

Jan. 21, 1917. First Disciples of the Lord Jesus. John 1: 35-51

Commentary.-I. Following Jesu (vs. 35-39). 35. Again the next day The day following the one on which John the Baptist said to the people, "Behold the Lamb of God." The retorus of his testimony as to Jesus are that on three successive days he lared to the people that Jesus was the Messiah. He gave witness of this fact to the priests and Levites who came from Jerusalem. He introduced to the multitudes. He declared this truth privately to two of his disorbles. Two of his disciples—We are not told how many disciples John the Baptist had. From this chapter we that some of them directly became followers of Jesus. From an account of his sending an inquiry from the place of his imprisonment, sking Jesus of his Messiahship, we know that he had disciples then (Matt. 11; 2-6); and he had disciples at the time of his death (Mark 6: 27-29). 36. lincking upon Jesus-The verb has in it the thought of beholding with intense interest. Behold the Lamb God. Behold, the Lamb of God!" R. V. This announcement declared both the nature and mission of Christ. 37, They followed Jesus-The two disciples were so impressed by the de charation the Baptist made and the appearance of Jesus, that they were fully convinced that he was the Christ and henceforth became his disciples. It wut but natural that they should do this, and John could not expect them do otherwise. He was preparing the way for the establishment of Christ's kingdom and was not interested in securing a following for him-self. "They followed Jesus" as truly as their former master had heralded his coming. They followed him when there was little in sight to attract them. They followed him lecause they were convinced that he was the "Lamb of God" to take away the sins of the world. They followed him through reproach and shame and through sufforing, but they followed him to eternal triumph and bliss. 38. What seek ye-Tuis was not

asked to obtain information. It was a kind of inquiry respecting their deshess an invitation to lay open their minds, to state their wisnes, and to express all their feelings respecting express all their feelings respecting the Messiah and their own salvation.

Rabbi—A Jewish title. if (Matt. 23: 8). It means master, or teacher. Interpreted—John explained the Hebrew term rabbi for the benefit of those who were not Jews. Where detellest thou—They wished to know where he lodged that they might have where he lodged that they might have an extended interview with him. 39. Come and see—Jesus gave them hearty welcome. He recognized their sincerity and devotion. About the tenth hour-According to the Roman method of reckoning it would be ten o'Clock in the forenoon, but according to the Jewish method it would be four c'clock in the afternoon. The latter was probably the hour.

Winning souls vs. 40-46). one of the two ... was Andrew—Andrews name is the first mentioned in the list of Christ's disciples. There in the list of Christ's disciples. There is no doubt as to the other one, for it must have been John, the writer of this Gospel. He always modestly retrained from mentioning his own mame. 41, he first findeth his own brother Simon—The language in the Greek would imply that each of the two disciples sought at once his own brother to bring him to Jesus and a procher to Jesus and a pr brother to bring him to Jesus, and Andrew succeeded first in bringing his brother Simon. Thus each disciple sought to bring some one to Jesus. This has ever been the method of advancing the cause of Christ. we have found the Messias—There was an exnectation at that time that Christ was about to appear. It was wonderful news that Andrew carried to his brether. The fullness of time had come, and he who was to rethe and he who was to redeem the world had been found. 42, he brought him was through human agenthat Simon was brought into contact with the Saviour of men. art Simon-Though it is the first time thou that Peter ever saw Jesus, it is not the first time that Jesus, in spirit at least, ever saw Peter. He knows his parentage, his name and history.-Whedon John John thou shalt be called Cappings—Jesus saw clearly the nature of Simon and what he might become through grace, and he changed his name accordingly. His new name meant rock and stood for solidity which is by interpretation, A stone-"Which is by interpretation, Peter."—

48. the day following-The day after Christ's interview with Peter. Jesus would go forth into Galilee—Jesus determined that his ministry should be-gin in Galilee rather than in the wilferness where John was preaching or in Judea, where ecclesiasticism was in tense. His home was in Galilee, and the people of that district were not closely bound up in religious customs and hence would be open to the teachings of Jesus. findeth Philip-Philip's home was in Califee, in a village called Bethsalada, on the northwest shore of the sea of Galilee, and one also at the north end, each of where the Jordan flows into the sca. This was called elithsaica Julias. The home of Philip. Andrew and Peter was the Bethsaida, first mentioned. The name means Andrew and refer was the Benssada, first mentioned. The name means nouse, or place, of fish. 45. Philip findeth Nathaniel—As soon as Philip findeth Nathaniel—As soon as Philip became a disciple of Jesus, he went forth to bring another to him. He be came at once a winner of souls. The Pentateuch, or the five books of Moses, the prophets-The Old Testament prophets foretold the coming of the Messiah. Jesus of Nazareth— Nazareth, the early home of Jesus ts a city about fifteen miles west of the Sea of Galilee, situated among the hills, high above the plains of Esdrae lon, which stretches away to the south In overlooks the scenes of many of the the son of Joseph—This is the lan Joseph was the reputed father of Jesus, and Philip ex-pressed the common opinion of these

who knew the family. 46. Can be any good thing come out of Najar-eth—The question implies either that Nazareth was an insignificant town or that it have a bad approximately that it bore a bad reputation. Nathan ael lived in Cana, only four miles from Nazareth, and he was astonished that the Messiah should come from that place come and see—Personal investi-gation would answer his inquiry.

III. A hearty confession (vs.51). 47. Behold an Israelite indeed—Jesus not only saw Nathanael as one man sees another, but He also saw thoroughly his character. He noted that there wa no guile, or deception, about him. He was an honest descendant of Abra ham. 48. Whence knowest thou managed was not acquainted with lesus and he was filled with wonder that Jesus should know him. When thou wast under the fig tree, I saw thee—The thick foliage of the fig tree furnished a choice place for meditation and prayer, and doubtless Nathanael made use of the children in the control of the thanael made use of it for that pur-pose. He was astonished at the words of Jesus. 49. Thou art the Son of God—The bearing of Jesus together with the marvelous knowledge that He manifested drew forth from Nathanael this sincere and weighty confee sion, He declared that He was the Messiah and the long-expected King of Israel. 50, 51. As great as was the mystery of how Jesus saw Nathan under the fig tree, there would yet he shown much greater manifestations of His power and glory.

Questions.—What did John the Ban-

tist announce to two of his disciples concerning Jesus? What course did those disciples take? Why did they address Jesus as "Rabbi"? Who were the two disciples? Whom did they go to seek? What name did Jesus give to Simon? What does the name mean? Whom did Philip bring to Jesus What confession did Nathanael make

PRACTICAL SURVEY. Topic.—Finding the Christ.

I. Was the culmination of John's ministry.

II. Led to personal, saving faith. I. Was the culmination of John's ministry. We have here the first steps in the history of the gospel The first announcement which scat men to Christ was, "Behold the Lamb of God." John the Baptist and Jesus had here met for the last time. The Bapwas preparing for the change in their relative positions implied in the entrance of Jesus upon His public car-eer. It was a proof of John's humility that he should be content to transfer his disciples to One greater than himself. In the school of the herald they had been prepared for the service of the King. It was a proof that they had profited by the lesons of the herald when they evinced a yearning for the still higher society of Christ. There was much to be known of Christ which their teacher could no. impart. In following Jesus they knowledged His high character as Master, on whose instruction they de sired to wait. We have brought us the first beginnings of the Christian Church, beginning with the quietness which is characteristic ning and first movements of personal religion. In this record we have the principle of Christian missions condensed into a few words, the happy exercise of Christian sympathy and onterprise. The two disciples of John followed Jesus. That was the decisive act which determined their destiny.

II. Led to personal, saving faith.
Jesus came to earth in order that in him the favor, fellowship and life of God might be made accessible to man. The efficiency of his sacrifice covers all the needs of spiritual life. It was not an accident that the first words of the Master, spoken in his Massianic office, expressed the profoundly significant question, "What seek ye?" It suggested to the disciples of John their need of having a clear consciousness of their object. Jesus set them on examining their purpose in following him. There was no lack of tenderness in his question. He saw that the motive of these ardent disciples must be laid bare to themselves. He fore saw that they were to become able ministers of his gospel to their fellow men. They desired a private interview that they might have a deeper and the rising by it into a higher life. Jesus fully gratified their cesire and satisfied all their hopes. The seed sown in the wilderness bore fruit hore fruit when Christ by his invitation quickened it into life. The conviction was formed in the minds of his two guests that their Host was none other than the Christ foretold in Hebrew prophecy. Momentous consequer flowed from Andrew's loving act. consequences could not have performed for his trother a nobler act, neither pre-sented to Christ a nobler tribute of his love. His was the impulse of a trether's heart, the action of a brother's energy. Prompt zeal, quiet helpfulness and yearning faith entered into his act. The Master took possession of Simon, changed his name and received him at once into his sernot seem to have. Philip did teen moved by the preaching of the Baptist to follow Josus. He was called to discipleship by the direct voice of Jesus. Gratitude to the Redeemer impolled him to a proclamation of redemption. Dy inviting Na-thaniel to see for himself, Philip showed his entire confidence in his own assertion and his cultivaness to have it projed. Philip's anxiety was to bring Nathanael into personal com munication with lesus, heeded Philip's terse advice. Nathanag stly yielded to the ferce of truth. He uttered at once an emphatic testim to Christ's divinity and Messiahship. That earliest creed, formulated by a guileless Israelite, was a brief ment of faith in Christ, made to Christ himself. In obedience to John's wilderness preaching we trace results in the disciples beholding Jesus, in following him, in communing with him. and finally pointing others to him. In faithfulness to his mission we mark the searching question of Jesus, put to his first followers, his gracious inritation to them, his encouraging promise to Peter, his divine command to Philip and his revelution to Na-

thansel concerning himself.

## HOW TO MAINTAIN FERTILITY OF THE SOIL

Growth of Leguminous Crops, Conservation of Barnyard Manure, Application of Lime and Phosphatic Fertilizers Are the Four Essentials.

Every agricultural country so far as the fertility of its soil is concerned, passes four stages. The first stage is where the soil is vingin and yields crops bountifully. No manure of fertilizer of any kind is required, and indeed, on account of the richard and indeed, on account of the richard seeds of the soil it would not pay to the soil counting.

Soluble and available for plant use. The organic matter in the manure is should not be plowed down. In considering the amount of the soil with energy to work. The activity of Azotobacter and other nitrogen fixing bacteria is directly proportional to the amount of organic matter the soil counting. and indeed, on account of the richmess of the soil, it would not pay to
use them. The second stage is where
the land has been depleted of a certain amount of its virgin fertility,
but still contains sufficient plant food
to wield profitable crops, if legumincrops are grown, and all the manure
that is made is returned to the land.
The third stage is where the reserve
of plant food in the soil is still furof plant food in the soil is still fur therther depleted, and where the ap-plication of manure made from the crops grown on the farm is not enough to produce crops that will yield maximum profit. The soil has also probably become somewhat acid through the continued use of fammyard manure. Now the growth of leguminous crops (clover, alfalfa, peas beans, etc.), and the use of manure must be supplemented by recruite or must be supplemented by regular applications of lime (to correct the acididty of the soil,) and phosphatic fertilizers. The fourth stage is where not only must leguminous crops be not only must reguminous crops be grown, manure applied, regular dress-ings of lime and phosphatic fertiliz-ers given, but potassic fertilizers must be used as well. In other words, the soil through heavy cropping has become deficient in all the essentials elements of plant life and a complete fertilizer must be used.

CLOVER INCREASES YIELD OF NEXT CROP.

All these different stages of soil fertility are represented in Canada. Only a very limited area has reached the fourth stage, but practically ail the older settled portions have reach ed the third stage.

Some leguminous crop should be some reguminous crop should be included in every rotation. Extensive experiments have shown that where land is fertilized regularly with lime and phosphatic fertilizers, and the only manure applied is that obtained by feeding the roots on the land, that the fertility of the soil can be maintained for at least sixty years. Leguminous crops are the sheet anchor of modern agriculture.

the necessity of conserving the water than the carbonate of lime, but manure on the farm. They regard it it does not neutralize the acid of more as a nuisance than anything sour soils as do the lime carbonate else. If they realized that every ton and slaked lime. In other respects, contained about two dollars' worth of fertility, they would probably take more care of it. A ton of manure contains about 10 pounds of nitrogen, 5 pounds of phospheric acid and 10 pounds of potash. At pre-war prices these elements of fertility would cost in artificial fertilizers about \$2.25.

ty of Azotobacter and other nitrogen fixing bacteria is directly propor ion-al to the amount of organic matter the soil contins.

Not only does manure enrich the soil with plant food and benefit the soil bacteria, but it has a very important physical effect. It locsens up heavy clay soils and makes them more easily worked. On the other hand, it makes loose sandy soils more compact. The desirability of an abuncomment. compact. The desirability of an abundance of organic matter in the soil is noticed especially in dry se sons, when it will be observed that soils that are lacking in this respect dry out very quickly and become hard and crack. If lots of manure has been applied and the soil consequently have applied and the soil consequently has an abundace of organic matter, the moisture will be held—where it is wanted-near the surface, in reach of the plant roots.

Banyard manure does not make a "balanced ration," so to speak for plants. It is deficient in pho-phoric acid. For this reason, when land has been worker for a number of years and the crop yield is not as large as the way formed by the way to use these it was formerly, it pays to use phosphatic fertilizers. They should be used as a rule on the roots or corn. The application of from two to four hundred pounds of acid phosphate or per acre will generally prove profitable.

When land has been dressed regular ly with barnyard manure for a number of years it becomes acid, Lime will correct this acidity. Experienced farmers in the older countries give their land a drussing of lime every few years.

There are three chief kinds of lime viz.: lime carbonate or ground lime stone, slaked lime, and sypsum. The lime carbonate or ground limestone is the kind that should be used in most cases. It is legs caustic than the slaked lime and moreover is a good deal cheaper.

Gypsum, or sulphate of lime, is found in beds or deposits, in various parts of the Dominion When pulverized, it is very commonly called land plaster. It is a valuable scurce of lime, A great many farmers do not realize as the compound is more soluble in gypsum or land-plaster may substitute lime, and being more sol ble, may be applied at a much less rate per acre. It also contains some sul-phur, which some authorities now think may have a special value in the soil.

Not only does manure enrich the almost any time of the year. Freshly sour that much heavier applications soil directly, with pant food, but slaked lime, especially if the soil is when it rots or decays the acids form very sour and a heavy application is ed which act on the insoluble plant required, is perhaps best applied in food already present, and make it the fall. It is the surface soil that

various forms of lime that should be applied, it is well to remember that 56 pounds of pure quick lime is the equivalent of 00 pounds of pure ear-bonate of lime. That is, 56 pounds of fresh lime or 74 pounds of slaked lime will have the same general effect in the soil as 100 pounds of ground limestone. While not quite accurate one ton of quicklime may be curate, one ton of quicklime may be considered equal to two tons of the carbonate. However, the character of the soil should be taken into consid-eration in deciding which material to use, carbonate or lime, that is, ground limestone and marl, is much milder in its action than the freshly slaked its action than the freshly slaked lime, and is therefore the better material to apply where rapid action is not an important point, and especial ly on light sand and gravelly soils These soils are usually poor in organic matter, due to the free oxidation induced by their open porous nature. Freshly slaked lime is generally credited with hastening this oxidation and on light soils would thus cause too rapid a dissipation of this valu-able material. On heavy clays, fresh-ly slaked lime may be used to advantage. There is not the same feat of unduly hastening the decay of the organic matter and its action in causing flocculation of the clay particles will be more rapid and the improvement in the physical condition of the soil more quickly obtained. On soils between the sands and clays, experi-ments in other countries indicate that the carbonate of lime will probably give the best results through a term of years, although the returns for the first year or two may be in favor

of fresh burned lime. AMOUNT OF LIME TO APPLY.

For mucks and peaty soils that may be decidedly acid, the fresh slaked lime is to be preferred.

The amount of lime that should be applied naturally varies with the nature of the soil, and the degree of acidity. We have generally recommended one ton of fresh lime or two tons of ground limestone, per acre. This is probably enough for light soils that are not very acid, but experience is showing us that much heavier applications may be made on clays that show acid with litrus paper. Too heavy dressings with fresh lime tend

to sterilize the soil for a time, that is, the lime checks the life process organisms within the soil. is, however, no fear of this with the carbonate of lime. On light soils it is safe to apply from one to two tons of the ground limestone, and on clay the same amount of the fresh lime. But in some cases the clays may be so sults.

"it explodes spontaneously by detona

-Canadian Countryman.

## Hoga, fed and watered ...

do. medium...
do canners .
bulls .....

Feeding steers
Stockers, choice
do, light
Milkers, choice, each

OTHER MARKETS. Oats—
May ... 0 61½ 0 61% 0 68% 0 685
July ... 0 60% 0 60% 0 68
July ... 2 68½ 0 68% 2 68
July ... 2 71 2 71½ 2 71 2 71½
a—To \$1.21 sold.

12 75

TORONTO MARKETS.

MEATS-WHOLESALE

SUGAR MARKET.

Wholesalers quote on Canadias refined sugar, Toronto delivery, as follows.
Royal Acadia, granulated 190 ths. 57 68.
Lantic, granulated 100 ths. 7 68.
Dominion, granulated 100 ths. 7 68.
Dominion, granulated 100 ths. 7 67.
St. Lawrence, Beaver 100 ths. 7 67.
Lantic, Blue Star 100 ths. 7 68.
Lantic, Blue Star 100 th

There was a strong demand for cattle, and prices were firm.
Lambs made a sharp advance, and logs were also higher.
Laport cattle, choice ... 950 10 00 Ettcher cattle, choice ... 860 9 20 do. do. medium ... 725 825 do. do. common ... 625 700 Ettcher cows, choice ... 700 T46 do. do. medium ... 560 6 56

SUGAR MARKET

MINNEAPOLIS GRAIN MARKET Minncapolis - Wheat-May, \$1.38; July 180; Casn-No. 1 hard, \$1.96 to \$1.95; No. 1 Northern, \$1.89 to \$1.92; No. 2 Northern, \$1.86 to \$1.92; Corn-No. 3 yellow, 91 1-4 to 92 1-4c. Oats-No. 3 will 3 1-2 to 54 1-2c. Flour unchanged, Bran, \$1.50 to \$28.09.

to \$28,00. DULUTH GRAIN MARKET. Duluth.—Wheat-No. 1 hard, \$1.83 n.4; No. 1 Northern, \$1.83 3-4; No. 2 Worth-crn, \$1.85 3-4; May, \$1.87 3-4. Liusecd, to aprive, \$2.86 1-2; May, \$2.90 1-2; July, \$5.52

LONDON WOOL SALES. LONDON WOOL SALEDS.

The offerings at the wool auction sales to-day amounted to 1,300 bales. It was the best selection of the series and the demand was animated at firm prices. Queensland secured sold at 3s, It 1-2d, and Victorian greasy at 2s 9d.

MONTREAL MARKETS.

MONTREAL MARKETS.

Montreal, Jan. B.—The offerings at the east end cattle market (C.P.R.) this norming amounted to 450 guille, 450 sheep. 600 hogs, and—350 calves. There was an active aemand for the best cattle, especially in steers, but even the light offerings were sufficient to fill the wants. The cheaper grades of cattle find ready Luyers, but medium grades do not seem to be wanted generally. Calves were in demand, especially grass-fed, at 45.50 to 85.

Quotations: Quotations: \$9; good steers \$7.51 to

Quotations:
Cnoice steers \$9: good steers \$7:5) to \$5.5; butchers' bulls \$7 to \$8; butchers' cows \$5.50 to \$7.50; canners bulls \$8.50; milk fed calves \$6.50; milk fed calves \$10; names bulls \$8.50; milk fed calves \$10; names bulls \$12 to \$15.50; celect hogs \$12.75 to \$13.50; CHICAGO LIVES \$10.50;

	CHICAGO LIVE STOCK			
	Cattle, receipts 8,000.			
	Market ima.			
	Native beet cattle 7 75		SC	
	Western steers 7 66		03	
1	Stookers and tooders			
	Stockers and leeders 5 60		di	
1	Covs and heners 440	10	60	
	Calves 8 00	11	UJ .	
1	Hogs, receipts 55.000.			
- 1	Market weak.			
-1	Light 9 99	10	45	
!	Nivod 10 10			
1	Maixed 10 10		69	
1	licavy 10 20	FU	6.	
1	Rough 10 20	70	25	
1	P'gs 760	9		
1		10		
1	Bulk of sales 10 25			
1	Sheep, receipts 10,000.	10	Ge	
1	Mich, 1600. 18 10,000.			
1	Market strong.			
ŧ.	Wethers 949	10	14	
1		11	695	
1				

BUFFALO LIVE STOCK. Cast Buffalo, Jan D.—Cattle, receipts 650; steady.
Volas, receipts 5,000; active; \$5 to \$55.50.
Hogs, receipts 5,000; active; heavy and ruxed \$11.25 to \$16.50 yorkers \$11.25 to \$16.51; pigs \$2.75 to \$10.60 roughs \$9.85 to \$10; stags \$7.50 to \$2.5. East Buffalo, Jan 13.-Cattle, receipts

Sheep and lambs, receipts 490; active; urchanged.

LIVERPOOL MARKETS. Us: to 15, 15s. Frams, short cut, 14 to 16 lbs.—96. Fracon, Cumperland cut, 26 to 38 m

lead bellies, 14 to 15 lbs.—1889, ong clear miceles, 15 ht, 25 to 34 ps.— tts.

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Hetrolous 15 1-14.

Linsed Off-12 64.
Citton Sec. Off built refined, spot-

Care Villa Ashes.

During the winter months the disposal of ashes from stoves and furnaces demands factention. Though many fires are caused by the disposition of hot ashes against frame buildings, wooden fences, etc., the practice is still continued.

Too much care cannot be given to the disposal of ashes. Either metal containers should be used, or the exhes should be placed at a safe distance from anything combustible. Couser-

## PECULIARITIES OF HIGH EXPLOSIVES

It is now realized that armies in the lield are using many different kinds of explosives, of which the most compaists of nitrocellulose, manufactured there is a new danger due to this confiction. tis now realize that armies in the field are using many different kinds of explosives, of which the most comsists of nitrocellulose, manufactured from cotton. For this purpose, as the late Sir William Ramsay pointed out, the guncotton must e "nitrated," or converted by the action of nitrie and converted by the action of nitric and onverted by the action of nuric and into a gelatin.ll're material, which may or may not be combined with nitro-glycerine. It is a frequent mistake to suppose that nitroglycerine usually supplies the propulsive force of modern ammunition. It has been found, on the constant, that it is inferior to some other explacines while it. Their question. "Where dwellest thou?" was a direct confession of a thou?" was a direct confession of a confes cussion takes place near it, as during the firing of a heavy cannon. Hence the material made by nitrating celu lese and cotton, when reduced to very fine powder or to threads, known as cordite, is employed for the purpos of generating the force which propels a projectile out of a gun. This mod-ern ammunition is far more effective than ordinary gunpowder, made from charcoal, sulphur and saltpetre. develops an enormous amount of energy. The pressure of the gases liberated may equal twenty tons to the square inch in the chamber of the gun, and the porjectile may leave the barrel with a velocity of 1,000 yards a

Cotton, however, is not the only form of woody fibre from which nitrocellulose can be made. Wood pulp, straw and substances like coke dust have been used, for example, in Australian and substances in Australian and substances. tria, but these substitutes have various drawbacks. First, they have the defect mentioned before of occupying too much space and, secondly they ignite too quickly, and thus the prescannot be used to expel a bullet from a gun. They are manufactured for other purposes, however, being excel-lent explosive material for shells, since they are not so easily made to explode as guncetton is, and because this property enables them to this property enables them to pass through the barrel of a gun without exploding: whereas the concussion of firing, as Sir William Ramsay says, is through the apt to explode a shell filled with gua-

Another objection to nitrocellulose prepared from straw or wood pulp is that, though it possesses similar prop-erties to guncotton, the powders made from it have not the same propulsive power as has an equal weight of gun-cotton, from which it is apparent that a bullet propelled vith one of these substitutes will not have the same substitutes will not have the same velocity as if propelled by an equal weight of guncotton. It is probable, however, owing to the great demand for explosives that much nitreecliulose made from wood pulp is now being

Whether this confinement of nitrocellulose could have been one of the causes of the explosion in New York is, of course, more or less conjectural, but is is quite likely that some cir-cumstances like the compression of explosives may have been a contributing cause. It will be noticed that there initiate a state of the ele ments of such substances as mercury fulminate or pieric powder sufficient to cause their detonation, a condition of things which would immensely increase the unstable properties of high explosives like trinitrotoluene pieric acid, otherwise not easily made to explode by burning or ordinary percussion.

Now the packing or confinement of explosives, as in railway cars and barges, can produce other effects that balges, can plotate chief the that may be called spontaneous explesion. If these explosives should contain picrates or picric acid, there is the danger that compounds of a highly explosive na-ture will be formed. Pieric acid, for example, forms dangerous compounds with lead, and for this reason it necessary to pack it in shells or re-ceptacles which contain no lead, nor even lead paint on the serew threads of the plugs. To avoid this danger manuficturers commonly varnish the interior of shells which are filled with pieric acid, but at the best it has a capricious chemical character may explode even after such precautions have been tak. 1.

In the present war pieric acid is

uced on a great scale. It is report that lyddite shells were stored barges in the harbor. Lyddite is pierie acid, citner uncombined—that is, mixed, say, with other substances—or molten and "cast" pieric acid. Cast pieric acid is a treacherous substance with a dangerous and wholly unwar-ranted reputation for stability. In fact there are chemists who say that it is the safest explosive for transport. This is quite a mistake. The French have found that it has an unstable nature sometimes exploding after a very slight concussion, though at others it requires a considerable detonation to make it separate into its gaseous ele-

ments An expert of the "Conservatoire des arts et metiers" describes it as the perfect type of explosive. He means that in ordinary circumstances it does not explode under violent shocks, and it is not easy to ignite. But there appears to be no absolute security for this stability. "Without any apparent reason," he writes significantly,

tion." (Revue Scientifique, p. 452, 1915). He then says: "If we examine the causes of this singular property with more care we find that this ca-pricious explosiveness is due, in the first place, to the formation of ple-rates. Pieric acid, which is made by nitrating phenol or carbolic acid, combines with most metals, forming galts

which are more unstable than pieric acid itself."

Pieric acid, when detonated, is one of the meet powerful of known explosives. The violence of the explosion in the harbor would indicate the true criefin of true origin of the unhappy occur-rence. It is also quite likely that the pieric acid and its mixtures were improperly packed and stored, and certainly the presence of such a large quantity of this explosive in one place. large. were several explosives reported. The concussion produced by a single explosion wou!! initiate a state of the elecystem of guarding such things under which we live.

There is still another peculiarity of

this explosion to be noticed. The question of relative bulk has had a great influence in the selection of the charges for shells. We have plenty of modifications of pieric acid which are known, like shimese and melinite, and doubtless other modifications which are unknown, and due to the genius

inspired by the war. Modern inventors have tried to make an ammunition which

concentrates the greatest energy in the smaltrates the greatest energy in the smallest space and the greatest explosive power in the most manageable form: nitrocellulose is a type of the first; pieric acid and plerates, ammonium pieraie and others are types of the second. But, according to Sir William Ramsay guncotton cannot be com-pressed to a greater density than 1.25, but picric acid and other shell fillings can be compressed to a density of 1.08. In other words, a chell which world hold a pound and a quarter of gun-cotton would hold one and three-quarter pounds of the denser picric and trinitroteluene

The explosion is therefore increased in violence because the larger amount is used as well as the more rapid explosion of the shell filling. Sir William Removal. liain Ramsay is an incontectable authority, and his views on explosives throw much light on the New York ratastro; he. As usual we have dome business in a modern, up to date man-ner, which is a melancholy satisfac-tion, if such a reflection can sunport our optimism in this meas. Y. Sun.

Souvenir for Germans.

"Bike" Evans, former Brantford ball player at the front lost none of his old nerve. The story has some out that recently "Bike" crawled over to a German dug-out and called out with a German tug-out and sales out with expletives: "How many are there of you down there?" The answer came back in good English: "Eight of us." Then divide these among you," called Evans, and with that he harled in two hand grenades, and in the con-fusion made his way back uninjured."