

Here indeed was a find worth gazing over, particularly when in a short time the very species—perhaps the very individuals—of a new type of dinosaur which had laid those eggs also came to light under the skilled hands of the collecting party.

To cap the climax, two embryos, perfectly encased within the shell, definitely connected the eggs with the skeleton, now doubly valuable because of this unique association.

Protoceratops, the cause of all this scientific rejoicing, was a fairly small dinosaur, about nine feet long. It was big-headed, hornless, and therefore armored with a defensive collar over the neck as a protection against flesh-eating species. A series of skulls,

from the embryo to the full-grown animal, was also secured—all in all, a most significant and illuminating page in the history of exploration (Plate X).

Two Cretaceous dinosaurs of deceptively appearance were Styracosaurus and Parasaurolophus (Plate XI).

These grotesque creatures with the long and formidable names were found in Alberta, Canada. In spite of their remarkable and awe-inspiring silhouettes, they were both harmless, inoffensive reptiles.

Styracosaurus (crowned lizard), the armored beauty in the foreground, probably developed all this wonderful array of points and spines merely to protect its otherwise defenseless neck and head against the attacks of destructive species equally common at the time. The huge head with its massive bony collar is six feet or more in length and surmounts a massive slow-moving body of great bulk and clumsiness.

An enormous beak, used for cutting foliage, forms the front of the mouth and further adds to the singular appearance of this pathetic nonentity. A strictly land-living animal, it could take but could not give in its struggle for life in a world of danger.

Parasaurolophus, on the other hand, could seek protection in the water, wading or swimming to safety when necessary. The long and singular projection from the top of the creature's skull was a development of the nasal region; its use is unknown. The food consisted of soft and moist vegetation gathered by means of the ducklike bill, as the creature paddled about in lakes and lagoons.

**Sea Monsters Once Swam Over Kansas**

To us who dwell today upon its time-worn surface, this old earth gives the impression of great and lasting stability. But a closer study demonstrates that colossal forces have been and are constantly at work to upset the balance of the land and water areas.

We know, for example, that whole mountain ranges have been thrust upward from time to time, only to be worn away and finally washed into the sea. Vast areas of the ocean bed have risen hundreds of feet. On the other hand, equally large land areas have sunk beneath the waves for perhaps millions of years, only to rise again at a later time.

During the Cretaceous era a vast but shallow ocean spread over what is now the central region of our country. In that ocean monsters of various shapes and sizes disported themselves and cruised about in large numbers in search of food.

Among these mighty reptiles Mosasaurus played a conspicuous part, for it was perhaps the most formidable of all that cruel and voracious tribe. Its remains have been found in Kansas. A length of thirty feet terminating in a powerful tail, four great paddles, and a long pointed head with sharp-toothed jaws, all combined to make this terrible marine lizard everything that our vivid imaginations conjure up when we think of a sea serpent.

Surging boldly forward through the blue water with light striking on its glistening body, one of these great sea dragons endeavors to seize the wide-winged Pteranodon (wings without teeth) soaring gracefully above the wave crests in Plate XII. This singular reptile, 15 feet across the wings, represents the last word in the evolution of the Pterodactyls (Plate VIII). The tiny flying creatures in the center of the picture are true birds, though the jaws were armed with small, sharp teeth.

**Warm-blooded but Feeble-minded Brutes and Cat-sized Horses Appear**

A vast amount of time now passes, and in Plate XIII the vales and forests are dominated no longer by scaly reptilian forms. The dinosaurs have vanished entirely, their places taken by warm-blooded animals of many species.

To be sure, these early mammals are primitive in form, with small brain power and consequently little initiative, but they are a decided improvement upon their predecessors.

In Uintatherium, the extraordinary-looking brute high on the river bank, we have an example of arrested mentality; the tiny brain-case seems out of all proportion for so large an animal. This weird being, with six horny knobs on the head and a pair of downward-pointing teeth resting against flanges in the lower jaw, belongs to a type no longer in existence. The teeth as well as the brain were very weak and small, so it is no wonder that the beast was eventually outclassed by smarter and more forward-looking creatures.

The little animal on the river's edge is in a wholly different class. Only a foot in height, it was an agile, graceful midget with four tiny toes on the front feet and three on the hinder pair.

Eohippus is the name of this interesting creature—"Dawn Horse" to us. But in reality it was not yet a horse by any means, though it is undoubtedly an ancestor of our present magnificent animals (page 170).

We have been fortunate in finding, particularly in this country, whole series of these little first horses. They range from the one shown here up through succeeding and ever larger three-toed and finally one-toed types, like those of the present day. The story of
this evolution is remarkably comprehensive, considering the very long time since the first chapters were written.

Curiously enough, the horses, though they had existed in millions on the American Continent, were gone when man arrived. The Indians had never seen a horse until some were brought over by the Spanish Conquistadors, and were amazed at the size and strength of the animal. The sight of a man riding on its back filled them with awe.

With the exception of the species known as *Equus przewalskii*, from the steppes of Turkistan, no truly wild horses are found in the world today. Our western "wild horses" are descendants of ancestors which were once domesticated, and our various types are the result of domestication through a long period of human history.*

Long before the Pharaohs raised their magnificent temples to the glory of the gods of Egypt, a great but now extinct fauna had lived about the ancient Lake Moeris in the region south of Cairo. Today this country is a desert, and we find the bones of numerous extinct animals buried in the hot dry sand of the vanished Eocene lake bed.

One of the largest and most characteristic of these animals is known as Arsinoitherium, in honor of the old-time Egyptian queen. This primitive and unique order of animals resembles at first sight a rhinoceros, but the two huge horns projecting forward on the nose are bony growths from the skull and not true horns, as are those of the rhinoceros. Two smaller horns rise, one over each eye, and the body, legs, and feet are rather elephantine in structure (Plate XIV).

With its mighty nose horns Arsinoitherium could ward off the attacks of such hungry carnivores as the three Hyaeodons, long-toothed hyenalike creatures, by which it is surrounded. These savage but slow animals also existed in our own country.

With the Aid of Iron Piping, a Giant Diplodocus Keeps Its Chin Up

The elongated dinosaur (Plate VI) is flanked on the left by a long-tusked American mastodon (Plate XVIII) and on the right by the ancestor of the whale, a Basilosaurus. The latter ends in *saurus*, the Latin suffix meaning lizard, because early scientists who first found its remains thought the teeth looked like a reptile's. Later discoveries proved that it was a mammal, but the name stuck. This group stands in the U. S. National Museum in Washington, D. C. (page 148).
Colorado Museum Restorers Perform a Humpty Dumpty Miracle as They Put a 75½-foot Diplodocus Together Again

The huge tail sticks straight out from the colossal hips at left, finally coming down in a long curving sweep (Plate VI). This is a modern innovation. Old restorations showed the tail turned down directly from the hips. The correct way of mounting was learned when several sets of firmly locked vertebrae were found.
About this Egyptian lake there were elephants as well, little fellows about the size of a tapir, their noses terminating in a short proboscis, but most decidedly elephants in miniature. From these first examples we are able to trace a direct connection to the great mammoths, mastodons, and the true elephants of a later day.

In these diminutive individuals the two little tusks or incisor teeth projecting downward from the upper jaw meet a similar pair growing upward from the lower jaw. Recent elephants have entirely lost these two lower teeth, but they persisted for ages in the long-jawed mastodon of our own country and Europe. Not until comparatively recent times did the great curving tusks of the later species become such a prominent feature.

Horny-headed Giants Roamed Our West

The name Titanotherium (giant animal) fits well the mighty, ponderous beast portrayed in Color Plate XV. In appearance it suggests a great rhinoceros, but it is not related except in a very general way.

Last of a long line of horned-headed ancestors, this giant of the Oligocene Period was of a type which flourished for ages upon the Continent of North America. Great herds of the huge creatures wandered over the vast reaches of our western country, much as did the buffaloes of a later day.

The two nose horns are really not true horns at all, but bony growths from the skull, and were covered with a thick, tough skin. The horn of the rhinoceros, on the other hand, is simply a mass of hairlike fibers pressed closely together and stuck more or less firmly upon the nasal projections of the skull.

No doubt Titanotherium was a fighter of parts, and the big males could ward off attacks by the ever-present wolflike animals which hung about on the edge of the herds to snap up possible young stragglers.

Strangely enough, a very similar beast has been discovered among the fossils of Mongolia, a fact which vastly increases the range of these large, powerful creatures.

The disappearance of so many important races of animals after a long period of existence is always a mystery, because at first sight they would seem abundantly able to take care of themselves under all climatic changes and conditions. Nevertheless, they did disappear, through famine, pestilence, or some other natural agency.

The volcano in action in the background suggests one method of destruction. As a matter of fact, many of the American Titanotheres were found buried under large deposits of
Early Art—a Cro-Magnon Man Draws a Picture of His Own Hand on a Cavern Wall

With a tube he blew ocher pigment around his fingers pressed against the side of the cave. When he removed his hand, the outline remained on the wall. This scene is one of the prehistoric exhibits in the Field Museum of Natural History in Chicago (page 183).
volcanic ash of sufficient weight and density to have caused easily their final extinction.

The great Continent of South America, particularly in its southern plains area, supported a large and varied assortment of interesting animals, many of them found in no other part of the world. Fairly representative are the three types shown in Plate XVI.

Toxodon, the clumsy-looking, big-headed brute at the left, was strictly herbivorous. Perhaps it inhabited a more or less marshy country and cut off its food with the long, heavy teeth, much after the manner of a rhinoceros.

Glyptodon, at the right, was related to the modern armadillo and had perhaps similar habits, though vastly greater in size. Its food, however, consisted of vegetation, whereas its modern relative is a meat eater. Eggs, insects, worms, and even carrion are all acceptable to the armadillo.

The power of rolling up into a ball was also out of the question for Glyptodon. Its bony armor was fixed in shape, not separated by rings on bands of movable flesh, which enable the little armadillo to curl up tightly when attacked.

There were many species of Glyptodonts in both North and South America. Some were very large, with a spiked tail-club which when moved swiftly from side to side proved to be a most efficient dissuader of marauding enemies. Indeed, these large animated cylinders were almost like our modern war tanks as they glided slowly along on the four short but stout clawed feet which projected just below the edges of the long, heavy carapace.

Macrauchenia, the long-necked animal walking in the background, is yet another of the singular herbivores of the South American region.

Combats such as that in Plate XVII were perhaps no novelty in the time of the giant ground sloth called Megatherium (great beast) and the fierce and voracious animal known as Saber-toothed Tiger.

The sloth—huge, massive, and proportionately slow in movement—was no match for the fast-moving cat armed with its terrible nine-inch fangs and sharp claws. There can be only one result in this sanguinary conflict, for the long, sharp teeth will be buried in the thick, tough skin and flesh of the great sloth and then, by repeated and powerful thrusts, plunged deep into the vitals. Loss of blood will quickly end the unequal struggle and the victorious feline can feast at will.

Both were extraordinary animals. The sloth, with its big limbs, bent down the branches of trees to secure the leaves on which it fed by means of the long prehensile tongue. The creature also dug for succulent roots, easily tearing them up with its powerful claws. When attacked, the sloth could not escape by running away but merely stood stupidly at bay, hoping by some lucky chance to impale its terrible adversary.

The saber-toothed cats, found also in North America and Europe, were the masters of their kingdom, wandering about in search of prey and killing it without much difficulty. Despite their name, they were not true tigers, but large felines with powerful front legs and feet, sloping backs, weak hind limbs, and short, lynxlike tails.

Mastodons Once Abundant in America

The American Mastodon (nipple-tooth), shown in Plate XVIII in a Florida environment, has long figured in the annals of scientific research.

As far back as the time of Thomas Jefferson keen interest was aroused by the finding of huge bones and teeth which were generally regarded as those of giants. Wiser heads frowned on this supposition as too fantastic, but the fact that the huge teeth somewhat resembled the molars of a man was evidence enough for those who wished to believe in such wonders.

Apparently the huge creatures had a wide range, particularly in the eastern and southern part of the continent. Abundant remains have been found at Big Bone Lick, Kentucky, and many other favored sites.

Mastodons were related to modern elephants, but they were more primitive in many ways and were distinctly inferior mentally. The head was flat: the tusks were larger, recurved slightly, and rather thick and heavy for their length.

The animal attained a height of ten feet at the shoulder, with a long, massive body and short, stocky legs—all in all, a very bulky creature. Its food consisted of twigs and leaves which it masticated easily with its huge molar teeth. The body was covered with a dense coat of long, coarse hair and wool.

Whether the early Indians ever really saw a living mastodon is still a much discussed question, but many excellent authorities seem to think that they might have done so.

A nearly perfect skeleton, known as the Warren Mastodon, was unearthed in 1845 by workmen digging for loam in a dried-up pond near Newburgh, New York, on the Hudson. After being exhibited throughout the country, it was purchased for $5,000 by Dr. J. C. Warren of Boston, in whose private museum it was mounted and remained for 57 years. When
the doctor's estate was settled, the now celebrated specimen was presented by the late J. P. Morgan to the American Museum of Natural History, in New York.

In contrast to the mastodon in the details of form, teeth, and shape of tusks, the Woolly Mammoth (Plate XIX) is more nearly related to the present-day African and Indian elephants.

The mammoth was a tall, rather delicately made animal with a high forehead and very long, sharply recurved tusks. In the northern form, at least, the body was covered by a dense coat of thick reddish-black hair mingled with an undercoat of wool.

Our almost complete knowledge of the life appearance of this giant animal lies in the fact that perfectly preserved specimens have been discovered in Russia where they had lain frozen in the ice for thousands of years. Russian scientists were able to secure most of the hair and flesh and all the bones of an individual discovered in 1900 in Siberia.

Some of the flesh was consumed by the bears and wolves attracted to the scene, but the greater part of the extraordinary monster was removed to the Museum in St. Petersburg (now Leningrad) where it was preserved and painted under the direction of experts.

In our own country mammoths have been found in such widely separated regions as Alaska, Florida, California, Texas, and New York State. The Woolly Mammoth, protected by the thick, weather-resistant coat of hair, lived in colder parts of the country, associated with the reindeer and the semi-Arctic animals.

Man and the mammoth were perhaps associated in this country. Its relation to man on the Continent of Europe is proved by the wonderful drawings in French caves (Pl. XXIII).

From time to time in various parts of New Zealand travelers have chanced upon small heaps of rounded pebbles lying on the ground. Such pebbles are now known to be the gizzard stones of the great extinct and flightless bird known as the Moa (Plate XX and page 182).

These huge birds-some of them ten feet in height-may have existed until after the coming of man to the islands. This event, most unfortunate for the Moas, took place, we think, about six or seven hundred years ago.

From that time onward the fate of the giant birds was sealed. They must have suffered terribly from the attacks of these hungry invaders and their voracious dogs. The fact that the Moa was flightless and had no means of defense except its huge feet and claws spelled disaster for this race of feathered giants.

We know the Moa's size and structure from practically complete skeletal remains. In spite of a casual resemblance, there is no close relationship between the Moa and the modern ostrich. The foot ended in four toes, three in front and one behind, while that of the ostrich has only two toes, one much larger than the other. The feathers were not unlike those of a Plymouth Rock chicken in color and pattern. No wings were visible.

The Moa's food consisted entirely of plants, and the huge eggs must have proved toothsome dainties to the hordes of encroaching human beings whose one idea was to destroy these magnificent and inoffensive birds.

**Early Americans Attack a Giant Bison**

The antiquity of man on this continent is naturally a matter of keen interest to specialist and layman alike, but despite intensive research no very ancient evidence in this region has as yet materialized.

Our knowledge of man in America has been extended back for several thousand years, however, by the discovery, near Folsom, New Mexico, in 1925-26, and later, of a new and peculiar type of arrow point associated with the bones of a long extinct bison. These strangely shaped artifacts were unlike any known type and had evidently been secured to the arrowshaft in some ingenious manner.

With these piercing weapons, impelled by the force of a powerful bow, even such a creature as the giant bison was slain (Plate XXI). A fierce struggle must have taken place in the locality of these finds. Several skeletons of the giant bison are scattered about and intermingled with the sharp flint arrowheads.

At any rate, the discovery of these implements gives rise to interesting speculations concerning early man in the New World.

In 1856 a human skull of an unusual type was found in the Neander Valley in Germany. Experts who examined the specimen declared that it belonged to a new and peculiar form of the genus *Homo* and gave the name "Neanderthal" to the new species, meaning Neander Valley Man (Plate XXII).

Later exploration has more than confirmed the opinions of anthropologists who detected in these stocky little men a most important connecting link between the past and present in human history.

From what we are able to glean by measurements of more or less complete skulls and skeletons, the Neanderthals were short men with thick necks, big hands and feet, and legs quite short below the knee. The forehead was low, the face and jaws projecting forward, and the ridges over the eyes were most pronounced.

All in all, the Neanderthal man was a most unprepossessing little fellow, but abundantly
Using Tiny Kiwi as a Model, Scientists Re-create a New Zealand Moa

They believe the nearest living relatives of the huge flightless bird are the kiwi (lower left) and the cassowary—not the ostrich (Plate XX). This restoration of the extinct Moa was made in England under the supervision of Lord Rothschild for his Natural History Museum at Tring Park, Hertfordshire (page 181).
Larger Than a Man's Hand Was the Dire Wolf's Paw

These perfectly preserved bones of the right front foot were found in the La Brea tar pits at Los Angeles. Larger than present-day American wolves, the ferocious animals ranged over all the United States. Their massive teeth were capable of crushing big bones.

able to look after himself in the cold, wet, and dreary climate of his time.

Our picture shows two men repelling an assault from below their rocky shelter at the little Grotto of Le Moustier in the Dordogne region of southwest France. The short flint-tipped spear, a heavy club, and the so-called coup de poing—a sort of crude stone hand-ax—comprise their rather scanty arms, but the two women and a child cowering in the cave will be defended to the last by their hardy champions.

Life was difficult in those far-off days when Alpine glaciers flowed down over parts of eastern France. But despite all the drawbacks, these tough and tenacious little savages were perhaps the dominant race in Europe for many thousands of years.

Just why the men of the particular race known as Cro-Magnon should have devoted so much time to matters artistic is difficult to say. It is possible that mystical cults, or the propitiation of animals to be hunted, may have had to do with this trait in early man (Plate XXIII).

The drawings are usually in color, but they naturally show considerable variation in quality. Reddish ocher, black, yellow, and white are the chalky colors extensively employed in these famous renderings of bison, mammoths, horses, reindeer, and many other animals of the time. Some of the pictures are deeply engraved and others raised in low relief. Certain examples are not paintings at all, but actual sculptured surfaces (page 171).

As a rule, the pictures were done on the stone walls, more rarely on the ceilings, of dark and sequestered caves. They are principally found in many parts of France and Spain.

Light for the work must have been produced by very primitive means. A tiny stone lamp, with perhaps a piece of moss in oil or grease, was the only thing possible under the conditions. A torch or a small fire would have given off too much smoke, since there is little ventilation in most of the caverns.

The Cro-Magnons, in contrast to the Neanderthals (Plate XXII), were a tall, long-limbed, and rather spare people, much like some of our Indian tribes. They take their name from the French cavern of Cro-Magnon. Their weapons were small and delicate, and the many bone needles and awls found in the deposits indicate a possible use of crudely fashioned clothing of tanned animal skins.

No primitive people since their day, with the possible exception of the recent Bushmen
of southern Africa and certain Australian tribes, have attempted the representation of animals with such excellent artistic results. We are fortunate that after a lapse of 10,000 years or more so many fine examples of their work remain in a fair state of preservation.

Man, in the course of his long history, has employed many materials in making his various tools and weapons. Wood, stone, bone, and shell have all served their purpose under the manipulation of his clever fingers. None of these substances, however, could compare with bronze.

Bronze is a mixture of tin and copper, two metals associated in nature in many regions. We do not know how or when primitive man made the discovery of this valuable blend. At any rate, after a certain period in prehistory—about 1500 B.C.—one finds an increasing use of bronze in most of the sites containing remains of man and relics of his activities.

In Plate XXIV a group of Lake Dwellers are pursuing a giant deer, the so-called Irish elk, through the calm, blue waters of a European lake. Their clumsily made dugout canoe is laboriously propelled by two of the men, while a third, poised in the bow, hurls his bronze-tipped spear at the stag.

In the distance may be seen two houses built on piles, a favorite method of the period. Whole communities lived in carefully constructed huts above the water, more or less safe from the attacks of their enemies.

Relics of every kind have been found on lake bottoms in the vicinity of these former habitations. Many are well preserved and denote a fairly high degree of culture among these primitive people, who were just emerging from the restrictions which the use of stone implements had imposed upon their ancestors.
Vanished *Stenomylus*, Slender-limbed Camel Which Roamed the Western Plains Millions of Years Ago, Left Its Bones Behind

These specimens come from a stratum of volcanic ash exposed along the Niobrara River in Sioux County, Nebraska, a few miles below the famous Agate Springs Ranch. Here dozens of complete, or nearly complete, skeletons have been found, lying close together. This area may have been a bed ground, where the animals died off one at a time; or a herd of them may have been suddenly overcome by poisonous fumes or an ash fall. These gazellelike creatures were about as tall as sheep, averaging some 27 inches in height at the shoulder (page 73).
On This Canvas, One Bull Records, in Color Pictures, His Exploits During "Custer's War"

The drawing, about 38 by 70 inches, shows the Custer massacre in upper left (Plate IV). The line stretching across the canvas represents the Little Bighorn River. Below it, at left, tepee circles are inscribed with the names of the tribes taking part in the battle. Figures at lower left depict Indian women and children fleeing to a hill. The right half shows Maj. Marcus A. Reno’s running fight with the Indians. One Bull (Plate XVI) figures prominently, since such a picture record, common among Plains warriors, usually was autobiographical. Emerging from the Hunkpapa camp, where Sitting Bull had his tent, is the mounted figure of One Bull, advancing toward Reno’s battle line. He next appears on a larger horse to the right of the battle line, where he has broken through to rescue a wounded friend, Good Bear. At extreme right center he is seen again, striking a soldier who is firing his revolver into the air. English lettering was done by One Bull’s daughter.
Morris found another fragment of shell drilled with a neat round hole. Nelson said it was one of the beads in a necklace.

We were in a fever of excitement, for the trail was getting hot. Nelson, most conservative of conservatives, was skipping about from place to place like a boy of sixteen. At last Dr. C. P. Berkey found a spot where half a dozen chipped flints were deeply embedded in the sandstone floor.

Before noon we had discovered a dozen such spots and were satisfied that some at least of the artifacts had weathered out of the lowest level and had not washed down from the surface of the dunes.

An unlooked-for complication entered when we began to discover fragments of pottery. It was primitive enough, to be sure, but a people who used such crude stone implements had no business to be making pottery! The problem became more interesting and more complicated every hour.

I have never seen the advantages of correlated work more clearly displayed than in solving this human problem. The geologists, paleontologists, topographers, and botanist all assisted the archeologist. Without such a combination of experts' knowledge available on the spot, it would have been impossible to settle many of the puzzling questions presented by this deposit.

The subject became so interesting that it was difficult to keep all the men from hunting artifacts. Dr. H. A. Loucks, our surgeon, was one of the most enthusiastic workers. In company with Dr. Berkey, he discovered a vast workshop where flint chips were scattered over the surface in tens of thousands (see illustration, page 667).

They took four of our Mongols to the spot one morning and returned with about 15,000 flakes. Nelson worked for days sorting the pile and selecting specimens.

The second day's work revealed dark spots in the lowest layers of the soft red
FOSSIL "BONE-SETTERS" APPLY A BANDAGE

Strips of burlap, soaked in flour paste, are put on to strengthen the humerus and radius of a giant Baluchitherium. Pieces of wood are made into enormous "splints" for the same purpose.

YEARS OF STUDY, TRAVEL, EXPLORATION—AND THIS WAS FOUND!

The cherished object is a skull of one of the earliest known mammals, which lived in the Age of Reptiles. Seven of these tiny, priceless skulls are accounted the most important single scientific specimens collected by the Expedition (see text, page 716).
AN OUTLINE OF A 10,000-YEAR HISTORY

Dr. N. C. Nelson, archeologist, is laying out flints cut by the Dune Dwellers many thousand years ago. The specimens show successive phases of a "mystery people" (see text, page 668).

"THE COSTLIEST EGGS IN THE WORLD"

This nest of dinosaur eggs adhered to the under side of a rock. George Olsen turned the rock with his pick, exposing the prehistoric nest. This set now is in the Field Museum of Natural History, Chicago (see text, page 663).

How do you know they are dinosaur eggs? Found in a deposit where there were all the dinosaur bones. Microscopically, shell exhibits structure unlike any other.
sandstone. Evidently these were ancient fire sites. When they were dug through in cross-sections, layers of ash containing charcoal, flints, and burned bones were revealed.

Very soon we found square bits of dinosaur and ostrich eggshells embedded in the sandstone. Then we realized that these people were the original discoverers of the dinosaur eggs.

Apparently they had picked up both the ostrich and dinosaur eggshell at the Flaming Cliffs, two miles away, and brought them to their workshops in the dunes.

A very few bones were found embedded in the flint-bearing strata, but they were so badly preserved that identification was impossible.

**ONE JOKE BRINGS ANOTHER**

On the second day, after many flints had been found, and Nelson had come to the conclusion that we were dealing with a late Paleolithic or Mesolithic culture, Dr. Chaney played a joke. He found a bit of rusted iron saw blade and planted it neatly in the flint-bearing layer. Dr. Berkey was the one who discovered it first.

There was consternation in camp. It completely upset all our theories and gave us a bad hour. But while we were sitting disconsolately about the spot racking our brains to account for its presence, Nelson strolled up and produced the other part of the blade which he had found near camp.

We determined to get even with Chaney. He was an enthusiastic collector of birds’ eggs and spent every leisure moment blowing and labeling them. Shackelford and I got two well-matched hen’s eggs and had the cook boil them hard. Then they were beautifully stained in potassium permanganate.

I found a bush near the sand dunes where the ground was splashed with bird droppings, scooped out a hollow depression and “set” the eggs. A pair of demniello cranes lived near the spot and I told Chaney that probably there was a nest in the vicinity. He never had seen a crane’s nest and eggs, so the rest was easy.

When I returned to camp and announced the discovery, he was all excitement. Four of us piled into a car and drove down to the spot. He was so delighted that I almost relented and confessed the joke. Then I remembered the saw and hardened my heart.

After Chaney had photographed the “nest” from three angles and made a close-up with the portrait lens, we went back to camp. Word had been passed around and eight or ten men gathered to see the dénouement.

First attempts at blowing were not successful, and after a serious discussion as to the best method of preservation he decided to remove the embryo through a hole in one side.

I never shall forget the expression on his face when he discovered that they were hard boiled! With a roar he hurled one at Mac Young and the other at me, but we already had a good start across the desert.

The artifacts represented a new culture not closely related to any known from other parts of the world. We named these people the “Dune Dwellers,” for wherever there were dead sand dunes we could be sure to find their implements. Obviously, they lived in the dunes, which are always formed near desert lakes, because there they could find water, shelter, and wood.

Later we found Dune Dweller implements in many other parts of Mongolia. In the east, where there was always more water, the remains were particularly abundant. Afterward Sven Hedin traced the culture far to the west, in Chinese Turkestan.

**THE DUNE DWELLERS A “MYSTERY PEOPLE.”**

We began to realize that these people had inhabited the Gobi in great numbers. To-day there are less than a million natives in all Mongolia. Twenty thousand years ago there were many millions—more than there ever have been in historical or traditional times. But they are a “mystery people.”

Where did they come from and where did they go? Doubtless they were driven out by increasing aridity.

As the Dune Dwellers saw the lakes and streams disappear and the game decrease correspondingly, they had to migrate. They certainly did not all die. What was their relationship to the early tribesmen of Europe and America? At present we do not know.
With Collars Turned Up against the Cold and White Hats Neatly Rolled and Flared, Bluejackets Head for Liberty at Dutch Harbor

These salty sailors will not find much amusement in the town, but at least they can stretch their legs and feel land under their feet after months at sea. A community of 52 people in normal times, Dutch Harbor has expanded rapidly in the past year to a mighty base from which the United States operates in the Aleutians.
Prehistoric Aleutian Life Comes to Light as a Burial Cave Gives Up Its Dead

Village sites on Amaknak Island were excavated in 1936 by Dr. Aleš Hrdlička and members of a U. S. National Museum Expedition which he headed. In a volcanic cove on Kagamil Island the expedition discovered several mummies. The Aleutians embalmed their dead, wrapping the bodies in grass mats or skins and hid them in caves.

The origin of the Aleuts seems as fog-wrapped as their home. Whatever their origin, they readily adapted themselves to their rain-washed surrounding.

Their waterproof coat, made from the gut of sea mammals, is one of the first waterproofs in the world.

Like the Eskimos, their hunters were expert seamen, going far from shore in their two-seated skin bidarks to hunt fish and sea mammals. They are related to the Eskimo, to whom they are somewhat akin in feature and language. Alexei Yachmenev told me that even in the small inhabited circle of the Aleutians there were distinct differences in dialect. He could not understand the Eskimo tongue.

The Aleuts mummified their dead and suspended the bodies in carefully hidden island caverns. After removing the intestines and stuffing the body with dry scented grasses, they dressed it in its best clothes, they seated it in a squatting position with knees drawn up to the chin. Then they wrapped it in closely plaited grass mats or skins. Finally it was lashed into a compact bundle and hung in the burial cave. There it was supposed to come to life at night, and to cook and feast.

Mummies at a Tea Party

The Eskimo is inclined to regard the dead as malicious, but the Aleut had no fear of them and regarded them with affection, carefully preserving the bodies of important persons.

I learned more about Aleutian mummies at a tea party at one of a small row of houses
THE MONGOLS BECAME ARDENT RADIO FANS

Often programs were picked up from Vladivostok and Khabarovsky, Siberia, but the desert dwellers much preferred listening to time signals. The primary use of the radio was to pick up the time signals, from the United States Naval Station at Cavite, Philippine Islands, so that chronometers might be checked to obtain accurate longitude observations.

Allowing 3 feet for the tail, we would have a great hyenalike beast more than 15 feet in length. The teeth, although of distinctly flesh-eating type, are blunt and adapted for crushing. There is evidence to show that the animal lived much upon carrion, as do present-day hyenas.

Strangely enough, we have found only this single skull in all of our explorations in Mongolia. This would indicate that *Andreosarchus* was by no means a common mammal, even in those far, dim days, sixty million years ago.

In a vast bad-land basin near Urtyn Obo we discovered an animal which belongs to a group called titanotheres. They were gigantic beasts which were supposed to have existed only in America until we found them in Mongolia. Superficially they somewhat resemble rhinoceroses.

All titanotheres are strange creatures, but the new one, *Embolotherium*, is the strangest of all. Professor Osborn named it the "battering-ram beast" because the front of the skull turns directly upward like a great post two feet high. This projection, expanded at the summit, is not a horn; it is composed of the nasal bones of the skull.

We shall never know what his face really looked like. It was all flesh and as, anatomically, the beast is unlike any other mammal, living or fossil, we have no guide for a restoration.

Through the entire length of the vertical postlike projection run the nasal tubes. Did they make a hairpin turn at the summit and curve down again in the fleshy part to open near the mouth? Professor Osborn thinks so. He argues quite properly that every animal likes to smell the food it eats. Still, it does seem to be much wasted effort on Nature's part to create such an arrangement.

Three distinguished paleontologists independently have made the same sugges-
edge of what had been an enormous lake in Pliocene times, two or three million years ago. The shore line is beautifully delineated by a layer of fresh-water clams shells, in which most of the fossils occur.

MASTODON USED ITS LOWER JAW AS DREDGE

Shortly after our arrival Captain Hill, the topographer, brought in an extraordinary flat plate. It was about 10 inches long, 8 inches wide, and three-quarters of an inch thick. It was enamel-covered and obviously a tooth. But what sort of a beast could have used a tooth of that type we did not know.

Other plates were found, but not until the day before we left for Peiping was the mystery solved. Granger then found that the flat plates were the two tusks in the lower jaw of an extraordinary mastodon.

The spoon-shaped front of the jaw can only be described as resembling a great coal shovel. The teeth lie side by side and are 16 inches across. The jaw itself was more than 5 feet long.

The fact that we found many mastodon remains on the very shores of the inland lake makes us believe that the animal fed upon the succulent aquatic vegetation. His expanded lower jaw was used as a dredge. It certainly is one of the most remarkable adaptations in the animal kingdom.

On our fifth expedition, in 1930, our paleontologists recovered a dozen or fifteen jaws of baby mastodons in this same region, representing almost every age in size and development. The crowning spec-

ITS JAW WAS SHAPED LIKE A COAL SCOOP

The model shows the head of the shovel-tusked mastodon found by the Expedition. The animal roamed the Central Asia plains about two million years ago.

tion, which I give because it is at least amusing.

Perhaps, they say, the nostrils opened at the very summit of the projection. The beast fed on vegetation which grew just under the surface of lakes or rivers. It could browse on the aquatic plants while its nostrils were still out of water. They visualize a sort of periscope.

I think an animal with a periscope nose is a wonderful idea, and I shall cling to it tenaciously until some better explanation of the Embolotherium’s remarkable proboscis is forthcoming.

At the end of the fourth expedition, in 1928, we made one of our most interesting discoveries. We were camped on the
Scotch saying.

Plight of Dr. Baumgarten
I can't tell.
Humbly. T. P. H.
Hans found things
shop. straw mats.

Trip to Swatow
Lettle did I think

Evening sung.
Robbery.
Swatow Bay.

Things beyond my expect.
Green trees.

Food.
Houses.

Clothing & hair.

Homes.

Language. stores.

Earthquake.
Mango
Papaya
Mango
Lichees
Peaches
Plums
Guava
Orange
Bananas
[Handwritten text not legible]
Si silk a hymn of bestow
Si to freeze time a spoon
Si death
Si 4 power
Si is
Si an oath
Sih mis Ûck's surname
Sih to consume

To many a knife
To to run away
To short to tumble down
To to fall down
To to be mi
To a bag
Toh a table Mrs Wuff's surname
Toh to select
the Kingdom of God. We are proposing a group to be known as "ZIONS HERALD Associates," each of whom will make a pledge of an annual amount for a period of three years. Bishop G. Bromley Oxnam has made such a pledge and has already paid his first instalment. A dozen other bishops have likewise made three-year pledges. Among other church leaders who have made pledges are Dr. John R. Mott, Dean Charles R. Brown, Dean Lynn Harold Hough, and Professor Rollin H. Walker.

You have been acquainted with the Herald for years. I feel sure that you believe in the paper and in its mission and that your verdict in the present situation will be the same as that recently given in a single sentence by one of the most distinguished leaders of American Methodism—"ZIONS HERALD must continue."

Will you not help us in the present crisis?

I suggest two ways:
FIRST: Become a ZIONS HERALD Associate by pledging at least $5.00 a year - more, if possible - for the three-year period.

SECOND: If you feel that you cannot become an Associate, instruct us to send the Herald at your expense for the three-year period at the special price of $2.00 a year as a gift to some relative or friend.

Enclosed are an Associates pledge and a return envelope. May we not hear from you soon?

Sincerely yours,

[Signature]

Editor
15 years since we left China. Some memories indelible.

Before I made up my mind to go to China, I wondered if the results were worth the sacrifice. Investigated—read—wrote—decided.

Witness results far beyond my faith.

Back in 1919—spoke in my own Church. Said—read we'd come back on the water that they would teach us meaning of results.

Far beyond my vision.

Pres. of China who is a Christian, not least of this Christian, but during imprisonment he read Bible daily. He seeks guidance from Cabinet members.

Wife of Gen. Tang—more outstanding daughter of 55 officials.

Loyalty—bravery—albeit failings.

Served Stanley's disease safety.

Sacrifice Bible women.

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Faith—exercising devil
& passing of streams—
only being a Christian became a
more wide real Christian

Save Shorter—will not unread

Wife—insult

Praying hard