

by the addition of the just sufficient quantity of water to dissolve the salicylate and the alkali which should guard the salicylate against precipitation in the form of salicylic acid by the acid of the gastric juice. The following prescription might, therefore, be recommended: potassium bicarbonate having been chosen in preference over sodium bicarbonate because of its greater solubility in water.

℞ Sodium Salicylate	10.0 Gm.
Potassium Bicarbonate	10.0 Gm.
Cinnamon Water	60.0 cc.
Syrup of Cinnamon, enough to make	120.0 cc.

Mix and label: Teaspoonful in glassful of seltzer water every two hours.

One advantage of using the cinnamon syrup instead of colorless syrups is that the discoloration salicylate undergoes on standing is thereby rendered unnoticeable.

IRON IN CINNAMON SYRUP.

Another advantage of our synthetic formula for syrup of cinnamon is that it could be used as a vehicle for iron salts, while the syrup at present official in the N. F. is out of the question for this purpose, because of "ink" formation. The following formula yields an actually delicious clear preparation.

℞ Iron and Ammonium Citrate	10.0 Gm.
Water	10.0 cc.
Syrup of Cinnamon (made from Oil of Cassia) to make	120.0 cc.

Mix and label: Teaspoonful in water three times a day after meals.

This would yield the average medicinal dose per teaspoonful. In view, however, of the much larger doses favored by clinicians, a tablespoonful, which might carry 1.5 Gm. of the medicament, would be more likely to produce striking results.

DRUG STORE LOCATION.*

BY I. K. ROLPH.¹

Perhaps no kind of retail business is more sensitive to good or faulty location than the drug store. This is largely because the drug store, more than any other kind of store with a city-wide distribution, enters into competition with a great many other kinds of stores and because it is dependent, to varying degrees, upon both transient and resident patronage.

TYPES OF LOCATIONS DEFINED.

There may be said to be five different types of retail locations, irrespective of kind of business. These five types of locations, each with its own definite characteristics, are: Central shopping district location, sub-center location, neighborhood location, string-street location and the "not concentrated" location. It is obvious that these location types are in relation to the retail structure of a city and, for that reason, are applicable to any large city. (Figure 1.) Further, because of

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the diffused distribution of drug stores, we find drug stores represented at every one of these locations. (Table I.)

TABLE I.—THE RETAIL DRUG PATTERN.

Locations.	ST. LOUIS.			BALTIMORE.		
	Per Cent of Drug Stores Represented.	Per Cent of Drug Sales Represented.	Average Annual Sales per Store.	Per Cent of Drug Stores Represented.	Per Cent of Drug Sales Represented.	Average Annual Sales per Store.
Total	100.0	100.0	\$ 30,252	100.0	100.0	\$ 30,000
Central shopping district	3.5	15.0	127,346	5.0	24.1	143,000
Uptown shopping district	1.6	4.8	88,338			
Sub-centers	20.4	26.6	39,558	18.3	24.7	40,500
String streets	13.3	10.3	23,466	7.4	7.8	32,000
Neighborhood developments and not concentrated	61.2	43.3	21,585	69.3	43.4	19,500

The central shopping district location is obviously within a city's central shopping district—the heart of the business district. The tendency in every city, outside of the heart of it, is for the population to group itself into communities. Some communities are, of course, more clearly defined than others. Sub-centers are the business centers of these urban communities. As a city may be said to be composed of a number of communities, so each community may be said to be composed of a number of neighborhoods. And neighborhood business reflects that part of the community in which it is located, and is governed, to an even greater degree, by the same considerations that govern the sub-center. String-street locations are those business sites strung along a street, on one or both sides, for a considerable distance. Business is not a definite part of the community around it, but rather draws its patronage from those persons using the street. "Not concentrated" business is that business which is scattered without relation to any retail development. It is business which stands alone, and may occur in any part of the city.

TABLE II.—THE CENTRAL SHOPPING DISTRICT IN THREE METROPOLITAN COMMUNITIES.

	BALTIMORE.	PITTSBURGH.	ST. LOUIS.
Area of district in square miles	0.14	0.21	0.15
Per cent of city's stores represented	6.10	11.00	5.00
Per cent of city's sales represented	28.10	47.00	32.00
Average annual sales per store	\$143,190	\$210,000	\$249,000
Per cent of sales done in this district by:			
General merchandise stores	38.0	49.0	51.0
Apparel stores	19.5	14.0	18.0
Furniture and household stores	9.5	11.0	11.0
Jewelry stores	4.3	3.0	3.0
Automotive establishments	0.3	1.0	1.0
Restaurants and other eating places	4.2	4.0	4.0
Lumber and building establishments	2.9	1.0	0.3
Food stores	2.4	7.0	1.0
Drug stores	2.9	2.0	1.7
Other retail stores	16.0	8.0	9.0
Per cent of sales done in this district by:			
Independent stores	64.1	59.0	72.0
Local chains	3.5	4.0	2.0
Sectional chains	15.7	10.0	4.0
National chains	10.9	26.0	19.0
Other types	5.8	1.0	3.0

THE CENTRAL SHOPPING DISTRICT LOCATION.

The proportion of a city's drug store business done at central shopping district locations is between 15 and 25 per cent, if St. Louis and Baltimore can be considered fairly typical of a metropolitan community. And these amounts of business are carried by about 4 or 5 per cent of the total drug stores in the city. (Table I.) In relation to central shopping district business as a whole, drug stores do from 1.7 per cent to 2.9 per cent of all business in that district. (Table II.)

Since business in this district is entirely dependent upon transient patronage, accessibility is the chief consideration in choosing a site. If accessibility is the chief consideration, then the amount of traffic that passes a location is important. In connection with the National Drug Store Survey conducted in St. Louis, the amount of traffic passing eight drug stores in the central shopping district was analyzed and compared with the net sales of these same stores. By correlating this information with the rent paid, it was possible to determine the cost of rent for every 100 persons passing each site and the average sales derived from every 100 passersby.

This analysis showed that these eight drug stores paid in rent all the way from 12 cents to 38 cents for every 100 persons that passed, and made sales of from \$1.53

TABLE III.—AN ANALYSIS OF EIGHT ACTUAL DRUG STORE SITES (ST. LOUIS).

Site Number.	Average Day's Traffic.	Per Cent Rating on Basis of Traffic Flow.	Sales Derived from Every 100 Persons Passing Store. (Relation of Traffic to Sales.)	Rent Cost for Every 100 Persons Passing Store. (Relation of Traffic to Rent.)	Per Cent Relation of Rent to Net Sales.
1	37,000	100.00	\$2.95	\$0.38	12.7
2	32,500	87.84	2.62	0.12	13.1
3	30,000	81.08	3.38	0.28	8.4
4	22,000	59.46	2.15	0.31	4.7
5	21,000	56.76	3.94	0.33	16.6
6	20,000	54.05	1.53	0.25	14.7
7	17,500	47.29	4.59	0.24	5.2
8	11,000	27.73	2.31	0.30	8.2

to \$4.59 per 100 persons. Table III gives the results of this analysis, with the sites arranged in the order of the volume of the average day's traffic.

It may be seen that at those points where traffic is heaviest, traffic is not always of the greatest value. In fact, the second lowest amount of daily traffic (17,500 persons) shows the greatest sales per 100 persons, and at a rent cost of only 24 cents per 100 persons passing.

It is thus indicated that not only is traffic as such an unreliable measure of potential business unless related to the character of traffic, but that rent is also an unstable factor, frequently unrelated to the value of the traffic or the actual amount of business which such a site can produce.

In connection with drug store rentals at central shopping district locations, you may be interested in learning about other drug store operating costs at these same locations contrasted with drug store operating costs at all other locations in the city. Such a study has just been made in the Bureau of Foreign and Domestic Commerce. It was based upon the Census of Retail Distribution, taken in St. Louis, although it is not a part of the National Drug Store Survey.

Salaries paid employees amounted to 12.2 per cent of sales in central shopping district drug stores, and 12.4 per cent of sales in drug stores located elsewhere

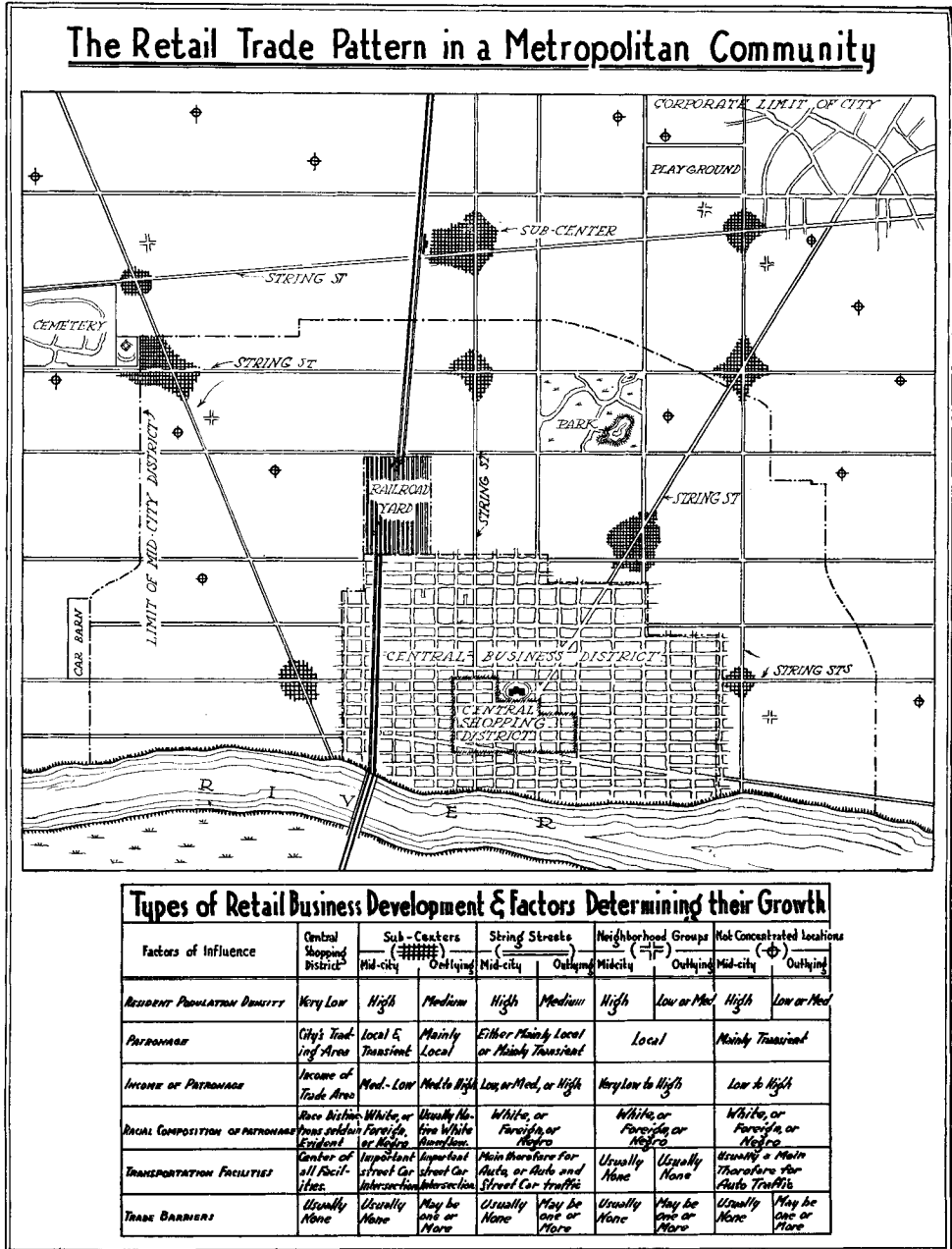


Fig. 1.—A typical urban community showing examples of its retail business developments together with a list of factors determining their character and growth.

in the city. Actual rent amounted to 7.1 per cent of sales in central shopping district drug stores, and 5.9 per cent of sales in stores elsewhere. Other expenses amounted to 5.4 per cent of sales in central shopping district drug stores, and 5.6 per cent of sales in stores elsewhere. Including a wage-compensation to owners (the average salary paid to employees and imputed to all owners who were reported as working in their stores), the total operating expense amounted to 24.8 per cent of sales for drug stores at central shopping district locations and 26.7 per cent of sales for drug stores at locations elsewhere in the city.

It is interesting to know that 70 kinds of retail business were found to have locations both in the central shopping district and outside. Of these 70 kinds of business, 37 were found to have lower total operating-expense ratios when located in the central shopping district than when those same kinds of business were located outside. The remaining 33 businesses had, of course, higher total operating expenses when located in the central shopping district than when located outside. The drug store is one of the 37 businesses whose total operating-expense ratio is lower (to the extent of 2 points) at central shopping district locations. However, it is well to remember that the expense ratio for stores outside of the central shopping district represents an average ratio for all stores at four types of locations (the sub-center, the neighborhood, the string-street and the not-concentrated locations), while the central shopping district ratio is for stores at one type of location only, namely, the central shopping district location.

Continuing with an analysis of expense ratios in the central shopping district, the above-average-sales stores were separated from the below-average-sales stores. The average sales per drug store in the central shopping district were found to be \$127,346, and six stores were found to have sales above that amount and 15 stores were found to have sales below. The total operating-expense ratio for those six stores with above-average sales was found to be 22.9 per cent, and the ratio for the 15 stores with below-average sales was found to be 28.8 per cent—a 6 point difference. To quote from this study—"The drug store reacts more consistently than any other kind of business in feeling the effect of increased sales. Actual-rent, employee-salary and other-expense ratios vary in similar degrees, as sales go above or below average, resulting in the same consistent differences in total operating-expense ratios." Perhaps I should state that while the average sales for all drug stores in the central shopping district were \$127,346, the average sales for those stores with above-average sales were \$303,541, and the average sales for those stores with below-average sales were \$56,868.

THE SUB-CENTER LOCATION.

The second most important type of drug site is the sub-center location. If the two cities (Baltimore and St. Louis) constitute an adequate sample, so that between 4 and 5 per cent of a city's drug stores are in the central shopping district, it is probably true that about 20 per cent of the drug stores are located in sub-centers. (Table I.) And it is undoubtedly the second ranking location type for a drug store, from the point of view of volume of business. Volume depends further, however, upon the income area in which the sub-center is located.

Accessibility to the people of that community, which is largely determined by transportation facilities, is, of course, as much of a factor in sub-center location as

accessibility to the city as a whole is in central shopping district location. And accessibility appears to be more correctly expressed in rent as related to sales at these locations than at central shopping district locations. An analysis of rent-to-sales percentages at a considerable number of sub-center locations has revealed, generally, a small range due largely to the fact that actual value of these locations is an easier matter of judgment. The survey in St. Louis showed that the rent-to-sales percentages at sub-center locations there were almost 4 points lower than at central shopping district locations. And those 4 points may be a contribution to net profit.

A higher selectivity of locations is available, also, when selecting a sub-center site, for there are always many sub-centers in any one city, as against only one central shopping district. Further, since sub-centers reflect very closely the income of the communities in which they are located, the volume of business one aims to do can be more closely related to a sub-center site than to any other type of site. Also, the kind of people one wishes to serve, which is expressed in racial background and occupations as well as income, determining the kind and quality of stock to be carried, may frequently be selected at sub-center sites. The population density of a community determines, in part, the stock turnover and volume.

THE NEIGHBORHOOD LOCATION.

Closely related to sub-center location is neighborhood location. Neighborhood drug business reflects the income of the people living in those neighborhoods to the same degree that sub-center drug business reflects the income of the people living in sub-center communities, which, after all, are simply the larger units of which the neighborhoods are part.

There is even a higher selectivity of locations available among neighborhood sites. And because it is a small part of a larger unit, a store at such a site is almost entirely dependent on the people immediately surrounding it. While stores here do not offer such high volumes (the average is probably about \$20,000, as shown in Table I), they can be very profitable if they are located in the right neighborhoods.

The St. Louis survey found that the rent-to-sales percentages at neighborhood locations were higher than at sub-center locations. Actual rentals were not higher but apparently they were out of proportion to the volume of business possible at those locations. In some instances, it has been known that landlords take advantage of the possibility that the neighborhood may become a sub-center later on, and so charge accordingly. It is believed better to pay a rental based on to-day's volume and a higher rental as the district develops rather than to speculate on the future of a district and pay on that basis. The landlord rather than the merchant should do the speculating.

THE STRING-STREET AND NOT-CONCENTRATED LOCATIONS.

The opportunities for drug store business are less at string-street and not-concentrated locations than at any other location types. (Table I.) Their chief weakness is due to the fact that they lack a business focal point, and so are difficult locations at which to carry on a drug business. Instances of considerable success are few and are accomplished only by exerting more than ordinary effort. Usually

these locations cater only to a small and limited number of drug patrons and fill emergency needs rather than general drug needs.

SUMMARY.

The possibilities of drug business at locations outside the central shopping district may be said to be in this order: Sub-center, neighborhood development, string-street development and the "not concentrated."

In choosing a central shopping district location, it should be borne in mind that the drug business at these locations accounts for less than one-fourth of all the drug business within the city limits, that character as well as amount of traffic should be considered in appraising a site's accessibility, and that rent also should be related as closely as possible to the actual amount of business which such a site can produce.

From an accumulation of figures, over a period of time and in a number of cities, it appears that drug stores located in sub-centers have the most desirable operating figures and characteristics. Sub-centers, generally, provide a high selectivity of profitable drug locations.

Both the sub-center and neighborhood locations are greatly influenced by the income of the population around them. The string-street location is greatly influenced by the character of traffic that uses the street and the degree and kind of business specialization that may exist there.

In general, five factors determine the selection of any profitable drug store location. *First*, it must be accessible to a sufficient number of people, either transient or resident patronage, or both. Resident patronage can be estimated by knowing the population of the shopping area to be served. If it is transient patronage, either partly or wholly, it is necessary to be assured of accessibility by street car, bus or automobile. *Second*, the people within that shopping area must have sufficient purchasing power. *Third*, if the racial composition or background of the people is conspicuous, it should be known so as to determine the kind and quality of stock to be carried. In the case of a chain store, the selection of a manager may even be influenced by such knowledge. *Fourth*, it is necessary to know the availability of transportation facilities, in all cases except where the patronage lives immediately around the store, as at the neighborhood location. And transportation facilities may be misleading unless the character of traffic is considered along with number of persons. A *fifth* factor is topography or other trade barriers (natural or artificial), which in residential areas, particularly, affect the limits of a shopping district. It is believed that these five factors can be more correctly applied if thought of in terms of the structure of the entire city.

ELECTIONS OF NATIONAL ACADEMY OF SCIENCES.

At the meeting of the National Academy of Sciences held in Washington on April 23rd, 24th and 25th, Dr. Thomas Hunt Morgan, director of the William G. Kerckhoff Laboratories of the Biological Sciences of the California Institute of Technology and past-president of the academy, was elected foreign secretary to succeed Dr. Robert A. Millikan,

director of the Norman Bridge Laboratory of Physics and chairman of the Executive Council of the California Institute of Technology, who asked to be relieved of the office, which he has held for the past fifteen years. Dr. Roger Adams, professor of organic chemistry at the University of Illinois, and Dr. H. S. Jennings, professor of zoology at the Johns Hopkins University, were elected members of the council.—*Science*, May 4, 1934.