7,434,000, Venus 492,000, Earth $1,618,000$, Moon 13,000,
Mars $13,463,000$, Jupiter $23,810,000$, Saturn $49,000,000$, Mars $13,463,000$, Jupiter $23,810,000$, Saturn $49,000,000$,
Uranus $85,053,000$, Neptune $140,000,000$. 2. Has our disance from Alcyone been estimated or determined? A. three years to traverse thedistance.
3. Is there a ny appreciable amount of heat
our olar system? A. No.
(37) P. B. G. says: There is a floating transparent mass which fioats over the pupils of my eyes. In pider's web; in looking at a dark object, or reading, eems like a blur. A. From your too general description we should judge your trouble was conjunctivitis, liningmembrane of the eyelid. The remedy for this is an astri
(38) J. R. asks: What are the exact proportions of the ingredients used in making oxygen gas, for y in a capacious retort of copper or 4 parts cher te of potash and 1 part peroxide of mangancse, well mixed together. Wash the gas well as it comes over. A pound of this mixture should give you about 25 gal-
lons of the gas. 2 . What is the best way of making hydrogen to mingle with oxygen? A. Hydrogen is usually prepared by the action of diluted sulphuric acid (1 of
acid to 7 of water) on scraps of zinc. This gas should also be well washed before using. Scrap iron and a less
dilute acil are occasionally employed, instead of zinc, in manufacturing the gas on a larger scale.
(39) H. C. asks: 1 . How much water should take to dissolve 1 oz. nitrate of silver? A. It will dis-
solve in 5 ozs. water at $52^{\circ}$ Fah. and in 0.6 oz. of boiling solve in 5 ozs. water at $52^{\circ}$ Fah. and in 0.6 oz. of boiling
water. 2. How much to dissolve 1 oz. tartaric acid? A. Tartaric acid is soluble in 4
and in $0^{\circ} 5$ parts at $212^{\circ}$ Fah.
(40) S. L. asks: Can tannate of caffeine be made from pure caffeine? A. The tannate of caffeine may be obtained as a beautifis white precipitate, if an
aqueous solution of caffeine is added in excess to aqueous aqueous solution of carfeine is added in excess to aqueous
tannic acid. An infustion of tea, by its tannin, also pre-
(41) S. K. asks: What is the proportion of saturated solution of bromide of potassium? A. This depends altogether upon the temperature at which the
solution was saturated. The solubility of the salt increases as the menstruum is warmed. Bromide of po tassium is soluble in 1.87 parts of water (by weight) at

(42) W. F. K. asks: 1. Is there to your knowledge any soap made entirely of vegetables? A.
There is no soap of this kind. 2. Whatis put into soap to harden it? A. After the saponification is finished, the soap is coagulated by the addition of common salt. The
precipitated soap is then pressed, dried. This gives hard soap.
(43) E. N. W.-Saffranine ( $\mathrm{C}_{21} \mathrm{H}_{20} \mathrm{~N}_{4}$ ) is prepared commercially by treating crude aniline oil with nitrous acid gas
(44) P., C., \& Co., ask: In packing ice in walls 10 inchesthick, will coke dust or ordinary cinders
be equivalent to sawdust? A. If the coke dust is as porous as charcoal dust, it may answer the purpose. In
the absence of sawdust, carpenters' shavings are some-
(45) .J. M. asks: 1. How long will it take ash and maple to season well? A. About 2 years. 2.
Would it be better to season them in sheds or in the open air? A. Let them be covered at top. 3. Why is spruce in preference to other soft woods for pianoforte caunse it is a tough wood, less likely to split than mos woods. 4. Which is the next best wood to spruce for ounding boards? A. Perhaps white wood or pine: 5. How long will spruce take to season well, if cut $1 / 6$ inch thick? A. Six months or so, not to dry, but to season. or your purpose, probably
(46) E. A. B. says: I notice that A. C. L makes inquiries in regard to laying a pipe. If he were than the lead pipe, enclosing and retaining the lead pipe than the lead pipe, enclosing and retaining the lead pipe
in the center of the earthen one by means of spiders placed at suitable distances, thus causing an air space to encircle the lead pipe, would not this form a better protection than if sawdust alone were used? A. The suggestion is a good one for the purpose indicated, provided the air space is hermetically sealed at the outlets. But it will not compensate
pipe is laid in the ground.
(47) R. M. asks: What shall I do, or cause to be done, to stop the serious leaking of five tin roofs, on properties erected last year? The tinman used the
best tin, but, as is usual here, the joints are not soldered; but the sheets are raised at the edges two inches or so
and pressed together and then turned over slightly. The roofs are rather fiat. The seams run from the gutter to the peak of house. The consequence is that when the fiows into the room beneath, doing much damage. The tinner says the seams cannot be soldered now they have been painted. A. In this city the tin is always soldered,
except upon steep roofs. The conditions you mention try roofs very much. Perhaps you can remedy it in a measure by tightening the seams, and giving them a coat
of rubber paint.
(48) C. F. J. asks: What will remove pimples and black worm specks from the face? A. Take
rose water 3 ozs., sulphate of zinc 1 drachm; mix. Wet the face with it, gentlydry it, and touch it over with cold cream, which also gently dry off
What is the chemical name for Paris green, and what are its constitnents? A. Paris green(Schweinfurtgreen) is the aceto-arsenite of copper. In 100 parts it contains:
Oxide of copper 3129 ; arsenious acid $58 \cdot 65$; acetic acid
10.06. Its composition may be formulated as follows: $\left(\begin{array}{c}\left.\mathrm{C}_{2} \mathrm{H}_{3} \mathrm{O}\right)_{2} \\ \mathbf{C u}\end{array}\right.$
(49) C. A. M. asks: 1. How can I harden is hardened to some extent by heating for a short time 2. How can Canada balsam be rendered colorless? A. It may be bleached by exposure to sunlight. 3. Is there any other transparent substance that can be worked in as
soft a condition, or as easily, and afterwards hardened without losing its transparency? A. There are several other gums and balsams (compounds of certain resin the Canada balsam-such as balsam copaiba, balsam tolu, gum benzoin, and Venice turpentine, also good
collodion. Canada balsam, however, gencrally gives the
(50) F. B. says: I want to keep a hot bar such as they have in restaurants. I do not want to use
gas, and I cannot put in a stove because I have not got chimney. How can I do it? A. There are small stoves in the market arranged to burn kerosene oil. If
you could provide suitable means of ventilation in your you could provide suitable means of ventilation in your
rooms one of these might answer the requirements.
(51) E. W. M. asks: How can a suitable white paint for paper water pails be made? A. Zinc whint practically available for this purpose that we paint pra
know of.
(52) D. says: I copied from a back number of your paper a recipe for an acid blister for curing sprains, ringbones, etc., in lyorses. I used it according cannotget the sore to heal or the hair to grow over the oil rosemary 5 ozs., oil lavender 3 ozs., oil turnentine 9 ozs., and pyroligneous acid 4 ozs . Mix well togethe and place in an earthen vessel, then add and stir in gradally sulphuric acid 1 pint until effervescence ceases, have off the hair and apply once a day to the affected
part. Keep the part perfectly dry for two weeks, and rest the animal for a month. A. Wash the sore night and morning with pure water containing a little salicylic acid, and cover with. a clean cotton cloth, between the olds of which a little of the dry acid has been rubbed. This will purify the sore and protect it from the attacks of insects. If this fails, it will be necessary to treat the
animal constitutionally.
(53) B. K. D. asks: If a steampipe 100 feet long is connected to a boiler with an ordinary valve at
20 feet from the end, which is securely plugged will there be as much pressure at the further end of the pipe as there is between the boiler and valve,
valve to be only one fourth open? A. Yes.
(54) F. B. asks: What size of engine is rewhat size of screw is required? I want to keep her at as light a draught as possible, and get a speed of from to 15 miles per hour. A. You will be obliged to devise
special machinery for any such speed as you speak of special machinery for any such speed as you speak of,
and you must determine the necessary data by experiand yo
ment.
(55) J. B. W. asks: What size of wheel should be used for a boat 100 feet long and of 20 feet ing engine, 26 inches in diameter of cylinder and 30 10 feet diameter, and of 15 to a propeller of from $91 / 2$
feet pitch.
(56) W. M. K. asks: At what angle to the line of direction should a plate, in passing through wa-
ter, be placed, to secure the greatest pressure sideways, ter, be placed, to secure the greatest pressure sideways,
with the least resistance to its forward motion? A. As we understand your question, the angle does not make however, we do not get your idea.
What difficulties or objections are there to usingnitroglycerin as a motor by exploding it in a cylinder? A. hecessary to provide a new cylinder after each explo-

## sion.

will dere any chemical compound, safe to use, which We think that you will find that wood and coal are the best compounds.
(57) A. R. says: I wish to discharge under a circular iron pipe, placed of an angle of $45^{\circ}$ to the horizon. What should be the diameters of the upper and get the idea. If you will send a sketch, showing the ar
(58) R. V. J. says: I am running two boilbilding. If I or for the purpose of heating a large building. If I pump water to the first guage, in a few Do you know of any remedy? A. Probably the rise the water is due to the construction of the boiler or the annot answer positively, from the data sent.
(59) G. W. asks: With what velocity will there is no resistance from friction, etc
(60) H. G. W. says: 1. Is the most power ful battery the best for electro-plating? A. No, but difbattery will it take to goldplate a watch case? A. A one gallon cell will answer. 3. Will it take more bat-
tery power to silverplate?
A. Better use two of the tery power to silverplate?
above named cells. Better use two of the
(61) E. D. W. says: 1. I am constructing a line of telegraph $1 / 4$ of a mile in length, and have three relays, each relay has $1 / 4$ of a lb. of No. 30 silk covered
wire. Will they be suitable for that distance and will No. 15 galvanized wire answer for my main line? A. Larger wire, say No. 23 , would be better adapted to so
short a circuit. No. short a circuit. No. 15 wire for the line will answer.
Use two wires. 2 Will you prese Use two wires. 2. Will you please send me directions
for making a cheap battery for my main line with the for making a cheap battery for my main line with the
above three instruments in circuit. A. Place a disk of copper, to which a guttapercha covered wireis soldered,
in the bottom of a jar, and suspend a piece of zinc with
a connecting wire in the upper part; after which fill the jar about ${ }_{3}^{2}$ full of water to which has been added ab solved, drop a few crystals of blue vitriol on the cop
(62) G. L. P., Jr., says: 1. The ports in a mall brass cylinder are out of place. Is it possible to ouve them filled with brass, so that they may be A . Yes, by burningin. 2. Could plaster Paris be used for cores in casting brass? A. Yes, but is apt to cause air holes. 3. Would a common hous furnace give heat enough to melt brass? A. Yes. 4
What is the best brass alloy for small castings? A What is the best brass alloy
Copper 10 , tin 5 , zinc 2 parts.
(63) J. T. F. asks: How can the surface of a pane of glass be softened so as to receive any impres-
sion, and then harden again? A. This is not feasible, sion, and then harden again? A. This is not feasible,
except by a uniform softening of the whole plate in except by a unif
suitable furnace.
(64) H. F. A. says: I wrote some time ago owing questions: 1. What are the and I ask the fol lowing questions: 1. What are the proportions of ni
trate of silver and wood naphtha for the dip? A. Make a saturated solution. 2. How shall I treat with ammo nia? A. Dip the articles in aqua ammonia. 3. Howdo By heating, but great care must be taken not to breath
(65) J. H. M. asks: Can you tell me how many cells of a carbon battery ( 4 inch jars) are neces-
sary for the prountion of the electric light? A. About sary for the pro
40 or 50 cells.
(66) J. N. asks: 1. Will the pressure in a boiler ultimately raise the water from the bottom, so that the plates will get red hot, generate a gas, and cause an explosion? A. If there is plenty of water, and the boiler is reasonably well designed, the water will not be
driven from the plates. We know of no good evidence in favor of the generation of the gas. 2. When I was second engineer, we had a foree pum.p. of which the
check valve spindle was too short. T told the first engicheck valve spindle was too short. I told the first engineer that it would not be safe, but "he knew his busi-
ness." On going to start the engine, I found no water at the gages. I lifted the steam valve, let out the steam, took an iron red, wrapped a cloth round it, and found damped. I brought some one to see it, The fire was
dinc a great change. If I had moved the fire first, I am afraid I should have been moved pretty quickly. Please give me your opinion. A. When the water is low in a boiler, and you do not know where it is, the safest thing
to do is to haul the fire if it can be done quickly, or if to do is to laul the fire if it can be done quickly, or if
not, cover the fire over with ashes, and allow the boiler not, cover the fire over with ashes, and allow the boiler mitting water. 3. I have been where several boilers pipe from the forcepump. The fires of the middle boilers were urged until they were very hot, and the side into the side boilers. Can you explain? A. Boilers be impossible This precaution is only neglected by the reckless or ignorant.
(67) L. B. says: Please tell me how I can ind out how many lbs. of steam passing through a 2 inch feed pipe into a $10 \times 18$ inch cylinder is equal to a
horse power? A. The steam per horse power per hour horse power? A. The steam per horse power per hour
may vary from 20 to 100 lbs ., according to the character of the engine. The horse power is the product of the effective pressure in lbs. per square inch, the area eflective pressure in in square mches. and the speed of the piston in feet per minute, divided by 33,000 .
(68) J. A.W. says: Will you explain why a hould show mocated at a distance from a certain powe should show more resistance when so attached than it
would when more closely located and attached, or, to be more explicit : Why does a train of cars so made up with empty cars in front of the loaded cars pull harder than the same train would with the loaded cars ahead of the empty cars? I know this to be fact. A. In you can
conveniently send us the data on which you base your opinion, please do so, together with such observations as have been made in regard to the behavior of the train, especially of the empty cars, when made up in the dif-
ferent ways mentioned. As youstate your question, we have not sufficient information to form a decided
(69) C. A. R. asks: How can I clean deers' antlers withont scraping near the roots, where horns are so rough? A. Try a little fine pumice powder moist ened with strong aakkali. Rub well and wash with wa-
ter. Or use muriatic acid, free from iron, in place of ter. Or use
the alkali.
(70) W. S. says: I have a conservatory which the plants droop and die from (I believe) the pipes in the street tad joining and oozing thring from the in the house. I have complained to the officials in charge of the public gas supply, but they only scout the idea and do nothing. Can you suggest any chemical or other appliance whereby the bad effects of the gas
might be neutralized? A. If this is, in reality, the cause, the trouble may be alleviated to some extent by sprinkling the floor withdry slaked lime and charcoal in powder; but the only practicable and effectual way to
overcome the difficulty will be to rectify the cause, as ploe is nothing practically available that may
(71) S. A. C. asks: Please tell me the dimensions for a poultry house for 800 hens, and the way
to build it? A. Make the building two stories in height: inclose it with matched boarding. also board it on the inside of the studding, and fill in the exterior frame with sawdust, tan-bark, or clay. If a part of the barn on the
south side of the hay-mow can be partitioned off for the purpose, so much the better; or the poultry-house may be erected against the south side of the barn as an ex-
tension thereto. Provide an open stairway from the fension thereto. Provide an open stairway from the the first storybe of the natural earth, and that of the vide plenty of glass windows on the south, the east, and
the west sides; and in the second story about one half windows to open for ventilation and protected with wirc cloth. Under the stairs in first story place boxes, in
which quite young chickens may be brooded over night, secure from rats and other vermin; also, malie cages in the corners, in which hens inclined to set at improper times may be placed and fed. Near these provide a box,
always filled with sand, lime, and ashes, for the fowls to always fille with sand, lime, and on the north side, make
wallow in. In the second story, on boxes for the hens to lay in and set in, with the entrance for the hen on the rear side and the place to take the egg out in front. Plenty of gravel and pounded bones should be given them at all times, with an occasional meal of meat in winter. Overhead the roosts are to be placed, of rough poles, 1 or 2 inches in diameter, with
the bark on. Thus provided, the hens will continue to the bark on. Thus provided, the hens will continue to place for doves or pigeons may be made in the roof the building, if desirable.
(72) S. B. M. asks: If you think it possible o re-tin fruit cans after they have been used and rusty, idea is to first cleanse with acid, and then dip in molten tin. A. Your method is a good one. Cover the tin bath with a layer of molten wax to kecp the hot tin from contact with the air.
(73) J. F. K. \& Co. ask: Is there an im proved tool for truing up crosshead wrists? A. We
(74) D. D. asks: How can I usc a lamp in a magic lantern so as not to cover much of the reflector
A. The refiector should be set so that the light refiected A. The renector come to a focus in the fiame of the lamp then it diverges with the light from the fiame, and the two enter the conder under similar conditions. you can have the body holding the oil on the ontside of the lantern, and the oil carried to the burner througl,
(75) A. O. asks: How can I find the maryi fying power of a microscope? A. Place under the mi-
croscope some defnite measure; then look, with onc eye, in the microscope, and with the other look at a rule placed the same distance away on the outside
With a little practice, it will be seen how long the one division in the microscope appears to be on the rule outside. In the same manner the apparent diametcr of the field may be determined; that is, if 1 division inside
(76) W E N Wh in term gine can I run witha boiler 16 inches high and 12 incles in diameter, made of $\frac{1}{8}$ inch copper, bound at every nches with bands $\frac{1}{5}$ inch thick and $11 / 2$ inch wide. The
heads are $\frac{3}{16}$ inch thick. A. You can make an engine $1 / 2 \times 3$ inche
(77) D. H. L. asks: Would there be any nelon which had been poisoned in the stem? A. No. (78) A lady writes to know what is the matter with her greenhouse. The plants drop their leaves
as soon as the heat is ra sed in the house. The gardener attributes it to the paint on the pipes. The rose house, she thinks, was kept too close during the summer, so that the red spiders became very numerous. But the
greenhouse trouble is of another kind. A. See if the greenhouse trouble is of another kind. A. See if the
gas main is not near the greenhouse; the effect of coal gas main is not near the greenhouse; the effect of coal used on the pipes has by as described. If the pain is sure death to the plants, and should be all scraped off Plants will sometimes be several years in recovering from the effects of it. The rose house should be left open during the summer.
Minerals, etc.-Specimens have been received from the following correspondents, and examined, with the result stated:
S. H.-The stones found in the coffee are small quartz pebbles.-F. G. K.-You failed to number or otherwise
designate your specimens. One of them is trap rock, with bright specks of pyrites. The one full of holes is with bright specks of pyrites. The one full of holes is a
piece of quartza iscolored by sesquioxide of iron. Besides these, there are a piece of slate, a sample of clay containing a considerable percentage of iron, and an
iron garnet.-T. S.-It is galena, sulphide of lead. It contains, when pure, $86 \cdot 6$ per cent of lead, and 13.4 per cent of sxlphur. The specimen you send is much mixed with earthy minerals and pyrites. It would require an

## COMMUNICATIONS RECEIVED.

The Editor of the Scientific American acknowledges,
with much pleasure, the recelpt of original papers and ontributions upon the following subj
On a Human Clock. By J. F. B.
On Spiritualism. By R. S. H., by T. B., and by B. C. H. On Wrought Iron Bridges. By J. E G On Postage Stamps. By J. W. S., and by H. W. B. Also inquiries and answers from the following:
J. M.-M. M.-O. H. H.-L. P. K.-C. R.-E

## HINTS TO CORRESPONDENTS

 Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude address of the writer should always be given. Inquiries relating to patents, or to the patentabilityof inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take plea-
sure in answering briefiy by mail, if the writer's address sure in answering briefiy by mail, if the writer's address is given.
Hundreds of inquiries analogous to the following are sent: "Who sells rotary nail-cutting machines? Who makes the best coal gas apparatus for hotels, large houses, etc.? Who sells steam blowers? Whose is the
best mariner's compass? Why do not makers of paperbest mariner's compass? Why do not makers of paper-
making machinery advertise in the Scientific Americak?" All such personal inquiries are printed, as will can?" All such personal inquiries are printed, as will
be observed, in the column of "Business and Persunal,"

DESIGNS PATENTED.

| 9,712, 9,713.-Corset. - M. Adler, New Haven, Conn. <br>  <br> 9,716.-8Kirt Prottcror.-R. Werner, Hoboken, N <br> 9,117-SOAP.-T. Worsles, Philadelphia, Pa. |
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the Buildings, and accounts of all the most notabie the Buildings, and accounts of all the most notable
Scientific and Mechanical objects, profusely illus Scientific and Mechanical objects, profusely illus-
trated with Engravings, are given in the Scientific American Supplement for the
year 1876. This work consists of Two Large year 1876. This work consists of Two Large
Volumes, comprising over 800 quarto pages, equal in quantity of reading matter to over Seve to the great INTERNATIONAL EXHIBITION is ery extensive, and probably forms the most com plete and full history of the affair that can be ob-
tained. The illustrations pertaining to the Exhibition are more than 450 in number. A copious ion is given. Those who desire to possess a com plete and splendid Illustrated Record of the Centennial Exposition should have the Scientific American Supplement for 1876 .
In addition to this splendid History of the Cen ennial Exhibition, the Scientific American Suplement for 1876 contains a vast amount of reading matter of great value for reference and preser-
vation. It presents to the reader, in attractive orm, full accounts of the Advances made during the year in all the chief departments of Science and the Useful Arts, covering the progress in
Chemistry and Metallurgy, Mechanics and EngiChemistry and Metallurgy, Mechanics and Engi-
neering, Electricity, Light, Heat, Sound, Architec ture, Photography, Technology, Pisciculture, AgriEconomy, Materia Medica, Hygiene, Natural HisPhysics, Georraphy, Geology, Mineralogy, Astron hysics, Geography, Geology, Mineralogy, AstronSix Hundred Engravings. The wide scope of this splendid work, its surprising variety of contents its wealth of illustration, renaer it the most valu able contribution to scientific literature extant, The Scientific American Supplement for 1876 complete, is supplied, stitched in paper, at the low rice of $\$ 5$. Strongly bound, both volumes in one
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## Washington

LifeIns.CO. Of IN.Y. 155 BROADWAY

## Sound to the Core: Its Management

ad the following Official Certificates: Insurance Departwent
ALbANY, January
2ad, 1877 .
To the Editors of the Evening Journal:
Having caused a personal examination to be made
of the condition and affaris of the Washington Life nsurance Company of New York, as of the 31st day of December, 1876 , by Hon. John A. McCall, J. J.,
Deputy superintendent, duly appointed by me for that purpose, and deeming it for the public interests
the that the result of his investigation should be
publishcd, I herewith enclose his report for publicatior
Very

Acting Superintende
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Acting Superintendent.
Albany, January 23d, 1877 .
Hon. William Smyth, Acting Supt. New York Insur-
ance Department:

 completed an examnation of the
Insurance Conpuny of New York City.
The veryington Life
jxhitsfactory condition of the company as
enibited below is attributable to the management of exhibited below is attributable to the management of
its affairs by able, prudent and honorable men. It
gives me pleasure to state that in ano minete and ex.
acting investigation I Ind nothing to condemn, but,
find on the contrary, much to commend.
Complete schedules of mortgages, deferred premi-
ums, and real estate investments.as of December 311t,
1876, being the date of examination, have been placed 1876, being the date of examination, have be
on flil in the department.
The following are the assets and liabilities :

Real estate
Bonds and mortgages.
Cash in bank and office
Loans on policies with in thents..
$\$ 159,28480$
$2,334,25279$

| Loans on policies within their value |  |
| :--- | :--- |



J. Y. State 7 's, regis'd 100,000 N. Y. City 5's, regist'd $1290,000 \quad 1,138,500$ Brooklyn 7's, regist'd 260,000 299,000 $\begin{array}{lll}\text { rooklyn } 6 s, \text { regist'd } & 103,000 & 107,000 \\ \text { Kingston City Coupons, }\end{array}$
bonds...... . ...... 11,000 11,000
$\$ 2,093,200 \$ 2,359,100 \$ 2,359,10000$
Total assets ... ..................... $\$ 5,265,49536$
Deduct items not admitted:
$\$ 10,83881$

Mortgages taken for dcbt...... $\$ 10,83881$
Value of real estate over de-
partment appraizal. ......... 37,78480
Agents' balances................. 43,592 92

## Total admitted assets.. <br> liabiluties.

 92,216 53Net value of outstanding policies $\left.\ldots . . . . \begin{array}{l}\$ 4,337,64400 \\ \text { Unpaid losses and cnco,vincnts not due.... } \\ 43,306 \\ 82\end{array}\right)$

Salaries, rent, \&c.............................3,000 00
Total liabilities as to policyholders...... $\$ 4,386,68583$

Surplus as regards pollcyhold's 786,59300 Aggregate...................... $\$ 5,173,27 \overline{8} 5$ Capital stock... . $\$ 12 \overline{25,000} 00$

John A. McCall, Jr., Deputy Supt.
CERUS CURTISS, President
 E. S. FRENCH,
W. HAXTUN $\underset{\text { Secretary }}{ }$


